

**THE IMPACT OF FOREIGN TRADE AND INVESTMENT
ON THE INDUSTRIALIZATION OF CHINA
1860 TO 1945**

BY

PETER A. PAWLIW

**A Thesis
Submitted to the Faculty of Graduate Studies
in Partial Fulfillment of the Requirements
for the Degree of**

MASTER OF ARTS

**Department of Economics
University of Manitoba
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ABSTRACT

This thesis investigates and provides support for the conclusion that foreign trade and investment were leading factors in the industrialization of China during the period, 1860 to 1945. The three main types of foreign economic influences were: Foreign Direct Investment (FDI), Technology Transfer, and Market Access.

The year 1860 was selected arbitrarily as a start date. Its only significance was that by this time trade data had become available for many treaty ports in China. However, the period, 1860 to 1890, was mainly a time of rapid foreign trade expansion, but modern industrialization efforts were meagre. The main period of foreign trade and investment expansion in China that promoted the growth of modern industries occurred primarily during the years, 1890 and 1945.

In order to examine the interaction of foreign trade and investment with the development of modern industry, three regions were selected for study: Shanghai, Manchuria, and Shansi. Industrial take-off occurred in Shanghai in the 1890's, in Manchuria during the period, 1900 to 1910, and in Shansi during the 1930's. Shansi was a late industrializer due to its remoteness from foreign influences. The international influences mentioned above were all important, but the magnitude of each type of foreign influence often differed between regions.

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This thesis is a culmination of studies which I began while working on a B.A. Honours degree in Economics at the University of Manitoba. My initial interest in Chinese economic history is largely due to taking classes which were taught with interest and enthusiasm by Dr. Vogt and Dr. Kerr.

Peter A. Pawliw

September 7, 2000

INTRODUCTION

A Definition of Industrialization

For the purpose of this thesis, it is important to clearly understand what is meant by industrialization. Industrialization can be thought of as a change in technology from pre-industrial to industrial technologies such as, use of the steam engine, electricity, and reliance on petroleum and coal. Industrialization includes the diffusion effects of these technologies throughout the economy, *i.e.*, to the manufacturing, mining, agricultural, transportation, and commercial sectors. Although, agriculture, transportation and commerce are all industries, the term industry as it is used in this thesis primarily refers to the mining, manufacturing, and public utilities (electricity) sectors. Therefore, the use of the terms, pre-modern and modern industry are meant to refer to the mining, manufacturing, and public utilities sectors of industry. Pre-modern refers to the technologies which were used before the Industrial Revolution, *i.e.*, before the invention and use of the steam engine and electricity. Modern, as in 'modern industry', refers to the use of the technologies of the Industrial Revolution. In this thesis, the use of the word 'industrialization' should be thought of as being synonymous with the word 'modernization'.

Industrial Take-Off In Three Regions: Shanghai, Manchuria, And Shansi¹

Industrial take-off in Shanghai was achieved during the 1890's, because this decade witnessed the establishment of foreign and domestic textile mills in the city. Manchurian industrial take-off occurred during the first decade of the 20th

¹ Please refer to tables and charts found at the end of this introductory section.

century because Russian railroad construction on the Chinese Eastern and the South Manchurian railway had been completed by the turn of the century. This had the effect of stimulating Russian investment in agri-food processing industries. In 1905, the Kwantung Leased Territory was ceded from Russia to Japan. This ushered in a period of investment in modern industry which lasted until the collapse of the Japanese Empire in 1945.

Shansi's industrial take-off did not occur until the 1930's due to its relative remoteness from foreign influences. Although railroads were built prior to 1930, these were inadequate to efficiently link Shansi's commercial and industrial centres together. Prior to the 1930's, the industrial sector continued to be dominated by pre-modern industries, *i.e.*, industries which did not use steam power or electricity. However, the industrialization program which was undertaken by the Warlord, Yen Hsi-shan during the 1930's provided clear evidence that a modern industrial sector had been successfully established within the province by 1937. Unlike the other two regions, the greatest stimulus to industrialize Shansi arose from the Provincial Government's military and political concerns. However, it should not be forgotten that the construction of the Chinese Eastern Railway and the South Manchuria Railway by Russia was initially done for strategic reasons, rather than economic ones.

Foreign Economic Influences

There were three main types of foreign economic influences: (1) Foreign Direct Investment (FDI), (2) Technology Transfer, and (3) Market Access.

First of all, capital, in the form of foreign direct investment played a leading role. It played a decisive role in the industrialization of Shanghai and Manchuria. Secondly, technology transfers also affected the rate and spread of industrialization. The diffusion of knowledge to Chinese businesses increased the likelihood that newly established infant industries would be able to compete against foreign producers. Knowledge diffusion occurred from foreigners working in China and from Chinese students who had either studied abroad or had attended a Chinese institution of learning which was organized and run along Western lines. There was a process of learning from FDI, *ie.*, Chinese learned new technologies and managerial procedures from foreign employers. Additionally, technology was imported in the form of industrial machinery, and machine tools. Technical training was achieved either by educating students in newly established Western-style educational institutions or by study abroad.

The industrialization process was accelerated by the use of expatriate specialized labour, *ie.*, imported foreign labour². The largest expatriate labour populations were composed of British, Russians, and Japanese. In 1931, the foreign populations of these three nations residing in China were respectively: 20,000; 140,000; and 280,000 (Remer, 1968:364). Specialized labour in the form of expatriate workers with scientific or technical training were important, but represented a very small proportion of the total populations of the regions studied. The demand for highly skilled expatriate workers became more intense as the

² The term 'expatriate' is a general term which refers to a person of foreign nationality, who tends to be used very specifically for personnel from Advanced Developed Countries(ADCs) working in Less Developed Countries(LDCs). They are employed by governments or businesses in LDCs at a high cost because of the large wage differential between ADCs and LDCs (Pearce, 1986, 141).

pace of industrialization quickened. This became especially apparent in Manchuria between 1932 to 1945, during which time massive amounts of Japanese capital was injected into its industrial sector. However, as was already stated, this expatriate population was small, and it should be kept in mind that the successful operation of modern enterprises in China was partially due to these workers. The most notable example of the use of expatriate labour occurred in the regions of China that were incorporated into the Japanese Empire.

A third factor which affected industrialization was market access. The free movement of imports and exports had the effect of increasing industrial specialization and a division of labour. For example, the rise of textile industry in Shanghai (exports of filature silk, and imports of cotton products which competed against a growing domestic modern textiles sector), bean oil and metallic products processing in Manchuria, and coal output expansion in Shansi. Shansi's exports and domestic savings financed imports of industrial equipment which were needed to establish a modern industrial sector.

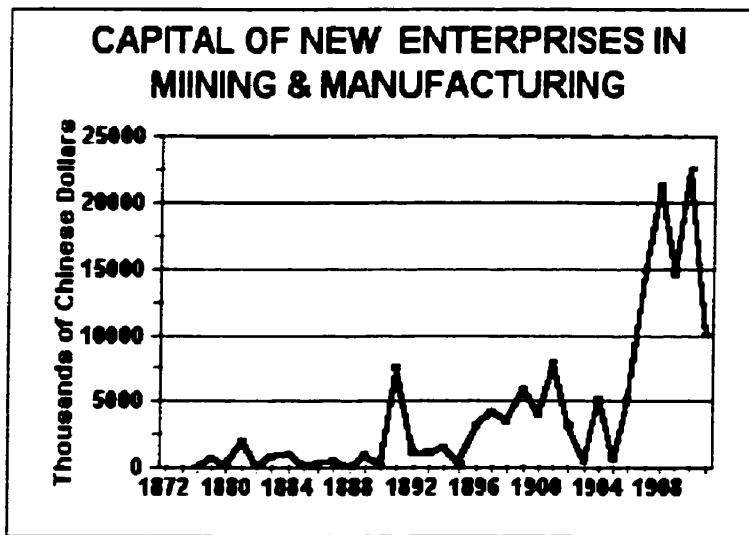
The first chapter of this thesis is quite general, and will discuss the industrialization process in China. The next three chapters concentrate on three distinct geographic regions - Shanghai, Manchuria, and Shansi. These regions are discussed sequentially from the earliest industrializer (Shanghai) to the latest (Shansi). The concluding chapter provides a comparison of the industrialization experiences of the three regions.

**Table 0.1: TOTAL CAPITAL OF NEW CHINESE AND SINO-FOREIGN
JOINT ENTERPRISES IN MINING AND MANUFACTURING
1872 TO 1911**

Value in thousands of Chinese dollars

Year	Capital
1872	36.0
1876	661.9
1877	139.9
1878	2,055.9
1880	28.0
1881	789.2
1882	971.9
1883	136.0
1884	385.7
1885	449.6
1886	66.0
1887	941.1
1888	140.0
1889	7,458.7
1890	1,204.9
1891	1,071.0
1892	1,549.6
1893	363.8
1894	3,187.8
1895	4,219.4
1896	3,539.0
1897	5,919.2
1898	3,987.4
1899	7,940.2
1900	3,098.0
1901	379.7
1902	5,275.9
1903	599.3
1904	5,223.0
1905	14,813.4
1906	21,278.4
1907	14,573.0
1908	22,527.3
1909	9,947.3
1910	4,944.7
1911	2,290.5

Chart 0.1:

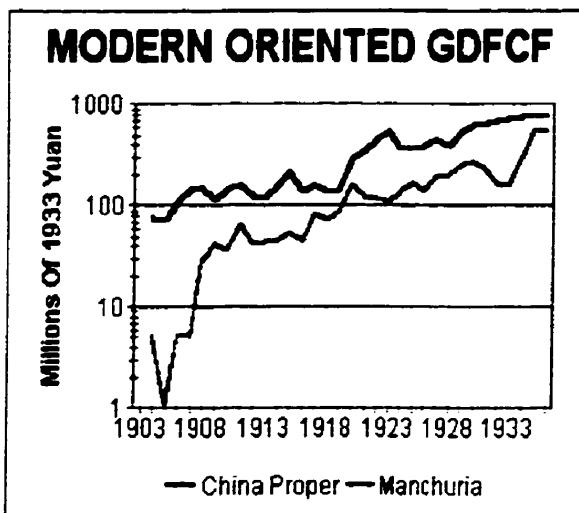


Source: Hou, 1965:135

Table 0.2: MODERN ORIENTED GROSS DOMESTIC FIXED CAPITAL FORMATION
Millions of 1933 yuan

Year	China Proper	Manchuria
1903	76	5
1904	71	1
1905	105	5
1906	145	5
1907	152	28
1908	112	42
1909	142	36
1910	158	65
1911	125	41
1912	120	43
1913	161	46
1914	214	53
1915	139	44
1916	158	85
1917	137	73
1918	134	89
1919	282	160
1920	352	124
1921	442	118
1922	532	107
1923	353	133
1924	358	165
1925	376	138
1926	444	190
1927	388	202
1928	505	241
1929	618	275
1930	613	235
1931	681	162
1932	704	161
1933	741	293
1934	741	530
1935	761	526
1936	873	525

Chart 0.2:



Gross Domestic Fixed Capital Formation (GDFCF) estimates are derived from time series for the apparent consumption of cement, iron and steel products, and machinery. Apparent consumption is the sum of domestic production and net imports.

Source: Rawski, 1989: 245

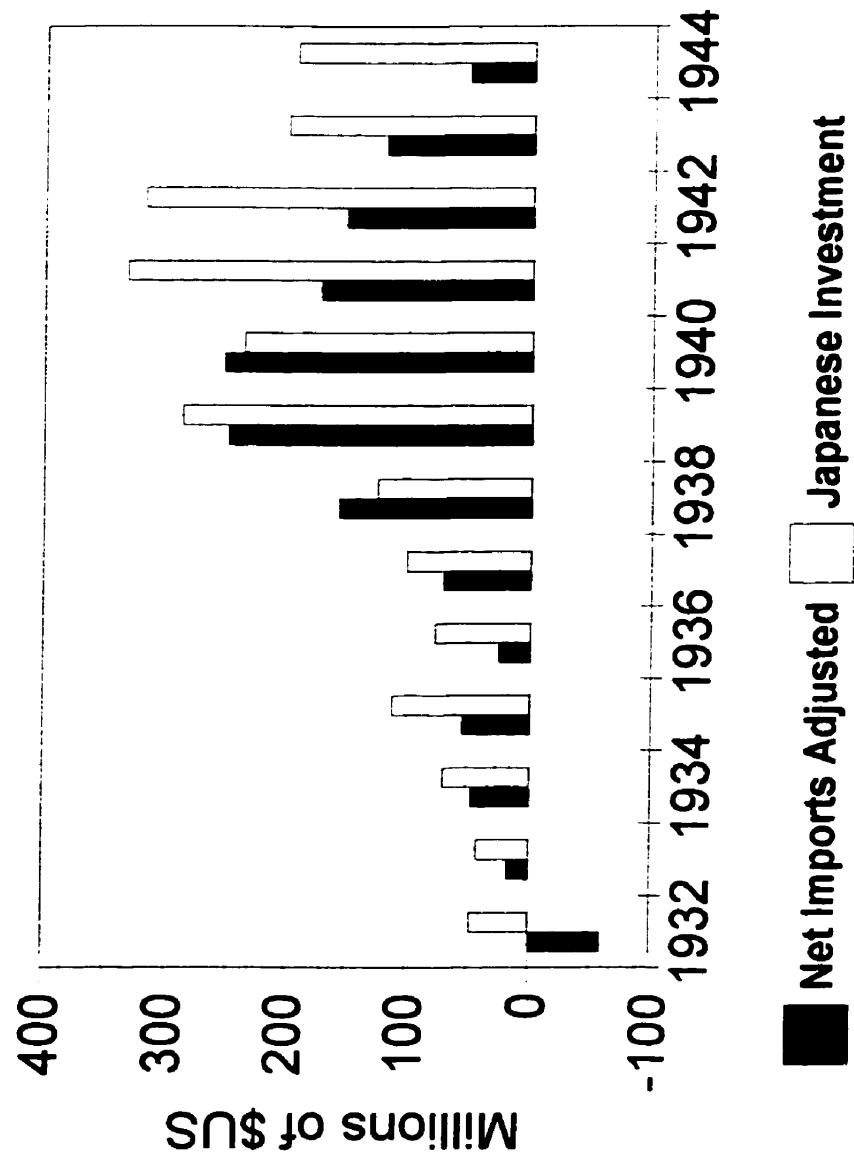
Table 0.3: Manchurian Trade and Investment

MANCHURIAN NET IMPORTS (Millions of \$US)			JAPANESE INVESTMENT IN MANCHURIA (Millions of \$US)	
YEAR	NET IMPORTS	Adjusted	YEAR	INVESTMENT
1932	-59.098	-59.098	1932	47.899
1933	17.324	17.324	1933	42.476
1934	47.300	47.300	1934	69.360
1935	54.775	54.775	1935	111.805
1936	25.439	25.439	1936	76.139
1937	69.680	69.680	1937	100.259
1938	156.327	156.327	1938	125.115
1939	250.462	250.462	1939	287.040
1940	253.967	253.967	1940	236.978
1941	172.184	172.184	1941	332.848
1942	100.900	151.350	1942	318.888
1943	79.700	119.550	1943	200.070
1944	35.200	52.800	1944	193.356

Note: From 1942 to 1944, Japan accounted for most of Manchuria's import and export trade.

Japanese trade figures were not adjusted to F.O.B. values (Manchurian ports) in the case of exports and to C.I.F. values in the case of imports. Therefore, the import balance values are vastly under-estimated. According to Cheng, during the Pacific War, ocean freight and insurance charges increased significantly over pre-war levels, and it would be reasonable to add 50% to the Japanese export surplus figures in order to make them import-excess figures of Manchuria. Before 1942, the corresponding figure was 25% (up to 1942 this adjustment had been made in the trade returns). [Source: Cheng, 1956: 204-205]

**Chart 0.3: MANCHURIA'S NET IMPORTS AND
JAPANESE INVESTMENT IN MANCHURIA**



Chapter 1

THE INDUSTRIALIZATION PROCESS IN CHINA

Two Key Questions

There are two key questions to keep in mind when evaluating the industrialization experience in China. Why did China industrialize when it did? How did this industrialization occur? The following chapters will examine these questions on a regional basis. The main explanatory factor in all three cases involved foreign influences, *i.e.*, economic, political, and military.

Definitions Of Terms

Industrialization is a change in technology from pre-industrial to industrial technology, *i.e.*, the use of the steam engine and electricity. Feuerwerker defined three types of economic growth, *i.e.*, Pre-modern/extensive growth, Smithian/intensive growth, and Modern Economic Growth (Feuerwerker, 1992:765). Smithian growth was the fastest rate that an economy could grow at before the onset of industrialization. Modern Economic Growth as defined by Simon Kuznets could only occur in an industrialized or an industrializing economy.

1.) Premodern or extensive growth. This type of growth yielded constant returns to additional inputs. It was unable to generate sustained, large and steady increases in per capita output and incomes.

2.) Smithian/intensive growth, that is, this was the type of economic growth that Adam Smith was referring to in his study, The Wealth of Nations. Total output

and per capita output may increase slowly. However, this growth was accompanied by large fluctuations in economic prosperity and it was also uncertain whether this growth rate was sustainable over the long-run. Since Smith's writings pre-dated the wide-spread industrialization of Britain, Smithian growth was based on efficiency and productivity gains from increased specialization, commercialization, and pre-modern technology improvements. This type of growth was most evident in the Chinese economy during the Song Dynasty.

3.) Modern Economic Growth: According to Simon Kuznets, there had to be sustained growth in the economy, that is, per capita output, in order for the growth to be considered 'modern'. By a sustained increase we mean a rise of such magnitude that it is not overshadowed by short-term fluctuations. And by a sustained trend in structure, e.g. a shift toward nonagricultural sectors, we mean one in which the rise in the share of nonagricultural activities in output (or in labour force) is not overshadowed by short-term fluctuations in the shares(Kuznets, 1967:26).

The type of growth described by Kuznets could only occur in economies which industrialized. The main invention which allowed for modern economic growth was the steam engine. Before its invention, the best that could be expected was Smithian growth. Water power and coal were used to revolutionize China's pre-modern iron and steel industry. However, the growth of their metallurgical industries were constrained by the availability of rivers which could be exploited for such uses. The utilization of steam power allowed for the establishment of

industry far away from rivers. Instead of water-power, modern industry depended on the exploitation of fossil fuels to power thermal electric plants.

Kuznets' type of growth essentially assumes that industrialization occurs. Pre-Modern and Smithian economies had not been able to sustain significant increases in per capita income over the long-run, nor were they able to initiate any substantial structural shifts in the economy which would decrease the dominance of the agricultural sector. In order for industrialization to occur, there had to be a continuous development and application of new technologies to production methods.

Feuerwerker (1992:765) believed that the highest levels of output per capita generated in pre-industrial China occurred during the Song dynasty(960-1279), a period which spanned over three hundred years. During this dynasty there was a technological revolution which raised per capita output to a new plateau. Otherwise, essentially all of the growth that occurred in the Chinese economy until the 19th century was of the pre-modern type. During the last half of the nineteenth century and the first four decades of the 20th century there is strong evidence to support the view that Smithian growth, that is, increased specialization and commercialization, occurred in Jiangnan and the Canton delta(Feuerwerker,1992:766). Feuerwerker concluded that there was no industrial revolution, no Green Revolution in agriculture, and the new technologies, products, materials and institutions which were copied or adapted were based on foreign models.

I believe that this view might be too narrow. However, there is little doubt that Feuerwerker was correct when he stated that the centres of economic growth were geographically confined. China's Self-Strengthening Movement which was initiated in the latter half of the 19th century produced a handful of modern firms which utilized the technologies of the Industrial Revolution. However, sustained rates of modern economic growth were not achieved until Shanghai and its environs began to rapidly industrialize in the 1890's.

Although Shanghai acted as China's commercial hub, it also served as the nation's most important industrial city. By 1933, Shanghai's factories produced over forty percent of China's industrial output, and was home to 0.6% of the country's population (Rawski, 1982:30). With such a high concentration of industrial activity within Shanghai, it is difficult to believe that locally there was not an industrial revolution. The Shanghai Power Co. Produced most of the city's electricity. If its electricity generation is used as a proxy for the growth of modern industry within the city, then the city's industrial output would have mushroomed at the staggering rate of 28 percent per annum between 1912 and 1925, and would have continued to expand at the respectable rate of 8 percent per annum between 1925 and 1936 (Wright, 1991:357)¹. It was estimated that the Shanghai Power Co. Was responsible for an average of 83 percent of the total sales of electric power in Shanghai for the period 1925-34 (Murphey, 1953:189). In 1936, 58 percent of China's electric power was generated by Shanghai's power plants (Murphey, 1953:189). Additionally, the Shanghai Power Company's "Riverside" plant had a

¹ Tim Wright, Research Note, "Electric Power Production in Pre 1937 China" in the China Quarterly (1991).

larger output in 1930(450 million Kilowatt-hours) than any single station in England, and the total output of the city's four power companies was greater than in any English city except London(Murphy, 1953:189).

Industrialization refers to the change of technology used from pre-modern industrial technologies to modern technologies used throughout the economy. Modern industry is comprised of those industries which rely on either steam power or electricity for their energy. In this thesis, the use of the term 'industry' is meant as a general term which encompasses the following industrial sectors: - mining, manufacturing, and public utilities (electricity).

Industrialization includes the diffusion of use or benefits of modern industrial technology throughout the economy. This diffusion creates cross-sector linkages which provide economy-wide productivity improvements. For example, the chemical fertilizer industry produces fertilizer which is either transported by rail or by truck to the farm sector. The farm sector utilizes this modern sector commodity to raise yields. The increased output is shipped to market by automobile, *ie.*, trucks; rail; or steamship. Additionally, it is worth noting that industrialization occurred mostly in urban areas. Most of China's farm sector did not undergo industrialization. However, certain farms did industrialize, *ie.*, mechanized farm machinery and chemical fertilizers were used.

Pre-Conditions For Industrial Take-Off

There are at least five pre-conditions for industrial take-off, namely:

I) Commercialization of domestic economy and expansion of international trade.

II) Sustained growth of per capita income

III) Specialization and the growth of large-scale industrial enterprises.

IV) Sustained growth of heavy industry, *ie.*, iron, steel, coal, and metal fabrication industries.

V) Technology improvements that continuously raise productivity.

The earliest time that these conditions occurred for a long period of time was during the Song Dynasty (960-1279). Nearly all of the pre-conditions for an industrial take-off were met, but modern industry failed to develop because although the Chinese understood the principles of the steam engine, they did not develop a working model of a modern steam engine, as was done in Britain². Although there was a substantial expansion of knowledge and the application of new technologies, steam power was not utilized in industry. Inanimate sources of energy were confined to the use of windmills and water wheels. However, an important change did occur in the metal industries. Foundries came to rely on

² Temple, Robert (1986) The Genius of China. New York: Simon and Schuster. See pages 64-66. "The essential design of the steam engine, lacking only the crank-shaft, was invented in China before the steam engine existed. ... instead of the piston of the steam engine working the wheels on a vehicle, the Chinese machine had wheels which were worked by rushing water in order to power pistons."(p.64). By the 5th century AD the Chinese had already mastered the 'Siemens' steel process, *ie.*, the Martin and Siemens steel process discovered in Europe in 1863 (p.68). Water-powered double-acting piston bellows allowed for a historically unprecedented rise in iron and steel output in China's pre-modern/Smithian economy.

coal instead of wood and charcoal. Additionally, steel production was perfected in China long before the industrial revolution occurred in Europe.

Industrialization, Trade, and Foreign Investment

Where, when, why, and how did industrialization occur? An attempt to answer this question will be made by examining three distinct regions - Shanghai, Manchuria, and Shansi. These three distinct geographic regions were chosen because of their differences.

Shanghai was China's most important port city. The city was surrounded by a vast market area which possessed abundant agricultural resources. Additionally, it was a bustling commercial and industrial centre before the onset of industrialization. During the middle of 19th century, the city was opened to foreign trade. Increased levels of commercial activity due to its openness to foreigners brought further prosperity to the city. The city's industrial take-off occurred in the 1890's when Chinese and foreigners started to invest in modern manufacturing plants. Shanghai's modern industrial growth was based on the application of the latest technologies to its manufacturing and commercial sectors. By the 1930's the city produced a significant amount of China's manufacturing and electricity output. However, its population was small in comparison to that of Shansi or Manchuria.

Manchuria was situated in the northeastern corner of China. Of the three regions under consideration, it was the largest in terms of land area and population. It possessed abundant natural resources such as - farmland, forests, water

resources, iron, coal, and other mineral deposits. Unlike Shanghai which was heavily influenced by British and European investment during its early stage of industrialization, Manchuria drew its foreign investment from Russia and Japan. However, after the Japanese occupation of Manchuria in the early 1930's, foreign investment was almost exclusively supplied by Japan.

Shansi was smaller geographically and in terms of population than Manchuria. Although, the province's farmland was able to grow a wide variety of crops, the cold, dry climate meant that the growing season was restricted compared to southeastern China where double-cropping was routinely practised. This also meant that it was not feasible to construct irrigation works because of the shortage of water. At the onset on industrialization, the peasantry was impoverished, the commercial sector stagnant and in decline, and the privately owned manufacturing and mining sectors were weak. Yen Hsi-shan's Ten Year Plan for the industrialization of Shansi relied upon provincially raised capital. Industrialization in the province occurred as a top-down process which was centrally planned by the state. Yen's Ten Year Plan was largely a success. Unlike, Shanghai and Manchuria, significant industrialization occurred before the onset of large-scale foreign investment. During the Sino-Japanese War (1937-45), Shansi like Manchuria benefited from Japanese investment.

There are two questions which should be kept in mind while evaluating the Chinese industrialization process, circa 1890-1945, but which are not the purpose of this thesis. Most importantly, the most fundamental question is whether or not foreign trade and investment were beneficial to the Chinese economy. Secondly,

what exactly occurred in the sectors of China's economy that underwent industrialization, ie. to what extent were modern industrial technologies adopted by the mining and manufacturing sectors. The purpose of this thesis is to explore the interplay of foreign economic influences on China's domestic economy. However, because China's newly industrializing sectors did not exist in isolation of foreign influences, and were often in competition with the existing pre-modern sectors of the economy, it is useful to be cognizant of these issues.

There is some question as to whether or not foreign trade and investment were beneficial for China. It is my belief that China's mining and manufacturing sectors benefited from foreign trade and investment. These foreign influences acted as a catalyst to transform China's pre-modern industries into modern ones.

There is no clear evidence to prove that the late Qing Empire was on the verge of a domestically generated industrial revolution. In fact, estimated per capita agricultural output was declining.

Between 1720 and 1830, the average productivity of agricultural labour had fallen by 22% (Hou et al., 1979:84). Although productivity improved during the late 19th and early 20th century, it did not attain the levels that had been achieved during 1720 and 1730. This would suggest that the surplus value which could be extracted from the agricultural sector was declining. This meant that China's available resources which could be used for investment in new plant and machinery, education, and research & development were also falling. Since well over half of economic output was derived from agriculture, a fall in per capita

agricultural output would likely translate into a contraction in per capita income. This decline in purchasing power would have economy-wide repercussions on the levels of consumption, saving, and investment.

Industrialization did occur, but it was restricted geographically. As a result, pre-1949 industrialization had a small impact on GDP growth, and it could not be considered to be as significant as the economy-wide modernization which occurred under Communist rule. This is not meant to negate the fact that the foundation of China's modern industrial sector was established before the Communist Revolution. A wide range of industries in the consumer and producer goods sectors were established. However, most of the benefits of these modern industries were geographically restricted during the pre-Communist period.

A few exceptions should be noted. The spread of a railroad network across China Proper and Manchuria increased the efficiency of the transportation and commercial sectors. These railroads were beneficial to farmers and industrialists who lived outside of the Treaty Ports. Additionally, the introduction of steamships for river and oceanic shipping lowered shipping costs and speeded up the import and export of domestically and internationally traded commodities. The development of the chemical fertilizer industry helped to raise the agricultural sectors crop yields. Although a large percentage of China's industrial product imports were destined for the Treaty Ports and urban centres, such items as chemical fertilizers, and agricultural machinery directly benefited the country's farm population.

Table 1.1: OUTPUT AND PRODUCTIVE CAPACITY OF CHINA'S FERTILIZER PLANTS

Ammonium Sulphate Output (Thousand Metric Tons)

Year	Dairen Actual ³	Dairen Productive Capacity	Yung-li-ning Actual Estimated	TOTAL FOR BOTH PLANTS
1935	.....	180	.....	.....
1937	182	210	18	200
1938	229	240	.....	.....
1941	190	240	37	227
1942	.....	454 ⁴	.....	.....
1949	.....	.....	.....	27

Source: Liu, 1970:9-10 & 12.

China had two chemical fertilizer plants, one at Dairen (Manchukuo) which was built in 1935 by the Japanese, and another located near Nanking (Nationalist China) which was constructed in 1934 by technicians trained in the United States (Liu, 1970:7). Both plants utilized modern machinery.

The amount of farm machinery imported into China and Manchuria rose rapidly during the 1920's. During the 1930's Manchuria's demand for imported machinery

³ It should be noted that output figures given by Liu(1970:9) only roughly correspond to a more complete data set given by Nakagane(1982:430) which shows output figures for the period, 1934-40. However, because Liu's production and productive capacity figures extend to 1941 and 1942 respectively, and Nakagane's did not, Liu's figures were used in the above table. It is more important to pay attention to what occurred during these later years than during the early 1930's because Japanese agricultural policy had improved markedly by the time that the Second Five Year Plan was implemented.

⁴ 1942 Plan Target announced by the Japanese in 1939.

rose steeply. However, it should be noted that in absolute terms, the quantity of modern farm machines used in China and Manchuria was still small.

The highest concentrations of modern industry tended to occur in the Treaty Ports and in Manchuria. However, there were exceptions, such as the case of Shansi under the leadership of the Warlord, Yen Hsi-shan.

One might reasonably speculate that there were few economy-wide linkage effects from industrialization before 1945. Modern enclave economies developed in the areas which were open to trade and foreign investment. Additionally, these areas were politically and militarily more stable than the rest of China. For example, the Treaty Ports and their foreign concession areas were under the protection of the foreign governments who had allowed their nationals to invest in these cities.

In Manchuria, the Kwantung Leased Territory was under direct Japanese control, and the Chinese Eastern Railway, including its concession zones and the Russian city of Harbin located in North Manchuria were under the jurisdiction of Russia. Unlike these areas, Shansi's government believed that their province was in continual danger of being invaded by rival warlord armies. The combination of this political/military uncertainty and the lack of investment capital made it less likely to expect that industrialization would successfully occur in Shansi.

For the most part, foreign capital was not welcomed because of the xenophobic attitudes of the populace. However, a small amount of Japanese capital was invested in the mining sector before the Sino-Japanese War. The principal reason

for a shortfall in the availability of venture capital was the collapse of the Shansi Bankers. Before the 1911 Republican Revolution, these bankers had profited from handling inter-government financial transactions. After the Revolution, the newly formed Republican government began to erect its own institutions which would replace the Shansi Bankers. Although the province's commercial sector continued to function, it was seriously handicapped by the loss of this business. This situation was complicated by the decline of foreign trade with Russia and Mongolia, much of which had been carried out by Shansi Bankers.

Basically, the Treaty Ports, such as Shanghai were reliant on foreign markets and foreign investment for their prosperity. Additionally, by the 1930's when the rate of industrialization accelerated in Manchuria, its economy became more closely linked with that of Japan. A similar, but delayed pattern of development due to its remoteness, *ie.*, distance from foreign economic influences, was initiated in Shansi after the Japanese occupation of the province. Before the occupation, inter-provincial trade was important, but foreign direct investment(FDI) was minor. Significant inflows of FDI from Japan flowed into Shansi's economy during the period, 1937-45. Additionally, an alliance between Yen Hsi-shan and the Japanese Occupation Forces allowed Shansi's new modern sector to remain productive throughout the Chinese Civil War(1945 to 1949).

Trade with and investment from Western, *ie.*, European or European settled, countries had a stimulating effect on the Chinese economy⁵. Chinese

⁵ Commercial ties with Japan only became important during the 20th century. During the 19th century, Britain was China's main source of investment, trade, and technology.

entrepreneurs, especially those in the Treaty Ports which were heavily influenced by foreigners successfully adopted foreign technologies in the production of consumer goods, ie., Shanghai's modern textile industry. However, heavy industry and mining stayed under the domination of foreign investors. Chinese investors were more able to raise the small amounts of capital needed for the establishment of light industries, than the relatively large amounts required to establish heavy industries.

As was already stated, there are several reasons why foreign trade and investment could be perceived as detrimental to Chinese economic development. To reiterate, these issues are not the purpose of this thesis, but these 'detrimental' factors played a role in how each region industrialized. The effects were more qualitative than quantitative. We will never know exactly to what extent these factors retarded or shaped the process of industrialization in China.

One major detrimental factor was the opium problem. Opium was an important import item during the 19th century. According to Thomas, the cumulative value of opium imports over the period, 1870 to 1897, was 817 million taels (Thomas, 1984:66). This was a huge sum of money that could have been invested in modern industry and infrastructure. The Compradors were China's commercial middlemen. They initially earned their living by managing and co-ordinating the operations of foreign firms operating in China. Once they learned how these companies operated, the compradors used their knowledge and skills to establish their own modern sector firms. They were among China's first entrepreneurs. The income earned by the compradors between 1842 and 1894 was only 531

million taels (Hao, 1970:105). This was notably less than the amount of money spent on opium imports during the last quarter of the 19th century.

Table 1.2: FOREIGN SHARE IN THE MODERN SECTOR OF THE CHINESE ECONOMY (%)

YEAR	TOTAL SHIPPING	YANGTZE SHIPPING	COTTON YARN SPINDLES	COAL	IRON ORE	PIG IRON
1897	77	.....	41	.....	.....	.....
1907	84	.....	34	.....	.....	100
1918	77	79	43	77 ⁶	100	100
1928	78	77	43	78	99	96
1936	.....	82	46	66	99	97

SOURCE: Hou, 1965:128

A second reason why this international openness could be considered detrimental to China was the pattern of unbalanced growth which occurred. China's Treaty Port system funnelled foreign investment into a selected number of urban centres. As a result, modern sector growth and commercial profits to be gained from trade were concentrated in these cities. These cities developed their own modern-sector enclave economies which were commercially linked to other international trading centres.

⁶ The foreign share of the modern coal mining sector was 90 percent in 1914.

International linkage effects probably outweighed domestic ones. For example, it was quite possible for a Treaty Port's economy to be booming, while the rural economy was in decline because of crop failure, banditry, or civil war. Railway lines could be damaged due to war. This could disrupt food, fuel, and raw materials shipments to the Treaty Port, but it would not necessarily harm the Port's economy because all of these commodities could be imported from other Chinese ports or from foreign sources. It was also possible that rural unrest would encourage the rich to move to the Treaty Ports. Their wealth would then be invested in the port's economy, rather than in the countryside. If foreign technologies and know-how were not confined to the Treaty Ports, more economy-wide linkages may have been created.

In the long run, foreign control over China's heavy industry and shipping could be detrimental to the country's economic development. As long as these industries stayed mostly under the control of foreigners, national development plans put forth by the Nationalist Government could be thwarted if these foreign investors did not agree with the government's policies.

Additionally, domestic linkage effects may be slow to develop if these industries continued to develop to serve export markets, rather than domestic industries.

Literature Review and An Overview of China's Economic History

In order to determine what the effect of foreign trade and investment was on the Chinese economy, it is necessary to look at a wide variety of materials presented by different scholars, *ie.*, information regarding trade, manufacturing, electricity, Gross Domestic Product growth, and demographics. However, it should be kept in

mind that there are conflicting views regarding the pre-Communist economic history of China. Generally speaking, some scholars believed that some industrialization did occur but that it was insufficient to modernize the economy, i.e., there were few if any spread/linkage effects between the new industries and the rest of the economy. Others believed that there was a relatively good coincidence of interests between the new modern sector industries and the existing commercial and productive facilities which produced efficiency improvements throughout the economy.

Foreign trade and foreign investment data are the most accessible, that is, statistics were recorded during the 19th and early 20th centuries. However, other information regarding agricultural and industrial output are harder to come by. Much of this data has been pieced together from a multitude of sources, and aggregate output levels were estimated. This data scarcity led to very few attempts being made to estimate per capita output(GDP or GNP per capita). Therefore, the question of whether the Chinese economy generated per capita growth, stagnated or declined between 1870 and 1949 has not been fully answered. However, there have been enough studies done to show that per capita growth did occur. The harder question to answer was whether this growth rate was relatively high or whether it was low. For example, Rawski tended to favour higher estimates, Perkins the mid-range, and Yeh preferred the lower values(Maddison,1995:145).

Initially, scholars of Chinese history believed that the rural economy's per capita income declined, and was accompanied by a slow rise in output from a small

modern sector. Additionally, it was believed that the modern sector declined during the world depression of the 1930's. Although these studies were conducted before 1937, the same view prevailed during the 1960's and 1970's. Ramon Myers made reference to writings by Eastman and Paauw (Myers, 1991: 604) which supported this opinion.

After 1970, new studies were published which indicated rural prosperity existed in certain parts of the country. For example, foreign and inter-regional trade in North China increased the level of commercialization and allowed family farms to maintain a constant level of per capita output. This was accomplished at the same time that the population was estimated to be growing quickly.

Additionally, other studies posited that treaty port commerce provided an economic stimulus to the hinterland. Within the treaty ports themselves, the foreign concession areas provided a safe and stable environment for foreigners and Chinese to conduct business. They were outside the jurisdiction of the Imperial government during the 19th century or the warlord governments, which were created after the fall of the Imperial government in 1911 and lasted until the late 1920's. Initially, treaty ports served almost exclusively as import and export depots. However, between 1895 (the first year that foreigners were allowed to build and operate industrial plants in China) and 1937, there was a notable rise of factory output in the nation's major cities.

Kung-chia Yeh estimated that there was a slight increase in GNP during the 1930's.⁷ One may assume that if the economy grew during the 1930's, then it must have reacted similarly in past decades. Long run estimates of Agricultural output support this view.⁸ However, the long-run growth trend for per capita agricultural output was very slow.

Dwight Perkins also supported the idea that GNP rose between 1914 and 1937. However, he did not believe that there was a significant change in per capita income(Myers, 1991:604). Myers believed that by 1983, some researchers were beginning to dispute the belief that the Chinese economy had undergone sustained GNP growth during the early decades of the 20th century(Myers, 1991:605). The general belief was that per capita income did not rise, GNP did not experience a sustained expansion, and the over-all welfare of the Chinese population did not improve. Feuerwerker's view was that GNP grew slowly; a small modern sector formed which had little impact on the economy; the relative supply and demand of labour and capital was unaltered; and that no relative economic contraction occurred in any sector(Myers, 1991:605). During the 1980's further research posited that rural poverty was wide-spread and caused by the unequal distribution of wealth, and by the large number of rural workers without full-time employment.

⁷ See Yeh's article in Chi-ming Hou and Tzong-shian Yu, Eds. book entitled Modern Chinese Economic History, which was published in 1979. Also note that Ta-Chung Liu (1946) estimated that the Chinese economy grew during the 1930's. However, his assumed growth rate is lower than the one used by Yeh.

⁸ Paul K.C. Liu and Kuo-shu Hwang (1979) in Modern Chinese Economic History, p.84, estimated that between 1900 and 1930, Agricultural output increased in aggregate by 25 percent and Agricultural output per capita increased in aggregate by 2.5 percent.

Myers identified two major issues, ie., the quantitative data which measured economic performance and the problem of causation(Myers, 1991:605). Those who discussed causation were broken into two camps. One side put their emphasis on wealth inequality and the unproductive use of wealth by the rich. Their belief was that the combination of these two factors led to economic stagnation or decline. The other school of thought emphasized the historical existence of competitive markets and rational economic groups. They often used statistical data which supported the view that there was significant economic growth to bolster the correctness of their Neo-Classical viewpoint.

Rawski's work during the 1980's produced new estimates for real GNP growth and sectoral output trends(Myers, 1991: 605). Brandt presented new measurements for agricultural output and labour income for the east-central part of China (Myers,1991:605). Faure studied the reactions of Kiangsu and Kwangtung provinces to foreign trade and commercialization. According to Myers, these three authors supported the view that modern economic development occurred. Simon Kuznets defined Modern Economic Growth as a situation in which there was a growth in output per capita on a sustained basis with structural change occurring in the economy(Myers,1991:605).

Huang produced a study in 1990 which concentrated on the rural area around Shanghai between 1350 and 1988. The study supported the view that there was a commercial expansion, but it disputed the view that there were any significant gains in per capita income until the early 1980's (Myers, 1991:606).

It was generally assumed that the Chinese Imperial Government was not supportive of commerce and industry and that this lack of support was a major reason for China's failure to achieve modern economic growth as quickly as Japan. Dwight Perkins challenged this view(Perkins,1967:478-492).⁹ Perkins believed that many government officials had a working knowledge of the commercial sector, and many were involved in commercial ventures. He also explored the link between commercialization and industrialization. In brief, there was no reason to believe that commercialization would automatically lead to industrialization. Of the three regions studied, this was most evident in Shansi, which had a well developed commercial sector but had very little modern industry, other than what was built by Yen Hsi-shan and the provincial government during the 1930's. In order for industrialization to occur, new technologies had to be adopted and increased capital formation was necessary (Perkins,1967:478). Additionally, the government could facilitate the introduction of new technologies and could institute policies which would encourage capital formation. Perkins concluded that the 19th century Qing government did very little to retard industrialization, but it also did not institute an aggressive development strategy to guide the country's industrialization process(Perkins,1967:478).

In 1394, a statute was introduced which barred officials above a certain rank from participating in trade. Many officials did not recognize the statute, and they continued to engage in commercial activities. This attitude which was held by the officials did not change over time. By the 18th and early 19th centuries, it was

⁹ Perkins, Dwight H. 1967. "Government as an Obstacle to Industrialization: The Case of Nineteenth-Century China." *Journal of Economic History* 27:4 (December).

government policy to reward merchants with high ranks and titles. " In the words of Ping-ti Ho, "it may be said that in Ch'ing times the social distinction between officials and rich merchants was more blurred than at any other time in Chinese history except for the Mongol Yuan period."(Perkins,1967:479).

Chung-li Chang estimated that 17 percent of gentry income, equivalent to 113.6 million taels(yearly average) during the 1880's was derived from Trade and Finance(Chang,1962:327). The Gentry were involved in a number of lucrative sectors which operated under a monopolistic structure. Such sectors included: the salt trade and the government authorized hong or foreign trade merchants at Canton in the early part of the 19th century (their guild was known as the Co-hong).

In order to deal effectively with the government bureaucracy and foreign firms, many leading compradors were drawn from the gentry(Chang,1962:169). Additionally, the gentry participated in banking, that is, money-lending, silver and copper exchange, and remittances via pawnshops, native banks, and the Shansi banks which they either owned or had controlling interests in(Chang, 1962:170). Pawnshops served the agricultural population, native banks served the merchants, and the Shansi banks dealt with interprovincial remittances. These businesses were monopolized by the gentry.

The scope of gentry participation in the modern sectors of the economy can be gleaned from data collected by Yen-P'ing Hao. Between 1872 and 1893, gentry-officials invested 250,000 taels(12.77% of the total invested) in Chinese-owned

steamship companies (Hao, 1970:125). Gentry-officials invested over 6 million Mexican dollars in China's cotton textile firms between 1890 and 1910, equivalent to more than a third of the total invested (Hao, 1970:130). Between 1883 and 1913, they invested \$798 thousand (28% of the total invested) Mexican dollars in China's machine-manufacturing industries (Hao, 1970:131). "Given the role of official families in trade, it would be surprising if government actions did really do much harm to commercial activities" (Perkins, 1967:480).

Concluding Remarks

In conclusion, it would seem that there are many conflicting ideas regarding China's integration into the world economy via foreign trade and the subsequent industrialization of the country. Although, China's global trade increased during the 19th and early 20th century, the effects of foreign penetration were uneven. As was shown, Shanghai increased its level of foreign commerce, and also acted as a melting pot for mixing Chinese know-how with newer foreign technologies. It also acted as a magnet for both Chinese and foreign investment in modern sector industries and services. However, a province such as Sichuan which was rich in human and natural resources, but far away from export markets was less able to share in the benefits of a modernizing economy.

Throughout the first half of the 20th century, the pre-modern economy continued to compete with the new, expanding modern sector. However, the high growth sectors were all modern sector. Historically, China had developed an integrated domestic commercial sector which complemented the new modern sector activities. Although China did not seem able to industrialize as quickly as Europe,

it should be noted that "...the process of actually putting factory industry into a dominant place throughout the European economies, and of adopting the new agriculture, was, in fact, one that required most of the nineteenth century." (Feuerwerker, 1992:768).

Europe had the advantage of learning from Britain which was geographically close, and shared a common 'European' heritage. On the other hand, China had traditionally viewed itself as the most civilized, advanced nation of the world. Generally speaking, the government bureaucracy of a country that viewed itself as the most advanced in the world, would be more slow to adopt technologies and ideas from a small country which was as geographically, and culturally distant as Britain. China's first significant Self-Strengthening projects were initiated during the 1860's. If development followed a similar path as in Europe, one would not expect modern industry to supplant the traditional sector until the 1960's.

Chapter 2

THE ROLE OF FOREIGN TRADE AND INVESTMENT IN THE INDUSTRIALIZATION OF SHANGHAI

Introduction

By the 1930's, Shanghai had become China's most important commercial and industrial port city. Most of the city's growth occurred during the last decades of the 19th century and the first decades of the 20th century. Unlike the modern industrial growth that occurred in Shansi and Manchuria, Shanghai's industrialization was not at all surprising. By the start of the 20th century, Shansi's banking and commercial sector had essentially collapsed, and the provincial economy was weak and faltering. At this time, the prospects for industrial growth in Shansi were not good. It was not until Shansi's government , headed by Yen Hsi-shan built railways that the province was able to effectively trade with other regions of the country. Yen's government was responsible for instituting a state-planning system which successfully established viable, self sustaining modern industrial sector in Shansi by 1937. Alternatively, Manchuria's industrialization was largely due to foreign investment, first in railways and port facilities, and then in manufacturing and mining enterprises. Without this high level of foreign interest in Manchuria's resources during the pre-Communist period, it was unlikely that commerce and industry would have developed more rapidly in Manchuria than in other parts of China.

On the other hand, the development of Shanghai was much different. Unlike Shansi, Shanghai's economy was relatively vibrant during its early phase of

industrialization. Additionally, unlike Manchuria, Shanghai's hinterland was settled and commercially developed at the onset of industrialization. Shanghai developed over many years as a commercial centre. It was strategically located on the Yangtze River's delta, and was able to function as a river and sea-port. By the latter half of the 19th century, Shanghai had become China's most important port-city. It was natural that because of the city's ability to act as a huge import and export distribution centre, it was bound to attract Chinese and foreign industrialists. Raw materials were either imported from China's interior provinces or from foreign countries to supply the city's factories with industrial inputs. These raw materials were manufactured into goods which were sold both in China and in foreign lands.

Shanghai existed as early as the 3rd century AD as a small fishing village. In 1075, the community which had been founded on the site that would become modern Shanghai was first referred to as 'Shanghai'. By 1292, the city had established itself as a small trading centre and was re-organised as a hsien. At about this time, the Customs office of the district was relocated to Shanghai from Liuho which was silting up. As the community's importance grew, more attention was paid to it by the central government. In 1554, the Ming dynasty sanctioned the construction of a wall to protect the town from Japanese pirates.

By the 19th century, Shanghai had evolved into a bustling commercial city. However, foreign trade had been restricted by the Qing government to the port of Canton. The Opium War (1839-42) was the catalyst which opened China and especially Shanghai to foreign trade. The war was fought between China and

Britain. China wanted to suppress opium imports, while British traders wanted greater access to China's vast markets. In 1842, the Treaty of Nanking, and in 1843, the supplementary Treaty of the Bogue were signed. The conclusion of these treaties between China and Britain ended the opium war. These treaties ceded Hong Kong to Britain, opened five Treaty Ports (Canton, Amoy, Foochow, Ningpo, and Shanghai) to foreign trade, established extraterritoriality and included the Most Favoured Nation (MFN) clause. The MFN clause meant that if China granted any right, privilege, or concession to a third country, Britain would be given the same rights as the Most Favoured Nation. By the end of the Qing dynasty, foreign powers had forced China to open a total of 48 Treaty Ports. In addition to losing the Opium War, China also faced the added expense of paying Britain an indemnity of \$US 21 million (O'Neil, 1987:222). China also accepted that there would be diplomatic equality between British and Chinese officials.

The area which now comprises the Municipality of Shanghai had a population of over 1 million during most of the Ming dynasty (1368-1644), over 2 million in the 18th century and more than 3 million by 1816 (Goodman (Ed.), 1997:164). According to Jacobs, "Shanghai was one of the five ports opened in 1842 by the Treaty of Nanking following the Opium War precisely because it was an important port" (Goodman (Ed.), 1997:164). In 1843, Britain established their concession zone, and in 1848 and 1849 respectively the United States and France set up their own concession areas. In 1863, the British and American concessions were amalgamated to form the International Settlement. Throughout the last half of the 19th century, Shanghai operated primarily as a commercial centre. Although this was a period of increased trade with foreigners, it did not translate into

significant demographic growth and expansion of Shanghai. However, with the onset of industrialization around the start of the 20th century, the city's rate of population growth increased. Shanghai's urban population in 1852 stood at 270 thousand, less than 500 thousand in 1895, over 2 million by 1914, over 3 million during the 1930's, and 5.5 million in 1949 (Goodman(Ed.),1997:164).

Table 2.1: POPULATION OF SHANGHAI - TWO ESTIMATES		
YEAR	POPULATION	POPULATION
1852	270,000	540,000
1895	500,000	.....
1914	2,000,000	1,280,000 ¹
1930's	3,000,000	.....
1936	3,300,000	.....
1945	5,000,000	.....
1949	.....	5,450,000

SOURCE: Goodman(Ed.),1997:164.

A Summary of Industrial Developments in Shanghai Circa Late 19th Century to 1945

Before 1895, the Chinese government had experimented with state owned and a mixture of state and privately owned infant industries in order to establish a modern sector in the Chinese economy. This initiative did produce some positive results, but the new arsenals, shipyards, mines, and steelworks existed in a vacuum, with neither infrastructure or inter-industry linkages² (Gray,1994:111).

¹The year for this estimate was 1910.

²One example of this modernization drive was the Kiangnan Arsenal and dockyard which were opened by the Imperial government in 1865.

These ventures were military in nature, and did not impact on the private sector of the economy. However, further initiatives were carried out to mobilize private capital. The Qing chose an organisational structure which combined government supervision with merchant management (*kuan-tu shang-pan*).

The China Merchants Steam Navigation Company (CMSNC), which was one of the most successful *kuan-tu shang-pan* companies had been established by Li Hung-chang who was the Governor General of Chihli and Superintendent of Trade for the Northern Ports. Before the establishment of the CMSNC, essentially all of the steamships which plied Chinese waters were owned by foreigners (Eng,1986:91). In 1872, the company was formed to regain control over coastal shipping routes which had come to be controlled by foreign, ie. mostly British, shipping firms; "to strengthen China's economy against Western encroachment; to fill the gap in the sea transport system threatened by the decline of the native junk trade"; and to earn profits for Li and his supporters (Hinton,1970:90). The company's first offices were established at Shanghai and Tientsin (Hinton,1970:90). As the company grew, new routes extending from Hong Kong to Newchwang were added.

In 1877, the CMSNC purchased the Shanghai Steam Navigation Company, which had been owned by the American corporation, Russell and Company (Hinton,1970:91). This acquisition doubled its shipping capacity and made it the largest steamship company in China (Feuerwerker,1958:183). However, the company did not continue to grow appreciably. In fact, it entered a period of relative stagnation. "By merely holding on the absolute position that it had won in the 1880's, the C.M.S.N. Co. in fact suffered a relative decline in importance as a

steamship enterprise." (Feuerwerker, 1958: 186). Between the 1880's and 1911, the bulk of the new shipping opportunities were exploited by British and Japanese companies (Feuerwerker, 1958:186). Ultimately, the CMSNC failed in its goal to recapture China's shipping trade which had become dominated by foreigners.

For the most part, the state and its officials were able to dominate the course of industrial development in China until two fundamental changes occurred in government policy. Foreigners were given permission to open factories in the Treaty Ports, by the Treaty of Shimonoseki in 1895; and from 1904 onwards legislation was passed which gave legal protection to merchants, made provisions for incorporation , and for limited liability (Gray,1994:112).

At the close of the 19th century, Shanghai's economy was reliant on commerce, trade, and handicraft industries, that is, cotton and silk textiles. During the 1890's, a shift from handicraft textiles to machine made textiles was occurring. Cotton goods were the leading import items, and silk products were the most important exports. Of the two industries, the cotton textiles sector was the most capital intensive. The fact that the cotton textiles sector required modern foreign technology and a relatively large amount of start-up capital meant that foreign investors from prosperous industrialized Western countries (and later Japan) were at a relative advantage to their Chinese counterparts. Chinese entrepreneurs lacked access to venture capital and had to rely on foreign technology imports³.

³The unwillingness of Chinese businessmen to invest in modern industries prompted the government to establish joint ventures with the private sector. The granting of monopoly rights to these businesses tended to retard industrial growth in the long-run. For example, after the government had proven that modern textile mills were profitable, Chinese entrepreneurs who wished to establish their own mills were blocked by the kuan-tu shang-pan mills which had been previously granted monopoly

Additionally, monopoly rights granted to the government controlled textile sector restricted private investment in cotton textile mills during the 1890's.

In contrast, the processing of raw silk by silk filatures was not capital intensive and did not require the use of sophisticated modern technologies (Eng,1986:185). This situation did not offer production opportunities to foreigners who were not able to produce reeled silk more efficiently than Chinese firms⁴. For the most part, the silk industry was developed with Chinese capital (Li,1981:204). "The silk filature industry was in fact the prime example among China's modern enterprises of development free of direct foreign investment." (Li,1981:204).

Instead of investing in production facilities, foreigners concentrated their efforts on the lucrative import and export trade of raw silk. They usually were able to set the price which would be paid to Chinese filatures for the silk because they controlled the inspection and grading of silk; and the international distribution and marketing of Chinese silk (Eng,1986:93 & 185). Unlike cotton textiles, the silk industry collapsed in the aftermath of the Great Depression. By the 1930's, the silk industry's electricity consumption and value of output were dwarfed by the cotton industry (Murphey,1953:170 & 189).

privileges.

⁴It is worth noting that Europeans were the first to establish steam filatures in Shanghai. Shanghai's first steam filature was established by British in 1861, and in 1866 the French founded the city's second filature (Eng,1986:38). However, these filatures were later closed down. The first Chinese filature was not founded until 1881 (Eng,1986:38).

After the passing of the Treaty of Shimonoseki in 1895, many manufacturing establishments were constructed by British, Japanese, Germans, and Americans; and Shanghai experienced its first industrial boom (Orchard:1936:25). Gradually machine made cloth from these newly established Chinese and foreign mills displaced handicraft production. However, handicraft woven cloth continued to be sold to wharf workers and other labourers who favoured sturdy hand-made work garments over the less durable factory made ones. Even during the 1930's, the handicraft sector continued to be a significant producer of cotton textiles. Another acceleration of industrial growth occurred during and after World War I as a result of the disruption of trade with Europe. In order to cope with the shortage of imports of foreign manufactures, Chinese companies followed an import substitution strategy (Orchard,1936:25). A third industrial boom was beginning to occur by the mid 1930's, after the city's economy had recovered from the Great Depression. This expansion was disrupted by the Sino-Japanese war in 1937. However, the industrial sector did partially recover during the Japanese occupation. This situation contrasted sharply with North China and Manchuria which thrived throughout most of the Sino-Japanese War (1937-45)⁵. In order to judge the magnitude of Shanghai's industrialization on a national scale, comparative electricity output statistics are given in the following table. It can readily be seen from this table that between 1915 and 1936, Shanghai and Manchuria were China's two most important industrial centres.

⁵It should be noted that the Japanese had given much more thought to the development of North China before the war had started. This largely explains why the North entered a period of rapid industrial growth during the war, but Shanghai did not. Additionally, upon the occupation of Tientsin in 1937, the trade of the port appeared to have been much less adversely affected than that of Shanghai. For trade statistics, refer to: Hsiao,1974: 177-178 & 190-192. Information regarding the economic and commercial development of Tientsin before and during the first few years of the war can be found in: Jones,1940:135-171. More general studies which focussed on North China included: Duus, et al., 1996:136-170; Li,1975:122-186; and Taylor,1980 (reprint of 1939 edition): 103-141.

**Table 2.2: ELECTRICITY GENERATION IN CHINA
(MILLION KILOWATT HOURS)**

YEAR	CHINA PROPER AND MANCHURIA	SHANGHAI POWER CO. ⁶	MANCHURIA
1915	95	62	45
1925	706	356	239
1936	3,075	813	1,351

SOURCE: Wright (1991), "Electric Power Production in Pre 1937 China". *China Quarterly*, Issue No. 126: p.357.

Cotton Textiles

As early as the 1830's, cotton spinning and weaving had become an established handicraft industry in many of the villages which surrounded Shanghai. In this area, cotton was probably the main crop grown by farmers. By the mid 19th century, it was common for farmers in the region to plant more cotton than rice (Orchard, 1936:23). When Shanghai was opened to foreign trade, its production of cotton cloth was adequate to supply several of the neighbouring provinces, and its nankeens, a buff coloured cotton cloth, were among the best produced in China (Orchard, 1936:24). The handicraft cotton textiles sector employed at least 200,000 weavers in Shanghai and its environs (Orchard, 1936:24).

Textile factories formed the most important part of Shanghai's manufacturing sector. Chinese interest in establishing a modern textile industry reliant on steam power or electricity dates back to the latter half of the 19th century. This interest

⁶ Almost all of Shanghai's electricity was produced by this company. Therefore, it is reasonable to use this as an approximation of the city's total electricity output.

was prompted by the sustained rise in the consumption of foreign cotton products (yarn and cloth) imports. In order to satisfy domestic demand, the Imperial government sought to develop a cotton industry which would be dominated by Chinese capital. Conversely, the establishment of modern silk reeling establishments was done to take advantage of opportunities to export silk products to foreign countries⁷.

"By 1891, cotton yarn and cloth had displaced opium as China's major import and constituted 64 percent of Chinese imports" (Thomas, 1984:100). This in itself should have enticed Chinese investors to invest in cotton mills since the success of cotton goods imports revealed that pre-modern handicraft industries were unable to produce a sufficient quantity of low cost cotton yarn and cloth to satisfy domestic demand. However, another factor which raised interest in the industry was the devaluation of the HK Tael. Since the tael was silver based, as the value of silver fell, the cost of foreign products increased. This meant that if import substituting firms were established, it was likely that they could successfully compete against foreign ones.

In 1876, Li Hung-chang, one of the Qing's most influential officials initiated plans to raise capital in Shanghai to build a modern cotton cloth mill. The rationale behind financing the establishment of a modern textile industry was that it would provide a source of income while limiting the imports of foreign cloth

⁷As already noted, it was foreigners, not Chinese who established the first modern silk reeling factory. However, later developments proved that the Chinese government's promotion of the modern cotton textile goods sector was the right decision since foreign direct investment was aimed at the cotton textiles sector, rather than the silk textiles sector. As a result, silk filatures did not face serious competition from foreign owned filatures in China.

(Chesneaux,1976:227). Government officials and merchants decided that the mill should be run on the system of 'Government supervision and merchant operation'. This was better known by the term, 'kuan-tu shang-pan', which could also be translated to mean, official supervision and merchant management. This system was characterized by a bureaucratic management style (Chao,1977:106). Private capital was sometimes wary of these enterprises because the managers were usually chosen by the government and private share-holders were often not consulted over important decisions (Chao,1977:106).

The Shanghai Cotton Cloth Mill opened in 1893. It was financed by a combination of government loans and share capital subscribed to by Chinese investors. Qing government loans amounted to about 30 percent of the mill's capital (Thomas,1984:101). After operating for six months, the textile mill was destroyed by a fire.

While the mill operated, it had proved to be quite profitable for its investors. Within half a year, sufficient capital had been raised to rebuild the factory on a larger scale. The new factory was called the Hua-sheng Spinning and Weaving Mill. The total capital of the Shanghai Cotton Mill was Tls. 1,090,290, while the capital raised for the new mill was Tls. 2,080,000, which was approximately two times the amount which had been raised for the original mill (Feuerwerker,1958:215 & 223)⁸. The CMSNC supplied Tls. 100,000 of investment capital to the Shanghai Cotton Cloth Mill in 1891, and by 1894, its total investment in the rebuilt mill totalled Tls. 300,000 (Feuerwerker,1958:181).

⁸ Note: These two estimates include loans which were made to both enterprises.

Sheng Hsuan-huai was one of China's leading government officials, and also a successful industrialist. He was largely responsible for the success of the mill, ie., the original mill and the larger, re-built mill. Under his guidance, the mill thrived during the 1890's. His goal was to construct a complex of modern cotton mills that would totally replace foreign imports (Thomas, 1984:101).

Initially, the kuan-tu shang-pan textile sector which had been established because of strong government support fared quite well. In the initial phase of industrialization, Chinese investors were wary of risking capital in industrial projects because these ventures were not guaranteed to succeed. They preferred to invest their capital in farmland, real estate, pawn-shops, or money lending establishments.

Government support for the textile industry was initially necessary to secure venture capital. The Shanghai Cotton Cloth Mill was given a ten year monopoly in Shanghai. Additionally, the government also reduced the tariff which was usually levied on cotton goods shipped between Chinese ports. Although monopoly privileges shielded the kuan-tu shang-pan textile sector from domestic competition, it was not protected from foreign owned textile mills which were built during and after 1895.

As a result of previous treaty arrangements, the Chinese government was prohibited from providing tariff protection against imports. Tariffs were set at a flat 5 percent *ad valorem*. Basically, this meant that the government was not able to control its international trade or protect emerging infant industries. It should

be noted that because of the Treaty of Shimonoseki allowed foreigners to build factories in treaty ports, foreigners were now able to exploit cheap Chinese labour and avoid even the 5 percent tariff on imports.

Sheng Hsuan-huai replaced the mill's original management team with a new staff who were more effective and able to deal with problems as they arose. Although foreign technology (textile machinery) had to be imported, China still controlled technology imports before 1895, and was able to maintain a monopoly as long as foreigners were prohibited from building cotton mills in China.

Li Hung-chang and Sheng Hsuan huai had planned to replace all cotton goods imports with Chinese products. "By 1897, China had over one third of the number of spindles and looms needed to achieve Li's goal, and Sheng's mills constituted well over half of China's total."(Thomas,1984:102). However, further expansion was hampered because of fierce competition with newly established foreign mills. By the early 1900's Sheng's cotton mill complex was beginning to disintegrate. The death of Li Hung-chang in 1901 signalled the end of an era. The cotton mills under Li and Sheng's control faced increasing competition from other Chinese owned mills, as well as foreign ones.

However, before Li-Hung-chang died, he played a vital role in the introduction of Western, *ie*. European and American, industrial technologies and ideas to China (Spector:1964,234). If not for Li, China may not have succeeded in establishing the foundations for Shanghai's Chinese owned cotton textile industry by 1900.

Table 2.3: Cotton Mills Controlled By Sheng Hsuan huai's Cotton Cloth & Yarn Administration, And Chang Chih-tung's Hupei Mill

MILLS ESTABLISHED UP TO AND INCLUDING 1895

DATE OPENED	LOCATION	NAME	NO. OF SPINDLES	NO. OF LOOMS
1891	Shanghai	Hua-hsin Spinning & Weaving Co.	9,024	50
1894	Shanghai	Hua-sheng Spinning & Weaving Co.	64,556	750
1894	Shanghai	Yu-yuan Spinning Co.	25,000	-----
1895	Shanghai	Yu-chin Spinning Co.	15,000	-----
1895	Shanghai	Ta-ch'un Spinning Co.	20,392	-----
1892	Wuchang	Hupei Cotton Cloth Mill	40,592	1,000
TOTAL			174,564	1,800

SOURCE: Feuerwerker,1958:222

The kuan-tu shang-pan textile sector was now pitted against new Chinese competitors who emphasized spinning yarn over weaving cloth. This meant that by the turn of the century, Sheng's mills were rapidly losing market share. Sheng's initial success attracted "a precipitate influx of foreign capital" to the textile industry after the signing of the Treaty of Shimonoseki (Feuerwerker,1958:222). By 1897, there were nearly 161 thousand foreign owned spindles in Shanghai (Feuerwerker,1958:222). Two years earlier, in 1895, Shanghai's cotton industry had been dominated by Sheng's mills which had about 134 thousand spindles (Feuerwerker,1958:221).

In 1913, the number of foreign owned spindles in Shanghai had increased to 339 thousand, which was equal to 41 percent of the total quantity of spindles (Chinese and foreign) in the whole country (Feuerwerker,1958:222). Both the foreign mills and those not under Sheng's control refused to pay the levy of one tael per bale of yarn which the Cotton Cloth and Yarn Administration had been collecting from Chinese mills. "The administration itself eventually 'simply lapsed - became dormant'." (Feuerwerker,1958:223).

Increased competition in the textile sector quickly absorbed available venture capital and the price of raw cotton rose precipitously as demand outstripped supply. This problem was compounded by the fact that the Hua-sheng mill's monopoly status was coming to an end. With the loss of monopoly status, Sheng, backed by Li Hung-chang and Liu K'un-i, arranged to end the mill's kuan-tu shang-pan status in 1901, and to convert it into a wholly private owned and controlled business enterprise. The new firm was called the Chi-ch'eng Company. From 1901 until 1931, when it was sold to the Hong Kong and Shanghai Banking Corporation, the mill was operated as a private enterprise under the sole control of the Sheng family (Feuerwerker,1958:224). Sheng Hsuan-huai's four subsidiary plants did not fare well. The Hua-hsin Mill fell into bankruptcy, and was reorganized under new management. The other three mills were bought out by Japanese investors (Feuerwerker,1958:224).

Although foreign competition was fierce in Shanghai, some Chinese mills located outside of the city, such as Chang Chien's mills in Nantung, located in the Province of Kiangsu, continued to prosper. Chang Chien's Dah Sun cotton mill complex had

only 20 thousand spindles when it started production in 1899, and a capitalization of half a million taels (Chu,1965:33). By 1925, the number of spindles totalled 177 thousand, and the firm's capitalization in 1923 was nearly 3.3 million taels (Chu,1965:33). Dah Sun's financial success peaked between 1914 and 1921, after which time the company entered a period of decline which lasted until the Sino-Japanese War in 1937. Dah Sun's prosperity was unique among Chinese owned textile firms. "Out of a total of sixteen Chinese owned cotton mills established between 1896 and 1913, all except Dah Sun either failed or changed ownership by the time of World War I" (Chu,1965:33).

Over-all, the Chinese owned textile sector did not fare well against foreign competition until the first World War. However, the war offered a brief opportunity to expand production as the pressure of foreign competition decreased. The war was only a temporary setback to the expansion of the foreign controlled textile sector which recovered quickly after the conflict was over.

A few factors accounted for the relatively slow growth of the Chinese cotton textile industry. The granting of monopoly rights restricted Chinese investors from founding textile companies, but did not stop foreigners from doing so. Ultimately, this had the effect of suppressing Chinese investment. The government of the Republic of China declared in 1919 that it was invalidating any monopoly rights which had been granted to specific factories in the past (Chao,1977:112).

The first Chinese mills were excessively large. The large scale of construction required raising significant amounts of investment capital in a capital scarce

environment. This would not have been necessary if the government's economic planners had been willing to settle for smaller mills. Smaller mills, requiring a smaller amount of start-up capital could have been constructed sooner rather than postponing production to raise more capital to open a larger mill. Additionally, operational and management problems were a serious problem for Chinese businessmen who had no experience operating modern factories.

These early factories were vertically integrated with a yarn spinning capacity designed to be used internally to weave cloth. This proved to be a misdirection of scarce resources since spinning yarn was more profitable than weaving cloth (Chao,1977:113). To make up for the lack of spinning capacity, new private sector investors in the textile industry between 1897 and 1910 concentrated on spinning (Chao,1977:113).

Table 2.4: COTTON SPINDLES BY OWNERSHIP FOR ALL OF CHINA				
	CHINESE	WESTERN	JAPANESE	TOTAL
1897				
Quantity	276,929	160,548	0	437,477
Percent (%)	63.3	36.7	0.0	100.0
1913				
Quantity	520,993	232,848	111,936	865,777
Percent (%)	60.2	26.9	12.9	100.0
SOURCE: Chao,1977:117				

Between 1897 and 1913, all of the foreign owned mills, *i.e.*, those owned by Western and Japanese, were built in Shanghai. However, Chinese owned mills were established both in and out of the city during this period. This meant that although well over half of the total number of spindles in China were controlled by Chinese, the percentage of foreign spindles in Shanghai usually exceeded 50 percent (Chao,1977:116).

As was already mentioned, the years, 1914-1922 marked a period of rapid growth for Chinese mills because of the lack of Western competition. However, the First World War offered an opportunity for Japan to invest in the Chinese textiles sector with little competition from Western countries. Other than this factor, there were several other reasons why the Japanese decided to increase their investment in China's textile sector. Firstly, Chinese tariff revisions in 1918 were less favourable to Japan, but more importantly the Japanese feared that Chinese import duties would be raised significantly in the near future (Chao,1977:119). Secondly, new legislation in Japan would make working hours less flexible than in China (Chao,1977:119). Thirdly, growth prospects in the Chinese textile sector were better than in Japan by the early 1920's, *i.e.*, demand for cotton goods was still rising in China, while the Japanese market had become saturated (Chao,1977:119).

Most of the growth during this period was triggered by increased Chinese private sector investment and by increased levels of Japanese investment. Ultimately, this favourable investment climate in China was directly related to the war in Europe which disrupted trade and momentarily decreased global textile production

capacity. As a consequence of the growth of a Chinese owned textile sector, technological advancements were made. Many of the new mills built during this period employed Chinese engineers instead of foreign ones (Chao,1977,120).

After the war-time boom, a period of keen competition started around 1923 and lasted until 1936. The high war-time demand for cotton products created a problem of global over-supply after the conflict ended. Western and Asian producers achieved such a high output level that prices of raw cotton rose to a record high. Conversely, the price of yarn fell drastically. However, vertically integrated mills which produced yarn and cloth were better able to compete because the reduction in the price of cloth was less than for yarn. "Thus, the wartime boom was followed by a severe crisis on a worldwide scale so far as the cotton textile industry was concerned" (Chao,1977:121). As the level of competition increased in China, the margin between the price of yarn and the cost of cotton per bale tended to fall, making it more difficult for inefficient mills to remain profitable (Chao,1977:122).

During the 1920's, Chinese owned mills were forced to increase productivity in order to maintain their market share against foreign textile imports⁹. Before 1931, there was virtually no tariff protection, except for the long established 5 percent *ad valorem* rate to protect the Chinese owned textile sector from foreign imports. "Burdened with weak financial reserves and high interest rates, Chinese managers drove their mills ruthlessly and succeeded in raising output per spindle above the level attained by their Japanese rivals" (Rawski,1989:103).

⁹Chao,1977:89 and Duus,1989:72-73.

**Table 2.5: PRODUCTION CAPACITY OF SHANGHAI MILLS IN 1929
BY NATIONALITY OF OWNERSHIP**

JAPANESE MILLS	CHINESE MILLS	BRITISH MILLS
43.1%	49.0%	7.9%

SOURCE: Duus, 1989:91

**Table 2.6: PRODUCTION CAPACITY OF SHANGHAI MILLS IN 1936
(Capacity calculated on the basis of the number of bales of cotton consumed)**

CHINESE	FOREIGN (Mostly Japanese)
45.7%	54.3%

SOURCE: Chinese Year Book 1937, 1937:694.

Textile Machinery Import Trends, 1910-1938

Textile machinery import statistics were available for all of China for the period, 1910 to 1941. At least until the start of the Sino-Japanese War, national import trends should have reflected import demand in Shanghai because it was the primary producer of cotton textiles during the pre Sino-Japanese War period. As a result of increased Japanese investment in North China between 1937 and 1941, a greater proportion of textile machinery imports may have been sent to Tientsin and Shantung. Therefore, it seemed reasonable to concentrate only on developments which occurred up to and during the first years of the Sino-Japanese War. During the occupation of Shanghai, war damage was heavy, and it was likely that some foreign imports of textile machinery were needed to raise output back to the pre-war levels which were attained in 1939.

Total foreign imports of textile machinery into China soared between 1910 and 1922. The value of these imports rose from HKT 17,000 in 1910 to HKT 30,480,000 in 1922 (Hsiao, 1974:47). After which time imports declined. During 1930 and 1931, import levels partially recovered, and about HKT 14.5 million worth of textile machinery was imported in each of these years (Hsiao, 1974:47). Between 1931 and 1933, imports declined. However, between 1933 and 1938, imports increased substantially.

**Table 2.7: VALUE OF TEXTILE MACHINERY IMPORTS INTO CHINA
(Value in 1922 in HKT; 1933-38 in Chinese Dollars)**

YEAR	VALUE IN CHINESE CURRENCY (1,000's)	EXCHANGE RATE (Equivalent of 1 Chinese currency unit in \$US)	VALUE IN \$US(1,000's)
1922	30,480	0.83	25,298
1930	14,454	0.46	6,649
1933	9,081	0.26	2,361
1936	13,939	0.30	4,182
1937	20,986	0.29	6,086
1938	24,946	0.21	5,239

SOURCE: Hsiao, 1974:47 and 192.

Once these import values were converted into American dollars, it became apparent that the peak level of textile machinery imports was reached during the early 1920's. The peak level of these imports during the 1930's was only about one-quarter of the annual import value in American dollars for 1922.

With respect to textile and other such machinery, it was worth noting that by 1936, most of the machines manufactured in China Proper consisted of pumps, grinding machines, et cetera ¹⁰. The more complex machinery was imported from foreign countries ¹¹.

The Textile Industry During The Japanese Occupation, 1937-45

When war broke out between Nationalist China and Japan in 1937, almost the entire cotton textiles sector fell under Japanese control. In 1933, there were 2.5 million cotton spindles in Shanghai, which was equivalent to 52.2 percent of China's total number of spindles¹² (Rawski,1982:30). In 1936, 39 percent of the spindles and 32 percent of the looms belonging to Chinese owned mills were located in Shanghai (Chao,1977:130).

During the defence of Shanghai, many Japanese and Chinese mills were severely damaged. However, between 1937 and 1941, some mills in the environs of Shanghai moved into the foreign concessions of the city to seek protection from the Western powers who controlled these areas. Between 1937 and 1941, the quantity of spindles in the foreign concessions nearly doubled, and the number of looms increased nearly 3-fold (Chao,1977:131).

The Japanese took control over all of the remaining mills in the city which had not moved to the foreign concessions or to interior provinces. This was occasionally

¹⁰ Chinese Year Book 1937,1937:721.

¹¹ Chinese Year Book 1937,1937:721.

¹² Ownership was split nearly evenly between Chinese and foreigners.

done in a co-operative manner with Chinese business owners. Chinese mills were either confiscated or were offered junior partnerships with Japanese firms (Yeh,1998:64-65).

Table 2.8: GEOGRAPHICAL DISTRIBUTION OF CHINESE OWNED COTTON TEXTILE CAPACITY IN 1936		
LOCATION	PERCENT OF TOTAL SPINDLES	PERCENT OF TOTAL LOOMS
Shanghai	39.1	32.4
Kiangsu, excluding Shanghai	20.2	34.4
Hopei, including Tientsin	13.0	3.6
Shansi	2.4	5.6
Manchuria	1.7	3.2

SOURCE: Chao,1977:130

Generally, those that could prove their companies were jointly owned by the Japanese or their allies, *i.e.*, Germany and Italy, stood a better chance of maintaining some control over their factories. If the Chinese mill owners refused to cooperate, then the mills would be seized and forcibly integrated with existing Japanese mills (Chao,1977:132).

With the resumption of peace in Japanese controlled Shanghai, the cotton industry experienced a wartime boom which lasted until the start of 1941. Chinese investors built ten new cotton mills in Shanghai's foreign concessions, with a total of 221 thousand spindles and nearly 2,800 looms (Chao,1977:132). Japanese mills, aided by their home government, initiated a massive re-construction and

expansion plan to augment their cotton textiles producing capacity (Chao, 1977:132). As the cotton industry recovered and grew, so did the other manufacturing sectors. Between 1936 and 1941, the growth of the city's entire industrial sector moved in tandem with the cotton industry¹³.

Table 2.9: INDUSTRIAL PRODUCTION INDEX FOR SHANGHAI'S COTTON INDUSTRY

YEAR	INDEX
1936	100.0
1937	81.7
1938	69.8
1939	104.5
1940	99.0
1941	63.3

SOURCE: Wang, 1948:5 in Myers, Ramon H.(1980) Selected Essays in Chinese Economic Development.

The flourishing economy of the concession areas was maintained by the coexistence of a number of mutually beneficial conditions (Yeh, 1998:64)¹⁴. A large supply of cheap labour was made available because of the growing Chinese refugee population. The arrival of European refugees, many of which were highly skilled and educated, from the war raging in Europe raised the quality of the

¹³Chinese Year Book, Vol. I: 1935-36, II (1968): pp.1143-1148.
Wang, 1948:5 in Myers, Ramon H.(1980) Selected Essays in Chinese Economic Development

¹⁴ All of the factors mentioned in this paragraph were from (Yeh, 1998,64).

labour force . Additionally, access to raw materials via international markets remained open. At the same time, there was a growth of liquid capital in Shanghai banks which was caused by the economic instability in the rest of the country. Upon the outbreak of the Pacific War, Japan occupied the International Settlement. This marked the end of Shanghai's dual economy, *i.e.*, the Western controlled concession areas now came under direct Japanese control. Chinese businesses in the International Settlement could no longer seek aid from the Allied Powers (Britain, France, and the United States) for grievances raised against the Japanese occupation forces.

The Pacific War between Japan and the United States marked the end of the wartime cotton textiles boom in Shanghai. Sales from mills in Shanghai and other coastal cities declined in 1941 as Japan tightened their trade embargo against Nationalist held territory. Additionally, high quality raw cotton imports from the USA declined after war broke out. To the detriment of the textile sector, the Japanese military urged cotton mills to scrap their machinery for the purpose of providing raw material for military industries (Chao,1977:133).

With Japan's surrender to the United States in September 1945, the era of Japanese and Chinese rivalry in Shanghai's cotton textile industry came to an end. The Nationalist government returned mills which had been seized by the Japanese to their original Chinese and British owners, and the remaining Japanese mills were nationalized. By 1946, only one percent of China's total cotton textile capacity remained under foreign ownership (Chao,1977:134).

Conclusion

In summary, Shanghai's industrial growth was largely due to the interaction of foreign trade and investment with the emerging cotton textile sector. The first foreign mills were British, but their level of output was soon over-taken by Japanese competitors. The proof that the Chinese owned cotton textile sector was globally competitive is found in the fact that between 1900 and 1936, it managed to maintain control over nearly half of the city's textile producing capacity.

Before the Treaty of Shimonoseki in 1895, increasing amounts of cotton goods imports encouraged China to build its own textile mills. After the Treaty was signed, the stimulus of foreign competition fuelled further growth and modernization of the industry. The continued interest of Japanese investors in China's cotton textile market was proof that there was ample growth potential for adroit Chinese entrepreneurs. The growth of the Chinese owned textile sector was made possible by skilful management and technological innovations which increased productivity. However, these productivity gains were only sufficient to maintain the relative size of the Chinese owned sector. The Chinese sector only had the resources and ability to slow down the advance of the Japanese owned mills in Shanghai. This sector was not capable of driving these foreign firms out of the country without Chinese government support.

It is worth noting that by the 1930's, the ownership of Tientsin's cotton textile sector was also split between Chinese and Japanese investors. In Shanghai, roughly half of the production capacity was controlled by Japan. However, in Tientsin the Japanese owned about 70 percent of the entire cotton spinning and

weaving capacity by 1937¹⁵. A similar situation also existed in Tsingtao. However, the expansion of the textile sector in Tientsin and Tsingtao was hampered by inadequate supplies of raw cotton during the initial stages of the Sino-Japanese war, *ie.*, 1937-38 (Jones, 1940:170).

After, the Japanese surrender in 1945, the Nationalist government of the Republic of China intervened on the behalf of British and Chinese owners who had lost their mills to Japanese corporations during the war. These mills were returned to their previous owners, and the remaining Japanese mills were nationalized. This was the first time since the founding of the cotton textiles industry in the 1890's, that the industry came almost entirely under the control of Chinese capital.

¹⁵Jones, 1940:146

CHAPTER 2: APPENDIX

**Table 2.10: NATIONAL ESTIMATES OF PRODUCTION AND SUPPLY OF COTTON AND COTTON GOODS, 1871 TO 1936
(Annual Averages For Selected Periods)**

PHYSICAL QUANTITIES	1871 to 1880	1901 to 1910	1934 to 1936
1. Cotton (million piculs)			
A. Output	7.0	7.0	17.3
B. Net Imports	0.1	-0.7	0.4
C. Domestic Supply	7.1	6.3	17.7
2. Yarn (million piculs)			
A. Factory Output	0.0	1.0	9.0
B. Handicraft Output	4.9	2.4	3.1
C. Net Imports	0.1	2.4	0.2
D. Domestic Supply	5.0	5.8	11.9
3. Cloth (million square yards)			
A. Factory Output	0.0	24.0	1,260.0
B. Handicraft Output	1,612.0	1,850.0	2,880.0
C. Net Imports	376.0	654.0	300.0
D. Domestic Supply	1,988.0	2,528.0	4,440.0
4. Yarn and Cloth Value Added in millions of 1933 Yuan			
A. Factory Output	0.0	14.1	175.4
B. Handicraft Output	105.1	93.9	140.9
C. Total	105.1	108.0	316.3

SOURCE: Rawski, 1989:93

**Table 2.11: DISTRIBUTION AND NATIONALITY OF MANUFACTURING OUTPUT IN 1933
(MILLIONS OF YUAN)**

REGION	CHINESE FIRMS	FOREIGN FIRMS	TOTAL
Shanghai	727.7	323.3	1,051.0
Manchuria	154.8	221.9	376.7
Total (China Proper and Manchuria)	1,926.2	719.3	2,645.5
Source: Rawski, 1989:74			

The next table also shows the value of manufacturing output in Shanghai.

However, it appeared to have been based on a smaller sample than Rawski's table (shown above). However, this table, provided by the Chinese Year Book was more useful in some respects, namely, the subdivisions given for the manufacturing sector indicated the importance of various industries within Shanghai, while Rawski's table only provided an estimate of total manufacturing output.

Table 2.12: SHANGHAI'S LEADING INDUSTRIES

1933 TO 1934

INDUSTRY	OUTPUT \$Ch millions	% of Total of 8 Industries
Cotton	151.3	49.7%
Silk	35.0	11.5%
Flour	74.2	24.4%
Wool	7.8	2.6%
Rubber	20.6	6.8%
Dyeing, Washing	9.5	3.1%
Machinery	0.4	0.1%
Paper	5.6	1.8%
TOTAL of 8 Industries	304.4	100.0%
Percent of All Industries	50.2%	
Total of All Industries	605.9	

SOURCE: Chinese Year Book 1935-36, 1968:1143-1148.

**Table 2.13: SHANGHAI - INDICES OF INDUSTRIAL PRODUCTION
1936 TO 1941 1936=100**

INDUSTRY	1936	1937	1938	1939	1940	1941
Cotton	100	81.7	69.8	104.5	99.0	63.3
Silk	100	72.6	95.5	116.8	104.2	97.3
Flour	100	77.5	72.5	112.1	49.0	22.3
Wool	100	89.1	59.5	164.8	173.1	149.5
Rubber	100	65.9	25.3	42.1	45.9	50.9
Dyeing, Washing	100	81.9	73.0	213.9	232.9	196.0
Machinery	100	99.6	56.0	112.1	153.9	125.0
Paper	100	115.6	147.4	242.5	380.5	396.0

SOURCE: Wang, 1948:5-6 in Myers (1980) Selected Essays in Chinese Economic Development.

The next table shows the trend in total industrial output. In order to create an index of industrial output a few assumptions were made. Firstly, it was assumed that the distribution of output prevailing in 1933-34 was the same in 1936. These output shares were used to create a weighted index. Secondly, it was assumed that the rest of the industrial sector behaved the same as the eight selected industries.

Table 2.14: SHANGHAI: Industrial Production Index For 8 Leading Industries

INDUSTRY	1936	1937	1938	1939	1940	1941
Cotton	49.7	40.6	34.7	51.9	49.2	31.5
Silk	11.5	8.3	11.0	13.4	12.0	11.2
Flour	24.4	18.9	17.7	27.3	11.9	5.4
Wool	2.6	2.3	1.5	4.2	4.4	3.8
Rubber	6.8	4.5	1.7	2.8	3.1	3.4
Dyeing, Washing	3.1	2.6	2.3	6.7	7.3	6.1
Machinery	0.1	0.1	0.1	0.1	0.2	0.2
Paper	1.8	2.1	2.7	4.5	7.0	7.3
TOTAL For 8 Industries	100.0	79.4	71.6	111.1	95.1	68.9

SOURCE: See references given for the two preceding tables.

Table 2.15: ELECTRICITY SOLD BY THE SHANGHAI POWER COMPANY¹⁶
1930 TO 1934

INDUSTRY	PERCENTAGE OF TOTAL INDUSTRIAL SALES
Cotton Mills	78%
Flour Mills	7
Rubber Works	2
Miscellaneous Textiles	2
Other Industries which accounted for less than 1% each	11
TOTAL	100

SOURCE: Murphey, 1953:189; and Orchard, 1936:26.

A Note On Foreign Investments In Shanghai

Although most of the foreign investment in the textile industry was Japanese, this was not the case in other sectors. Britain, by far was the single largest foreign investor. The second largest investor was Japan. The third and fourth largest investors were respectively, the United States and France. It is also worth noting that between 1902 and 1931, Shanghai's share of the total foreign investment in China grew appreciably.

¹⁶ It produced 83 % of the total sales of electric power in Shanghai for the period, 1925 to 1934. About 78 % of its sales were to industrial establishments.

The multinational firms operating in Shanghai in the fields of transportation; banking and finance; and manufacturing usually conducted business with China's interior provinces and other Chinese ports. As a result, "the systems of accounting of the firms themselves do not permit an estimate of a separate figure for Shanghai" (Jones, 1940:78). Basically, this means that the statistics presented in the following two tables are debatable. However, to my knowledge these figures have not been widely challenged.

Table 2.16: FOREIGN INVESTMENT IN SHANGHAI, 1902-1931

1902		1914		1931	
\$US millions	Percentage Of Total Foreign Investment In China	\$US millions	Percentage Of Total Foreign Investment In China	\$US millions	Percentage Of Total Foreign Investment In China
110.0	14.0%	291.0	18.1%	1,112.2	34.3%

SOURCE: Remer, 1968:73

Table 2.17: FOREIGN DIRECT BUSINESS INVESTMENT IN SHANGHAI BY COUNTRY, 1931

COUNTRY	VALUE IN \$US MILLIONS	PERCENT OF FOREIGN INVESTMENT
Britain	737.4	66.3%
Japan	215.0	19.3
United States	97.5	8.8
France	38.9	3.5
Other Countries	23.4	2.1

SOURCE: Jones, 1940:78

Foreign Trade Tables

**Table 2.18: FOREIGN TRADE OF SHANGHAI
COMPOSITION OF EXPORTS**

PRODUCT	1860	1900	1930
Raw Silk	66%	30%	14%
Tea	28	16	4
Vegetable Oils	0	10	18
Textiles	0	0	16

SOURCE: Murphey, 1953:119

**Table 2.19: FOREIGN TRADE OF SHANGHAI
COMPOSITION OF IMPORTS**

PRODUCT	1860	1900	1930
Opium	48%	12%	0%
Cotton Textiles	44	50	8
Coal	0	4	4
Metals and Minerals	0	6	20
Machinery	0	6	28
Raw Cotton	0	0	14

SOURCE: Murphey, 1953:120

Table 2.20: EXPORTS AND IMPORTS

EXPORTS FROM SHANGHAI IN 1936 AND 1940

	1936	1940
Textile Fibres (mostly silk)	12.4%	22.9%
Yarns	8.1	12.6
Piece Goods (cotton and silk)	5.2	8.2

IMPORTS TO SHANGHAI IN 1936 AND 1940

	1936	1940
Rice	0.1%	7.5%
Coal	0.5	6.6
Raw Cotton	6.3	28.5
Metals and Ores	11.3	6.8
Machinery and Tools	6.0	2.6

SOURCE: Barnett, 1941:153-154

Although coal imports from foreign sources did not make up a significant portion of total imports in 1936, it was worth noting that Shanghai's coal had to be imported from neighbouring provinces. It was not supplied by producers in the province of Kiangsu.

**Table 2.21: SHANGHAI'S COAL CONSUMPTION BY MAJOR SUPPLIERS
IN 1936
Percent of Total**

DOMESTIC SOURCES	Sub-Total	91%
Hopeh (Kaiping Mines)	36	
Shantung (Miscellaneous Mines)	30	
Anhwei	23	
Shansi	2	
FOREIGN SOURCES	Sub-Total	9%
Indo-China	5	
Japan	3	
Manchuria (Manchukuo)	1	
TOTAL	100	

SOURCE: Murphrey, 1953:185.

COMMERCIAL TRENDS: TRADE TABLES FOR SHANGHAI, TIENSIN, & MANCHURIA

(1874-1932 in HKT and 1933-47 in \$Ch) Millions of units

Table 2.22: SHANGHAI

Year	Shanghai		American Dollars Per Chinese Currency Unit			SIGNIFICANCE OF YEAR
	Imports	Exports	Total	ExRate		
1875	45.9	30.8	76.7	1.50		20 years before the Treaty of Shimonoseki
1895	98.6	70.2	168.8	0.80		Treaty of Shimonoseki
1925	431.9	306.2	738.1	0.84		30 Years After foreign industrial investment was permitted
1931	833.6	277.5	1,111.0	0.34		Pre-War peak of foreign trade
1932	510.4	158.3	668.7	0.34		Establishment of Manchukuo; Effect of Global Depression
1936	555.2	362.3	917.5	0.30		Last year before the Sino-Japanese War
1937	510.8	404.7	915.5	0.29		War breaks out with Japan
1938	274.9	223.0	497.9	0.21		First full year of the Japanese occupation
1941	786.5	2,042.5	2,828.9	0.05		Last year for which trade figures were available

**Shanghai's Imports and Exports
(Millions of \$US)**

Year	Imports	Exports	Total	Net Exports
1875	68.9	46.2	115.1	-22.6
1895	78.9	56.2	135.0	-22.7
1925	362.8	257.2	620.0	-105.6
1931	283.4	94.4	377.8	-189.1
1932	173.5	53.8	227.4	-119.7
1936	165.0	107.6	272.6	-57.3
1937	149.7	118.6	268.3	-31.1
1938	57.8	46.9	104.6	-10.9
1941	41.7	108.3	149.9	66.6

NOTES for Shanghai's Imports and Exports:

ExRate is the abbreviation for Exchange Rate

SOURCE FOR SHANGHAI TRADE DATA: Hsiao, 1974:175-176 and 190-192

Table 2.23: Tientsin

COMMERCIAL TRENDS
(1874-1932 in HK\$ and 1933-47 in \$Ch)

Millions of units

Tientsin

**American
Dollars Per
Chinese
Currency Unit**

Table 2.23: Tientsin

Year	Imports	Exports	Total	ExRate
1875	1.0	3.0	4.0	1.50
1895	5.4	8.9	14.3	0.80
1925	85.1	62.2	147.3	0.84
1931	109.4	88.7	198.1	0.34
1932	104.5	62.9	167.4	0.34
1936	72.6	117.8	190.5	0.30
1937	84.1	127.9	211.9	0.29
1938	233.9	176.1	409.9	0.21
1941	712.4	178.1	890.5	0.05

Tientsin
(Millions of American Dollars)

Year	Imports	Exports	Total	Net Exports
1875	1.4	4.5	6.0	3.1
1895	4.3	7.1	11.4	2.8
1925	71.5	52.3	123.7	-19.2
1931	37.2	30.2	67.3	-7.0
1932	35.5	21.4	56.9	-14.1
1936	21.6	35.0	56.6	13.4
1937	24.6	37.5	62.1	12.8
1938	49.1	37.0	86.1	-12.1
1941	37.8	9.4	47.2	-28.3

SOURCE: Hsiao, 1974: 177-178 & 190-192

Table 2.24: MANCHURIA - COMMERCIAL TRENDS*

Year	Manchuria Millions of Yuan			HKT per Yuan	American Dollars	American Dollars Per Chinese Currency Unit	(1874-1932 in HKT and 1933-47 in \$Ch)
	Imports	Exports	Total		ExRate	ExRate	
1875	4.4	4.2	8.6	0.64	.....	.....	1.50
1895	5.8	8.7	14.5	0.64	.....	.....	0.80
1925	381.2	486.7	867.9	.....	.....	0.57	0.84
1931	341.0	722.8	1,063.8	.....	.....	0.22	0.34
1932	337.7	618.2	955.9	.....	.....	.....	0.34
1936	691.8	602.8	1,294.6	.....	.....	.....	0.30
1937	887.4	645.3	1,532.7	.....	.....	.....	0.29
1938	1,274.7	725.5	2,000.2	.....	.....	.....	0.21
1941	1,260.9	608.8	1,869.7	.....	.....	.....	0.05

* Note: Exchange rates are shown for Chinese national currency, that is, Hk Taels and Chinese dollars. As of 1932, Manchuria began to use the Manchukuo Yuan (MY). For the exchange rate between the MY and the American dollar, refer to Cheng, 1956: 206. Trade figures given in Manchurian Yuan (pre-1932) are from Chao, 1982: 22-23. It was assumed that before 1932 the value of this yuan was equal to the Chinese yuan. However, it should be noted that before 1932, the Hk Tael was the main currency unit. This is the reason for including exchange rates for the Hk Tael and the yuan. (Chinese dollar).

Year	Manchuria (Millions of American Dollars)			American Dollars Per Chinese Currency Unit	
	Imports	Exports	Net Exports	Total	ExRate
1875	4.2	4.0	-0.2	8.3	1.50
1895	3.0	4.5	1.5	7.4	0.80
1925	216.9	277.0	60.0	493.9	0.84
1931	76.5	162.2	85.7	238.7	0.34
1932	71.1	126.4	55.3	197.5	0.34
1936	197.6	151.0	-46.6	348.6	0.30
1937	255.4	161.9	-93.5	417.3	0.29
1938	362.2	189.3	-172.9	551.5	0.21
1941	330.4	146.7	-183.7	477.1	0.05

FOREIGN TRADE OF MANCHURIA
(Millions of \$US)

Year	IMPORTS					EXPORTS				
	Total	Japan Proper	% of Total	Occupied China	% of Total	Total	Japan Proper	% of Total	Occupied China	% of Total
1927-31 Avg.	114.0	61.8	54.2%	NA	NA	175.8	71.2	40.5%	NA	NA
1932	71.1	38.4	54.0%	12.9	18.1%	130.2	40.6	31.2%	38.6	29.6%
1933	132.7	80.7	60.8%	20.6	15.5%	115.3	45.7	39.6%	18.5	16.0%
1934	193.4	125.0	64.6%	18.8	9.7%	146.1	56.1	38.4%	21.3	14.6%
1935	180.8	130.0	71.9%	9.6	5.3%	126.0	54.9	43.6%	19.5	15.5%
1936	197.6	144.8	73.3%	13.6	6.9%	172.1	67.8	39.4%	36.7	21.3%
1937	255.4	180.6	70.7%	11.2	4.4%	185.7	79.9	43.0%	32.7	17.6%
1938	362.2	265.8	73.4%	20.3	5.6%	205.8	103.9	50.5%	34.6	16.8%
1939	467.2	371.0	79.4%	17.3	3.7%	216.8	119.2	55.0%	44.0	20.3%
1940	409.2	343.7	84.0%	16.0	3.9%	155.3	94.2	60.7%	37.4	24.1%
1941	330.5	263.1	79.6%	23.5	7.1%	158.3	93.4	59.0%	37.2	23.5%
1942	254.3	244.8	96.3%	9.5	3.7%	153.4	135.0	88.0%	18.4	12.0%
1943	201.3	196.8	97.8%	4.5	2.2%	121.6	98.8	81.3%	22.8	18.8%
1944	153.4	149.2	97.3%	4.2	2.7%	118.2	107.6	91.0%	10.6	9.0%

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NOTES:

For the period, 1932-41, Japan includes Taiwan, and trade with China is for China Proper, not just for Occupied China.

For the period, 1942 to 1944, the only available foreign trade data was for Manchukuo's trade with Japan and Occupied China. This would have represented the bulk of the trade. However, some trade was probably carried on with Korea and Taiwan.

SOURCE: Chao, 1982: 22-23, and Cheng, 1956: 145, 196, 198, & 206.

Hsiao, 1974: 190-192

Chapter 3

MANCHURIA

Part 1

INVESTMENT TRENDS IN THE MANCHURIAN ECONOMY

Circa 1900 to 1930: The Pre-Manchukuo Period

Introduction

The Manchuria chapter is divided into several parts, *i.e.*, Investment Trends; North and South Manchuria; and Manchukuo. The section on investment trends covers the entire geographic region of Manchuria. In order to highlight differences between the North and South, these two geographic regions of Manchuria are discussed separately. A separate section is devoted to the Manchukuo period because the entire region came under Japanese rule, and Japan became its only important foreign investor.

From the turn of the century until 1932, Manchuria was split between the competing interests of Russians, Japanese and Chinese. In order to forestall the take-over of Manchuria by foreign powers, the Qing government decided to allow unlimited Chinese immigration to the territory. This policy was put into effect in 1903, and the Russian built railway connecting Harbin to Dairen became the conduit through which these new Chinese settlers flowed. The Qing made Manchuria part of China and divided it into the three provinces of Heilungkiang,

Kirin, and Fengtien. The province known as Fengtien had its name changed several times. First, its name was changed to Shengking, and then to Liaoning.

The Russo-Japanese War (1904 to 1905), divided Manchuria into two spheres of foreign influence. The Liaotung Peninsula, formerly controlled by Russia was ceded to Japan and came to be called the Kwantung Leased Territory (KLT). The KLT and the South Manchuria Railway Zone (SMRZ) fell under the jurisdiction of Japan, while the Chinese Eastern Railway (CER) and the CER Zone continued to stay under Russian ownership. In 1911, the Qing government was overthrown, and by 1912 the Warlord, Chang Tso-lin had seized control of Manchuria. Chang ruled the region between 1912 and 1928, during which time it functioned as a separate state which acted independently of the Republican Government ruled by Yuan Shih-k'ai.

On July 25, 1919, the USSR gave up its extraterritorial rights and privileges in China. By May, 1924, the Republican (Peking) Government had signed an agreement with the Soviet Union which defined the status of the CER. However, because Chang Tso-lin did not accept this document, a separate agreement was drawn up later in the year to accommodate him. "Once Chang had established himself as the dominant figure in the Northeast, Japanese diplomats, officials, army officers, and businessmen strove assiduously to work through him to build up the Japanese position" (McCormack, 1977:257). Chang was opportunistic and did not seem to realize the danger of forging such close ties with Japan. During Chang's rule, a semi-colonial relationship developed between Japan and Manchuria. This alliance yielded satisfactory results for both sides until 1925.

Such factors as the growth of Chinese nationalism and Chang's own personal ambitions clashed with the goals of Japanese imperialism (McCormack, 1977:257).

In 1928, Chang Tso-lin was assassinated by the Japanese and the leadership of Manchuria was assumed by his son, Chang Hsueh-liang. In December, 1928 Chang Hsueh-liang recognized the authority of the Nationalist Government over all of China, including Manchuria.

In 1929, Chang's police seized various documents from Soviet consulates in Manchuria and they took control of the CER and expelled several hundred Russians. When the USSR saw that diplomacy would not solve the conflict, Soviet forces were dispatched to restore Russian control over the railway. Two years later, in 1931, Japanese forces occupied Mukden and several other cities, which consequently led to the collapse of Chang's government. In 1932, under Japanese auspices, the puppet state of Manchukuo was created. This marked the start of state-led industrialization which would characterize the period of direct Japanese rule between 1932 and 1945. However, it should be recognized that by this time the industrialization of the KLT was well under way and that Japanese investment was present throughout the region. The Soviet Union sold the CER to Manchukuo for about one-eighth of its value (O'Neill, 1987:186)¹. Japan was now in total control of Manchuria's resources and its economic development.

¹ O'Neill said that the CER was sold for one-eighth (12.5%) of its value. However, according to Dallin (1953: **Soviet Russia and the Far East**, pp. 18 to 21), it probably sold for around 20% of its value. In 1927, the CER was valued at \$US 300 million (approximately equal to 600 million gold rubles). However, Remer (1968:606) estimated that it was worth \$US 210.5 million in 1930. In 1935, the sale was finalized for the amount of 140 million Japanese Yen (\$US 40.2 million) plus the employees' retirement allowances (Dallin, 1953:20).

Although such business's as the South Manchuria Railway Company were affected by Japanese political considerations because of government investment in them, many others were established in Manchuria as purely profit making enterprises. Staple-led growth characterized the Manchurian economy from the late 19th century until 1932. This export oriented economy heavily relied on producing ever-increasing quantities of bean and bean products (cake and oil) for export. In conjunction with the increasing development of the agricultural sector, the mining and manufacturing sectors also expanded. Economic growth was being generated not only by exploiting the region's comparative advantage in agriculture but by increasing flows of foreign investment into the commercial and industrial sectors of the economy. This investment was responsible for establishing a regional railroad network and many of the first modern sector enterprises (public utilities - electricity and gas; mines; oil and flour mills; match and tobacco manufacturing plants; sugar refineries; and alcohol distilleries).

Russian Investment

Initially, at the turn of the century Russian investment was dominant throughout Manchuria. However, Japanese investment gradually increased, eventually overtaking the level of Russian investment. For the most part, the total quantity of Russian investment hardly increased at all when compared to Japanese investment. However, private-sector Russian business investment did show a more impressive rate of growth.

Manchuria and Shanghai represented the two most important destinations for foreign direct investments in China. Unlike Shanghai, the basis for foreign

investment in Manchuria were railway concession zones, rather than the creation of a Treaty Port. Although Manchuria was rich in natural resources, the initial reasons for Russian investment were political, not economic. This was in sharp contrast to Shanghai which developed for economic reasons. There were no significant Russian investments in Manchuria at the time that the building of the CER was proposed. However, once the railway was built, Russian investment began to pour into the CER zone. The initial Japanese interest in Manchuria was also political and strategic before it was economic (Remer, 1968:113). As already stated, the two most important investors in Manchuria were Russians and Japanese. Between 1900 and 1932, the investments of other countries were insignificant. By 1931, the accumulated investments of British and Americans probably stood at approximately \$US 40 million (Remer, 1968:97).

Table 3.1: FOREIGN INVESTMENT IN MANCHURIA		
1902 To 1931		
Year	Millions of \$US	% of Total Foreign Investment in China, incl. Manchuria
1902	216.0	27.4
1914	361.6	22.4
1931	880.0	27.1

Source: Remer, 1968:73

Russia was granted mining rights in China in 1896, when the statutes of the CER company were signed. "The company was empowered, subject to the sanction of the Chinese government, to exploit, in connection with the railroad or independently of it, coal mines, and also to exploit in China other enterprises -

mining, industrial, and commercial" (Hou, 1965:69). The CER quickly began to exploit coal fields throughout Manchuria. The company opened coal mines at Fushun and Fengtsin, Chalainor in Heilungkiang, and Taochiatun and Shihpeiling in Kirin (the later two were also referred to as the Kuanchangtze coal field (Hou, 1965:69)). By the terms of the Russo-Japanese War, Russia was forced to cede control of all of these coal mines to Japan, with the exception of the Chalainor mine. The CER continued to operate this mine, but it only produced low quality coal (lignite).

In 1924, a Russian company and the Kirin provincial government were able to reach an agreement to exploit coal fields at Mu-leng. At about the same time, Chinese investors grouped together to develop a coal mine at Hao-kang (Sun, 1969:63). The CER built branch lines to these mines, and coal shipments began in 1925 and 1927 respectively (Sun, 1969:63). The aggregate output of these two new mines quickly surpassed that of the Chalainor mine (Sun, 1969:63).

The Russian government built a port and town at Dalny (Dairen) and the town of Port Arthur at a cost of 30 and 12 million Rubles respectively, totalling 42 million Rubles by the end of 1903 (Remer, 1968:565). However, these were not commercial ventures. They were more political and military in nature. Russian business investments grew slowly and have been summarized by the following table on the next page.

For 1914, there were two estimates of investment, one given by an American source (Remer, 1968:587), and one Russian (Sladkovsky, 1981:275). Remer's

**Table 3.2: RUSSIAN BUSINESS INVESTMENTS IN MANCHURIA
in \$US millions**

Type of Investment/Year	1904	PERCENT OF TOTAL	1914	PERCENT OF TOTAL	1930	PERCENT OF TOTAL
CER	208.3	96	189.3	83	210.5	80
Commercial and Industrial	7.7	4	38.5	17	51.3	20
TOTAL	216.0	100	227.8	100	261.8	100

Source: Remer, 1968: 573, 587, & 606

estimate of commercial investment in Manchuria, exclusive of the CER was 75 million Rubles (\$US 38.5 million). The Russian estimate was 91 million Rubles, which was distributed as follows: -

- | | |
|---|--------------|
| 1. Private investments in urban construction, banking, and trade. | R 40 million |
| 2. Manufacturing Industries | R 35 million |
| 3. Mining Industries | R 11 million |
| 4. Private logging concessions | R 5 million |
| Total Russian Investment in 1914 | R 91 million |

Remer also gave a detailed break-down of Russian investments in Harbin for the year 1926 (Remer, 1968:603). The industries which had capital invested that was equal to or in excess of one million Gold Rubles are shown in the following table.

**Table 3.3: HARBIN: Investments of Russian Capital By Industry in 1926
(1,000's of Gold Rubles)**

CATEGORY	CAPITAL INVESTED	SOLD TO CHINESE	SOLD TO JAPANESE
Flour Mills	14,000	11,000	-----
a) Distilleries	5,000	1,250	-----
b) Breweries	1,200	200	-----
c) Vodka Distilleries	1,300	-----	-----
TOTAL BREWERIES & DISTILLERIES (a to c)	<u>7,500</u>	<u>1,450</u>	-----
Bean Oil Mills	2,000	1,000	-----
Metal Working Factories	2,000	-----	-----
Electric Plants	1,000	-----	500
Sausage Factories	1,000	-----	-----
Veneer Factories	1,000	-----	-----
Timber Concessions and Saw Mills	6,500	-----	-----
Mining Concessions	3,000	-----	-----
Sugar Refineries	2,000	-----	-----
Tobacco Factories	1,000	-----	-----
TOTAL FOR ALL INDUSTRIES	45,250	13,550	1,000

SOURCE: Remer, 1968:603

Note: The preceding total does not include residential houses, storehouses, and other buildings; nor does it include buildings of the CER; and land property (not built on).

According to the preceding table, nearly a third of the capital invested in Russian industrial enterprises was in the hands of Chinese and Japanese investors by

1926. However, what was equally clear was that Russian capital was responsible for establishing a wide variety of modern industries, not limited to the ones presented (see Remer, 1968:603 for industries with a capitalization of less than one million Gold Rubles).

Over the entire period, 1904 to 1930, Russian investment grew only 21%. However, this growth was almost exclusively due to commercial and industrial investments, rather than further growth of the CER company. Commercial and industrial investments grew nearly 7-fold between 1904 and 1930. In 1904, only 4% of Russia's investments were in non-CER ventures. However, by 1930 the share of these investments had increased significantly, totalling about 20% of Russia's investment in Manchuria.

Although Russian capital and know-how were the driving forces behind the early industrialization of North Manchuria, the Russian population was actually quite

**Table 3.4: ESTIMATES OF THE RUSSIAN POPULATION IN MANCHURIA
In 1,000's**

Location\Year	1912	Circa Early 1920's*	1930
Harbin only	46.5	100.0	64.5
Total for Manchuria	70.1	124.5	111.6

* Estimates for European population, most were assumed to be Russian.

SOURCE: 1912 estimates (Wolff, 1999:92); Early 1920's, Harbin Consular District (Arnold, 1926:669); and 1930 estimates (Remer, 1968:610).

small. The Russian population represented a little over one percent of North Manchuria's total population of 11.9 million in 1921 (Econ.Bureau,1924:11; and Remer,1968:609). The Russian population was assumed to be about 124.5 thousand (Arnold,1926:669).

Japanese Investment

In sharp contrast to Russia, Japan's investments in Manchuria at the turn of the century were negligible. However, by 1914, Japanese capital was beginning to play an important role in Manchuria's modern sector.

After acquiring the KLT, Japanese investment rose quickly between 1905 and 1914. Additionally, the Japanese population in Manchuria also rose quickly, and had surpassed that of Russian population by 1930.

Table 3.5: JAPANESE POPULATION IN MANCHURIA

YEAR	POPULATION	PERCENT OF TOTAL JAPANESE IN CHINA
1901	83	2
1911	53,248	68
1914	67,958	80
1930	215,000*	80

Source: Remer,1968: 421,450,451, and 455.

Notes: 1901 to 1914: Chinese Customs figures - % distribution from p.450.
Estimates for 1930: Probably derived from Japanese Committee figures.

* Out of this population, at least 199,500 (92.8%) were in the KLT and SMR Zone. In 1914, this ratio was 95% (Remer,1968:455).

The Japanese, like the Russians were clustered in those areas which were under the control of their home governments, that is, the KLT and SMR Zone for Japan, and Harbin and the CER Zone for Russia. Additionally, the Russians and Japanese also invested the bulk of their China-bound capital in Manchuria. Regarding Russia, nearly all of their investments were made in Manchuria. Japanese investment was more widely distributed but was still highly concentrated in Manchuria, that is, 68.9 percent and 62.9 percent of the total invested in China for the years 1914 and 1930 (Remer, 1968:426 & 470).

In the span of seventeen years, 1914 to 1930, Japanese investment increased over 4-fold. This injection of foreign capital spurred rapid industrial growth in the mining and manufacturing sectors.

Table 3.6: JAPANESE INVESTMENT IN MANCHURIA			
YEAR	\$US MILLIONS	YEN MILLIONS	PERCENT OF CAPITAL BELONGING TO THE SMR
1914	132.6	265.2	79.2%
1930	543.5	1,100.4	63.0%

SOURCE: Remer, 1968:426-427, 470-471, & 473.
 Exchange Rate for 1930 from: - US Dept. of Commerce. (1968) **Foreign Commerce Yearbook 1933:** p.273.

During this pre-Manchukuo period, the coal and iron industries were established to furnish Japan with raw materials. However, as the industrialization of Manchukuo progressed, increasing quantities of coal and pig iron were consumed domestically. The scale of coal mining was large. The Fushun mine was frequently referred to

as the largest open-cut coal mine in the world, with an annual output of 7.4 million tons in 1930 (Remer, 1968:490).

The largest Japanese investments in manufacturing were to be found in the following sectors: - vegetable oil, bean cake, flour, tobacco, paper, saw mills & woodworking, matches, and wool processing. Additionally, investments were made in the electricity and gas sectors (public utilities). By 1930, about 27 percent of their capital was invested in public utilities, mining & manufacturing, and much of the rest was invested in transportation (35%) [Remer, 1968:506].

**Table 3.7: DIRECT BUSINESS INVESTMENTS IN MANCHURIA AS OF
1930
(Millions of Yen)**

	ECONOMIC SECTOR	INVESTMENT	PERCENT OF TOTAL
1.	Transportation	388.5	35.4
2.	Public Utilities	31.3	2.8
3.	Mining	165.2	15.0
4.	Manufacturing	98.6	8.9
5.	Banking and Finance	82.6	7.5
6.	Real Estate	146.0	13.3
7.	Import and Export	117.8	10.7
8.	Miscellaneous	70.4	6.4
9.	TOTAL	1,100.4	100.0

SOURCE: Remer, 1968:506

Part 2

EXPORT-DRIVEN GROWTH IN SOUTH MANCHURIA

Introduction

There are two key questions that this part of the chapter will seek to address.

Firstly, how export dependent was Manchuria? Secondly, what effect did trade expansion have on the economic environment, that is, did the prospect of a growing import-export trade attract foreign investment, and did it encourage industrialization?

The southern part of Manchuria was opened to foreign trade when the Port of Newchwang (Yingkou) was made a Treaty Port during the 1860's, by treaty with Britain. In the 19th century, Newchwang was the only Manchurian Port that was opened for foreign trade. However, in the early 20th century, more ports were opened to trade. In North Manchuria, Harbin was important both as a commercial hub and as a centre of Russian business interests in the region. The regions of South Manchuria around Dairen and Mukden served as centres of Japanese commercial influence.

From around 1860 to 1930, Manchuria served as a region of new settlement. Growth of the economy was based mostly on the increase in population and land under cultivation. The export sector primarily was concerned with the production of one staple commodity - the soy bean which could be processed into bean cake (fertilizer) and bean oil (used for cooking). Most industrial growth which occurred

during this period was carried out by Russian or Japanese entrepreneurs, that is, the CER (Chinese Eastern Railway) and the SMR (South Manchuria Railway). The following two points mark the beginning and end of the period under discussion:

- (1) In 1864, Newchwang, the first treaty Port in Manchuria was opened; and
- (2) In 1931, the Japanese invaded Manchuria. This invasion marked a turning point in Manchuria's history because the new colonial government sought to industrialize the region so that it could provide Japan with industrial as well as agricultural exports.

This portion of the Manchuria Chapter is primarily concerned with the period, 1898 to 1930 for two reasons. Firstly, during the decade 1898 - 1908, the population growth was spectacular, that is, a 2.5 times increase. Additionally, the region was exposed to massive injections of foreign capital, mostly Russian and Japanese.

This section of the chapter will primarily study the effects of increased commerce in South Manchuria and its two most important ports, Newchwang and Dairen. However, a brief comparison will be made between these two South Manchurian cities and North Manchuria's major port, Harbin. Population growth in the two newer ports of Harbin and Dairen was much faster than in the much older port of Newchwang. It should also be noted that, by 1927, these newer cities were considerably larger than Newchwang. (See Table 3.8).

Table 3.8: POPULATION OF MAJOR MANCHURIAN PORTS

Port/Year	Circa 1860	1910	1927
Dairen	-----	16,000	222,400
Harbin	-----	30,000	186,000
Newchwang	50,000	52,000	65,600

Sources: Condliffe, 1930: 411 and BPP, 1854-66: 109

Overview of The Economy

In 1860, Manchuria's population was about 3 million (mn). However, by 1887 it had already exceeded 5 mn. Between 1887 and 1898, population growth was relatively slow. By 1898 a population of 7 mn had been attained. Between 1908 and 1930, the population nearly doubled and stood at 31.3 mn in 1930 (Chao, 1983:6). Similarly, there was a substantial increase in the cultivated acreage from 1,800 thousand hectares in 1872-73, to 12,600 thousand hectares in 1930 (Chao, 1983:9)².

Bean product (that is, soybeans, bean cake and bean oil) exports dominated the export trade in 1872 (87% of total exports) (Chao, 1983:10). Over time, its share in the total export trade declined as exports were diversified. In 1899, bean products accounted for 81% of exports, but by 1929, it accounted for only 60% (Chao, 1983:10). Overall, total export growth was spectacular. Exports of soybeans and soybean products in 1934 prices stood at 7.7 million yuan in 1867,

² However, Chao believed that the 1872-73 figure was over-estimated. If one assumes that Chao is correct, then the cultivated acreage per capita was declining over this period, that is, for farmers to maintain a stable or increasing income, there would have to be an increase in agricultural productivity.

and fell to 6.9 million yuan in 1872, before expanding 4.5-fold to 31.0 million yuan in 1899. There was nearly a 3-fold increase between 1899 and 1909 which brought the export value to 91.0 million yuan. Between 1909 and 1929, the export value had again nearly risen 3-fold, and totalled 255.5 million yuan. In 1872, total exports (valued at 1913 prices) stood at 6.4 million yuan, of which soybean products accounted for 5.6 million yuan of the total. Between 1872 and 1899, total exports expanded 6.4-fold. During the period 1899 to 1909, the increase was 3.1-fold, and between 1909 and 1929, the increase was 3-fold. Total exports in 1929 were 390.5 million yuan (1913 prices), which was equivalent to 663.1 million yuan at current prices. (Chao, 1983: 10-11).

Table 3.9: INCREASE IN EXPORTS FOR MANCHURIA		
Period	Soybean Products at 1934 prices	Total Exports at 1913 prices
1872-1899	4.5-fold	6.4-fold
1899-1909	3.0	3.1
1909-1929	3.0	3.0

SOURCE: Chao, 1983: 10-11

As can be seen from the Foreign Trade Indices Table, the rate of import growth was far slower than for exports.

**Table 3.10: FOREIGN TRADE INDICES FOR MANCHURIA
(in 1913 prices)**

Year	Imports	Exports	Total
1872	100	100	100
1899	559	644	589
1909	1,018	2,002	1,370
1929	2,824	6,102	3,996

SOURCE: Chao, 1983:10

"The divergence between population increases and export growth is so significant that even if exports rose more rapidly than domestic product, there would still be room left for a rise in per capita product".
(Chao, 1983:11).

Newchwang

During the 1860's, the port was opened to foreign trade. Initially the level of commercial activity was restrained by the Chinese Imperial government's restrictive policies which discouraged the immigration of Chinese into Manchuria. As long as Newchwang's hinterland could not grow, the prosperity of the port was not assured. Three main factors were responsible for future economic growth in the port: (1) The bean trade and manufacture of bean cake; (2) The shipping on the Liao River; and (3) The passage of coolies (Hoshino, 1920:18). The growth of

the soy bean trade was rapid. In 1861, 34 ships visited Newchwang, and in 1865, 271 ships arrived (Hoshino, 1920:19).

Even foreign capital was attracted to the bean processing industries which thrived in the port. In 1865, a British firm imported machinery from Britain for processing bean oil and cake by steam power (Hou, 1965:84). Production started in 1868, but the firm proved to be uncompetitive. The quality of the processed beans was better, but the cost was too high to compete with native methods. After two years of operation, the plant closed. However, by the late 1800's, foreign mills were again being established in Manchuria. In 1929 there were 300 bean oil mills in Manchuria, including the ones which used traditional methods (Hou, 1965:84). Of the 60 mills in Dairen, only two were foreign-owned [Japanese], and of the 50 in Harbin, only two were foreign [Russian] (Hou, 1965: 84-85).

In 1908, Newchwang had over 20 bean factories and the annual export of bean cake amounted to 5.2 mn piculs, (20 piculs = 1 metric ton) with a value of 10 mn Japanese yen (Jyen), which was equivalent to 80% of the whole export trade (Hoshino, 1920:20).

The other two factors contributing to the rapid growth of the port were as follows.

- (1) The Liao River was important because it connected the port to its hinterland.
- (2) Additionally, during the early 20th century, (1900-1910), approximately 300,000 coolies came to Manchuria every year, and more than half of them passed through Newchwang (Hoshino, 1920:20). "The passage of so many people annually, even though poor coolies only, cannot have failed to contribute to the

prosperity of the port". (Hoshino, 1920:20). It should also be noted that export oriented production accelerated during the mid-1880's when the restrictive measures on immigration were entirely removed. During the 19th century, the main impact of the port was it opened up new markets for Manchurian products which resulted in the substantial development of the Liao River Basin (Hoshino, 1920: 23).

The effect of the Sino-Japanese war, 1894-95, was to acquaint Japanese businessmen with Manchuria's agricultural products. Besides importing agricultural goods into Japan, these businessmen were also confident that they could successfully market Japanese manufactured goods in Manchuria. Since the war, Newchwang's trade expanded quickly. In 1895, total trade (imports and exports) stood at 9.4 mn taels, but by 1899, it had soared to 48.4 mn taels (Hoshino, 1920:22). Newchwang's exports were directed mainly to Chinese and Japanese markets, of which Japan was the most important foreign market, (approximately one-third of total exports). Cotton products were the most important Manchurian import item. These imports were dominated by American products. Between 1898 and 1899, the Japanese increased their cotton products exports to Newchwang, but they were still a minor competitor in the Manchurian market.

Opium was both imported and exported. However, Manchuria produced enough opium to satisfy domestic demand. Although opium was not shown in the export statistics, it should be noted that considerable amounts of the drug were exported by cart and junk to China's northern provinces. It was reported that thousands of

migrant workers in Manchuria returned home with opium on a yearly basis (Hosie, 1887:4). Most of the coal imported into Manchuria was used by the local blacksmiths, not by modern industry. During 1896, licenses were issued to prospectors who were involved in coal and metal mining (Hosie, 1887:5).

In 1896, the modern industrial sector expanded. A mint was built in Kirin, and the machinery needed for a second mint at Mukden was purchased. Additionally, a bean mill which used modern machinery was also established in Newchwang, and British investors were interested in this bean mill. A German firm was involved in a silk reeling establishment located 30 miles east of Newchwang. New railway construction continued throughout 1896. "The construction of the proposed Railway from Newchwang to Kirin (Province) will give a great impetus to trade, and its extension southwards to Ta-lien-wan Bay just north of Port Arthur which is open to navigation all the year round, would tend still further to develop the valuable resources of the whole of Manchuria". (Hosie, 1897:10).

Exports

Alexander Hosie, Head of the British Consulate at Newchwang from November 1894 to July 1897, and from April 1899 to April 1900, estimated that in 1899, 600,000 tons of beans were grown in Manchuria (Hosie, 1980:244). According to him, essentially the entire crop was exported because Manchurian farmers grew millet as their staple crop which was consumed by people and farm animals. In addition, farmers used animal manure on their fields so that they could export most of the bean cake which was used as fertilizer and animal feed. Although Japan represented a major export market for beans and bean cake, nearly all of

the bean oil was exported to China. Between 1898 and 1899, bean product exports increased from 478 thousand to 551 thousand tons, equal to a 15% increase (Hosie, 1980: 242). More specifically, bean exports were up 12%, and the higher value-added bean cake was up 19% and bean oil (used for food and light) was up 48% (Hosie, 1980:242).

Before 1897, gold was the second most important export item. However, after 1897, its place was taken by silk. A negligible amount of manufactured silk was exported out of the small amount produced. The silk industry was mostly concerned with reeling the raw silk for export. Between 1898 and 1899, silk exports increased 88% from about 1.4 to 2.6 mn taels.

It is not known how much gold was produced in Manchuria. However, it should be noted that the wealthy invested their excess capital in gold bars and jewellery. In 1898 and 1899, over one million taels were exported via Newchwang. Other major export items included silver, ginseng, and skins and furs. There was also a miscellaneous category which included such goods as medicines, prawns and shrimps and fruits and vegetables.

As already noted, Japan was Newchwang's only major foreign export market. Up to the end of the 19th century, Newchwang was the only port in Manchuria which was open to foreign trade. Therefore the above figures can be taken to represent the entire export trade of Manchuria. By 1909, Newchwang's importance as the major commercial centre of Manchuria had declined. In South Manchuria, it was

being eclipsed by Dairen, and much of the commerce of North Manchuria was being carried out by Harbin (Bell, 1974:136-137).

**Table 3.11: EXPORT TRADE OF MANCHURIA THROUGH
NEWCHWANG, 1898, 1899 and 1904
(Value In Thousands Of Haikwan Taels)**

Exports	1898	1899	1904
Beans, Bean cake and bean oil	14,881	16,686	8,769
Silk	1,375	2,587	2,008
Gold	1,036	1,357	NA
Silver	466	3,166	NA
Ginseng	218	222	-----
Skins & furs	135	161	37
Miscellaneous	840	959	1,345
TOTAL:	18,950	25,139	NA
TOTAL WITHOUT GOLD & SILVER:	17,448	20,616	12,159

Sources: Arnold, 1926:484; Hoshino, 1920:22; and Hosie, 1980:252.

The Special Position of Kwantung Leased Territory

Japan's colonial ambitions in Korea and Taiwan were initially concentrated on their agricultural sectors. This was not the case in Kwantung, because it could not be made into a highly productive rice growing area. However, its geographical position was of commercial and strategic interest to Japan. When the Japanese army occupied Kwantung and the South Manchuria Railway Zone, it gained control over South Manchuria. South Manchuria could then be used as a conduit through

which the natural resources and market potential of all of Manchuria could be harnessed. The Kwantung colonial government had two goals:-

"1. to help Japanese businesses to capture the Manchurian market, and, 2. to facilitate the development and extraction of Manchuria's natural resources for Japan's benefit"

(Myers, et al, 1984: 350).

The colonial administration based its economic policies on ideas and economic programs which had been used in Japan during the early part of the Meiji Period. Government projects expanded the economic infrastructure, and increased the investment in human capital through better health and education. These government expenditures initiated and later sustained economic growth through increased productivity and technological change. Investments made by the government included expenditure on railways, harbors, roads, warehousing and banking (Myers, et al, 1984:351). Great strides were made in improving the diet and accessibility of modern medical services which reduced mortality. Publicly financed elementary schools were built for Japanese and Chinese students. In Kwantung and the South Manchurian Railway Zone, the enrolment in Japanese style primary schools stood at 1,000 students in 1906. Enrolment steadily increased to 36,000 in 1920, and nearly reached 93,000 in 1935. (Myers, et al, 1984:353).

In 1935, about half of the students were Japanese, but approximately 19% of the Chinese school-age population, (6-15 years old), were enrolled in Japanese-style elementary schools. (Myers, et al, 1984:353).

In order to fully exploit the colony's resources, the government actively promoted selected industries, introduced new technologies, and funded economic ventures (Myers, et al, 1984:355). Development programs were thoroughly researched before being implemented. Key factors researched included economic resources and local customs. The government also participated with private Japanese businesses to form semi-official companies in mining and mineral processing. The most relevant example of this partnership in Kwantung was the South Manchuria Railway Company which planned and directed the industrialization of Kwantung and the South Manchuria Railway Zone (Myers, et al, 1984:357).

Table 3.12: KWANTUNG LEASED TERRITORY RATES OF GROWTH OF ECONOMIC SECTORS						
(NOTE: Aggregate data not available)						
Year	Agricultural Production	Mining		Manufacturing		Population (Kwantung Pop. only)
		Value Added	Production	Value Added	Production	
1912 to 1927	4.93%	10.22%	10.21%	11.80%	11.30%	3.20%

SOURCES: Myers, et al, 1984: 389
Myers, et al, 1972: 341

Within the KLT, the slowest growing sector was agriculture. The mining and manufacturing sectors averaged rates of growth that were at least twice as high

as what was registered for the agricultural sector between 1912 and 1927. In contrast to Russian controlled North Manchuria, ie. Harbin, the Chinese Eastern Railway and its environs, where the development of the food processing sector and coal mining was stressed, Japanese investment in the KLT and South Manchuria Railway Zone was geared more towards developing heavy industry.

The Fushun Coal Mines produced most of South Manchuria's coal. In 1905, the mines were transferred from Russian to Japanese control as a result of the Treaty of Portsmouth. By 1905, under Russian control the mines had produced about 110 thousand tons of coal per annum (Sun,1969:64). The Japanese expanded output at a prodigious pace. By 1907, sales of Fushun coal surpassed 202 thousand tons, and had climbed to nearly 8 million tons by 1929 (Sun,1969:65). This represented a 39.5-fold rise in output over just twenty two years, equivalent to an annual average growth rate of 18.2 percent.

Statistics for pig iron output in the KLT became available in 1915. Pig iron output rose from 35 thousand metric tons in 1915 to about 261 thousand tons by 1930, equivalent to a 7.5-fold increase over 15 years (Sun,1969:90). Between 1915 and 1930, the value of metals, and machinery rose 8-fold, and 2.0-fold respectively (Sun,1969:94). Within the same period, cement output rose from 180 thousand barrels to 1,112 thousand barrels, equal to a 6.2-fold increase (Sun,1969:90). The expansion of electricity output within the KLT followed a similar trend, increasing from 11 million KWH's in 1910 to 305 million KWH's by 1930 (Sun,1969:90). Electricity output expanded at an average annual rate of 18.1 percent between 1910 and 1930.

Dairen

In 1898, China ceded the Liaotung Peninsula to Russia. Upon obtaining this territory, Russia built the port of Dalny (Dairen) which housed approximately 18,000 people when it was completed. By 1904, the Russians had built water-works, electric works, and many fine buildings for the port (Hoshino, 1920: 48). In 1905, Japan defeated Russia, and by the Treaty of Portsmouth, the Liaotung Peninsula was ceded to Japan. The Japanese completed any unfinished Russian construction work in Dairen and they also enlarged the city. Since the Liaotung Peninsula was operated as a Japanese colony, they had a vested interest in promoting modern industries. Although they developed only mining and other non-agricultural activities in the colony and the South Manchuria Railway zone, economic growth in this industrial enclave sector did facilitate agricultural commercialization throughout the economy (Myers et al, 1984:384).

In order to determine if industrial growth and investment was adequate to generate industrial exports, the composition of industrial output and trade will be studied. About 98% of the industrial capital of the Liaotung Peninsula was concentrated in Dairen (SMR, 1922:39). The Liaotung Peninsula (Kwantung Leased Territory (KLT), only had one large city, Dairen, which had a population of about 200 thousand by the mid-1920's, equivalent to 26% of the KLT's total population , but specific information regarding urban and rural population is not known (Arnold, 1926:640). Historical studies have paid more attention to the industrial rather than agricultural production of the KLT. Therefore it is difficult to determine precisely how much agriculture contributed to gross output. However, it was certain that if the KLT's farms could not produce enough inputs for the

colony's food processing industries, then materials could be purchased from outside of the KLT. A partial estimate of agricultural output can be calculated for 1920 by using Kang Chao's agricultural product prices for 1934.

Table 3.13: Kwantung Territory, Agricultural Output In 1920

Crop	(Tons)	Price per ton in 1934 yuan	Price per ton in 1934 Japanese Yen	Total Value in 1,000's of 1934 Japanese Yen
Kaoliang	16,000	42.5	50.6	809.6
Millet	17,900	63.3	75.3	1,347.9
Soya Beans	15,500	57.7	68.7	1,064.9
Corn	60,000	40.2	47.8	2,868.0
Barley	1,800	74.1	88.2	158.8
Wheat	1,100	114.1	135.8	149.4
Small Beans	4,200	42.8	50.9	213.8
TOTAL:				6,612.4
Gross value of Industrial Production for 1920 in the Kwantung Leased Territory & the South Manchuria Railway Zone at 1934 prices in 1,000 yen				134,977.0
GRAND TOTAL				141,589.4
SOURCES FOR AGRICULTURAL OUTPUT DATA:				
Chao, 1983: 45 SMR, 1922: 16 Sun, 1969: 94 & 95 Yano, 1936: 312				

This calculation would imply that agricultural production accounted for only 4.7% of total output. To this total could be added fruit output which equalled 253.5 thousand 1934 Japanese Yen in 1924 (Chao, 1983:47; Yano, 1936:312).

Additionally, a very small amount of the farmland was devoted to the growing of industrial crops, i.e., cotton, tobacco, peanuts, sesame oil, oil seeds, and flax (Chao, 1983:48). These additions are minor, and the crop estimate is probably representative of the level of agricultural output during 1920.

Since the agricultural output of the KLT was very low, it can be assumed that there probably was a large amount of urbanization. However, this finding should be put into perspective. Even if all of the KLT's population was classified as urban, this would only amount to 1.4 million people (1933 estimate). In 1934, Manchuria's total population was about 30.9 million. Therefore, the KLT's population would have amounted to 4.5% of Manchuria's total population. (Yano, 1936: 450 & 461). At any rate, the KLT did not represent a large geographic area and it did not have a large population. However, its transportation and industrial infrastructure were complementary to the Manchurian hinterland.

During the 1930's, approximately one-fifth of Manchuria's output was generated by industry, and one-third by agriculture. The rest of the economic output was accounted for by the service sector. During the 1920's, nearly half of GDP was produced by the Agricultural sector, and about one-sixth was produced by the industrial sector. The remaining one-third of the economy was generated by the service sector. (Chao, 1983:33). These statistics are worth noting, because it shows that the relatively large industrial sector which existed in Dairen and the

KLT was probably more the exception than the rule in the 1920's. However, the relative rise of the industrial and service sectors during the 1930's, indicated that Manchuria's economy was beginning to shift away from dependence on its agricultural economy.

Since it has been established that the industrial sector was the most important part of the economy, it would be worthwhile to examine the composition of output. In 1910, the leading sectors were: (1) Mining, (2) Vegetable oil, and (3) Machinery. By 1920, the composition of output had begun to shift. The lead sectors were now (1) Vegetable oil, (2) Mining and (3) Food, beverage and tobacco. By 1930, the order of the lead industries had remained unchanged.

The two sub-sectors that dominated the economy were mining and vegetable oil. The food, beverage and tobacco sector held a constant share of industrial output between 1910-1930. However, it should be noted that the textile, metal, and chemical sectors grew from a position of negligible output in 1910, to a significant 15% of output by 1930. On the other hand, machinery and ceramics declined from a position of being major industrial sectors in 1910 to rather minor ones in 1930.

The KLT and SMR Zone had encouraged both domestic and foreign investment because the Japanese created an environment where personal safety was assured and private property was protected. In addition, there was easy access to a transportation system (i.e. the South Manchuria Railway (SMR)). Separate foreign investment figures were not available for the KLT and SMR Zone. However, in

1930, Japan accounted for 70.5% of the foreign investment in Manchuria, equivalent to 1, 617 mn Japanese Yen (Shen, 1960:122). This was a great increase over the amount of Japanese investments in 1914 which totalled 265 mn Japanese Yen (Remer, 1968:473). Japanese investments were concentrated in the KLT and SMR Zone and in the South of Manchuria.

Table 3.14: COMPOSITION OF INDUSTRIAL PRODUCTION IN THE KLT AND SMR ZONE					
Year	Mining	Public Utilities	Food, Beverage & Tobacco	Textile	Vegetable Oil
1910	33%	3%	8%	0%	30%
1920	23%	3%	7%	0%	55%
1930	28%	6%	7%	6%	33%
Year	Wood Products	Metal	Machinery	Ceramics	Chemicals
1910	0%	0%	16%	10%	0%
1920	0%	2%	7%	2%	1%
1930	2%	4%	4%	4%	5%

SOURCE: Sun, 1969: 94

The only other significant foreign investor was the Soviet Union. It accounted for 25.7% of total foreign investments, equal to 590 million Japanese Yen (Jyen) in 1930 (Shen, 1960:122). Soviet investment was concentrated in Harbin and the

surrounding districts of North Manchuria. The total amount of all foreign investment in Manchuria totalled 2.3 billion Jyen in 1930. A significant proportion of foreign investments in China were located in Manchuria, that is, 27.4% in 1902, 22.4% in 1914, and 27.1% in 1931 (Remer, 1968:73).

In 1918, the total capital of the manufacturing sector in the KLT was 41.7 mn Jyen, most of which was located in Dairen, and the corresponding figure for the SMR Zone was 33.7 mn Jyen, of which 73% was concentrated in Mukden, Penhsihu, and Fushun (SMR, 1922:39). In 1910, bean oil and bean cake were the most important manufactured goods produced. In 1920, bean oil and bean cake continued to be the main items produced. However, tobacco products and wheat flour were of growing importance. In 1925, the same items as in 1920 continued to be important. However, other goods like textiles, cotton yarn, bricks and tiles, cement, sugar, wines, bean sauce and pig iron were being produced. Coal and electricity output was also increasing quickly, that is, 2.2 -fold and 4.1-fold increases respectively, between 1920 and 1930 (Sun, 1969:90).

By 1918, Dairen dominated Manchuria's import-export trade. The port handled 62.1% of Manchuria's trade in 1918, and nearly 55% of it in 1927 (Condliffe, 1930:402). Although industrial exports grew considerably, they continued to be over-shadowed by agricultural exports from Manchuria's rural areas. Beans and processed bean products were the main agricultural exports. Cement, cigarettes, coal and pig iron were some of the most important industrial exports. The two most important imports were wheat flour, and machinery and parts.

In 1927, the chief exports for all of Manchuria were soya beans, bean cake, and coal. This was basically the same as the figures quoted in the preceding Table. However, the import demand of Manchuria differed from that of Dairen. For example, the three most important import items in 1927 were cotton piece goods, gunny bags and hemp, and iron and steel. Machinery and wheat flour were relatively minor imports.

Table 3.15: MAJOR EXPORTS FROM DAIREN - Value in Haikwan Taels

Item	1913	1924
Bean cake, bean meal, beans and bean oil	27.1 million taels	98.2 million taels
Cement	0.3	0.5
Cigarettes	NA	2.0
Coal	4.1	14.8
Pig iron	NA	3.0

Source: Arnold, 1926: 649

Table 3.16: MAJOR IMPORTS INTO DAIREN - Value in Haikwan Taels

Item	1913	1924
Wheat Flour	2.0 million taels	8.9 million taels
Machinery and parts	0.5	5.5

Source: Arnold, 1926: 649

In 1911 and 1930 respectively, the KLT and SMR Zone produced 77% and 76% of Manchuria's industrial output (Sun, 1969: 94 & 99). Therefore, it would seem reasonable to use national data for Manchuria to determine whether or not these industries were export oriented. The following figures are from Rawski, (1982: 75-103). In 1910, 1920 and 1930, Manchurian cement output in thousands of metric tons(MT) was, 26, 32 and 194 respectively. Net exports (1,000's of MT) for the same years were, -46, -39, and 10. By the end of the period, (1910-1930), consumption had risen and even an exportable surplus was generated by 1930. Apparent consumption (1,000's of MT) was 72, 63, and 158 respectively, for 1910, 1920 and 1930.

Production of pig iron in thousands of metric tons(MT) for 1915, 1920 and 1930 were 30, 124 and 348 respectively. Net exports for the same years (1,000's of MT) were -4, -24, and 72 . Apparent Consumption, which is equal to: (Domestic Output) - (Net Foreign Exports) - (Net Inter-Regional Exports from Manchuria to China) [Refer to Rawski,1982:75-103], rose rapidly, and by 1930, an exportable surplus was produced. Consumption for 1915, 1920 and 1930, (1,000's of MT) was 34, 148 and 236 respectively. It should also be noted that there was a large net export of coal in 1927 which equalled 33.1 million Hk taels, that is, Exports of Tls. 34.9 mn - Imports of Tls. 1.8 mn (Condliffe, 1930: 405).

The KLT's industrial sector experienced a down-turn in 1920. As a result, the level of exports and imports stagnated. In 1925, banks wrote off most of their bad debts. This financial sector reorganization encouraged the revival of trade at Dairen. By the mid 1920's, the Anshan iron works completed the reconstruction

of their ore processing plant, and an annual production level of 150,000 tons of pig iron was possible, and future planned output was to reach 200,000 tons (White, 1926:57).

Fushun's coal output was nearly 6 mn tons in 1925-26, and their planned target for 1929-30 was around 8 mn tons (White, 1926:58). In addition, special wharves for loading coal cargoes were in the planning process, and a coal screening and washing plant was installed at Fushun.

Import demand for metals was mostly generated by the South Manchuria Railway Company (i.e., for railway construction), and by the Mukden Arsenals in 1926. A breakdown of Dairen's machinery imports were given for 1926 by country - Japan £218,000, Britain, USA and Germany £202,000 (White, 1927:52). Many different types of machinery were imported, that is, agricultural, electric, power station, propelling (boiler, turbine) pumps and pumping machinery, textile and cocks and valves. In 1928, import demand for machinery was generated by the South Manchuria Railway and its subsidiary enterprises. Projects underway during the late 1920's included a new 500-ton blast furnace at Anshan and extensions in electrical plant at Anshan, Fushun, Changchun and Dairen (Dening, 1928:73).

In 1928, total machinery imports into Dairen were £653 thousand, up about 56% from its level in 1926, of which 43% came from Japan (Cunningham, 1930:74). In addition, large importations of rails, coaches, goods cars, locomotives and sundry railway materials were made, the chief sources of supply being the USA and Europe. Most of Dairen's import-export trade was with Japan in 1928.

However, a significant amount of trade was done with the British Empire. The total trade of Dairen was (imports 117 mn taels + exports 188 mn taels) = 305 mn taels, of which 13% of trade was done with the British Empire, and 58% was with Japan and Korea, (i.e., 57% with Japan and 1% with Korea). (Cunningham, 1930:81).

Manchuria

Economic growth in Manchuria from the 19th century until 1930 was based on the export of staple goods, primarily soybeans and related soybean products. About one-third of Manchuria's farmland was used for soybean production (Duus, et al, 1989:133). Family farms used traditional tools and agricultural practices. The spread of agricultural production across the region had been encouraged by successive waves of Chinese immigrants who cleared the land and established new villages. Local industry benefitted from soybean production which provided the raw materials for the manufacture of bean cakes and bean oil. Between 1930 and 1934, Manchuria's economy was destabilized by the world depression. World demand for agricultural products dropped sharply. This caused the exports of Manchuria's agriculturally based export sector to fall. Depressed export levels led to a fall in domestic output. In order to insulate the economy from the vagaries of the world market, the Japanese controlled state of Manchukuo embarked on a strategy of import substitution between 1934 and 1945. It is evident from the GDP by industrial origin table that the Great Depression in combination with a state policy of rapid industrialization had already drastically decreased the importance of the agricultural sector by 1934.

Table 3.17: GROSS DOMESTIC PRODUCT BY INDUSTRIAL ORIGIN (%)

	Manchuria	China Proper
Sector/Year	(1929)	(1934)
Agriculture	48.6%	36.2%
Industry	15.5	19.8
Service	36.0	44.0

SOURCES: Chao, 1983:33 and Duus, *et al.*, 1989:134

Conclusion

In conclusion, it is difficult to determine what the export to GDP ratio would be for the KLT and SMR Zone because of the lack of national income estimates, and it also would be difficult to determine what it would have been for Newchwang for similar reasons. It is even more difficult to derive an export to GDP ratio for Newchwang, because there is a total lack of output estimates for the city and its hinterland in the 19th century.

For the period 1917-21, the export to agricultural product ratio for the relatively undeveloped North Manchuria was about 20% (Tang, 1924:265). This would give a rough idea of the export to GDP ratio of Newchwang in the 19th century. Although the climate of South Manchuria was more favourable than the North, an extensive railway network did not exist in the 19th century. Therefore, even if a larger amount of agricultural surplus could be produced in the South, there would

be no way to transport it to market. The trade to GDP ratio for all of Manchuria was 39% in 1934, and the export to GDP ratio was 17% (Chao, 1983: 15 & 23)³. This would indicate that by the 1930's, trade played an important role in the economy.

However, it is uncertain how much larger the export to GDP ratio was in earlier years. By the early 1930's, most of the growth was being generated by the industrial sector which required large imports, but was not yet producing substantial amounts of exports. Until 1930, agriculture had been the motor of growth for the economy. Better access to transportation routes via rail and sea in addition to productivity increases should have diverted labour to the production of export crops. However, what is certain is that even if the exportable surplus did not rise above one-fifth of production, the expansion of the population and the land under cultivation would have produced annual increases in export volume during the period 1860-1930.

During the export boom in Newchwang, there was an increase in bean product processing, but there did not seem as if a modern industrial sector was developing. On the other hand, Dairen supplanted Newchwang as Manchuria's principal port, and it also attracted substantial amounts of investment to modern industries. By 1930, the KLT and SMR Zone was even able to export surplus industrial production, i.e., coal, cement and pig iron. One possible reason for this divergent development path was political and economic situations of the countries concerned were different. From 1860-1930, China's political structure was in a

³ Trade to GDP Ratio = ([exports + imports]/GDP)

state of collapse, while Japan had a strong state apparatus. Additionally, the economic prosperity of Japan allowed it to export capital to Manchuria. On the other hand, the Chinese government was always short of funds, and the merchant class was constrained by government regulations and was subject to many types of taxation, that is, if a military commander needed more money, he could either levy new taxes or he could expropriate property from the gentry or merchant classes.

Part 3

NORTH MANCHURIA

Introduction

Manchuria was located in northeastern China, and was comprised of three provinces, namely, Heilungkiang, Kirin, and Liaoning. This region was endowed with rich agricultural land and abundant natural resources. Additionally, by the last years of the 19th century, it became strategically important to Russia. In 1898, the Chinese Empire leased the Liaotung Peninsula which was located in south Manchuria to Russia. The Russians established Port Arthur as a naval base and the southern terminus of the South Manchurian Railway(SMR).

On February 9, 1904, Port Arthur was attacked by Japanese forces. This was the start of the Russo-Japanese war which occurred between 1904 and 1905. The Japanese were victorious, and thereby gained control over the newly built naval base at Port Arthur and the Liaotung Peninsula. Additionally, Japan took control over the SMR which connected Harbin with Dairen and Port Arthur.

Russia was the first significant foreign investor in Manchuria. In order to strengthen Russia's military situation in northeastern Asia, Port Arthur was built and the Chinese Eastern(CER) and South Manchurian(SMR) Railways were built to connect Russia with the ports of South Manchuria. By and large, the Russian investments were modern sector in nature, and were concentrated in the transportation (railroads and shipping), commerce, manufacturing and mining

sectors. Basically, investment was concentrated in non-farm ventures. However, it should be noted that the Russian manufacturing firms were reliant on the agricultural sector for their inputs. These food processing industries included, beancake, bean oil, flour, sugar, tobacco, and alcohol. Over-all, there were very few Russian farmers in Manchuria. The bulk of the farmers and manual labourers were Chinese. The Russian population was concentrated in Harbin and the CER zone, many of which commanded much higher salaries than unskilled Chinese workers.

The CER represented the largest Russian investment in Manchuria. Additionally, before railways had been built, there was very little, if any modern industry in the region. The CER and the lands adjacent to it acted as a magnet for Russian modern sector investment. Permission to build the CER was granted to Russia by the Chinese Empire in 1896. The railroad's construction costs were financed by French capital, and Harbin was built as the CER's administrative centre at the turn of the century.

The Russian Empire initially viewed Manchuria as a land which could be colonized. However, when Russia lost the Russo-Japanese war (1904-1905), its control over South Manchuria and the South Manchurian Railroad was severed. The Russian Revolution in 1917, and the subsequent civil war (1918-1921), further weakened Russia's control over North Manchuria. However, at the outset, the CER was much more important than simply being an ordinary railroad company. The CER's administration established agricultural experiment stations, mines, industrial works, shipping, and schools(O'Neill, 1987:55).

In 1929, the Chinese attempted to seize control of the CER, but were unsuccessful. In 1932, Japan occupied Manchuria and established the puppet state of Manchukuo, and in 1933, the USSR sold the CER for about one eighth of its investment value to Japanese interests (O'Neill, 1987:55). The railroad reverted to Chinese control after the Sino-Japanese War (1937-1945).

Construction at Harbin started around 1900. Before World War II, Harbin was the largest European settlement in Asia, with a population of 100,000 Russians, and a total population of 150,000⁴. The Harbin consular district comprised the province of Heilungkiang and all of the province of Kirin lying north of a line drawn between the cities of Changchun and Kirin. Its area, inclusive of Barga, Mongolia was 390 thousand square miles, exclusive of Barga it was about 220 thousand square miles. The economic bureau of the CER estimated the population to be around 11 to 12 million by the early 1920's (Arnold, 1926:669).

Other than the Russian city of Harbin, Fuchiatien was the only other major city in the region. It had a population of 200 thousand, and served as the most important Chinese commercial centre for the purchasing of wheat, beans, corn, barley, and hemp products (Arnold, 1926:669-670). These commodities were brought to the city by carts and by river boats. Fuchiatien lay adjacent to Harbin, and was connected to it by a paved road. 'Greater' Harbin, consisted of Old Harbin, Pristan, New Town, and Fuchiatien. For the most part, the latter three settlements were growing, while Old Harbin was in decline (Wolff, 1999:92).

⁴O'Neill, 1987:55 and Arnold, 1926:669).

Russian Manchuria's economy was reliant on the agricultural sector to provide the raw materials for many of its industries. The most important agricultural products were: - beans, wheat, Italian millet, kaoliang, corn, and barley. The principle unprocessed agricultural exports consisted of beans and wheat. In conjunction with farming, stock breeding also provided an exportable surplus. In 1923, nearly 13 hundred horses were exported (Arnold, 1926:670). Additionally, export growth was also seen in the meat processing industries. The timber and lumber industries cut and processed Korean pine, spruce, fir, elm, oak, white birch, Manchurian walnut, velvet tree, ash, maple, and aspen trees.

The mining industry was much less important than agriculture. Although coal output was increasing, it did not increase rapidly enough to keep pace with demand. The production shortfall was compensated for by increasing coal imports from South Manchuria. Coal deposits were found at Chalainor, on the Han River near Mergen; Puhai, on the southern line of the CER; at Machiaohe; and near Kiamusze Station, on the southern line of the CER (Arnold, 1926:670-671). Chalainor coal was lignite, while the other deposits contained high quality coals. By the early 1920's, the total annual output of coal was 300,000 tons (Arnold, 1926:671). Most of the domestically produced coal was consumed by the CER. The private market relied on coal imports from South Manchuria and Russia.. Further development of the coal mining industry in Russian controlled North Manchuria was hampered by a lack of available venture capital (Arnold, 1926:671).

The Chalainor mines represented the only sizable deposits to be exploited by the early 1920's. From 1909 to 1922, these mines were operated as a concession from the CER, but in 1922 the railway took over direct control of the mines. Up to 1914, annual output fluctuated between 96 and 160 thousand tons, depending upon demand (Arnold, 1926:671). In 1915, output began to increase, and exceeded 290,000 tons in 1920 (Arnold, 1926:671). However, by 1923, output had fallen to 180 thousand tons (Arnold, 1926:671). Other important commodities produced by the mining sector included gold and soda. Little or no attention was paid to the exploitation of other metals and minerals.

The basis of Russia's influence in North Manchuria was its ownership of the CER and its notable investments in modern industry. There were also modern firms which were either Chinese owned, or were a mix of Russo-Chinese and Russo-Japanese investments. The Consular District of Harbin attracted Russian investment to various agricultural products processing industries, most notably flour milling, bean oil manufacturing, and alcohol distilling.

The most important manufacturing industry was flour milling. Capital investments stood at approximately \$US 10 million by the early 1920's (Arnold, 1926:671). There were about 2,500 workers employed by these flour mills at this time (Arnold, 1926:671). The production of flour amounted to 150,000 tons per annum (Arnold, 1926:671). During the early 1920's, exports of flour represented a significant portion of total flour output. Exports of flour in 1921, 1922, and 1923

were 87, 43, and 56 thousand tons respectively⁵. Exports of flour as a percentage of estimated total flour output was 58%, 31%, and 37% respectively for the years 1921, 1922, and 1923. It should be noted that by the 1920's, the majority of the flour mills were owned by Chinese, not Russians. This demonstrated that the previous lack of modern sector capitalist business activity in Manchuria had more to do with inadequate methods of transportation and the inaccessibility of modern technologies, and was not due to a shortage of Chinese venture capital.

Table 3.18: STEAM POWERED FLOUR MILLS IN THE CER ZONE BY OWNERSHIP, CIRCA 1923

Chinese	26
Mixed Ownership	2
Russian	8
Japanese	2
Total	38

Source: Econ.Bureau(1924):233

The bean oil and cake processing industries represented the second most important manufacturing sector in the district. There were 60 modern steam powered plants and about 1,000 small pre-modern mills operating throughout the region (Arnold, 1926: 671). The total combined output of oil and cake amounted

⁵ Either see Arnold(1926) *China - A Commercial and Industrial Handbook*, or Economic Bureau (1924) *North Manchuria and The Chinese Eastern Railway*. Both of these references have sections devoted to the flour industry.

to 300 thousand tons (Arnold,1926:671). The industry's success was mainly export driven. The combined exports of oil and cake were 216 and 305 thousand tons, equivalent to about 72% and 102% of total output respectively for 1922 and 1923 (Arnold,1926:671).

The third most important manufacturing industry was the alcohol distilling sector. There were a few hundred hanshin (a Chinese alcoholic beverage) distilleries which consumed over 100,000 tons of grain per year⁶. In addition to these pre-modern operations, there were eight modern spirit distilleries in business by the early 1920's⁷. The capital investment in modern distilleries was significant, amounting to \$US 2 ½ to \$US 3.0 million, that is, 25% to 30% of the level of capital investment in modern flour mills⁸. The total productive capacity of the modern sector distilleries was over 2.6 million gallons per annum⁹. However, the output to capacity ratio was rather low, and was estimated to have been about 31%¹⁰.

Essentially all of the modern sector had been created by Russians as a direct result of the construction of the CER. In summary, these modern sector Russian owned firms survived many economic crises and were plagued by a lack of

⁶Arnold,1926:671

⁷Arnold,1926:671

⁸Arnold,1926:671

⁹Arnold, 1926:672

¹⁰Arnold,1926:672

cooperation in the acquisition of raw materials, the marketing of their products and from insufficient operating capital¹¹.

Most of the skilled workers in North Manchuria were Russian, while most of the unskilled labourers were Chinese. Harbin's manufacturing enterprises had little difficulty filling job vacancies, but those located along the CER and in the interior were usually compelled to contract for labour in the south. The wage gap between skilled and unskilled workers could be quite large. An unskilled worker could expect to earn between \$US 120 and \$US 180 per annum, while a miller, usually Russian earned between \$US 744 and \$US 1,800¹². A machinist's annual salary was similar, ranging from \$US 360 to \$US 1,800¹³.

There was a shortage of skilled workers in the flour milling industry. This had prompted firms to continue to pay wages to these employees even during periods when the mills were closed. Other than the CER, employers in North Manchuria provided no health or accident insurance coverage, nor did they provide boarding and lodging. Despite these conditions, strikes were rare.

The primary means of transportation in North Manchuria was the CER. It had a mileage of approximately 1,364 miles during the early 1920's, that is, the main line was 1,078 miles long and spurs to timber concessions added an additional 286 miles (Arnold,1926:673). The CER not only linked North Manchuria with the ports

¹¹Arnold,1926:672

¹²Arnold,1926:672

¹³Arnold,1926:672

of the Pacific Ocean, it also acted as a conduit for trade via Russia's Siberian railways with the ports of northern Europe's Baltic and North Seas.

The inflow of Russian immigrants and the upsurge in North Manchuria's foreign trade was a direct result of the establishment of the CER. This railroad successfully linked agricultural, cattle raising, timber, mining and manufacturing centres together into one national market. Essentially all of the region's imports and exports were carried by the CER. However, some traded goods were carried by cart and river-boat. The CER was responsible for creating and managing cities and towns which it built within the railway zone. Additionally, the CER was also responsible for various civic services which included schools, hospitals, and until the early 1920's, churches.

Modern industrial development was stimulated by the CER. The railroad was the primary consumer of North Manchurian mined coal; it established sawmills, a plant for the dry distillation of wood, a parquet factory and a plant for the hydraulic press packing of wool and skins¹⁴. The CER also represented a very significant employer within the modern sector, with 16,000 people on its payroll¹⁵. Other than the CER, there were no other railways of importance. The only roads in use were dirt, rather than paved, and were of poor quality. These roads were little more than well-worn trails which were occasionally connected by bridges. During the winter months, about 1,000 miles of such roads were in service. These roads

¹⁴Arnold, 1926:673

¹⁵Arnold, 1926:673

could be linked together by building winter roads across swamps and streams during winter for use by automobiles.

Further evidence that modern communications were becoming even more important was provided by the installation of a telephone system at Harbin in 1921 which was valued at \$US 600,000 and produced gross annual revenues of about \$US 200,000¹⁶. About 2,100 subscribers were served in Harbin, equivalent to nearly 14 subscribers per 1,000 of population(see table). This ratio of telephones to population ranked it above both Dairen and Tientsin in terms of the prevalence of phone service. The CER served the purpose of carrying passengers regionally, but within Harbin, about 150 passenger buses provided service to the city's commuters¹⁷.

It was evident that although Harbin's telephone system compared favourably with two of the other leading commercial and industrial centres of Northern China, it was not very outstanding in comparison to Japan and the USA. Their national telephone to population ratio's were either similar to urban China's (*ie.* Japan) or were much higher (*ie.* USA). However, the urban telephone networks of Northern China were far more advanced than what existed in the rural areas of China where telephones were nearly non-existent. In Harbin, although telephone service was a relative luxury, the telephone system had a capacity utilization rate of 70% in

¹⁶Arnold, 1926:674

¹⁷Arnold, 1926:677

1924¹⁸. Each subscriber paid a fee of \$US 100 to \$US 125 per year for phone service¹⁹.

Table 3.19: SELECTED TELEPHONE STATISTICS Circa Mid 1920's				
City	Region	Population	Telephones	Units Per 1,000 of Population
Harbin	North Manchuria	150,000	2,087*	13.9
Dairen	South Manchuria	187,000	976*	5.2
Tientsin	North China	839,000	7,410*	8.8
China Proper		435,000,000	40,050	0.1
Japan Proper		59,737,000	554,433	9.3
United States of America		118,628,000	16,936,000	142.8

* Subscribers - It was not known how many telephones there were per subscriber.

Sources: Arnold, 1926: 522,533,640,644,669, and 674.
Klein, 1927: 599,631-632.

Although this telephone system was owned by the CER, it was installed by an American company. In 1922, the CER upgraded its inter-urban phone network,

¹⁸Arnold, 1926:674

¹⁹Arnold, 1926:674

and further improvements were scheduled for the mid 1920's which would connect Harbin with Vladivostok by telephone²⁰.

Electric light plants were primarily located in Harbin and its Chinese sister city, Fuchiatien. In addition to these plants were ones operated by the CER at settlements in the railway zone. Small plants were also in use in various other Chinese cities in North Manchuria.

Within the Harbin/Fuchiatien metro area, the Chinese operated Yueh Ping Electric Company was the largest producer of electricity for lighting. This plant was built by an American company, and was able to provide excellent service to its users²¹. The second largest producer was the Japanese owned, North Manchurian Electric Enterprise Co. which provided very poor service to its subscribers²². The third largest producer was the Russian owned, United Manchurian Flour Mills. Nearly half of the electric power capacity was controlled by Chinese, about 1/3 by Russians, and over 1/5 by Japanese investors.

²⁰Arnold, 1926: 675

²¹Arnold, 1926:677

²²Arnold, 1926:676

**Table 3.20: PUBLIC UTILITIES - ELECTRIC LIGHT PLANTS -
Circa Mid-1920's**

Company	Nationality of Ownership	Location	Capacity KW
North Manchurian Electric Enterprise Co.	Japanese	Harbin	600
I.I. Churin and Co.	Russian	Newtown-Harbin	130
Chinese Eastern Railway	Russian	Harbin	316
United Manchurian Flour Mills	Russian	Pristan-Harbin	450
Yueh Ping Electric Co.	Chinese	Fuchiatien-Harbin	1,200

Source: Arnold, 1926:676-677.

Table 3.21: ELECTRIC POWER CAPACITY BY NATIONALITY OF OWNERSHIP

Nationality	Capacity in KW	Percent of Total
Chinese	1,200	45
Russian	896	33
Japanese	600	22
TOTAL	2,696	100

Source: See above table.

Commerce

The leading exports of the Harbin district consisted of beans and bean products; wheat and flour; and skins and furs. Between 1913 and 1923, substantial export growth occurred in tandem with impressive industrial growth. The growth of bean cake exports was due to increased demand from Japan. On the other hand, bean oil exports increased to satisfy European demand. The unstable economic and

political environment which prevailed in Siberia (Russia) was responsible for the increased level of exports of Siberian furs to China, which in turn were re-exported to foreign markets. The preceding observations were made by Arnold (1926:677). Arnold's observations regarding the destinations of the bean cake and oil exports were difficult to substantiate. The data collected by the CER's Economic Bureau regarding point of export, that is, via Russia or South Manchuria did not always agree with Arnold's observations (Econ.Bureau,1924:257). However, it should be noted that the trend of rising exports was clear throughout this period.

For the most part, at the turn of the century, the flour trade was dominated by Russian millers. In 1909, Russian owned steam mills ground 3.6 million bushels of wheat, equal to three-quarters of the wheat ground by steam power (Grigg,1914:16). However, it was likely that by the mid-1920's, output by modern Chinese owned mills had increased substantially due to their acquisition of formerly Russian owned flour producing establishments, and by the creation of new Chinese flour milling companies (Remer,1968:603).

During the decade, 1913 to 1923, most of the export expansion of the flour industry was due to increased demand in South Manchuria (Econ.Bureau,1924:242). After World War I, Germany showed increased interest in the North Manchurian market. German products for use in industry and for direct consumption offered stiff competition to other foreign imports (Econ.Bureau,1924:267). Domestic industries which were newly created, but not yet able to produce substantial exports included, glass factories, rice cleaning plants, sewing of linen and the manufacture of linen goods, rope & cord making,

camel's hair belting, veneer manufacture, celluloid, dry distillation of wood, and match making. All of these industries were initiated by Russian entrepreneurs. The lack of success in fully developing these new industries was largely due to the scarcity of Russian capital and by the lack of knowledge of Chinese workers (Econ.Bureau,1924:268).

With the onset of World War I and the ensuing civil war in Russia, cloth exports to North Manchuria fell off considerably. This prompted Chinese entrepreneurs to construct Harbin's first cloth factory in 1922. The factory was valued at \$US 500,000 and was capable of producing 300,000 yards of piece goods per annum by 1923/24 (Econ. Bureau,1924:266). At this point, plans had already been made to double output to 600,000 yards in the near future.

The leading exports via the CER by tonnage in 1923 were: cereals, timber & lumber, vegetable oils, meat products, and iron, steel, tin, & cast iron (Econ.Bureau,1924:285). The main export destinations were as follows: - Japan, South Manchuria, the neighbouring Chinese districts, UK, Denmark, Scandinavia, USA, Netherlands-India, and Russia (Econ.Bureau,1924,286). However, it should be noted that exports to Russia were of little importance by the 1920's.

Imports

By the 1920's, very few imports came from Russia. Changchun functioned as the principal port of entry, but import statistics were not available because the Chinese Maritime Customs did not keep records regarding this trade (Arnold,1926:667). North Manchuria's main imports comprised the following: -

petroleum and petroleum products; Fushun coal; piece goods; machinery; railway supplies; and perfumery and drugs. Imports from the United States included such items as: petroleum, piece goods, machinery, tools, canned goods, and motor cars²³.

Imports via the CER showed a marked increase between 1913 and 1923. In terms of tonnage transported, the top import items in 1923 were: - coal, salt, piece goods, mineral oils, and fruits and berries (Econ.Bureau,1924:289-290). North Manchuria's major import suppliers consisted of the following countries and regions: South Manchuria, United States, Japan, Germany, UK, France, Netherlands-India and Russia (Econ.Bureau,1924:291-294).

Table 3.22: EXPORTS OF KEY COMMODITIES
Average for 1911 to 1913

Commodity	Quantity (piculs)	Value (HK Taels)	Percent of Total
Beans	5,287,860	10,728,463	69
Bean Cake	239,577	280,147	2
Bean Oil	41,788	348,424	2
Wheat	1,695,980	4,073,711	26
Skins and Furs	590,759	105,363	1
TOTAL	-----	15,536,108	100

Source: Arnold. 1926: 677.

²³Arnold,1926:678

A roughly comparable flour export figure is shown in the next table. If added to the above total, the exports of key commodities would have amounted to approximately HKT 17.2 million, of which flour exports would have represented 9.9%.

Table 3.23: NORTH MANCHURIAN FLOUR EXPORTS
Average for 1909 to 1914

Commodity	Quantity (tons)	Quantity (piculs)	Price HKT/picul in 1912	Value HKT
Flour*	19,903	334,454	5.12	1,712,404

Notes: Original flour export statistics given in tons.

1 ton = 2,240 lbs; 1 picul = 133.3 lbs

*Flour export figure was from - Economic Bureau, 1924:243

Flour export price for 1912 in Hsiao, 1974:83.

Unless otherwise stated the export and import figures for N. Manchuria are from Arnold, 1926.

Table 3.24: EXPORTS
Average for 1921 to 1923

Commodity	Quantity in piculs	Value in HK Taels	Percent of Total
Beans	5,239,028	13,164,115	42
Bean Cake	2,730,486	5,763,577	18
Bean Oil	211,112	1,990,091	6
Wheat	1,748,646	4,084,379	13
Wheat Flour	1,039,000	5,564,000	18
Skins and Furs	1,891,599	937,629	3
TOTAL	-----	31,503,791	100

Source: Arnold, 1926: 671 & 677.

**Table 3.25: COMPUTATION OF WHEAT FLOUR EXPORTS
1921 TO 1923**

Year	Quantity In Tons	Quantity in 1,000's of Piculs	Price HKT/Picul	Value 1,000's of HK Taels
1921	86,532	1,454	4.58	6,659
1922	42,661	717	6.16	4,417
1923	56,332	947	5.93	5,616
AVG.	61,842	1,039	NA	5,564

Sources For Export Tables: Arnold,1926:671 and 677; and Hsiao,1974:83.

Commercial Trends

Between 1900 and 1909, Harbin had grown into the most important regional trading centre in North Manchuria. Its volume of trade in 1909 totalled 34.5 million rubles which was far in excess of other regional trading centres (Wolff,1999:18). For comparative purposes, one may note that the total volume of trade at Mukden only amounted to 13 million rubles²⁴. By 1913, Harbin's total value of trade had increased 68 percent in aggregate since 1909, totalling 58 million rubles²⁵. In 1895 two ships had docked at Harbin, by 1911, this total had grown to 5,440²⁶. Goods were imported and exported from forty foreign and one hundred domestic destinations²⁷. The commercial turn-over measured in American dollars showed a similar upward trend.

²⁴Wolff,1999:18

²⁵Wolff,1999:18

²⁶Wolff,1999:18

²⁷Wolff,1999:18

**Table 3.26: TOTAL TRADE OF HARBIN
In Millions of \$US**

Year	Value of Trade
1908	14.0
1910	17.2
1912	26.7
1914	27.0

Source: Economic Bureau, 1924:272

The Russian tariff policy which was supposed to discourage the entry of foreign, *i.e.* non-Russian, goods into the North Manchurian market never succeeded. Despite tariff barriers, Russian products were unable to gain a lasting foot-hold. Russian exporters were not able to dominate the Manchurian market for two main reasons. Firstly, they did not do sufficient market research to determine what the tastes of the average Chinese consumer were, and secondly, their products were not price competitive, *i.e.*, Japanese products lacked quality but were very cheap, while German products tended to be of high quality but still sold at a reasonable price when compared to American or British goods. Additionally, the depreciation of the Russian Ruble, and the weakness of the Russian economy contributed to its loss of influence in the North Manchurian economy.

The total value of foreign trade peaked at Harbin in 1928, and totalled 104 million HK Taels (HKT 76 million in exports and HKT 28 million in imports) [Hsiao, 1974:173]. Between 1908 and 1932, most of the trade consisted of exports, while imports were of secondary importance. In 1908, Harbin's imports

(HKT 7.3 million) and exports (HKT 9.5 million) totalled HKT 16.8 million (Hsiao, 1974:172). Trade expansion followed an upward, but unsteady trend up to 1928. Between 1928 and 1932, the level of trade collapsed. This could easily be explained by the onset of the World Depression which had the effect of reducing the global demand for North Manchuria's processed and unprocessed agricultural exports.

**Table 3.27: GDP ESTIMATE FOR 1922
EXCLUDING THE FOLLOWING SECTORS: TRADE, AND HANDICRAFT INDUSTRIES
\$US MILLIONS**

Sector	Output	Exports
Agriculture	264.0	49.0
Forestry	30.0	1.0
Cattle Breeding	18.5	0.8
Modern Manufacturing Industries ²⁸	4.5	1.5
Mining	3.0	0.0
GDP Estimate for 1922	320.0	52.3

Source: Economic Bureau, 1924:17

There was a possibility that the value of manufacturing was under-estimated if such industries as bean cake and oil, and flour milling were included as agricultural, rather than industrial output. Nonetheless, the preceding table did indicate that the export to GDP ratio was approximately 16% in 1922, which was

²⁸Due to the level of Russian business investments, this figure seemed rather low. See: Remer, 1968: 587, 603, and 606. Additionally, industrial output statistics presented by Sun seemed to indicate that aggregate industrial output in 1922 should have been much higher (Sun, 1969:99).

quite high when compared to China Proper²⁹. This showed that North Manchuria was much more reliant on changes in world markets, than was China Proper. Until the World Depression, export led growth benefited the economy which had become a competitive exporter of processed and unprocessed agricultural commodities. Although manufactured product exports did not dominate trade, there had been rapid growth between 1913 and 1923 of both output and exports. North Manchuria's manufactured goods exports were dependent on export markets and would have had much poorer growth prospects if Manchuria had continued to be isolated from foreign markets. This fact provided a strong reason to believe that foreign investment (largely Russian) and trade with Japan, South Manchuria, Europe and the United States played a decisive role in the development of the North Manchurian economy.

²⁹The ratio of manufactured goods exports to manufacturing output was 33% in North Manchuria in 1922.

Part 4

INVESTMENT, INDUSTRY, AND TRADE DURING THE MANCHUKUO PERIOD, 1932 TO 1945

Introduction

In 1932, the armed forces of the Japanese Empire occupied Manchuria. The Japanese created the state of Manchukuo from Manchuria's four provinces (Fengt'ien, Kirin, Heilungkiang, and Jehol) which was given a nominally independent government headed by the former Qing Emperor, P'u Yi. In theory, formal relations were to be carried out according to international laws and treaties. However, it should be noted that Manchukuo's government had little power, and had to follow the dictates of Japan's rulers. Basically, Japanese occupied Manchuria existed as a colonial possession and was treated in a similar manner as Japan's other colonies, that is, Taiwan and Korea. Before 1932, the only part of Manchurian which was under Japanese administration was the Kwantung Leased Territory(KLT) and the South Manchuria Railway Zone(SMRZ). As a result of considerable Japanese investment in these two regions, industrial activity was

clustered in the KLT (64% of Manchurian Gross Industrial Output in 1934³⁰), and most of the activity in mining and modern transport occurred in the SMRZ ³¹.

The Japanese occupation marked a turning point in Manchuria's history. No longer was it an isolated hinterland which was controlled by regional Chinese Warlords who only had a tenuous relationship with the Republic of China, it was now entering a new relationship with a technologically advanced and expansionist Japan. Japanese planners sought to fully integrate the colonial economies with that of Japan. Initially, Japan tended to view its colonies the same way that Europeans viewed theirs, ie, colonies were to export raw materials and they were to import manufactured products to the mother country. However, this is not meant to negate the fact that investment did flow into the colonies to develop agriculture and agri-food industries, to build infrastructure, ie, railroads, and to educate the population. Additionally, an industrial expansion did occur in Manchuria (including the KLT and the SMRZ) between 1900 and 1932. The main point to be made is that it was not an expressed goal of Japanese planners to develop Manchurian industry before it became a colony in 1932.

Between 1932 and 1942 - 43, the dynamic growth oriented parts of the economy shifted from agriculture to industry and the service sectors. As these new sectors

³⁰Chao, Kang. The Economic Development of Manchuria: The Rise Of A Frontier Economy. Ann Arbor: University of Michigan, 1982:pp.77&78. The year 1934 was chosen for comparison instead of 1931 because 1934 was the first year for which statistics were available for all of Manchuria, including the KLT. For the years preceding 1934, the KLT statistics were used to make estimates for all of Manchuria(pp.73&74).

³¹Ibid., p.36

After 1937, the administration of the SMRZ was taken over by the Manchurian government and separate statistics for the zone and the rest of Manchuria were not available.

gained prominence, export and import shares for specific products (selected agricultural and industrial products or product groups) changed significantly to reflect Manchuria's changing economic needs. Import shares of producer goods grew swiftly and export shares of industrial products started to become significant. During the pre-colonial period, industrial exports were dominated by agri-food products, mainly bean oil and cake (bean cake was used as fertilizer in Japan until the 1930's when its chemical fertilizer industry was developed³²).

Although the importance of the farm sector declined, it was still important to Manchukuo's economy. Even before 1930, farms had begun to mechanize. During the 1930's and 1940's chemical fertilizer production and consumption increased significantly.

The Modernization of Manchuria's Farm Sector

China had two chemical fertilizer plants, one at Dairen (Manchukuo) which was built in 1935 by the Japanese, and another located near Nanking (Nationalist China) which was constructed in 1934 by technicians trained in the United States (Liu, 1970:7). Both plants utilized modern machinery.

The Dairen plant was constructed using the modern technology then existing in Japan. Fertilizer making technology was purchased from Germany, ie. the German Wade method which was an advanced nitrogen fixation process was used (Liu, 1970:8). The Chinese owned, Yung-li-ning plant located near Nanking used

³²Sun, Kungtu C. The Economic Development of Manchuria in the First Half of the Twentieth Century. Cambridge, Mass.: Harvard Univ. Press, 1969: p.17.

imported American machinery and employed American technicians (Liu, 1970:10).

Fertilizer production was not given priority in Manchukuo or Nationalist China during the 1930's³³. However, it did appear that the Japanese had serious plans to increase Manchukuo's output during the 1940's. It is worth noting that although chemical fertilizer consumption rose rapidly in Manchuria, a considerable percentage of its fertilizer output was exported to Japan, Korea, Taiwan, and North China (Nakagane, 1982:429-430). Consumption from domestic output is shown in the following table. Actual consumption was probably not as low as these figures imply because fertilizer exports were offset by imports³⁴.

**Table 3.28: CONSUMPTION OF AMMONIUM SULPHATE IN MANCHURIA
FROM DOMESTIC PRODUCTION**

Year	1934	1935	1936	1937	1938	1939	1940
Consumption (metric tons)	1,020	3,146	10,662	18,878	21,138	34,200	70,000

SOURCE: Nakagane, 1982: 430.

China Proper's imports of ammonium sulphate increased from 49 thousand tons in 1934 to nearly 161 thousand tons in 1937, equivalent to a 3.3-fold increase over

³³ Nationalist China before the Sino-Japanese War, and Japanese Occupied China (1937-1945).

³⁴ Foreign Commerce Yearbook 1938, 1968: 308 - This was the general trend that prevailed between 1934 and 1937. It was assumed that a significant portion of the import category, 'chemicals, fertilizers' consisted of fertilizers. If that was not the case, then Manchuria could have been a net exporter of fertilizer, i.e., ammonium sulphate. However, even if this was the case, Manchurian consumption of chemical fertilizers was rising rapidly. Further study revealed that Manchuria was a net exporter of ammonium sulphate. See the table entitled, "Chemical Fertilizer Production and Trade of Manchuria".

just three years³⁵. The value of fertilizer imports increased 2.7-fold for China Proper, 1.7-fold for Manchuria, and 2.2-fold for all of China over this three year period, 1934-37.

Table 3.29: Fertilizer Imports
Value in thousands of American dollars

YEAR	China Proper Ammonium Sulphate	Manchuria Fertilizer*	TOTAL
1934	2,111	2,209	4,320
1937	5,746	3,842	9,588

Source:

Foreign Commerce Yearbook 1938, 1968: 304 & 308.

* The import category was "chemicals, fertilizers".

The amount of farm machinery imported into China and Manchuria rose rapidly

during the 1920's. During the 1930's Manchuria's demand for imported machinery rose steeply. However, it should be noted that in absolute terms, the quantity of modern farm machines used in China and Manchuria was still small.

Manchuria's mechanized farms which used farm machines such as: - tractors, seeders, reapers, threshers, and plows were mostly operated by Russian emigre farmers, and Japanese and Korean colonists (Nakagane, 1982: 428). For the most part, mechanization in Chinese farms was restricted to the adoption of the treadie thresher (Nakagane, 1982: 428).

³⁵ Foreign Commerce Yearbook 1938, 1968: 304.

Table 3.30: CHEMICAL FERTILIZER PRODUCTION AND TRADE OF MANCHURIA
(1,000 metric tons)

Estimates from various sources:

IY=International Yearbook of Agricultural Statistics(1938)

Nakagane=Nakagane(1982)

Liu=Liu(1970)

FCY=Foreign Commerce Yearbooks (USA) for 1938 and 1939.

Year	OUTPUT IY	OUTPUT Nakagane*	OUTPUT IY & Nakagane	NET IMPORTS IY	IMPORTS FCY	IMPORTS Nakagane	IMPORTS IY & Nakagane
1931	6.0	NA	6.0	NA	NA	NA	NA
1932	30.0	NA	30.0	5.0	NA	NA	5.0
1933	30.0	NA	30.0	-33.6	NA	NA	-33.6
1934	30.0	NA	57.8	57.8	-28.1	-28.3	-56.8
1935	200.0	NA	172.8	172.8	-98.9	-97.8	-169.6
1936	250.0	NA	181.7	181.7	-176.4	-174.3	-171.1
1937	NA	NA	214.4	214.4	-154.6	-153.7	-195.5
1938	NA	193.2	193.2	NA	-209.0	-172.1	-172.1
1939	NA	154.8	154.8	NA	-126.0	-120.6	-120.6
1940	NA	221.4	221.4	NA	NA	-151.4	-151.4
1941	NA	237.7	237.7	NA	NA	NA	NA
1942	NA	449.6	449.6	NA	NA	NA	NA

Notes for Table 3.30

*Liu's data used to estimate output in 1941 and 1942.

It was reasonable to expect that the 1941 level of output could have been achieved. However, if the planned production capacity target for 1942 was not achieved, then output in 1942 would likely have been similar to the level of output prevailing in 1941.

FCY: It was implied that Manchurian trade statistics were used, but a specific source was not identified. The IY appears to have used the same source as the FCY.

Nakagane: The original source was Manchurian Agriculture Handbook (1939) in Japanese. Liu: Original Japanese language sources included: -
Kogyo Kagakukai(1937) Manchuria's Resources and the Chemical Industry
and Manshi Kai (1964) Forty Years of Manchurian Development.

Table 3.31: Ammonium Sulphate

Year	OUTPUT IY & Nakagane	(1000 metric tons)	
		IMPORTS IY & Nakagane	CONSUMPTION IY & Nakagane
1931	6.0	NA	NA
1932	30.0	5.0	35.0
1933	30.0	-33.6	-3.6
1934	57.8	-56.8	1.0
1935	172.8	-169.6	3.2
1936	181.7	-171.1	10.6
1937	214.4	-195.5	18.9
1938	193.2	-172.1	21.1
1939	154.8	-120.6	34.2
1940	221.4	-151.4	70.0
1941	237.7	NA	NA
1942	449.6	NA	NA

Table 3.32: FARM MACHINERY IMPORTS
(1,000's of Hk Tls.)

YEAR	CHINA	MANCHURIA (Dairen Only)
1923	304	.....
1924	280	.....
1925	161	.....
1926	512	185 ³⁶
1927	666	283
1928	743	336

Source: Dept. of Overseas Trade (Britain), 1980: see machinery imports tables or trade appendices. - This is a compilation of economic reports for the years 1926, 1927, 1928, and 1930.

Table 3.33: FARM MACHINERY IMPORT INDEX FOR MANCHURIA

YEAR	1933	1938
INDEX	100	3,915

Source: Nakagane, 1982:428.

Industrial Output And Trade Trends, 1932 To 1945

Although Manchuria was not specifically targeted for industrial development by the Qing government, or by the warlords who ruled the region between 1911 and

³⁶ It was uncertain if this figure was for 1925 or 1926. However, since some trade statistics had been released for 1926, it was likely that machinery imports were for this year. Import values in taels were calculated for 1926 and 1928 by using the £ to tael exchange rates given in the text of the economic reports.

1931, it seemed to perform relatively well when compared to the rest of China.

After the Japanese invasion and occupation that occurred in 1932, the development of modern industry under Japanese guidance was accelerated.

The phase of staple-led export growth ended in 1930. Between 1930 and 1934, the region's economy experienced the 'staple trap' as global demand for agricultural products fell sharply and output fell. A policy of state-led industrialization was followed between 1934 and 1945. This had the effect of changing the composition of trade. The ratio of bean and bean products exports fell in proportion to the total export trade. In 1932, the ratio stood at 59.7%, but had fallen to only 31.2% by 1941 (Cheng,1956:201).

The proportion of exports which comprised ores, metals, and metallic products rose steadily over this period, from 2.7% in 1932 to 17.4% in 1941 (Cheng,1956:201). In contrast, coal exports followed a declining trend. The estimated output of coal in 1944 was three times that of 1934, with 1944 exports little more than half of 1934 exports, which represented a tremendous increase in domestic consumption (Wang and Read,1946:179)³⁷.

The one notable change in the composition of imports was the rise in the importance of producers' goods, especially, machinery, tools, vehicles and vessels. The ratio of machinery, tools, vehicles and vessels to total imports was only 3.4% in 1932, but had risen to 21.7% by 1941 (Cheng,1956:202). Manchuria's imports

³⁷Wang, Kung-Ping and Thomas T. Read, (1946). "Controlling Factors in China's Coal Development", *Pacific Affairs*. V.19: pp.165-181.

grew at a faster rate than its exports. In 1932, its net exports were \$US 55 million, but by 1941, its net imports totalled \$US 184 million (Cheng, 1956:201 & 202).

Up to 1931, the quantity of Japanese investment had grown steadily so that by this time Japan had become the most important foreign investor in Manchukuo. However, this amount of capital was a mere fraction of the total which was invested between 1932 and 1944. The amount of Japanese capital invested in Manchuria by 1944 was nearly 7 ½ times greater than the level prevailing in 1931 (Beasley, 1987:215).

Table 3.34: JAPANESE INVESTMENT IN MANCHURIAⁱⁱ
1931 To 1944
(Millions of Yen at current prices)

YEAR	TOTAL CAPITAL INVESTED	AMOUNT OF NEW CAPITAL ADDED FOR EACH PERIOD
1931	1,400	NA
1936	3,000	1,600
1941	7,300	4,300
1944	10,400	3,100

Source: Beasley, 1987:215

NOTES: See Endnote ii for a more detailed description of the distribution of capital by industrial sector (only manufacturing industries), and by nationality for 1932.

It should be noted that Remer (1968), Beasley (1987) and Cheng (1956:204) all gave different estimates of what the level of Japanese investment in Manchuria was up to 1931. However, Beasley's and Cheng's estimates of the capital invested

by 1944 were about the same. Remer did not provide any estimates for the Manchukuo period. Investments in Manchuria at the end of June 1945, were almost split evenly between Japan and Manchukuo. The total amount of Japanese capital was 11,276 million Yuan (47% of total investment), and the contribution of Manchukuo's capital amounted to 12,872 million Yuan (53% of total investment), totalling 24,148 million Yuan (Duus et al, 1989:147)³⁸.

Japanese investment was primarily used to develop the producer goods industries, but some capital was invested in expanding consumer goods output. The following key industries consumed the bulk of the investment capital: - electric power; coal; iron and steel; liquid fuel; cement; paper; cotton textiles; machinery and tools; chemicals, which included vegetable oil milling; and railways (Cheng, 1956:194). By 1934, Manchukuo had become more industrialized than the rest of China (Duus, et al., 1989:134). It was also evident that the sources which accounted for the region's economic growth had shifted from a combination of land and labour to capital and technology³⁹. The contribution of technological innovation to the process of economic growth increased from 26% during the period, 1924 to 1929 to 46% during the period, 1934 to 1941⁴⁰. Fixed capital was estimated to have been equivalent to 9% of Manchuria's GDP in 1924, over 17% in 1934, and 23% by 1939⁴¹. This situation differed greatly with China

³⁸Note: These figures would have been in Manchurian Yuan, NOT Chinese Yuan, ie. the currency of the Nationalist Government headed by the GMD.

³⁹Duus, et al., 1989:134

⁴⁰Duus et al, 1989:134

⁴¹Duus et al., 1989:134

Proper, which had a fixed capital to GDP ratio of 5% in 1933⁴². China did not achieve investment rates which were similar to Manchuria's until the end of the Communist China's First Five Year Plan in 1956-57..

However, according to Nakagane Katsuji the openness of the economy to foreign trade remained almost constant, with a ratio of foreign trade to GDP of approximately 17% (Duus, et al., 1989:134). It was uncertain how this ratio of 17% was computed because it would appear that if Chao's GDP figures at 1934 prices were adjusted by the price indices given by Sun and Cheng, the foreign trade ratio would have increased between 1924 and 1934, decreased rapidly between 1934 and 1941, and decreased for the whole period, 1924 to 1941⁴³.

It would appear that as Manchukuo's economy industrialized, it became less dependent on trade⁴⁴. Japan encouraged further integration between Yen Bloc regions (Japan, Northeast and North China). However, this strategy did not seem to increase Manchukuo's dependence on trade. Additionally, international trade was disrupted by the outbreak of World War II.

When Japan's Kwantung Army conquered Manchuria, its leadership had decided that economic growth and development would occur under state guidance.

⁴²Duus et al, 1989:134

⁴³Cheng, 1956:206 and Sun, 1969:95 - price indices
Chao, 1982:15 - GDP at 1934 prices

⁴⁴ From the available trade statistics, this is a reasonable statement to make. However, a thorough study of trade flows between Manchukuo and its trading partners (*i.e.* primarily the Japanese Empire, British Empire, Europe, the United States; and various parts of China Proper) would be required to verify whether or not the importance of trade was really declining.

Table 3.35: MANCHURIAN GDP AND TRADE

(Millions of current Yuan)

YEAR	POPULATION (millions)	GDP	GDP PER CAPITA (Yuan)	TOTAL TRADE Exports and Imports	PERCENT OF GDP
1924	31.0	3,158	102	732	23%
1934	38.7	2,677	69	1,042	39%
1941	45.8	13,700	299	1,870	14%

YEAR	GDP PER CAPITA Current Yuan	EXCHANGE RATE 100 Manchurian Yuan to \$US	GDP PER CAPITA Current \$US	GDP PER CAPITA 1934 Yuan
1924	102	52.70	54	77
1934	69	32.59	22*	69
1941	299	23.44	70	103

NOTES: * The per capita GDP of China in 1933 was \$Ch 59 (Liu & Yeh, 1965:66 &178). At the prevailing exchange rate (1 Chinese dollar = 0.2860 American dollars), per capita GDP would have been \$US 17 (US Foreign Commerce YB for 1938, 1968:311). It was apparent from the above stated statistics that during the early 1930's, Manchuria's per capita GDP exceeded that of China by about 29%.

Sources:

Chao, 1982: 15, 23, and 34 - Population, GDP and trade statistics;
Cheng, 1956:206 - price index; and Sun, 1969:95 - price index.

Exchange rates from: **US Foreign Commerce Yearbook for 1933** (1968):254; and Cheng(1956):206.

NOTE: Manchuria's GDP appeared to be higher in 1924, than in 1934 because the price level in 1924 was 34.5% higher than in 1934.

Eventually, this guidance was formalized by the implementation of two Five Year Plans. Monetary parity was established between the currencies of Japan and Manchukuo. This measure initially had the effect of over-valuing the Manchukuo currency and helped to spur a surge of imports from Japan between 1932 and 1936.

The rate of industrial growth accelerated once Manchukuo had been created. During the pre-Manchukuo decade, 1921 to 1931, industrial output grew 1.74-fold, but during 1932 to 1942 (half year), output grew by a factor of 2.97 times (Sun, 1969:102). However, this impressive rate of industrial expansion only lasted until 1943, during which time industrial output peaked in most sectors. A few key industrial sectors, namely coal and electricity continued to achieve positive rates of growth in 1944, but most of the other sectors were registering negative rates of growth (Eckstein et al., 1968:63).

By 1943, Manchuria had become the dominant industrial region of China. The combined production of Manchuria and North China represented almost all of China's modern sector output. The only other industrial region of note in Japanese controlled China was Shanghai and the province of Kiangsu. Modern industry developed quickly in Nationalist controlled Free China, but because it had grown from a small base, industrial output in 1943 would not have been very significant. Manchuria produced most of China's iron, steel, machine tools, and about two-thirds of the electrical power (Duus, et al., 1996:139).

Table 3.36: INDUSTRIAL OUTPUT OF SELECTED PRODUCTS

(1,000's of metric tons unless stated otherwise)

PRODUCT/YEAR	1932	1943	AGGREGATE GROWTH
			1932 TO 1943
Iron Ore	993	5,408	5.4-fold
Pig Iron	368	1,710	4.6-fold
Steel Ingots ⁴⁵	137	862	6.3-fold
Coal	8,830	25,320	2.9-fold
Cement	109	1,503	13.8-fold
Pulp	12	67	5.6-fold
Paper (1,000's of lbs)	22	168	7.6-fold
Electric Power (kwh's) ⁴⁶	593	4,475	7.5-fold

Sources:

Eckstein, et al (Eds.). (1968). **Economic Trends In Communist China.**: 63.
 Rodgers, Allan (1948), "The Manchurian Iron and Steel Industry And Its Resource Base", **Geographical Review**. V.38: 49.

The output of sophisticated industrial products became possible as the economy modernized. Manchukuo had the ability to produce machine tools, automobiles, aeroplanes, locomotives, and rolling stock for its railways (Sun, 1969:82-83). This modern industrial sector was guided by state plans and output targets, but corporations were not forced to adhere to these directives if a more efficient

⁴⁵ 1935 was the first year that output statistics were available for steel ingots.

⁴⁶ According to Cheng(1956:194) electricity output was 383 million KWH's in 1931-32, and had risen to 4,884 million KWH's by 1944-45. This represented a 12.8 fold increase over this period. The reason for this discrepancy between Cheng and Eckstein(1968) was probably a result of each researcher using different data to arrive at output estimates for 1931-32 and 1932.

means of achieving the state plans could be devised. For example, for the sake of operational efficiency, work could be contracted out to other firms. "Japanese enterprises had considerable freedom to function like private enterprises in a free market, but they also operated in a corporation holding company structure that possessed the power to set prices, exchange certain outputs, transfer and acquire modern technology, and so forth" (Duus,et al,1996:139).

Table 3.37: DISTRIBUTION OF ELECTRICITY OUTPUT IN CHINA FOR 1944

(Millions Of Kilowatt Hours Generated)

LOCATION	OUTPUT	PERCENT OF TOTAL
JAPANESE CONTROLLED⁴⁷	8,062	98%
Formosa (Taiwan)	1,340	16
Manchuria (Manchukuo)	4,884	59
OCCUPIED CHINA (1-3)	1,838	22
1) North China ⁴⁸	1,134	14
2) Shanghai ⁴⁹	392	5
3) Other Occupied Areas	312	4
FREE CHINA (Controlled by the Nationalist Government)	171	2
CHINA, TOTAL	8,233	100
Sources: Cheng, 1956:122, 194, & 264; Cohen, 1949:175; Murphey, 1953:188-189; Wright, 1991:357.		

⁴⁷ For comparative purposes, output in the Japanese colony of Korea was 2,887 million kwh's in 1944 (Cohen, 1949:175). The Yalu River hydro power plant was not included in this estimate. It provided 3,279 million kwh's of electricity which was shared between Korea and Manchuria (Cohen, 1949:175).

⁴⁸ North China's electricity output estimated on the basis of the ratio of North China's electrical power output (kw) to that of Manchukuo in 1943 (Duus, 1996:139). Note that in Duus (1996), Myers stated that the electrical power figures were in kwh's. However, upon comparison with Cheng, 1956:194, these figures would have to refer to power output in kilowatts. The ratio used to estimate what North China's probable electricity output (kwh's) was 23%.

⁴⁹ It was assumed that Shanghai's electricity output was maintained at 1943 levels in 1944.

Table 3.38: DISTRIBUTION OF ELECTRICITY OUTPUT IN 1936 AND 1944

(MILLION KWH'S)

LOCATION	1936	PERCENT OF TOTAL OUTPUT	1944	PERCENT OF TOTAL OUTPUT
Shanghai ⁵⁰	980	26	392	5
Manchuria	1,351	36	4,884	59
China Proper and Manchuria	3,075	83	6,893 ⁵¹	84
China Proper	1,724	46	2,009	24
China Proper, excluding Shanghai	744	20	1,617	20
Taiwan	638	17	1,340	16
China, Total	3,713	100	8,233	100

NOTES: Taiwan was not considered part of 'China Proper'.

Sources: See sources given for the preceding table. Additional references include: Ho, 1978:366. - Taiwan's electricity output estimated on the basis of his electric power index.

⁵⁰ Pre-War and Wartime electricity output in Shanghai was as follows:

ELECTRICITY OUTPUT IN SHANGHAI, 1936-1943								
Year	1936	1937	1938	1939	1940	1941	1942	1943
Index	100.0	82.4	72.5	102.9	105.5	80.0	50.0	40.0
Output (million kwh's)	980	808	711	1,008	1,034	784	490	392

SOURCES & NOTES: Cheng, 1956:122 - output index
The Shanghai Power Co. produced 83% of the total sales of electric power in the city during the period, 1925-34 (Murphy, 1953:188-189). In 1936, the Shanghai Power Co.'s output totalled 813 million kwh's (Wright, 1991:357). Therefore, Shanghai's total electricity output in 1936 could be estimated to have been 980 million kwh's, i.e., [(1/0.83)*813] = 980.

⁵¹This total includes China Proper, that is, Occupied China and Free China; and Manchuria.

**Table 3.39: ELECTRICITY OUTPUT PER CAPITA
In Kilowatt Hours**

Year	Manchuria	Japan	USA
1930	14	212	930
1931	15	247	882
1932	16	266	796
1933	17	293	817
1934	20	322	873
1935	28	360	933
1936	34	389	1061
1937	40	426	1136
1938	51	455	1092
1939	59	471	1231
1940	67	475	1362
1941	77	509	1561
1942	87	500	1728
1943	94	508	1957
1944	100	481	2020

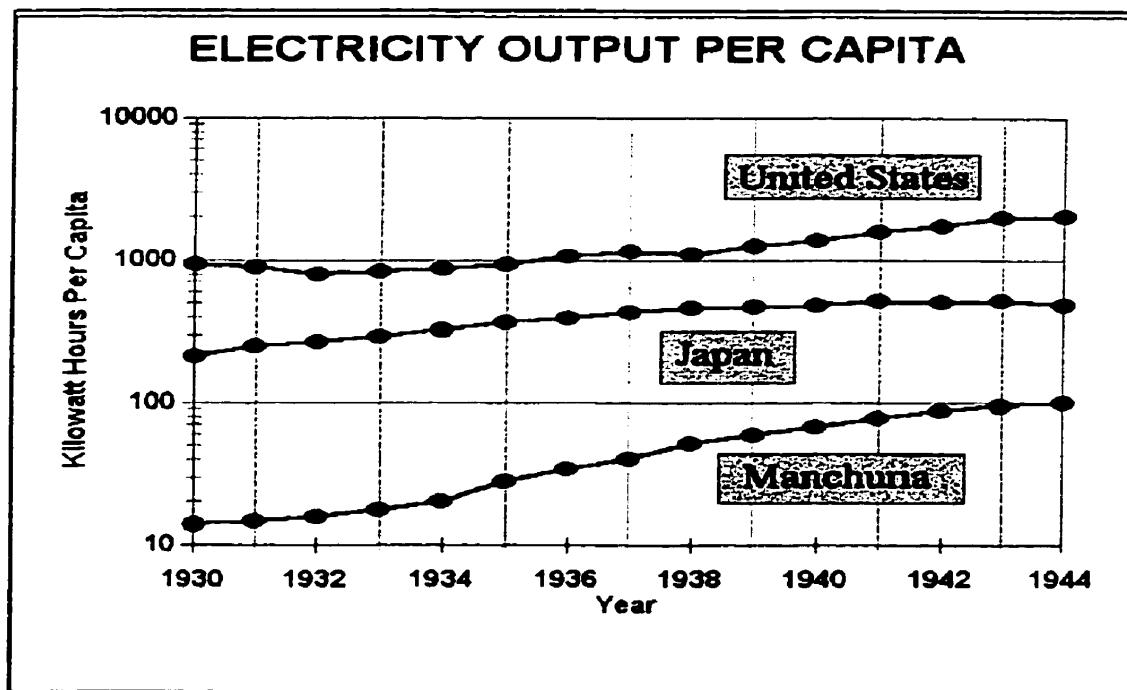
Sources:

Population figures from: Chao,1982:15 and Maddison,1991:234-235.
ELECTRICITY OUTPUT figures for Manchuria were from:

1930 to 1936	Wright,1991:357
1937 to 1941	Duus,1996:152
1942 to 1943	Eckstein,1968:63
1944	Cheng,1956:194

Japanese and American output figures were from: Woytinsky1953:966

Chart 3.1



An Outline of the Industrial Progress of Manchukuo, 1932-1945

By Plan Period

The industrial development of the region was carried out in two stages, the pre-plan and plan periods.

Pre-Plan, 1932-36

The pre-plan period, 1932-36, was characterized by broad based planning and policy formulation which integrated Manchukuo into the Japanese Empire. The

First Five Year Plan, 1937-41 and the Second Five Year Plan, 1941-45, were instituted to accelerate the rate of industrial growth and to build up the region's defensive capabilities. Additionally, these plans were meant to run in tandem with North China's Nine Year Plan, 1937-45.

Of these two regions, Manchukuo was the most important. However, unlike North China, the Japanese development of Manchukuo's resources initially was not carried out under the guidance of a state plan. Between 1932 and 1936, the economy was developed under a broad based plan. The main objectives of Manchukuo's economic development policies were: to improve the region's transport and communications infrastructure; to increase the supply of raw materials from agriculture, forestry, and aquatic resources; the establishment of new industries and mines; the upgrading of commercial and financial facilities; and the promotion of the further development of the region's private sector to aid in the speedy expansion of the industrial sector (Duus,1996:143). It was also hoped that the growth of the private sector would lead to the improvement of public welfare, and the revitalization of local communities and their private organizations (Duus,1996:143). During this period, the automobile industry was established. The Dowa Automobile Joint-Stock Company was created by the Manchukuo government in 1936. Dowa made arrangements with four Japanese companies to supply financial capital and equipment. These companies were: - Tokyo Gas-Electrical Company, Mitsui Heavy Industry, Toyota Automobile Company, and Kangami Automobile Co. (Duus,1996:146).

In 1936 and 1937, two factors forced Manchukuo's economic planners to re-evaluate their industrial development strategies. Firstly, in December 1936, the Sian Incident produced an alliance between the Nationalist Government of China and Chinese Communist guerrilla armies that tried to resist Japan's military and economic penetration of North China (Duus, 1996:197). Secondly, in 1937, the United States raised trade barriers against Japan. The USA initiated a trade embargo on strategic materials that Japan and its colonies required to expand its military industrial complex (Duus, 1996:147). These two new threats to Japan convinced their economic planners that a prolonged war with China and the USA was possible and that it was necessary to accelerate the pace of industrialization in Manchukuo. In order to secure access to raw materials, Japanese forces occupied North China and integrated its economy with that of the Japanese Empire between 1937 and 1938.

First Five Year Plan, 1937-41

Manchukuo's First Five Year Plan (FFYP), 1937 to 1941, was largely successful in significantly raising output. However, output often fell short of plan targets. During the FFYP, two automobile companies, the Dowa Automobile Co. and the Manchuria Automobile Co.; and one aircraft company, the Manchuria Aircraft Mfg. Co. were amalgamated as part of the Manchurian Industrial Development Corporation⁵². In 1941, nearly four thousand automobiles were produced, most of

⁵²Cohen, 1949:39 and Mitchell, 1942:82-83.

The Dowa Automobile Company was established in 1934 and was taken over by the Manchurian Industrial Development Corp. (MIDC) in 1938 (Cohen, 1949:39). When the MIDC became operative in 1938, the Manchuria Aircraft and Automobile companies were established by it (Cohen, 1949:39). It was uncertain whether the status of Dowa changed between 1934 and 1936. According to Duus (1996:146), the Dowa Automobile Joint Stock Company was established by the Manchukuo government in 1936.

which were classified as large vehicles (Duus,1996:152). Although output was not large, Manchukuo's production facilities were able to manufacture high grade training aeroplanes (Sun,1969:86). Investment in the MIDC during the FFYP was considerable. The total loans and investments of this corporation in Manchukuo increased astronomically, from 174 million yen during the first half of 1938 to a cumulative total of 1,498 million yen by the end of 1941 (Cohen,1949:39).

Table 3.40: VEHICLE OUTPUT IN JAPAN AND MANCHUKUO (Number Of Units)			
COUNTRY/REGION	1936	1941	PERCENT OF 1941 OUTPUT
1) Japan	8,841	47,901	92.3%
2) Manchukuo	NA	3,969	7.7
Total (1+2)	8,841	51,870	100.0

Sources: Cohen,1949:246 and Duus,1996:152

Second Five Year Plan,1942-46

The Second Five Year Plan (1942 to 1946) was not able to be fulfilled because of the collapse of Manchukuo's industrial sector in 1944 and 1945. This was largely the result of Japan losing the Pacific War to the United States. There was not anything inherently wrong with the Japanese infrastructure or the economic planning process. For the most part, it seemed that production came closer to meeting plan targets during the Second Five Year Plan (SFYP) than during the FFYP. This was noticeable upon examining output and output targets for a selected number of key commodities in 1943. It was likely that the main reason for this improvement was the scaling down of expectations and the realization that

output targets during the FFYP were over zealous. There was an adequate amount of data to estimate the growth rate of Manchukuo's total industrial output, i.e., manufacturing, mining, and public utilities, in 1943. Refer to endnote iii for this estimate. Plan target and fulfilment tables can be found towards the end of this chapter.

Manufacturing capacities of military related industries such as machine tools, weapons, munitions, aircraft, and vehicles were increased (Duus, 1996:151)⁵³. This creation of additional production capacity was in line with the SFYP's main objectives. These objectives were to construct a new national defence system and to continue long term industrial diversification and expansion (Duus, 1996:158).

During the First and Second Five Year Plans, the development of the aluminum and magnesium industries were stressed⁵⁴. Aluminum and magnesium were used chiefly in the production and fabrication of aircraft. Japan's war which was waged on the Asiatic Mainland necessitated the expansion of vehicle and tank production. However, when Japan entered the Pacific War against the United States, battles were fought at sea using naval and air units. This meant that greater priority was given to aircraft and warship production over tanks during the SFYP.

A large proportion of the Japanese Empire's aluminous shale was mined in North China during this period. American intelligence reports estimated that in 1944,

⁵³It appeared that there was considerable expansion of production capacity in the aircraft and automotive sectors, but that actual output was low. This may be explained by a time lag between the production of parts and the assembly time required to produce functioning airplanes and vehicles.

⁵⁴Aluminum could be produced from aluminous shale, alunitc, alum clay, and bauxite.

North China could produce over 60% of Japanese requirements for aluminous raw materials for the production of aluminum. North China exported its shale to Japan, Manchukuo, and Korea for processing. Additionally, an alumina production plant of significant size was being erected in North China at this time (McCune,1989:82-83).

Manchukuo's aluminum output increased from 967 metric tons in 1938 to 8,030 tons in 1941 (Duus,1996:152). The highest output level achieved was 8,557 tons in 1943 (Cohen,1949:155). In 1944, output fell to 7,617 tons, 55 percent of which was exported to Japan Proper⁵⁵. Although aluminum output increased rapidly during the FFYP, it made little progress between 1942 and 1944. "The history of magnesium during the war paralleled that of aluminum except on a very much smaller scale." (Cohen,1949:158). Manchukuo's magnesite exports expanded 2.2-fold between 1936 and 1939⁵⁶.

By the 1940's, only three of Japan's major armament/munitions factories were located on the Asiatic Mainland, one in Manchukuo, and two in Korea (McCune,1989:84). The Mukden Arsenal, located in Manchukuo, was the only manufacturing plant on the Asiatic Mainland which was able to produce heavy guns and tanks (McCune,1989:84-85).

⁵⁵Cohen,1949:155

⁵⁶U.S. Foreign Commerce Yearbook for 1939 (1968):249.

Between 1935 and 1945, Manchukuo's hydroelectric resources were developed⁵⁷. Chief consumers of this electricity included the chemical, munitions, aluminum, and magnesium industries (McCune, 1989:110). Additionally, in order to make up for the shortage of petroleum, large oil shale deposits at Fushun near Mukden were exploited (McCune, 1989:110). The development of these oil shale deposits was encouraged by the Pacific War. As Japanese shipping was disrupted by American attacks, it became necessary to supplement oil shipments with domestic production from oil shale. Synthetic oil production never accounted for over 5 percent of Japan's oil needs, but 55 percent of the synthetic oil producing capacity was located in Manchuria by the early 1940's (Cohen, 1949:137)⁵⁸.

Table 3.41: SHALE OIL OUTPUT (Thousands of metric tons)				
YEAR	1934	1936	1939	1941
OUTPUT	91	180	360	600
Source: Chao, 1982:66.				

North China's Nine Year Plan (NYP) to 1945, was fairly successful in developing the transportation and mining sectors. According to Japanese observers these sectors continued to function well during 1944 (Duus, 1996:167 & 169). In each year, from 1939 to 1944, there was an increase in the amount of railway freight traffic (Duus, 1996:168). However, like Manchukuo's SFYP, North China's NYP could not

⁵⁷ Note: This period includes the implementation of the FFYP in 1937, and the commencement of the SFYP in 1942.

⁵⁸ Synthetic oil was made from coal, coal tar, and oil shale.

be completed because the Japanese occupation ended in 1945. Shortly thereafter, the economies of Manchuria and North China were disrupted by the onset of the Chinese civil war which lasted until 1949 when the Communists defeated the Nationalist armies fighting on the Chinese mainland.

Manchurian industrial establishments which survived the USSR's attacks during 1945 were systematically looted by Soviet occupation forces. According to Japanese experts, industrial losses due to war damage and looting by the Soviets amounted to at least \$US 1.2 billion (Sun,1969:88). This level of damage seriously compromised the ability of Manchuria's industries to recover quickly after the Sino-Japanese War. Capacity losses approached 100% in many key industrial sectors and were significant in others: - iron and steel (60% to 100%); coal mining (80% to 90%); railways (50% to 100%); machinery (68% to 80%); electricity (60% to 71%); and liquid fuel (75% to 90%) (Sun,1969:88).

Manchukuo's industrial infrastructure was seriously damaged by the Soviet invasion. However, the Nationalist Government must have believed that the possibility of economic rehabilitation was favourable, because a substantial number of Japanese soldiers were retained after Japan's surrender to the United States and China in 1945 by the Nationalist military to protect Manchuria against Chinese Communist armies (see Table 3.42).

In summary, Manchukuo's modern sector was built around the expansion of manufacturing, transportation, and energy output. In contrast, North China's modern sector was more limited in its scope of development. It was reliant on the

expansion of the mining and metals sectors, and on a relatively efficient railway transportation system.

Table 3.42: KWANTUNG ARMY FORCES IN MANCHUKUO, 1932 TO 1947

YEAR	MANPOWER	AIRCRAFT	TANKS	HEAVY ARTILLERY UNITS
1932	94,100	100	50	-----
1939	270,000	560	200	-----
1945	+500,000	900	700	1,800
1947	+80,000	NA	NA	NA

Sources for Table 3.42:

1932 and 1939 figures were from Duus, et al., 1989: 423.

1945 figures were from Gillin, 1983: 514. The 1945 figures refer only to Japanese units which surrendered to the Soviets. In addition to ground and air units, the Soviets also captured a flotilla of Japanese warships on the Sungari River in Northern Manchuria (Gillin, 1983:514).

1947 - These were not necessarily Kwantung Army soldiers. They were Japanese soldiers stationed in eastern and northwestern Manchuria. These military forces were fully armed and under the command of Chiang Kai-shek's headquarters (Gillin, 1983:500). Additionally, many Japanese that joined the Nationalist Army were admitted to Chiang's officer corps because of their superior training and technical skills.

Table 3.43: SELECTED INDICATORS OF PLAN FULFILMENT FOR MANCHUKUO

COMMODITY	1941 Percent of FFYP Targets	1943 Actual Output (1,000's of metric tons)	1943 SFYP Targets	1943 Percent of SFYP Targets
Coal	88%	25,320	31,450	81%
Iron Ore	56	5,404	9,000	60
Iron	42	1,710	1,660 ⁵⁹	103
Steel Ingots	28	862	1,184	73
Aluminum Ingots (tons)	54	8,557	10,000	86

Sources:

Cohen,1949:155 (Aluminum output and plan target data for 1941 and 1943; 1941 output also given in Duus).

Duus,1996:152,156; Eckstein,1968:63

Mitchell,1942:77 (Note: Original target figures were given for 1941. This source was used to provide an iron ore plan target figure which was not given in Duus[1996]. However, it was evident from comparing plan targets for 1941 that Mitchell and Duus et al. Had referenced different versions of the FFYP⁶⁰. Duus et al. most likely used revised plan figures which were not available before the end of the Pacific War.

⁵⁹ The plan target for iron was revised downward significantly from the 1941 target of 3,325 thousand metric tons (Duus,1996:152 and 156).

⁶⁰ This particular chapter in Duus et al. was actually written by Ramon Myers.

**Table 3.44: SELECTED INDICATORS OF PLAN FULFILLMENT FOR NORTH CHINA
(Thousands of tons)**

COMMODITY	1938 Actual Output	1943 Actual Output	Plan Targets	Percent of Plan Targets
Coal	12,800	22,200	31,000 ⁶¹	72%
Iron Ore ⁶²	483	1,300	2,700 ⁶³	48
Aluminous Shale ⁶⁴	NA	426	930	46

Sources: Cohen, 1949:151; and Duus, 1996:139, 156-157, & 163.

**Table 3.45: TRADE BETWEEN NORTH CHINA AND MANCHUKUO/JAPAN
1941 TO OCTOBER 1943
(MILLIONS OF JAPANESE YEN)**

Exports			
Year	Japan	Manchukuo	Total
1941	200	78	278
1942	330	137	468
1943 (1-10)	532	172	705
Imports			
Year	Japan	Manchukuo	Total
1941	348	96	480
1942	322	144	468
1943 (1-10)	285	156	441

⁶¹This was the plan target for 1943.

⁶²Iron output in 1943 was 116,000 tons (Duus, 1996:139). There were two possible reasons why output was so low. Firstly, the bulk of the iron ore was expected to be exported to Japan. Secondly, planned pig iron producing capacity was not achieved in North China.

⁶³Plan target for 1945.

⁶⁴Actual and plan output figures for 1944.

Source for Table 3.45: Li,1975:179.

Trade Notes: Before the Japanese occupation of North China, the excess of imports over exports increased quickly (Li,1975:143). Net imports, *i.e.*, trade deficits, for 1938, 1939, and 1940 were, in terms of China Reserve Bank notes, \$65 million, \$373 million, and \$657 million respectively (Li,1975:143). For these years, the value of the Chinese dollar and that of the China Reserve Bank were approximately equal (Li,1975:143). Major import items consisted of machinery, capital goods, and food during these years.

Conclusion

Although the Russians acted as pioneers of modern industry in Manchuria, their achievements were quickly over-taken by Japanese investors in the KLT and SMRZ. The pre-Manchukuo injections of foreign capital set the ground-work for Japanese sponsored state-led growth during the Manchukuo period. Massive injections of Japanese capital had the desired effect of making Manchukuo into the industrial heart of China. Output levels achieved between 1942 and 1944 far outstripped what could have been produced before 1932.

As a result of the global depression, the staple-based export economy collapsed. A new export base was built-up which was reliant on the production of industrial materials, both raw and manufactured for export to Japan. However, this re-orientation of trade was not sufficient to allow Manchuria's position as a net exporter to be maintained. Other industries had not been developed to a high enough level to act as a new engine for export-led growth. During the colonial period, (1932 to 1945) Manchuria became a net importer.

In terms of the volume of trade during the pre-Manchukuo period, and the heightened level of foreign investment between 1932 and 1945, there was little

doubt that Manchuria's industrialization was largely due to its integration with foreign markets, *ie.* the global market, and later the market area of the Japanese Empire. To summarize, pre-1932 industrialization was led by the agricultural processing industries, namely, bean products and flour. Between 1932 and 1945, industrial growth occurred as a result of the expansion of the producer goods sector, *ie.* heavy industry (namely iron, steel, and metals processing and fabrication industries), mining, and electric power utilities (thermal and hydro power). This industrial expansion was accomplished by utilizing unskilled labourers from Manchuria and North China and by importing skilled workers from Japan. The management and technical personnel, *ie.* specialists in the physical and social sciences, were exclusively Japanese (Jones, 1949:165)⁶⁵.

⁶⁵ For example, the South Manchuria Railway hired Japanese researchers, many of which were Marxists or Communists who could not find work in Japan (Yeh, et al., 1998: 53-54).

CHAPTER 3

ENDNOTES

- i. It was likely that manufacturing output was as much as five times larger, ie. approximately \$US 22.5 million, than what was stated by the CER's Economic Bureau.

NORTH MANCHURIA'S GROSS VALUE OF INDUSTRIAL OUTPUT IN 1922 1926 Prices, Value in 1,000 Yen					
BEAN CAKE	BEAN OIL	WHEAT FLOUR	COAL	TOTAL	COMMENTS
16,816	6,884	14,960	1,648	40,308	1926 Prices in Yen
17,674	7,235	15,723	1,732	42,364	1922 Prices in Yen
8,448	3,458	7,516	828	20,250	\$US of 1922

Notes: In order to adjust 1926 prices to 1922 prices, the value of output was multiplied by 1.051. The 1922 exchange rate of Yen to American dollars was: 1 Yen = \$US 0.4780.

The total output of bean cake, bean oil, and wheat flour was \$US 19,422 thousand in 1922. Therefore, if all of the other manufacturing industries were included in this calculation, then total output certainly would have been above \$US 20 million. In fact, it was quite probably higher than \$US 22.5 million. This conclusion was reached on the basis that Sun (1969, 95 & 98) never included key industries such as alcohol distilling, sugar refining, and electricity in his estimate of industrial output for North Manchuria.

Whether or not these industries (excluding coal) were included as part of the agricultural sector, it was evident that a large proportion of their production was exported.

ii.

NUMBER OF FACTORIES AND CAPITAL INVESTED IN THE INDUSTRIAL SECTOR IN MANCHURIA, 1932

Category	Number of factories	Percent of whole	Capital (million yen)	Percent of whole
Metal industry	248	6	34.61	14
Machine tools	223	6	27.65	11
Ceramics	510	13	18.29	8
Spinning	800	21	23.92	10
Chemicals	641	17	60.02	25
Foodstuffs	712	18	48.88	20
Miscellaneous	749	19	28.95	12
TOTAL	3,883	100	242.32	100
Japanese capital	727	18	154.37	64
Chinese capital	3,081	80	67.98	28
Other foreign capital	75	2	19.97	8

SOURCE: McCormack, 1977: 8.

iii.

AN ESTIMATE OF MANCHUKUO'S INDUSTRIAL OUTPUT IN 1943

Manchuria's industrial output continued to climb rapidly throughout the first years of the 1940's. The output of key industrial commodities peaked in 1943. It also was likely that the transportation, communications, and services sectors continued to expand at a rate similar to what was achieved during the First Five Year Plan, 1937-41.

Assumption:

Assume that the industrial structure was the same during 1936-41 and 1941-43. All else being equal, one would expect that an increase or decrease in the rate of growth of the 6 selected key industries between 1941 and 1943 would be reflected in an increase or decrease in the rate of growth of the entire industrial sector. Therefore, it was likely that total industrial output expanded at an annual rate of 8% between 1941 and 1943, rather than 12% (6 key industries). See table for further details.

MANCHURIA
SELECTED INDUSTRIAL COMMODITY PRODUCTION STATISTICS

Quantity and Value in 1,000's of units unless otherwise stated

* Net Value Added in 1933 Chinese Yuan per unit, i.e., per metric ton, per 375-lb. barrel, per kwh

Commodity	1936		1941		1943		
	Quantity	Unit Price*	Value	Quantity	Value	Quantity	Value
Iron Ore (metric tons)	1,795	2.90000	5,206	3,703	10,739	5,408	15,683
Pig Iron (metric tons)	633	26.30000	16,648	1,236	32,507	1,710	44,973
Steel Ingots (metric tons)	364	40.00000	14,560	561	22,440	862	34,480
Cement (1,000's of 375-lb. barrels)	3,480	2.50000	8,700	6,982	17,456	9,018	22,545
Coal (metric tons)	13,874	3.50000	48,559	23,800	83,300	25,320	88,620
Electricity (1,000's kwh)	1,351,000	0.03590	48,501	3,520,000	126,368	4,475,000	160,653
TOTAL (6 Industries)			142,173		292,809		366,954
Increase in Total Value							
Between Each Period			NA		205.95%		125.32%
Per Annum Change					15.55%		11.95%
(1) Industrial Output (Value-added in)							
million 1934 Manchukuo Yuan			582.8		956.9		
Aggregate Increase					164.19%		
Per Annum Change					10.43%		
Ratio of Per Annum Change of (1) to Total 6 Industries ; This ratio used to est. 1941-43 growth rate					67.06%		8.01%
(2) Sun's Industrial Output Index			157.8		277.3		
Aggregate Increase					175.73%		
Per Annum Change					11.94%		

Sources:

Iron Ore (metric tons) 1936 and 1941 from Chao,1982:66.

Pig Iron (metric tons) 1936 output figure from Mitchell, 1942:69, 1941 & 1943 from Eckstein, 1968:63.
This figure is used instead of Duus, 1996:152 because Duus's figure would indicate

a sudden rise in output between 1936 and 1937, while Mitchell's would indicate
a more gradual expansion.

Steel Ingots (metric tons) 1936 and 1941 from Duus,1996:152

Cement (375-lb. barrels) 1936,1941, and 1943 from Feuerwerker,1967:310-311.

Coal (metric tons) 1936 & 1941 from Chao,1982:66

Electricity (kwh) 1936 & 1941 from Chao,1982:84

Unless otherwise stated, 1943 statistics were from Eckstein,1968:63.

Unit Prices given in Chang, 1969:128.
The 1933 gross unit price calculated from Feuerwerker, 1967:316 works out to be about the same

as the one given by Chang, 1969:128. However, Chang did not explicitly state that his barrels
were 375-lb. barrels as was given in Feuerwerker, 1967:316.

1) **Industrial Output** is the M sector given in Chao,1982:32

2) **Sun's Industrial Output Index** is from Sun,1969:102

Chapter 4

SHANSI PROVINCE

Introduction¹

Before 1949, most of China's industrial development was confined to its major ports, such as: - Canton, Shanghai, and Dairen and its coastal provinces. However, this did not mean that the rest of the country was not exposed to modern technologies. The province of Shansi is a good example of an interior province which attempted to modernize its economy. Shansi was geographically isolated from China's major ports and industrial centres.

Did industrialization occur as a consequence of autarkic provincial policies or was it motivated by increased commercialization and trade? Moreover, did industrialization occur significantly later than in Shanghai and Manchuria? If so, why? Shansi's industrial take-off, *ie*, a sustained rise in modern sector manufacturing and mining output, occurred in the 1930's, which was much later than in Shanghai and Manchuria. The latter two regions were rapidly industrializing between 1890 and 1910. Industrialization occurred later in Shansi because it was geographically remote from foreign influences. The province was land-locked and had no seaports through which it could conduct foreign trade.

¹ The best English language source for information on Shansi are the various works of Donald G. Gillin. Most of the relevant economics related material can be found in his book entitled, WARLORD - Yen Hsi-shan in Shansi Province: 1911-1949, which was published in 1967. Also of note was, Gillin and Etter's article, "Staying On: Japanese Soldiers and Civilians in China, 1945-1949", which can be found in the Journal of Asian Studies, Volume 42, Issue 3 (May, 1983): 497-518. This is the only article that I am aware of that discusses the post-war economic and military relationship between Shansi and Japan.

Additionally, the xenophobic attitudes of the populace discouraged any substantial amounts of direct foreign investment prior to the Japanese occupation (1937-1945).

Perhaps the extraordinary pre-eminence and prosperity formerly enjoyed by the merchants and bankers of Shansi left them convinced of the correctness of their own methods and made them even less inclined than businessmen elsewhere in China to embrace practices introduced from the West.

(Gillin, 1967: 82).

Although Shansi had a highly developed, commercialized economy before the onset of industrialization, venture capital was scarce. Shansi's prosperity reached its zenith during the 19th century as a result of the effectiveness of its powerful banking and commercial interests which established business contacts throughout China. However, by the time that the imperial government collapsed in 1911, Shansi's economy was in decline. Privately owned modern sector firms which were founded during the Republican period, *i.e.*, after the revolution in 1911, generally were undercapitalized, small, and unable to generate high enough revenues to earn a profit. Shansi's warlord, Yen Hsi-shan initiated a Ten Year Plan to modernize the province's economy during the early 1930's. The plan's objective was to use state planning to create a modern industrial sector within Shansi which would be capable of substantially raising the level of mining and manufacturing output. This was very much unlike the initial stages of industrialization in Shanghai and Manchuria where modern enterprises were

successfully established because of their profit earning potential. The drafting of the Ten Year Plan was motivated by economic, social, political, and military considerations. The high priority given to defence related industries was also unique. In contrast, during the early stages of industrialization, Shanghai and Manchuria's modern manufacturing sectors were optimized for the production of consumer goods, *ie.*, textiles and agri-food products.

Population

In order to understand Shansi's economic situation, a few historical statistics would be of use.² Historical statistics showed that the province's population fluctuated between 11 to 14 million between 1873 and 1953(Perkins 1969:p.212). The 1933 population was 12.4 million, equivalent to 2.5 percent of China's total population(Perkins 1969:p.212).

The population decline in Shansi which occurred between 1873 and 1893 could be easily explained. The province was seriously affected by the century's worst drought in 1877-1878.

Table 4.1: POPULATION TRENDS (Millions)

Year	1873	1893	1913	1933	1953
Shansi	14.1	10.9	11.6	12.4	14.3
Suiyuan	1.5	2.1	2.6	2.7	NA
China	348.7	386.7	430.4	503.1	582.6

(Source: Perkins, 1969: 212)

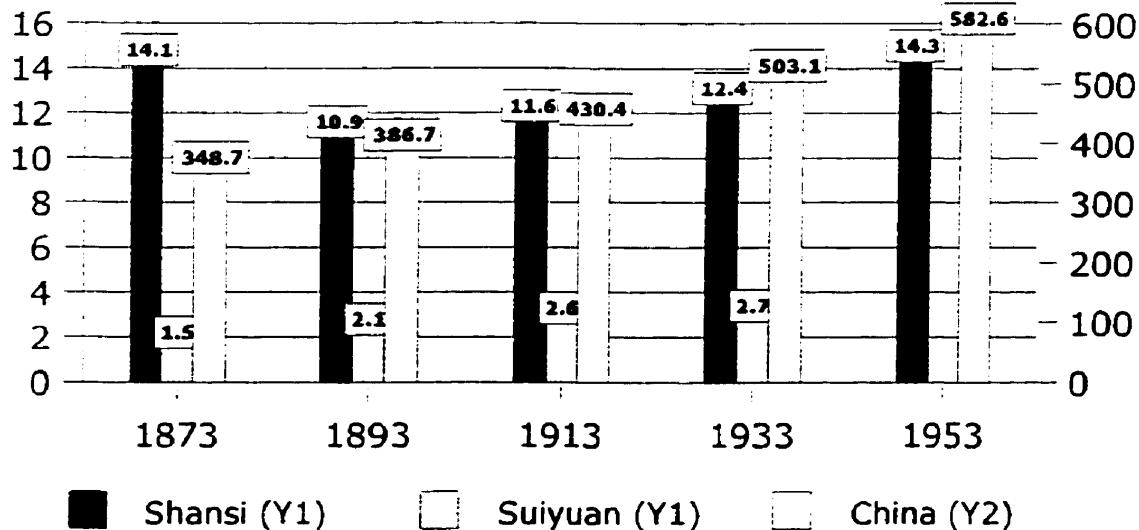
² The population estimates in the following table were from:
Dwight H. Perkins. (1969). **Agricultural Development in China 1368-1968**. Chicago: Aldine Publishing Co. p.212.

Additionally, the economy was weakened by the Taiping Rebellion, the Boxer uprising, and the 1911 Republican Revolution. The Taiping Rebellion (1851-64)

Chart 4.1

Population Estimates

(millions)



was a military and social movement that sought to overthrow the Qing Dynasty. Their ideology included quasi-Christian and communal beliefs. Their armies captured Nanking in 1853 and they made it their capital city for the next 11 years. Qing armies, led by Zeng Guofan eventually defeated the Taiping in 1864. It was estimated that the rebellion caused the deaths of 20million Chinese citizens (Spence 1990:p.805).

The Boxer uprising occurred in 1900. It was an anti-Christian/foreign peasant uprising that originated in northern Shandong and culminated with the siege of

the foreign legation in Peking. Many of the Participants were poor peasants who practised a type of martial art that gave the name "boxer" to the movement. This peasant-based uprising ended when a combined Western military force entered Peking, forcing the Chinese Empress and her court to flee to Xi'an. Although the 1911 Republican Revolution did not cause many deaths, it did succeed in further disrupting the province's domestic economy.

In spite of these instabilities, Shansi's population did grow gradually and steadily between 1893 and 1953. This would indicate that in a general sense, these were years of prosperity, that is, there was enough food to feed an expanding population. It was especially amazing that the population continued to expand between 1933 and 1953. Intuitively, one would have expected that deaths due to the war with Japan(1937-1945) and the Civil war(1946-1949) would have seriously curtailed population growth.

Population estimates for Suiyuan province, bordering on Shansi's northwestern frontier, were also shown in the preceding population table and graph for comparative purposes. Politically and economically Shansi exerted influence over Suiyuan.

Most Important Economic Activities

Over-all, North China's economy remained dependent on agriculture during the first half of the 20th century. Shansi's cultivated acreage in the early 1930's was roughly twice as large as Suiyuan's, or equivalent to 3.8 percent of China's total cultivated acreage (Perkins 1969:p.236).

Shansi's agricultural products comprised: wheat, millet, sorghum, maize, cotton, tobacco, walnuts, peanuts, rapeseed, and grapes and other fruits. Suiyuan's main crops were wheat, beans and linseed. Kaoliang and millet were grown for local consumption. In addition to Shansi possessing a diversified agricultural base, it also had considerable deposits of iron and anthracite coal. During the 1920's, agriculture and coal mining were the principal industries. There was also a multitude of pre-modern iron furnaces in operation, but there was little evidence of the development of modern industry. At this time, further economic growth was dependent on the development of a railroad network and irrigation works³.

During the 18th and 19th centuries Shansi's commercial and banking interests reached the peak of their prosperity. Many of China's banks were owned by Shansi businessmen and the province's merchants carried on the bulk of the nation's trade with Russia and Mongolia. More than CH\$40 million per annum was remitted to Shansi because of these commercial endeavours.

Shansi banks started to be established towards the end of the 1700's for the purpose of remitting funds needed in the commercial transactions of Shansi's merchants. By 1900, Shansi banks were operating branches in cities throughout China, including Canton and Shanghai. These banks worked hand-in-hand with the national and provincial governments for whom they transferred revenues and

³ Arnold, Julian.(1926) **China: A Commercial and Industrial Handbook.** Washington D.C.: Government Printing Office: p.10.

expenditures, and held deposits of these funds without paying interest. Business moved away from directly dealing with merchants to becoming bankers' banks⁴.

The opening of the Treaty Ports during the 19th century gave these banks new opportunities to expand since there was more commercial activity and more need for fund Remittance. "The Shansi banks' original capital came from trade, and their access to government funds made it unnecessary for them to accept private funds on deposit."⁵ This relationship was seriously damaged after 1900 when the customs revenues were pledged as security for debts incurred by indemnities and the repayment of foreign loans. Instead of these funds being deposited with the Shansi banks, it was deposited in foreign banks. Additionally, the Imperial government's Board of Revenue was reorganized and the government established its own banking institutions(King 1965:p.94). Most of the Shansi bankers failed to reorganize their businesses to survive after the 1911 Revolution severed their commercial ties with the government. A major vulnerability of the banks was that they were family businesses, wholly capitalized by family members, and subject to unlimited liability(King 1965:p.94).

During their existence, the Shansi banks worked in consort to set interest rates, establish standardized operating procedures, suppress violating firms, and to provide mutual support (King 1965:p.94). They opposed the entry of new firms into the remittance business and they acted together whenever their interests

⁴McElderry, Andrea Lee.(1976) Shanghai Old Style Banks, 1800-1935. Ann Arbor: University of Michigan: p.12.

⁵King, Frank H.H.(1965) Money and Monetary Policy in China 1845-1895. Cambridge, Mass.:Harvard University Press: p.93.

were involved. Although the Shansi Banks were nation-wide, and an important part of the financial sector, they made little direct contribution to the money supply. This can be explained by their practice of accepting few current accounts and they issued no bank notes.

Until 1900, the province's wealth was sufficient to import most of their food and manufactured goods. However, the last decades of the 19th century saw a deterioration of the province's economic position. By 1920, Shansi was reduced to being one of the poorest provinces in China. Most bankers operated with little capital and were too ignorant of modern banking to compete with the new modern western style banks.

The 1911 Revolution was the final event which destroyed the banking sector. The revolution destroyed the wealth and power of the ruling bureaucracy to whom Shansi's bankers had loaned great sums⁶. In 1911, 26 old style banks were in business, but by 1930, only 3 continued to operate(Gillin 1967:p.79). In Russia and Mongolia foreign competition and economic nationalism reduced the volume of trade carried out by Shansi's merchants to the point that most of them went bankrupt. In addition to the loss of trade, their Russian currency holdings became nearly worthless after World War I. This occurred because of the Bolshevik Revolution which had the effect of causing the ruble to depreciate considerably.

⁶ Gillin, Donald.(1967) **Warlord Yen Hsi-shan in Shansi Province, 1911-1949.** Princeton: Princeton University Press:p.79.

Shansi's Economic Situation During the 1920's

By 1921, in one district of Shansi, there were between 4 to 5 thousand unemployed merchants and in once prosperous towns businessmen sold their wives and children to pay their debts (Gillin 1967:80).

The agricultural and handicraft sectors were also in trouble. The handicraft sector was not able to compete successfully with its new foreign competitors.

Additionally, North China stopped buying Shansi's relatively expensive grain in favour of Suiyuan's as soon as the construction of the Peking-Suiyuan Railroad was completed. These unfavourable economic circumstances coupled with rapid population growth produced growing unemployment, which was estimated at over 1 million in 1918 (Gillin 1967:80). During the 1920's, it was estimated that over 16 percent of the labour force was unemployed (Gillin 1967:80). Before 1920, the trade deficit had soared to more than CH\$75 million (Gillin 1967:81). After 1920, the deficit declined, but the outflow of specie continued at the rate of CH\$20 million per annum (Gillin 1967:81). The outflow of specie caused the money supply to decline, which in turn had a contractionary effect on the economy. By 1935, 90 percent of Shansi's families were living in poverty. The province's warlord, Yen Hsi-shan realized that the likelihood of his regime collapsing was high if he did not succeed in modernizing Shansi's economy.

Yen adopted an import-substitution strategy coupled with export promotion to revive the economy. Unfortunately, the private business sector was slow to modernize their management and production methods. Shansi's businessmen restricted their choice of business partners to members of their own clan and they

continued to assume unlimited liability for debts. This meant that Shansi's business sector was always short of capital, and was at a disadvantage when compared to firms organised along Western, that is, European or American lines. Additionally, they did not value impersonal relationships which were normal in Western business communities. The interests of their own families were placed above the welfare of the company. As a result of this attitude, nepotism, corruption and mismanagement were common and were responsible for the failure of the Taiyuan Electric Light Company in 1923, as well as the decline of the once prosperous salt and brewing industries (Gillin 1967:81-82).

In order to increase competitiveness, Yen established a chamber of commerce in each district, introduced a uniform system of weights and measures, and published a weekly business oriented newspaper (Gillin 1967:82). Although these initiatives were useful, positive results were not forthcoming because most of the province's venture capital was used in speculative investments and short-term loans to individuals.

Gillin believed that the rapid increase in land prices in Shansi during the 1920's indicated that many merchants and bankers were using their profits to buy land (Gillin 1967:82). Between 1919 and 1929, land prices went up by 150 to 500 percent⁷. The range of the land price increase is so large because it refers to price changes in each of Shansi's districts between 1919 and 1929, and does not refer to the average land price increase for the whole province. It was common for

⁷Chen, Han-seng.(1936), "The Good Earth of China's Model Province" **Pacific Affairs** Vol.9:pp.370-380. - see page 374 for land prices.

merchants charged with collecting provincial taxes to induce fluctuations in the value of the currency in order to exact from the peasants sums much larger than those requested by the provincial government (Gillin 1967:82).

The 1920's Industrialization Program

Since Shansi's commercial and business sector seemed incapable of developing modern industries, Yen decided to advocate a move towards state capitalism. He tried to establish a government monopoly over manufacturing to attain this goal. Overall, the 1920's industrialization plan was only partially successful. It was successful in establishing modern textile mills, but failed to establish other competitive modern sector manufacturing firms.

In 1920, Yen feared an invasion by the neighbouring Warlord Han Fu-chu. This military threat prompted the government to invest in heavy industry. In addition to the Taiyuan arsenal, Yen constructed a sulphates factory, a small, modern iron works, a CH\$600,000 machine tool factory, and refineries which experimented with techniques to extract petroleum from coal and shale rock (Gillin 1967:83). The machine tool plant boasted a low capacity steel works which was capable of producing greater amounts of steel than most of the other mills in China. Additionally, production costs were kept low by the availability of cheap locally mined coal.

Yen used these firms to train workers who could be used in a state controlled industrial sector. These industries were geared towards weapons production, but Yen's long-term plan was to produce machinery which could be used to modernize

Shansi's economy (Gillin, 1967:84). Despite this plan, large scale investments in modern industry did not begin until the 1930's.

The most important enterprise involved in the 1920's military industries' modernization program was the Taiyuan Arsenal. The arsenal replaced a much smaller gun repair shop. Machinery was imported from Germany and was operated under the supervision of Chinese technicians who were advised by several Swedish and German engineers. The majority of the Chinese technicians were American educated, but some may have graduated from Yen's own Shansi Military Technical School which offered courses in chemistry, physics, and engineering. By 1926, the Taiyuan Arsenal was one of the largest and most productive arsenals in China (Gillin 1967:28). It's 8,000 workers manufactured a wide array of armaments (Gillin 1967:28).

Table 4.2: TAIYUAN ARSENAL'S 1926 OUTPUT

Product	Daily Output	Monthly Output	Yearly Est. Output
Grenades	4,500	NA	1,642,500
Cartridges	120,000	NA	43,800,000
Mortar & Artillery Shells	3,200	NA	1,168,000
Rifles	NA	1,500	18,000
Pistols	NA	500	6,000
Mortars	NA	300	3,600
Machine Guns	NA	30	360
Field Guns & Howitzers (75mm to 105mm)	NA	Less than 30	?

Source: Gillin 1967:28.

Large quantities of grenades, cartridges, and mortar and artillery shells were manufactured yearly. Additionally, it should be noted that the estimated annual output of rifles was relatively high - 18,000 in 1926 (Gillin 1967:28). Therefore, one year's output was high enough to equip approximately one-third of Yen's standing professional army. Yen's entire army was equipped with weapons produced by the arsenal.

Research and development was fostered by the government. A research department was set up in the Military Technical School, and under the advise of a German Technician, an Arms Committee was established. It offered generous rewards to inventors of new weapons and to those who could improve existing ones.

"This committee was responsible for the development of more rapid firing automatic weapons, a new 88 millimetre howitzer, and a device that enabled Yen's riflemen to fire grenades a distance of several hundred yards"(Gillin 1967:29). Yen not only sought to modernize the army, he also endeavoured to create an air force. Two aircraft were purchased and a repair shop was built for them. Several Japanese flying instructors were hired to train Chinese pilots. Unfortunately, one of the planes crashed and was destroyed during its first flight over Taiyuan.

Although the Shansi army was equipped with weapons which utilized modern technologies, it was still at a disadvantage when compared to the better trained and numerically larger armies commanded by rival warlords. During the 1920's, the number of army conscripts grew. After conscripts were trained and

discharged, they were periodically given additional training. These discharged soldiers formed a rural militia which reduced the need for a large professional army, but which gave Yen the ability to quickly mobilize 100,000 soldiers. The

Table 4.3: Estimates of the Size of the Shansi Army in Comparison to the of the National Army (All provinces including Shansi)

	1923	% of Total	1923-24	% of Total	1925	% of Total
Shansi	50,000	3%	43,400	5%	64,000	3%
China, Total	1,508,000		877,620		2,262,000	

Source:

Ch'en, Jerome(1979). **The Military-Gentry Coalition: China Under the Warlords.** Toronto: University of Toronto-York University Joint Centre on Modern East Asia.

Shansi army and the civilian reserve relied on the local population to provide conscripts. This citizens' army was unique in China because most provincial armies contained soldiers from neighbouring provinces (Gillin 1967: 25). Soldiers were charged with the tasks of repairing roads and helping peasants with farm-work. Additionally, the army was expected to pay for whatever supplies that it procured from the civilian population.

Although the military and heavy industry was given priority, light industry was promoted to encourage job growth in the declining handicraft sector. Over-all, the

impact of this initiative was small. However, this program was responsible for granting subsidies to cottage industries which did help to support the handicraft sector. More importantly, Yen's government promoted the development of modern-style firms by building 2 flour mills, a cigarette factory, a paper mill, and a large modern cotton textile mill. This cotton mill, along with a number of smaller, privately operated ones, manufactured Ch\$3.5 million worth of cloth and yarn annually (Gillin 1967:84).

The manufacture of consumer goods was promoted by building many small factories and workshops where soldiers and unemployed workers were taught how to make candles, soap, clothing, and other commodities (Gillin 1967:84). Out of all of these endeavours, only the textile mills were successful, the other industries suffered from a shortage of capital, poor management practices, and out-dated, inefficient production methods (Gillin 1967:84). Throughout the 1920's, Shansi remained dependent on imports of manufactured goods from neighbouring provinces, and from foreign countries. This trade imbalance was a continual drain on the province's specie reserves.

Industrialization efforts failed during the 1920's for a number of reasons. The business/commercial sector was driven by the goal of attaining land and title in order to join the ranks of the landed gentry. Additionally, Land speculation, and high interest loans were considered better investments than risking one's own capital in a modern industrial firm which would be built to produce a specific commodity. A modern factory or firm could not guarantee a rate of return, nor could it guarantee that there would even be any profits during the initial years of

operation. This uncertainty deterred many would-be investors who sought safer, more tangible investments, such as land or pawn shops.

The province suffered from a surplus of labour which kept wages low and discouraged technological innovation. Local norms of behaviour demanded that women stay confined to the household and they were discouraged from seeking factory jobs. Since many household consumer goods, that is, candles and clothing could be manufactured within the household by these women, the incentive for industrial specialization was removed. It should also be noted that most people continued to believe that the economy was static. For example, individuals could become richer or poorer, but the per capita wealth and income of the province's population was incapable of increasing. Therefore, they did not see the need to invest in modern productive enterprises. Instead, savings were spent on weddings and other forms of conspicuous consumption. Although the extended family system could help to pool capital, it could also drain families of their financial resources if relatives lost their land or jobs and became impoverished.

Yen's 1920's industrialization program was mismanaged and suffered from a lack of planning and coordination (Gillin, 1967:85). For example, economic goals were usually subordinated to military and political problems. The government's ability to provide investment capital was constrained because at least half of the province's revenues were spent on the army (Gillin, 1967:85). Other problems included: - a high level of taxation, and an initial pre-occupation with agriculture and reforestation. Perhaps to forestall labour unrest, Yen curtailed the formation

of labour unions. This may also have been done because the unions were seen as subverting traditional values.

In 1917, Yen publicly stated that the province's mineral wealth belonged to the state. The Shansi Bureau of Public Mines was created to manage the exploitation of these resources. Private firms were expected to operate these potential mines. Yen provided most of the \$Ch 1.5 million invested in the Share - The - Wealth Mining Company, which was established to carry out local mining (Gillin 1967:87). Yen also provided investment capital to privately owned and operated coal mines. Some of these operations used foreign machinery and modern mining methods. This resulted in coal output nearly doubling between 1920 and 1926.

However, this expansion of mining activity was short-lived because of economic disruptions caused by Yen's involvement in a series of wars with neighbouring warlords. As a result of this situation, coal continued to make up less than 1/3 of the province's exports (Gillin 1967:88). Although Shansi was a net exporter of coal, this did not mean that there was adequate coal for household consumption. Many parts of the province suffered from a shortage of coal. When coal was available, the price that it sold at was so high that millions of people still could not afford to purchase enough to keep their homes heated throughout winter.

Throughout the 1920's, the mining industry suffered from a shortage of capital. Mining technology was usually primitive and working conditions were poor. Working conditions were so bad that there was a continual shortage of miners. Only criminals, or those desperately in need of employment would work in these

badly-ventilated and flooded mine pits. Yen's T'ung Pao Mining Company was well capitalized, but much of these funds were used to pay salaries to the company's managers who were Yen's friends and relatives. Yen tried to attract foreign capital to the mining industry, but was largely unsuccessful because most of his subjects were wary of foreigners.

Despite this distrust of foreigners, Shansi's most productive mines were largely controlled by Japanese investors. These mines were centred around Tatung and were operated by the T'ung Chi Mining Company. It was privately owned and had its head office in Tientsin.

Market development for coal mining and mining in general was hampered by the lack of a province-wide railroad network. Tatung relied on the Peking-Suiyuan Railroad which was owned by the Federal government. The Cheng Tai Railroad linked Taiyuan with Hopei's rail network. This railroad was controlled by French investors who had built the railroad before the 1911 Revolution. Their annual profits were kept high by charging the highest freight rates in China (Gillin 1967: 89). This meant that Shansi's relatively cheap coal had to be sold at an uncompetitive, high price in order to cover the freight charges. This severely hampered the market development of the province's mineral resources.

Yen expected the Federal government to finance his province's railroad development. Disputes over the type of track to be used, ie, either standard width or narrow gauge, caused negotiations over railway funding to break-down. However, one of the most important reasons for rejecting the proposal was that

these new federally funded railroads would be used to send invading armies into Shansi. Nonetheless, even with an expanded rail network, mining companies would still be subjected to a wide array of taxes. In addition to the limited rail-network, the province's roads suffered from a lack of maintenance.

The drought of 1919-1922 high-lighted the need for more and better roads to transport grain to famine stricken areas. As a result of this natural disaster, Yen's soldiers, along with the American Red Cross and the China International Famine Relief Commission built over a 1,000 miles of roads.

By 1929 motor roads linked Taiyuan with almost every district in the province, while at the same time a newly erected network of telephone and telegraph lines enabled Yen to communicate instantaneously with all of the district capitals and military headquarters in his domain.(Gillin, 1967: 91)

Travel by automobile increased the speed of transport by 10 to 12 times (Gillin, 1967:91).

This road network was built just in time to transport famine relief in 1929. It was likely that this transportation network allowed Shansi to cope better than its neighbouring provinces during this drought. Unfortunately, road and bridge maintenance was minimal. Private-sector use of the roads was discouraged because high taxes were levied against trucks or buses using public highways. It must be concluded that the new telecommunications network was built to service the government and the military, not the private sector (Gillin, 1967: 92).

Agricultural Modernization

Yen sought to promote agriculture in a variety of ways. Projects included: -

1. Canal, well, and reservoir building
2. Re-forestation
3. Crop diversification
4. Cotton promotion
5. Animal husbandry expansion by means of importing Australian Merino sheep
6. Silk manufacturing, and
7. Academic training of individuals in the agricultural sector.

Yen's greatest success in agriculture was the 3-fold increase in the amount of land planted with cotton (Gillin, 1967:94). Little else of his agricultural promotion program was successful. Yen established a modern silk-weaving factory which went bankrupt. He also founded a number of sericulture (silk worm cultivation) schools which were to promote the development of a provincially based silk industry (Gillin 1967:94). All of these attempts to raise agricultural output failed to eliminate food imports.

Yen's agricultural modernization program failed because, "he neglected to effect changes in the system of land ownership and other reforms that would encourage peasants to employ the new methods of farming he urged upon them"(Gillin, 1967: 98). For example, many farmers did not see the point of raising productivity if the greater part of this increased production would have to be paid as land-rent to landlords or as interest to money lenders. The peasantry could

generally be characterized as ignorant, conservative and hostile towards government (Gillin, 1967: 98). There were many instances where the peasantry sought to sabotage or neglect to help with modernization efforts (Gillin, 1967: 98). However, it should be noted that during the 1920's Yen was still unwilling to challenge Shansi's gentry and bankers who were responsible for keeping the peasants impoverished. Land reform in combination with the extension of cheap credit, low priced fertilizer, and crop insurance would have won him the support of the majority of the peasantry (Gillin, 1967: 99).

The Financial Sector

In 1919, Yen created his own bank, the Provincial Bank of Shansi. Price stabilization was attempted by the withdrawal of all rival bank notes. The Bank's currency was relatively stable throughout most of the 1920's. However, its stable currency did not solve Shansi's monetary problems because other private banks continued to operate. Currency issued by rival banks continued to provoke economic instability. In 1923, a financial crisis precipitated by these banks caused the bankruptcy of hundreds of banks and money-changing shops (Gillin, 1967: 100). This crisis caused the government to limit these firms' ability to issue copper certificates and currency speculation was made illegal.

Any monetary expansion tended to lower the purchasing power of the currency because the economy was stagnant. Any growth in the money supply was seen as inflationary and not originating from an increase in output. As a result of this situation, provincial currencies continued to depreciate. This shortage of capital, that is, paper currency backed by specie, resulted in considerable increases in

interest rates. For example, interest rates increased from around 10% in the early 1920's to an average rate of 24% in 1925, with rates ranging up to 100% in some instances (Gillin, 1967: 100). Although much of the monetary instability was not caused by Yen, he too sought to raise revenue by minting his own copper coins which helped to fuel inflation.

The Political And Military Environment On The Eve Of The 10 Year Plan

Throughout the 1920's, Yen's armies fought against rival warlords' forces in northern China. Shansi's internal political situation was in a state of flux. Chinese Communist Party supporters frequently violently clashed with anti-Communists for control of the local Kuomintang [KMT] (Gillin, 1967:106).

“Since radicals within the Kuomintang frequently attacked provincial officials as well, their behaviour must have terrified Yen Hsi-shan, who lived in fear of a popular uprising against his regime.”

(Gillin, 1967:106)

These circumstances obliged Yen to support Chiang Kai-shek's newly formed anti-Communist National Government at Nanking. In Shansi, students who supported the Communist Party were purged from the local KMT and were either arrested by the police or were forced to leave the province. Yen formally allied himself with the KMT regime when he accepted an appointment to the position of Commander in Chief of the Northern Route Revolutionary Army. This new alliance allowed Yen to distance himself from some of the more conservative gentry elements which continued to exert some political influence within the province(Gillin, 1967:107).

This new alliance with the KMT did not affect the balance of power within Yen's bureaucracy. Yen's trusted political and military allies continued to dominate the government. The changes that were introduced because of the alliance with the KMT were best described as "raising the flag and altering the names"(Gillin, 1967:107). This meant that the titles and appellations formally used by the government and the army were replaced with, " a nomenclature more in keeping with the revolutionary pretensions of the Kuomintang"(Gillin,1967:107).

In 1928, Yen's army was the first Nationalist-allied force to enter Peking and liberate it from warlord rule(Gillin,1967:109). Yen was now Commander of the Nationalist garrisons in Peking and Tientsin, and was subsequently elected to the People's political council and the Central Executive Committee of the Kuomintang. Yen was then granted the posts of Minister of the Interior and Vice-Chairman of the powerful Military Affairs Commission of the Nationalist Government.

Although Yen's political successes were considerable, he was unable to shield his province from the effects of war. Shansi's economy was severely disrupted from the damage caused by ongoing warfare . Additionally, banditry and crime were on the rise because of the large numbers of disbanded and ill-disciplined soldiers who were now in Shansi.

Yen was forced to recruit well over one hundred thousand additional men into his army in order to wage military campaigns in North China(Gillin, 1967:109). Many of these recruits were bandits from neighbouring provinces who were impossible to indoctrinate or control (Gillin, 1967:109). Some of these new 'bandit' soldiers

who were housed on the premises of the new petroleum refinery damaged its machinery so badly that production was halted(Gillin,1967:110). Gillin speculated that these soldiers may have also been responsible for the 25% decline in iron output after 1928(Gillin,1967:110). Although, economic modernization was important to Yen, he was obliged to give his full attention to military matters. This meant that economic affairs were left to local officials who lacked the motivation to carry out economic reform and modernization (Gillin,1967:110).

Government finances fell into a state of chaos as Yen vastly increased military spending. Schools were closed because of a lack of funds and civil servants were encouraged to embezzle government revenues because some of the funds usually used to pay their meagre salaries were diverted to the military. Revenues were grossly inadequate to finance the new military expenditures. The financial strife that the government had to deal with can be aptly summed up by a quote from Gillin.

In 1928 the expenses of the provincial government
were 350 percent greater than in 1925, with the result
that between those years its annual deficit soared
from CH\$ 685,571 to CH\$ 13,647,000,
notwithstanding the fact that after 1925 Yen imposed
a multitude of new taxes which caused the income of
his government to more than double by 1928.

(Gillin,1967:110)

These growing budget deficits were largely financed by printing unbacked paper currency. The unchecked rise in the money supply caused rampant inflation which

further destabilized the economy. The exorbitant taxes which were inflicted on the province's citizens decreased their per capita purchasing power and the ability of farmers to save or invest any of their earnings. The combination of high inflation and taxation may account for the reoccurrence of famine in Shansi beginning in 1929 (Gillin 1967:110).

In the winter of 1930, Yen allied himself with Feng Yu-hsiang, a prominent North China warlord in order to resist Chiang Kai-shek's growing power. Yen believed that if he allowed Chiang to destroy Feng's army, he would be unable to resist subsequent demands that he share with the Nationalist Government his authority in Shansi and other parts of North China (Gillin, 1967:112). Yen, and his new allies struggled to establish a government in North China that would be independent from the Nationalist Government, but in the end, Chiang's superior military force triumphed. More than 100,000 men died during this civil war (Gillin, 1967:115). By the end of the conflict, Shansi had become so impoverished that at least half of the population was reduced to eating grass and bark(Gillin, 1967:116).

The Provincial Ten Year Plan of Economic Reconstruction (Circa 1932-1937)

The Ten Year Plan (TYP) was initiated by Yen Hsi-shan for economic, social, political, and military reasons. The Plan period was reduced to a span of about five years because of the Japanese invasion of Shansi in the summer of 1937. A chapter appendix is provided for further reference. It includes investment related data for Shansi during the TYP, an estimate of Japanese investment during 1937

to 1945, comparative figures for Shansi and other regions of China, and trade statistics.

Shansi's economy was weak, agriculture and industry were in decline, the provincial currency was unstable, and growing Provincial Government deficits had to be balanced by borrowing funds from the Nationalist Government. Additionally, poverty stricken inhabitants were turning to crime to earn a living. Politically, Shansi was caught in an ideological war between the Chinese Communists, Yen's adherents, and the Nationalist Party. Yen favoured building a strong state apparatus to facilitate the modernization of the economy. He believed that this was the reason behind the growing power of the Soviet Union and the continuance of American prosperity. The Soviets had achieved high rates of economic growth by using state planning, and the USA, under the leadership of President Roosevelt had increased the role of the government in the economy by initiating the "New Deal". Although the accomplishments of the fascist governments of Germany and Italy were less impressive, Yen still believed that there might be some positive economic lessons to be learned from them.

Shansi's military threats were numerous. The Chinese Communists wanted to gain a foothold in Shansi before the Japanese invasion. As a result of military confrontations with the Communists, Yen initiated social and military reforms in order to raise popular support for his regime and to better prepare his army to resist renewed Communist attacks. Yen also feared the growing military power of the USSR, and Nationalist China. However, the greatest threat to Shansi's

independence was Japan. Japan wanted to acquire Shansi's mineral wealth and its newly constructed industrial and communications infrastructure.

The Japanese even viewed Shansi as a growing threat to Japanese commercial interests in North China. For example, historically, China had imported most of its steel from Japan, but the new facilities which were being constructed in Shansi were capable of producing steel for export to the rest of North China at a lower cost (Gillin, 1967, 215). Additionally, both Yen Hsi-shan and the Japanese wanted control of the iron resources of the bordering provinces of Suiyuan and Chahar. Basically, Shansi's military and Yen's political influence in China Proper were essential to maintain the territorial integrity of the province and to guarantee commercial access to neighbouring provinces and regions.

Rapid economic recovery was needed to restore confidence in Yen and his government. By 1932, Shansi's trade balance had deteriorated considerably. Net imports included: - narcotics and foreign made goods, ie. , kerosene, matches, leather products, paper, textiles, and cigarettes(Gillin, 1967:125). These foreign imports decimated the province's handicraft industries, which in turn reduced the income of the peasants who had operated such industries. Examples of affected handicraft industries included: homespun yarn, candle making, and copper utensils. Fortunately, there was not a food shortage for peasants or city dwellers who had sufficient resources to maintain their level of consumption.

However, the combination of bumper harvests along with an influx of foreign cereals, caused the price of agricultural products to decline by as much as 2/3

(Gillin, 1967:125). This coincided with steep rises in non-agricultural commodity prices which were heavily influenced by the depreciation of Yen's currency. By 1932, the currency was worth less than 10 percent of its original value (Gillin, 1967:125). Due to the increasing scarcity of specie, interest rates also increased rapidly. Most peasants stopped purchasing new goods instead of taking out high interest loans to maintain their consumption levels.

The decline in consumption had adverse affects on commerce and industry. Between 1927 and 1935, half of the pawnshops in rural Shansi went bankrupt, along with a few textile mills, all of the match factories, its only distillery, and thousands of other commercial and manufacturing firms (Gillin, 1967:126). In one year, 90 percent of the businesses in Taiyuan failed, the output of coal fell, and the sale of pins made in Shansi decreased by almost 50 percent (Gillin, 1967:126). By 1934, at least one third of Taiyuan's labourers were unemployed (Gillin, 1967:126). Young women and girls were sold at prices ranging from \$CH 2 to \$CH 25 a head by their impoverished families (Gillin, 1967:127). It was common for female infants to be killed at birth because they were viewed as a liability. As a result of this practice, by 1935, women made up less than 44 percent of the population (Gillin, 1967:127). The number of crimes committed were also rising. "In 1935 the warden of a prison in Tatung blamed the economic depression for a twelve fold increase in the population of his prison since 1928" (Gillin, 1967:127).

As a result of the extreme economic hardship that most of Shansi's residents endured during the 1920's and 1930's, Yen initiated a Provincial Ten Year Plan of Economic Reconstruction in 1932.

In order to defend the territorial integrity of Shansi, military industries were to be expanded. The long range plan was to produce a wide array of modern weaponry, including aircraft. Yen sought to tie Suiyuan's economy closer to Shansi's. Iron mining was initiated in Suiyuan and by 1936 over 4,000 acres of formerly untilled land was brought under cultivation (Gillin, 1967:128).

The Ten Year Plan was modelled on the Soviet Union's Five Year Plans. Yen admired the economic achievements of the Russian Communists because he believed that they had succeeded in eradicating unemployment (Gillin, 1967:129). Economic planning was carried out through all levels of government, that is, from the village to the Provincial level. Projects were thoroughly evaluated before any money was spent on them. Village Inspection Committees exposed misdeeds committed by district magistrates, heads of district finance bureaus, tax collectors, the chief of the Military Telegraph Bureau, and the entire Municipal Government of Taiyuan (Gillin, 1967:131).

The Society for National Salvation Through Production and the Committee for the Consumption of Locally Made Goods directed merchants to sell provincially manufactured goods rather than ones imported from foreign countries and other Chinese provinces. The Bureau of Economic Controls tried to licence imports in such a way as to prevent foreign made goods from entering Shansi. Out-of-

province Chinese imports were also discouraged if they competed with commodities manufactured in Shansi.

Government workers in Taiyuan were partially paid with government promissory notes that could be exchanged for goods only at the Shansi Marketing Cooperative for Locally Made Goods. This was a large, modern department store that was built in Taiyuan to sell locally manufactured products. Yen planned on establishing a monopoly of retail trade by encouraging manufacturers and farmers to sell most of their production through the Shansi Marketing Cooperative for Locally Made Goods and other government operated stores (Gillin, 1967:132).

Yen's support for state enterprises and economic planning was founded on reality, rather than on ideological formulations, *i.e.*, he drew from the experiences of other countries such as the Soviet Union and the Japanese Empire. In addition to the phenomenal industrial growth which was occurring in Russia, Japanese state-sponsored development was responsible for accelerating the rate of economic growth in Manchukuo.

Private enterprises in Shansi during the 1930's were virtually all small, undercapitalized, and inefficient, while at the same time engaged in savage and mutually ruinous competition with one another (Gillin, 1967:133).

Adversely affected industries of this uncompetitive private sector included flour mills, a large cotton mill, coal mines, iron works and water-control projects (Gillin, 1967:133).

Yen's ultimate goal of economic planning was to bring all industries under government supervision in order to improve productivity. Shansi's government acquired the power to set prices and standards of quality for locally manufactured goods. Manufactures were obliged to use modern production methods in their shops and factories and were forced to merge in order to achieve economies of scale. For example, all of the privately owned mining companies operating around Tatung were required to sell their output through a government managed marketing cooperative (Gillin, 1967:134). Additionally, the government created the Northwestern Industrial Company to develop heavy industry in Shansi.

Shansi's state owned banks were established to finance the Ten Year Plan, but they also dominated the fiscal resources of the province. Yen established control over the Provincial Bank of Shansi and he created three more government operated banks which possessed assets worth nearly \$CH 13 million, whereas the largest private bank had assets valued at \$CH 300,000 (Gillin, 1967:134). Over \$CH 2 million was invested in privately owned pawnshops, but Yen planned to tax them heavily and eventually replace them with publicly operated firms.

According to Gillin(1967:136), foreign investment was not an important source of revenue for financing the Ten Year Plan. The only significant foreign investor was Japan, but the amount of funds invested would have been inconsequential in deciding the outcome of the Ten Year Plan. Since foreign capital was not forthcoming, it had to be raised domestically. Shansi's new industries enjoyed a monopoly position in the marketplace and charged as high a price as the market would bear. Profits from selling cement, alcohol, and other industrial products, along with other government revenues were used to subsidize the less efficient

heavy industries. Yen believed that his heavy industries would not become profitable until growth in other sectors of the economy caused the demand for machine tools, locomotives, and agricultural machinery to grow.

In order to raise revenue, the salt merchants were gradually replaced with government officials who were thought to be less likely to engage in smuggling or other illegal activities. Additionally, the newly created opium monopoly annually earned \$CH 2 million which was spent on economic reconstruction (Gillin, 1967:138)⁸. Money raised from fines levied against those who grew and transported it amounted to \$CH 6-7 million per year (Gillin, 1967:138). However, imports of foreign made heroin and morphine resulted in a revenue loss of over \$CH 30 million (Gillin, 1967:138).

Existing taxes were raised, and new ones were imposed on nearly every kind of business transaction. For example, there was a 50% tax on alcohol, and a 30% tax on cigarettes (Gillin, 1967:138). Professional tax collectors were hired by the government to increase the effectiveness of taxation. Historically merchants handled tax collections, but they could not be counted on to be incorruptible. Tax revenues were an important source of capital for the Northwestern Industrial Company. Capital amounting to over \$US 2 million was raised in 1932, and an additional \$US 22.5 million was raised over the next four years, which totalled \$US 24.5 million for the five year period (Gillin, 1967:139).

⁸It should be noted that in the past, Yen had been opposed to the selling of opium (Gillin, 1967:137).

Any citizen of the province could be conscripted for free labour on public enterprises and the populace was subject to further government exactions whenever taxes did not yield enough revenue. In order to raise investment capital, military spending was cut. The size of the army shrank and so did the standard of living of the average soldier. Many of the soldiers built railroads in return for wages lower than those paid to ordinary coolies.

The sacrifices that the Soviet people made to finance the industrialization of Russia were held up as an example to the people of Shansi. Yen followed the Russian example of sacrificing present consumption for future production. Salt consumption was curtailed and it was exported in large quantities to raise investment capital. However, Yen did not sacrifice education during the Ten Year Plan. The existing education system was reorganized in such a way as to emphasize technical training. Yen foresaw that Shansi's new factories would require increasing numbers of engineer and skilled personnel if they were to function efficiently. Consequently, by 1937, quite a few of the engineers and technicians employed in Shansi's modern sector were graduates of provincial schools.

Achievements of the Ten Year Plan (Circa 1932-37)

Yen Hsi-shan's Ten Year Plan was interrupted by the Sino-Japanese war in 1937. Between 1930 and 1937, an extraordinary change was beginning in Shansi's economy. Its previously insignificant modern industrial sector had grown to a critical mass which allowed industry-wide linkages to occur, and for industrial growth to be self-sustaining. Industrial growth was reliant on the development of a provincial market for industrial products. The National Government at Nanking

was either neutral or hostile towards Shansi's leaders. This hostility probably limited the amount of commerce between the two regions. However, it should be noted that Shansi was linked by a railroad network to Nationalist China. This did allow for the export of some industrial commodities.

In 1932, the provincial arsenal and machine tool works were expanded into a complex of 8 factories. Goods produced included: weapons, machine tools, locomotives, railroad cars, steel rails, electric motors, iron boilers, agricultural machinery and hydraulic equipment (Gillin, 1967:186). The output of iron and steel products was successfully raised. Additionally, installations were built to produce electrolytic salts, sulphuric acid, nitric acid and other chemicals. Shops were also established to repair automobiles and electric motors. Plans were even being laid for the construction of facilities to manufacture aircraft and motor vehicles. Other newly established modern establishments included: a tannery, a paper mill, a distillery, a printing plant, a factory which made fire-resistant bricks, and a cement works (Gillin, 1967:187). In 1936, the nominal capacities of Chinese-owned cement plants in China Proper and Shansi were 5,270,000 and 150,000 - 375 lb. barrels per year (Feuerwerker, 1967:308)⁹. Additionally, it should be noted that the total annual capacity of the Manchurian cement industry in 1936 was about 4 million - 375 lb. barrels (Feuerwerker, 1967:308). Therefore, although a cement plant greatly enhanced Shansi's construction industry, its output was quite small when compared to China's total cement output.

⁹Feuerwerker, et al. (1967). Approaches to Modern Chinese History.

In order to satisfy consumer demand, government investments were made to expand light industry. Match and cigarette factories were built which were able to meet the demands of the entire province. Additionally, a woolen mill was established to produce shirting, carpets, and other woven goods. The previously established cotton mills had significantly expanded their facilities, at a cost of over \$CH 7 million (Gillin,1967:188). "By 1937 Taiyuan was the site of an industrial complex consisting of no less than 21 large factories" (Gillin,1967:188).

In order to meet the demand for electricity, ten new electric generating plants were constructed (Gillin,1967:188). As electricity output increased, so did the numbers of cities that were supplied with it. By 1936, Shansi's chemical industries had significantly diversified their production. The province's scientists and technicians were producing potassium chloride and potassium carbonate. Additionally, Shansi's scientific personnel invented a charcoal burning engine for use in buses and other motor vehicles (Gillin,1967:189). These scientific developments prompted Yen to establish an Academy for research into the natural sciences.

Shansi's industrial complex was relatively competitive, and diversified enough to produce a wide range of industrial products to encourage further industrial growth and integration of new and existing industries. "It would appear that not only were the products of Yen's new industries serviceable and reasonably priced, but the process of industrial growth in Shansi became to some extent self-sustaining" (Gillin,1967:189).

High transportation costs kept Shansi from successfully exporting much of the machinery produced by its heavy industries¹⁰. Although foreign imports of silk, cotton textiles, and cigarettes were discouraged, these products were so cheaply priced that merchants continued to import them. As a result, foreign imports continued to offer stiff competition to Shansi's new industries.

Shansi's inability to increase its industrial products exports and to make all of its import substituting firms profitable was largely responsible for its persistent trade deficit, which amounted to \$CH 7.7 million in 1934 (Gillin,1967:190). However, it should be noted that some of these new import substituting firms were able to compete for markets outside of Shansi. Successful industrial products included woolen textiles, matches, industrial alcohol, paper, bricks, cement and machine tools. These goods were sufficiently competitive to dominate the domestic market and some of them were able to be successfully exported (Gillin,1967:191).

By 1934, the number of bankruptcies in Taiyuan quickly declined, and employment rose. Between 1932 and 1936, its population rose from 76 thousand to 144 thousand, representing an increase of nearly 90% within the span of four years (Gillin,1967:191). The population increase was largely caused by an increase in the number of people seeking work in Taiyuan's new factories which were offering high wages to attract new workers. A Communist writer had even commented that by 1937 one of the distinguishing features of the Taiyuan Basin was its large numbers of industrial workers.

¹⁰ Transport costs could be high for a number of reasons. For example, machinery is quite heavy in comparison to imported cigarettes. Additionally, road and rail carriers outside of Shansi may have been discouraged from transporting the province's exports by rival warlords.

In addition to the already established industries, plans had been laid to construct a sugar refinery and a rayon factory. However, planning had to be carefully done because Shansi was locked in an economic war with Japan and Nationalist China. The Japanese were trying to hold onto their steel markets in North China, and to expand their consumer goods exports and branch-plant operations. The Nationalist Government was also trying to expand their economic influence over Yen's domain. For example, a dispute over salt taxation caused the Nationalists to retaliate against Shansi by flooding its export markets with cheap salt.

Although it is out of the scope of this study, it is worthwhile to note that the Ten Year Plan did aim to improve the prosperity of the agricultural sector. Yen introduced mechanized textile factories into rural areas; increased crop and animal specialization, *i.e.*: cotton, merino sheep and chickens; improved and expanded dams and irrigation works; and increased agricultural research. Yen wanted to nationalize and redistribute all of the farmland in Shansi, but province-wide implementation was impossible because of opposition from landlords and land-owning peasants (Gillin, 1967:203).

Between July 1937 and 1938 Japanese forces occupied Shansi and took control over its newly constructed industrial sector. Although Yen's army fought tenaciously against the Japanese, it was only able to maintain control over a small part of the province. In the land that Yen continued to control, he put the merchants out of business by instituting government monopolies.

Yen abolished the private ownership of land,
moreover, and redistributed land in such a way as to

give every able-bodied peasant between the ages of 18 and 48 a plot of equal size (Gillin, 1967:283).

In 1945, the Japanese offered their surrender to Yen, who promptly enlisted their support so that he could re-establish control over Shansi before the Communists invaded. Besides utilizing Japanese armies to defend the province, Yen also enlisted hundreds of Japanese technicians to maintain and increase the output of the factories he and the Japanese had constructed in the Taiyuan Basin (Gillin, 1967:285).

Yen's troops rapidly lost control of the countryside as the Communist's forces advanced. By the winter of 1947, Yen's domain consisted of little more than Taiyuan and its surrounding area. On April 24, 1949, the commander of Yen's defence forces, General Imamura Hosaku, surrendered to the Chinese Communists. After the bulk of his forces had been decimated, General Imamura committed suicide by swallowing poison. However, Yen managed to escape to Taiwan where he died in 1960 (Gillin, 1967:288).

SURVEYS OF SELECTED MANUFACTURING AND MINING RELATED INDUSTRIES

This part of the chapter is divided into two sections, *ie.*, this section which is devoted to the discussion of the most important industries in Shansi, and a second section which focusses on Shansi's relative level of industrial development.

Cement

Cement was an important indicator of the growth of the modern construction industry. As part of Yen Hsi-shan's Ten Year Plan, the provincial government opened the Taiyuan Cement Works in 1935.

By 1936, China Proper's cement output was dominated by eight production centres, one of which was the one built by Yen in Shansi. Yen's plant was among the smallest, and its potential output amounted to only 2.8% of the nominal capacity of Chinese owned plants in 1936 (Feuerwerker et al, 1967:308)¹¹.

Table 4.4: NOMINAL CAPACITIES OF CEMENT PLANTS IN CHINA PROPER AND MANCHURIA IN 1936

Province/Region	Capacity (375-lb barrels per year)
Shansi	150,000
China Proper	5,270,000
Manchuria	4,000,000

Source: Feuerwerker, 1967: 308

The nominal capacity of the Taiyuan cement plant was 150,000 375-lb barrels per year, which was equivalent to 25,515 metric tons (Feuerwerker, 1967:308)¹².

¹¹Feuerwerker, et al (1967). Approaches to Modern Chinese History. Berkeley: University of California Press.

¹²Gillin stated that Yen's new cement works were producing 175,000 tons of cement per month (Gillin, 1967:187). When compared to Feuerwerker(1967:308), it became evident that this figure probably referred to maximum output measured in 375-lb barrels per year.

Since an output figure for Shansi was not available, output could be estimated on the basis of the output to capacity ratio for China Proper which was 83% in 1936 (Feuerwerker,1967:308 & 310). Therefore, Shansi's annual cement output would have been about 21,200 metric tons.

In 1936, Shansi's net exports through national railways of cement was 1,420 metric tons (Chinese Yearbook 1937,1937:609). It is worth noting that although Shansi's cement output was relatively small, it was sufficient to supply the province's growing industrial sector. Net exports indicated that there was some surplus production. The cement was being produced at a competitive price which allowed it to be successfully exported to neighbouring provinces. The net export to output ratio for cement in Shansi was 7% in 1936. It should be recognized that cement manufacturing was one of the new modern industries which were established as a result of the province's Ten Year Plan. Without this government promotion of modern industries, it was unlikely that Shansi's modern industrial sector would have undergone such rapid development during the 1930's.

Coal Mining

The discussion given below is meant to high-light the importance of coal to the province's economy. However, essentially all of the information pertaining to the development and expansion of Shansi's coal industry is covered in the following section, entitled "SHANSI'S RELATIVE LEVEL OF INDUSTRIAL DEVELOPMENT".

Government investment in mining was small, amounting to only \$CH 1.5 million(Gillin,1967:179). The most important minerals produced were coal and iron. Coal output in 1930 was 2,204,617 tons, which was roughly the same as the

level of output during the period 1910-14 (Gillin, 1967:179). According to Shansi's provincial statistics (*i.e.* statistics presented in the Statistical Annual published by the Provincial Government of Shansi), output nearly doubled within the span of four years to 4,127,305 (Gillin, 1967:179). According to statistics presented in a South Manchurian Railroad Company survey of conditions in North China the output of coal only rose 75 percent, but the author of "Shansi Report" believed that output had increased by well over 100 percent (Gillin, 1967:179). Both of the above estimates of output growth differ from the provincial government's statistics. Output growth would have been 87% for the period 1930-34 if the government's statistics were used to calculate aggregate output expansion. These three growth estimates make it somewhat uncertain to gauge the exact level of output in 1934, but all three sources recognize the fact that it was possible to quickly mobilize labour and capital to expand output if the need arose.

The estimate of coal output in 1934 given by the Chinese Year Book, 1937 issue was only 2.7 million tons (CYB 1937, 1937: 743). There were two reasons for this discrepancy. It was the goal of Shansi's government to do their utmost to conceal any significant changes in the level or composition of industrial output from the Nanking Government. This was done for strategic and military reasons. Yen thought that if the Nanking Government believed that the level of military and industrial strength in Shansi was unchanged, then it would not view the province as a threat to its regional dominance. The other reason for the data discrepancy could be explained by incomplete data, *ie.* the writers of the **Chinese Year Book** may have estimated what 1934 output was, on the basis of 1933's output. In 1933 the amount of coal sold was much lower than what was produced, and output plunged to 2,686,046 tons (Gillin, 1967:180) according to Shansi's

Provincial Government. This was nearly the amount of output which the **Chinese Year Book** claimed Shansi had produced in 1934. In 1934 Yen's new railroads were able to compete successfully against the Central Government's Cheng-Tai Railroad which had previously monopolized Shansi's import and export trade. Coal exporters now had more railroads open to them, and it should also be noted that Yen's railroads forced the Cheng-Tai Railroad to reduce its rates in order to maintain its competitiveness. It is likely that this was an explanatory factor for the sharp output rise between 1933 and 1934 which was recorded by the provincial government.

In order to maintain consistency, the statistics given in the Chinese Year Book and other related sources(see the next chapter for details) will be used for further discussion. This was done because statistics pertaining to Shansi were given for many years, that is, 1910, 1914, 1931-36, and 1944. Similarly, these sources also provided statistics for all of China, North China, and Manchuria for the same years.

Iron and Steel

Historical Trends In Trade Openness And Pig Iron Output In China

Iron and steel making technologies were very well developed before the onset of industrialization. This high level of technological know-how and the large scale of production that could be achieved by pre-modern firms probably retarded the rate of diffusion of modern industrial technologies, *ie.*, the steam engine and electricity, to China's well established centres of metal smelting and fabrication. This was likely the case in Shansi. Its pre-modern pig iron producing capacity was

considerable. It was not until the late 1930's that modern sector pig iron output started to become a significant proportion of total output.

It is useful to look at the historical trend in China's per capita output of pig iron. The high level of output attained during the Sung dynasty shows that pre-modern firms could resist the adoption of modern technologies for a limited time. However, as illustrated by the historical data, the main periods of output growth occurred during times of openness to foreign ideas. Since Shansi was quite insular, it was unlikely that the province's pre-modern pig iron sector was open to foreign ideas or technologies. Therefore, it is reasonable to assume that without the adoption of the technologies of the industrial revolution, Shansi's pig iron output would have been stable. However, the establishment of modern iron and steel processing plants proved that the application of foreign technologies could be used to successfully raise output.

The data presented in the following tables show that per capita pig iron output was positively correlated with trade openness, *i.e.*, openness to foreign ideas and products. This was not a 20th century phenomenon which was directly caused by industrialization. It was likely that a relatively open economy encouraged the dissemination of foreign knowledge and technology to China. The melding together of local and foreign ideas probably spurred new technological developments which raised productivity.

Table 4.5: PIG IRON OUTPUT IN CHINA

Year	Pig Iron - TOTAL Output (metric tons)	PIG IRON -TOTAL Output (kg)	POPULATION	Per Capita Output (kg)
806	12,247	12,247,200	54,000,000	0.23
998	29,484	29,484,000	54,166,667	0.54
1064	82,011	82,010,880	62,344,828	1.32
1078	113,400	113,400,000	80,645,161	1.41
1400	56,700	56,700,000	72,500,000	0.78
1880	120,000	120,000,000	377,500,000	0.32
1912	200,000	200,000,000	430,000,000	0.47
1933	600,000	600,000,000	500,000,000	1.20
1937	900,000	900,000,000	500,000,000	1.80

Year	Pig Iron - TOTAL Per Capita Output (kg)	Trading Regime	DYNASTY/ PERIOD/ PARTY	MODE OF PRODUCTION
806	0.23	CLOSED	T'ang	Pre-Modern
998	0.54	OPEN	Sung	Pre-Modern
1064	1.32	OPEN	Sung	Pre-Modern
1078	1.41	OPEN	Sung	Pre-Modern
1400	0.78	CLOSED	Ming	Pre-Modern
1880	0.32	OPEN	Qing	Pre-Modern
1912	0.47	OPEN	Warlord	Mostly Pre-Modern
1933	1.20	OPEN	GMD	Mostly Modern
1937	1.80	OPEN	GMD	Mostly Modern

Year	Pig Iron - TOTAL Per Capita Output (kg)	Avg. Annual Rate Of Growth
806	0.23	NA
806-998	0.54	0.45%
998-1064	1.32	1.36%
1064-1078	1.41	0.47%
1078-1400	0.78	-0.18%
1400-1880	0.32	-0.19%
1880-1912	0.47	1.21%
1912-1933	1.20	4.56%
1933-1937	1.80	10.67%

Chart 4.2

Per Capita Pig Iron Output

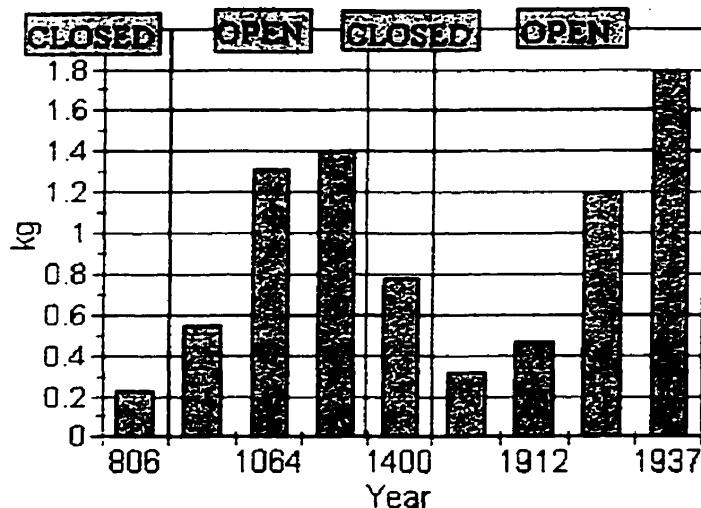
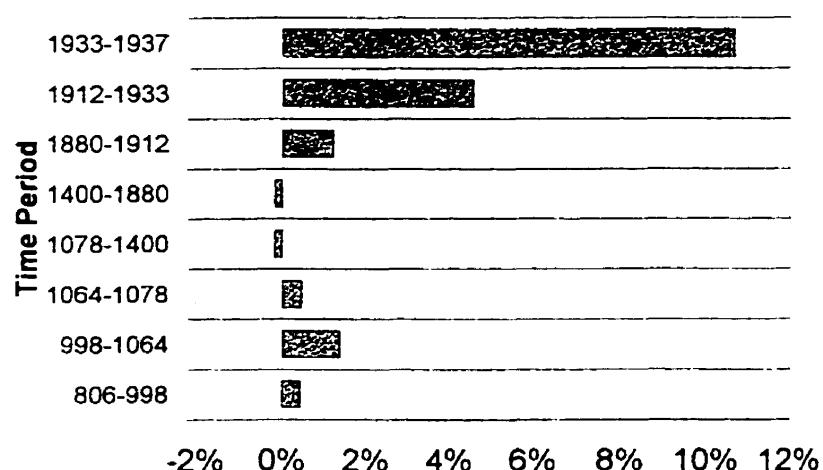


Chart 4.3

Total Pig Iron Output Per Capita

Avg. Per Annum Rate Of Growth



REFERENCE MATERIALS FOR PIG IRON GRAPHS:

Chang,1962: 296, 306 - 1880 estimates (output and population)

Chang,1969: 92 - 1912 to 1937 estimates (output)

Hartwell,1962: 155 - 1400 est. (output)

Hartwell,1966: 34 - Sung Dynasty estimates (output and population)

Perkins,1969: 16 - (population estimates, various years)

Early Development of Shansi's Iron Industry

During the first half of the 20th century, Shansi was reputed to have rich deposits of iron ore. The province was noted for its multitude of pre-modern iron furnaces(Arnold,1926:10)¹³. However, before the 1930's there were few signs of the development of modern industry.

During the 1930's, Shansi accounted for nearly 45% of China's estimated annual production of iron ore and pig iron by pre-modern mines (CYB 1937,1937:748). Pre-modern iron ore output was approximately 180,000 tons, and pig iron production from this ore was about 60,000 tons during the 1930's. Cressey gave an iron ore production figure of 82,000 metric tons for 1942¹⁴. However, it is uncertain whether or not this is total output, that is, pre-modern and modern, or whether it is only modern output.

¹³Arnold, Julian(1926) **China - A Commercial and Industrial Handbook.** Washington, D.C.: Government Printing Office.

¹⁴Cressey, George B. (1955). **Land of the 500 Million, A Geography of China.** p.141.

Table 4.6: Pre-Modern Output During the 1930's in tons

PROVINCE	IRON ORE	% OF TOTAL	PIG IRON	% OF TOTAL
Shansi	180,000	44%	60,000	43%
Szechwan	60,000	15%	20,000	14%
Total	409,582	100%	138,727	100%

Source: CYB 1937,1937:748

Since Shansi's mining resources were controlled by Japan during the Sino-Japanese War, 1937-1945, one may surmise that the Japanese would have employed modern technologies to raise productivity and increase output. Therefore, it was unlikely that iron ore output declined during the Japanese occupation, unless ore reserves were exhausted.

Iron ore output from Yangchuan, Shansi was the province's largest iron mining operation. During 1932-33 and 1933-34, output rose 31% and 6% respectively(China Proper v.III,1945:96)¹⁵. Although the above stated growth rates are high, the actual level of output was modest. Yangchuan's output for 1932, 1933, and 1934 was 13,000, 17,000, and 18,000 metric tons of iron ore respectively.

It is evident from examining the data presented in Table 4.7 that Shansi's major mine output was nearly insignificant when viewed as a percentage of the national total. This is indicative of the fact that most of Shansi's iron ore output came from small pre- modern mines.

¹⁵China Proper V. III - Economic Geography, Ports and Communications (1945). Geographical Handbook Series, Cambridge: Naval Intelligence Division.

Table 4.7: IRON ORE PRODUCTION BY MAJOR MINES

(1,000's of metric tons; Manchurian mines included)

REGION	1932	1933	1934
China, Total	1,839	1,902	2,135
Yangchuan, Shansi	13	17	18
Percent of Total	0.7%	0.9%	0.8%

SOURCE: China Proper, 1945:96.

Pig Iron and Steel - The Expansion of the Modern Sector

In 1918, a small blast furnace was installed at Yangchuan by the Paoching Company of Shansi to produce pig iron(CYB 1936-37:1177). The Paoching Iron Works had a capacity of 20 tons per day, equivalent to a yearly maximum output of 7,300 tons(CYB 1937, 1937: 748 & 749). Throughout the better part of the 1930's, steel output was also quite low. Pig iron output from the Paoching Iron Works was 5,000 and 4,000 tons respectively for 1933 and 1934(China Yearbook 1939, 1974:472).

**Table 4.8: PIG IRON OUTPUT FROM THE PAOCHING IRON WORKS
in tons**

Year	1933	1934	1935/36	1937 Estimate*
Output	5,000	4,000	12,000	32,120
Percent of Capacity	68%	55%	55%	55%
Capacity	7,300	7,300	21,900 est.	58,400

Source For Table 4.8:

* Gillin, 1967:187 - This 1937 output estimate assumes that 58,400 or more tons of cast iron would be produced from the new, modern Iron and Steel Plant that Yen had nearly completed building in 1937. See the text for sources for the preceding years. It was uncertain what Paoching's pig iron output was in 1937, and as a result, it was not included in this tentative output estimate.

In order to raise steel output, a new electric furnace was purchased in 1935(Gillin, 1967:186). By 1935, steel output had risen to 20 tons a day, equivalent to 7,300 tons per year(Gillin, 1967:186). At the same time, iron output at the Pao Chin Foundry¹⁶ trebled(Gillin, 1967:187). Based on the level of pig iron output in 1933 and 1934, which averaged 4,500 tons per annum, it would be reasonable to estimate that 1935 output was in the range of 12,000 to 13,500 tons, but capacity may have been as high as 21,900 tons.

Table 4.9: STEEL OUTPUT IN SHANSI
in tons

YEAR	1935	1936	1937 Estimate
Output	7,300	43,000	87,600
Comments	Estimated Maximum	Actual Output	Estimated Maximum

Sources: Gillin, 1967: 186 &187.

By 1936-37, the Shansi government was in the process of completing the construction of a large steel plant near Taiyuan which was to have an estimated

¹⁶I believe this is the Paoching Iron Works that was mentioned in other sources which were referenced.

output of 87,600 tons of steel per year(CYB,1937,1937:750). This modern steel mill was valued at over \$Ch 5 million and was comparable, in size to the Japanese-operated Penchi-hu mill in Manchuria(Gillin,1967:187). When completed, it would be capable of manufacturing 240 tons of coke, 160 tons of cast iron, 240 tons of open-hearth steel, and 150 tons of steel rails for the T'ung-Pu Railroad(Gillin,1967:187). Nearly 80% of the mill had been built by the time Shansi was occupied by the Japanese who were quite impressed by it. If the statistics which were reported for the 1930's were reliable, then it would appear that Shansi's iron and steel industries were entering a period of extremely rapid expansion.

Throughout the 1930's, Shansi's output of iron ore was dominated by the pre-modern sector. It was likely that a significantly larger share of output was produced by modern means during the Japanese occupation. The following table shows the relative production shares of the modern and pre-modern iron ore sectors.

Table 4.10: TOTAL IRON ORE OUTPUT OF SHANSI BEFORE AND DURING THE JAPANESE OCCUPATION (1,000'S OF TONS)

<u>Year</u>	<u>1932</u>	<u>1933</u>	<u>1934</u>	<u>1942</u>
Pre-Modern	180	180	180	Not Known
Modern	13	17	18	82
Total	193	197	198	82

Notes for Table 4.10:

Pre-modern mines were assumed to use little or no modern industrial technologies, and were labour intensive (CYB 1937,1937:748).

Modern mines were assumed to be those that were listed as primary producers (China Proper, 1945:96). The above stated 1942 output figure for iron ore is the statistic given by Cressey¹⁷. Although not explicitly stated, these output figures appeared to refer to modern sector production. This seemed to be probable because upon comparison of these statistics with those presented by Chang, one could infer that Cressey was only referring to modern sector output¹⁸.

If Cressey's iron ore output figure represented most of the iron which was available for pig iron production, then pig iron output would have declined substantially during the Japanese occupation. However, if pre-modern output continued to be significant, then pig iron output could have been maintained at pre-war levels. Even if Cressey's iron ore figure referred only to modern sector

¹⁷Cressey,1955:141

¹⁸Chang's study focussed on modern sector output, but it also gave some estimates of pre-modern sector production.

Chang, John K.(1969). **Industrial Development in Pre-Communist China.** Chicago: Aldine Publishing Co.: 92, 117, & 123.

output, then the corresponding level of modern sector pig iron output would likely have been similar to the level of production which prevailed before the war.

Table 4.11: SHANSI'S TOTAL PIG IRON OUTPUT

in tons

Year	1933	1934	1935/36	1937	1942 est.
Pre-Modern	60,000	60,000	60,000	60,000	NA
Modern	5,000	4,000	12,000	32,000	26,650
Total	65,000	64,000	72,000	92,000	26,650
Pig Iron to Iron Ore Ratio	33%	32%	NA	NA	32.5%

NOTES:

Pre-modern output figures were from (CYB 1937,1937: 748).

Modern sector output figures were from (China Yearbook 1939,1974: 472) and (Gillin, 1967: 187).

The 1942 estimate assumed that 82,000 tons of iron ore were mined and that when smelted, 26,650 tons of pig iron would be produced. The average of the pig iron to iron ore ratio for 1933 and 1934 was used to calculate the 1942 pig iron output figure.

On the basis of the available information, it appeared that the Japanese were not able to sustain the rapid expansion in the iron and steel industries which was initiated under the leadership of Yen Hsi-shan. However, if most of the iron ore

mined in 1942 came from modern mines, this would have marked a significant shift from pre-modern to modern large scale mining operations.

It was very likely that Shansi's 1942 iron ore output estimate given by Cressey¹⁹ referred only to modern sector output. His source was Nelson Dickerman's, **Mineral Resources of China, Foreign Minerals Survey**, II, No. 7, which was published by the US Bureau of Mines in 1948. An output figure of 9,727,217 metric tons was stated for all of China in 1942 by Cressey(1955:141). This output estimate was essentially the same as the one arrived at by Chang (1969:123), for modern sector iron ore output. His output estimate for 1942 was 9,452,000 metric tons, that is, approximately three percent smaller than Cressey's figure.

According to the Chinese Year Book and Cressey, iron ore output would have declined throughout North China during the war²⁰. However, information supplied by Duus,et al(1996) would imply that this was not the case. Known provincial output statistics are shown below and are followed by a discussion of Duus, et al's findings.

Totals of these provincial iron ore output figures would imply that output declined during the Japanese occupation of North China. However, this was not true, aggregate output figures for North China which were presented by Duus et al.(1996) clearly indicated that iron ore output had risen considerably during the occupation. However, there is no mention as to whether or not modern sector

¹⁹Cressey,1955:141

²⁰Chinese Year Book 1937, 1937: 748 and Cressey, 1955: 141.

output dominated the mining industry. It was probable that the modern sector grew considerably under the Japanese occupation, and may have become dominant. This viewpoint seems credible because during the occupation a considerable amount of capital was invested in North China's mining industry. Additionally, it was unlikely that high rates of output growth could be sustained throughout the war if most mines were reliant on pre-modern technologies.

Table 4.12: NORTH CHINA'S IRON ORE OUTPUT

Province	Pre-Modern Output During the 1930's ²¹	Modern Sector Output in 1942 ²²
Hopei (Hopeh)	NA	NA
Shantung	NA	32,056
Shansi	180,000	82,000
Honan	25,000	25,000
NORTH CHINA TOTAL	205,000	139,056

Sources:

Chinese Year Book 1937, 1937: 748
Cressey, 1955:141

These two conflicting scenarios can be reconciled. Part of the discrepancy between Duus and the previously discussed sources may have been caused by changes in the geographical coverage of the Japanese controlled territories of North China. Japanese North China generally referred to the four provinces of

²¹Pre-modern output was used for comparative purposes because large modern mine output was not significant.

²²These figures may be representative of the total level of output if pre-modern mines were either abandoned or upgraded to modern mines with the use of Japanese technology and machinery in all of these provinces.

Hopei, Shantung, Honan, and Shansi. However, discussions of Japanese controlled North China have sometimes grouped the following five provinces together - Hopei, Shantung, Shansi, Suiyuan and Chahar. Additionally, North China and Inner Mongolia were sometimes grouped together²³.

Iron ore production rose from 483,000 tons in 1938 to 1,307,000 tons in 1943, equivalent to a 2.7 - fold increase over this five year period (Duus, et al, 1996: 139 &163). It was likely that this calculation included Chahar because its inclusion yielded an output estimate for 1942 which was similar to the 1943 output figure for North China.

**TABLE 4.13: AN ALTERNATE ESTIMATE OF IRON ORE OUTPUT IN 1942
(QUANTITY IN TONS)**

Hopei	NA
Shantung	32,056
Shansi	82,000
Suiyuan	NA
Chahar	923,376
NORTH CHINA TOTAL	1,037,432

Source: Cressey, 1955:141.

²³The region of Inner Mongolia included the provinces of Suiyuan and Chahar. See maps in, O'Neill, Hugh B. (1987). **Companion To Chinese History**. New York: Facts On File Publications: 394-397.

Taylor, George E. (1980). **Japanese Sponsored Regime in North China**. New York: Garland Publishing: 9.

Duus, Peter, et al. (1996). **The Japanese Wartime Empire, 1931-1945**: 162.

Cohen, Jerome B. (1949). **Japan's Economy in War and Reconstruction**: 163.

Electricity

In order to fuel this industrial expansion, electricity output had increased enormously. Between 1929 and 1936 there was a 9-fold increase in electric power generating capacity(Gillin, 1967:188).

In 1937, Yen was laying the groundwork for a \$Ch 6.5 million hydroelectric station which would have the ability to generate 326,748,000 KWH's per annum(Gillin, 1967:189). In addition to hydro power, Yen invested another \$Ch 200,000 in the refinery that he had constructed during the 1920's to extract petroleum from shale rock(Gillin,1967:189). In 1936 Shansi produced 172,800,000 KWH's of electricity (14 KWH's per capita) which was equal to about 3.5% of China's total output(Gillin,1967:189). This meant that if Yen had succeeded in constructing the above mentioned hydro plant, electricity output could have been expanded to approximately 500 million KWH's, which would be nearly 3 times larger than the level of output in 1936.

It should also be noted that although coal output was not sustained at a high level during the early 1930's (1930 - 1936), it did expand considerably during the period of Japanese rule (1937 - 1945). Expanded coal output was indicative of both increased industrial production and larger coal exports. Additionally, it was likely that a portion of this expanded coal output was used to fuel coal burning electric power generating stations.

Table 4.14: ELECTRICITY OUTPUT IN 1936

	Million KWH's	Population in millions	Year of Estimate	Per Capita Output in KWH's
China, Total ²⁴ (China Proper & Manchuria)	3,967	503.1	1933 (Incl. Manchuria, Excl. Taiwan)	8
China Proper ²⁵	2,616	467.1	1933	6
Manchuria ²⁶	1,351	36.0	1936	38
Shansi ²⁷	173	12.4	1933	14
Shanghai ²⁸	980	3.7	1936	265
China, Adj. ²⁹	1,463	451.0	NA	3

²⁴Gross output, including industrial plants.

²⁵China, Total minus Manchurian output.

²⁶The Manchurian output included production by at least some industrial plants. Especially noteworthy was the inclusion of the output of the massive power station at the Fushun Coal Mines. The statistic given refers to gross output , including consumption by the power plants themselves.

The source for 11-13 was Wright, Tim (1991) "Research Note - Electric Power Production in Pre-1937 China", China Quarterly, Issue No. 126: 356-363.

²⁷According to Yen Hsi-shan, in 1936 Shansi produced 172.8 million KWH's of electricity(Gillin, 1967:189).

²⁸Wright (1991: 357) gave the output of the Shanghai Power Company as 813 million KWH's in 1936. This company provided 83% of the electricity sold in Greater Shanghai(China Proper Vol.III, 1945:319). On this basis, the electricity output of Shanghai could be estimated to have been 980 million KWH's.

²⁹China, Adj.(Adjusted) is: China, Total minus the following

- a) Manchuria
- b) Shansi, and
- c) Shanghai

Notes For Table 4.14:

Population data is from the following sources:

China Proper, Vol. III(1945)pp.296 - Shanghai

Chinese Yearbook 1937 (1937) p.41- China's Total pop. during the 1930's was 440 million. Population estimates for 1933 were found in Perkins(1969): p.212 for China, Shansi, and Manchuria.

Cheng, Yu-Kwei (1956) Foreign Trade and Industrial Development of China. p. 193 - Manchuria

	1932	1940	Annual Growth Rate
Manchurian Population, millions	29.969	43.234	4.7%

Pop. estimate for 1936 extrapolated using the above rate of growth:
36.013 million.

Table 4.15: ELECTRIC POWER OUTPUT IN 1936 FOR SELECTED COUNTRIES³⁰

COUNTRY	KWH's Per Capita
Japan	343
USA	868
UK	436
USSR	187

³⁰US Foreign commerce YearBook 1938 (1968):413.

Note that Japan's population was only 70.9 million in 1936, but because of the relatively high per capita production of electricity, Japan Proper's aggregate electricity output was 24,312 million KWH's. This was far in excess of what was produced in China. Even with the inclusion of Manchuria, total output fell far short of what Japan produced.

Communications - Railroad Construction

Railway construction was an integral part of the Ten Year Plan. Approximately 600 miles of narrow-gauge rail lines were laid which ran the length of the province. This new railway was named the T'ung-Pu Railroad. Construction started in the summer of 1932, and it was nearly completed, along with at least a hundred miles of branch lines, when the Japanese launched their invasion into Shansi in the summer of 1937.

Most of the steel rails, forty-five locomotives and miscellaneous other railroad equipment was imported from Germany. Yen's factories manufactured the railroad's wooden sleepers and over 460 freight cars. Additionally, it should be noted that during the plan period preceding the Japanese invasion there was a 3-fold increase in the size of the telephone system. Collectively, the expansion of telecommunications and the railroad network significantly improved Shansi's communications infrastructure.

SHANSI'S RELATIVE LEVEL OF INDUSTRIAL DEVELOPMENT

Introduction

Yen Hsi-shan's Ten Year Plan for economic development was launched during the early 1930's, but was interrupted by the Sino-Japanese War(1937-45) in 1937. Yen's efforts to create a modern industrial sector were partially successful. Although there was an upsurge of modern sector industrial output , the pre-modern sector continued to dominate the economic life of the province. The important point to be noted is that most of the growth sectors were reliant on

modern technology. Unless otherwise specified, industrial output figures refer to modern sector output. Therefore, the over-all level of Shansi's industrial output was probably higher than some of these comparisons would suggest.

One method of determining Shansi's relative level of industrial development is to compare its output of the nation's most traded industrial commodities with other provinces or regions. Comparisons for a wide range of commodities are difficult to come by for earlier years. Therefore, the mid-1930's has been chosen as the most appropriate time period to study. Although industrialization efforts were well under way by 1936-37, one must bear in mind two points. Firstly, the industrial complex which existed in Shansi during the 1920's was minuscule when compared to what existed by 1936-37. Secondly, the 1933 population was 12.4 million, equivalent to 2.5 percent of China's total population(Perkins 1969:p.212). This means that as long as Shansi produced more than 2.5% of a commodity's national output, then it was producing more than the average level of output for that commodity.

The following products were selected for comparison:-

1. **Cotton Yarn and Cotton Piece Goods**

These two goods served as basic staple commodities for the bulk of China's population and represented the most traded commodity group in the country during the 1930's. Additionally, foreigners looked at China as a huge potential market for their manufactured cotton goods.

2. Cigarettes

Cigarettes were the most traded consumer good in the country. There was considerable foreign investment in the Chinese cigarette industry, and China also imported cigarettes.

3. Flour

Modern flour milling developed quickly because of low production costs. Flour mills were established in the wheat growing areas of Northern China and in ports such as Shanghai which acted as processing and exporting centres.

4. Raw Cotton

Although it was not an industrial product, raw cotton was one of China's most important industrial raw materials. As China's domestic production of manufactured cotton products grew, demand for raw cotton was stimulated. In addition, demand created by the Japanese cotton industry was especially intense during the Sino-Japanese war.

5. Coal

Coal was China's most important non-agricultural raw material. By the 1930's quite a few large modern coal mines existed, but they operated side- by-side with many pre-modern mines. Since coal was most cheaply transported in bulk shipments, its exploitation tended to encourage the development of new railroads. Additionally, coal was in high demand to provide fuel to China's modern industries which were most prevalent in Manchuria, Shanghai, and other major port cities. In order to develop modern industry, cheap coal was essential. This was one advantage that Shansi had, which many other provinces lacked.

Cotton

The most important domestically traded commodities were cotton yarn and cotton piece goods. Throughout the 1930's it was likely that Shansi was capable of producing enough cotton products to satisfy its domestic demand (Chinese Year Book [CYB], 1937: 621). By 1936 Shansi's cotton products output was significant, but it was by no means a large producer.

Table 4.16: COTTON INDUSTRY STATISTICS FOR 1936

Region	No. of Factories	No. of Spindles	Cotton Yarn Output (bales)	No. of Looms	Output of Cloth 1000 sq. yards
Kiangsu (most of this output is from Shanghai)	87 *Shanghai = 65 *Other cities = 22 ³¹	3,714,356	1,299,538	35,547	758,717
Liaoning (one of Manchuria's three provinces)	6	159,852	NA	1,005	NA
Shansi	5	74,724	65,781	2,312	24,526
TOTAL	143	5,524,635	2,025,489	53,846	1,035,575

Source: CYB, 1937:621

³¹ CYB 1937, 1937: 693

Table 4.17: COTTON INDUSTRY STATISTICS FOR 1936

	No. of Factories	Percent of Factories
Shanghai	65	45%
Kiangsu, excl. Shanghai	22	15%
Kiangsu	87	61%
Liaoning	6	4%
Shansi	5	3%
Total	143	100%

Source: CYB, 1937:621

Since statistics were not available for all of the provinces, comparisons were best made with Kiangsu, which was the largest provincial producer. Otherwise, Shanghai was the best standard of comparison because the output values or quantities for a wide range of commodities was known for the city during the 1930's. Additionally, it should be added that in most cases, unless otherwise noted, Kiangsu's output included that of Shanghai. Shansi's cotton yarn and cloth output were respectively 5% and 3% of Kiangsu's output.

Cigarettes

The second most traded commodity was cigarettes. On a national level, Shansi was an insignificant cigarette producer. However, its output generated by Chinese factories exceeded the production of Chinese factories in the following provinces for which data was available: Kiangsu, excluding Shanghai; Chekiang; Anhwei; Hupeh; Shantung; and Hopei. If foreign factory output is added then, Hupeh, Shantung, and Hopei's output far exceeded Shansi's. Shansi's output was equivalent to 2% of Shanghai's Chinese factory output and over 1% of its total factory output (Chinese Year Book 1937, 1937:621).

**Table 4.18: CIGARETTE OUTPUT STATISTICS FOR JULY 1934 TO JUNE
1935
IN MILLIONS OF CASES**

REGION	CHINESE FACTORIES	% OF CHINESE FACTORIES	FOREIGN FACTORIES	TOTAL
Shanghai	50.8	95%	26.6	77.5
Kiangsu, excl. Shanghai	less than 1 million	NA	NA	less than 1 million
Shansi	1.0	2%	NA	1.0
TOTAL	53.5	100%	55.8	109.3

Source: Chinese Year Book 1937, 1937:621

Flour

China's third most important commercially traded good was flour. In terms of factory capitalization, Shansi compared favourably with other producing regions, but its output was relatively low in comparison to Shanghai.

As can be seen from Table 4.19, Shansi's output to capital ratio was less than half of the national average, and was very low when compared to Shanghai. This would imply that the capital invested in the modern flour milling industry in Shansi was used to establish or support a relatively inefficient industry which did not offer a large return on its capital. However, it is likely that although these mills appeared uncompetitive nationally, they probably were able to outperform Shansi's pre-modern flour mills.

Table 4.19: CHINA'S FLOUR MILLS - Output from July 1932 to June 1935

Region	No. of Mills	% of Total	Capital \$CH millions	% of Total	Output millions of sacks	% of Total	Output to Capital Ratio
Shanghai	11	10%	7.9	25%	31.1	42%	3.9
Kiangsu (excl. Shanghai)	14	13	5.5	17	15.1	20	2.7
Shansi	5	5	1.3	4	1.0	1	0.8
Total	106	100	31.9	100	74.9	100	2.3

Source: China Year Book 1937, 1937: 624

Raw Cotton And Coal

Two of the most traded raw materials for industry were raw cotton and coal. Raw cotton output depended primarily on pre-modern farm output which used little modern technology. On the other hand, many coal mines utilized some modern technologies, but others were essentially pre-modern operations which relied on increasing the number of labourers in order to raise production.

Shansi's raw cotton production was probably adequate to supply its provincial cotton mills, but its production represented only 4% of China Proper's output. The output to area cultivated ratio of Shansi was close to the national average, but land productivity lagged behind Kiangsu.

Table 4.20: RAW COTTON OUTPUT IN 1935

PROVINCE	AREA CULTIVATED (1,000 SHI- MOWS)	% OF TOTAL	OUTPUT (1,000 SHI- PICULS)	% OF TOTAL	OUTPUT TO AREA RATIO
Shansi	2,389	5%	628	4%	0.26
Kiangsu	11,998	23	3,951	27	0.33
Total	52,182	100	14,586	100	0.28

Source: China Year Book 1937, 1937: 627)

Coal Mining

For the period, 1910-14, the province's coal output was approximately 2.5 million tons (China Year Book [CYB] 1919-20, 1974:65). This level of output was equivalent to 25% of China's total coal production in 1910³². This ratio rose to 27% in 1914 because total Chinese output decreased, not because production increased in Shansi³³.

The Chinghsing collieries, at Chinghsing, Chihli province (at the Shansi border) were owned by a Sino-German company, and its capital amounted to

³²China Year Book 1919-1920, 1974: 64 and 65

³³China Year Book 1919-1920, 1974: 64 and 65

Tls. 500,000³⁴ (China YearBook, 1919-20:69). Although the mines were not in Shansi, a railway line was built to connect them with the Shansi railway system.

The Paoching collieries, at Pingtingchou, in eastern Shansi, on the Chengting-Taiyuanfu Railway, were owned by the Pao Chin Mining Company of Shansi. This Chinese owned operation operated with imported foreign machinery and was able to achieve an output of 131,396 tons in 1915 (China Year Book, 1919-20:70). The Pao Chin Coal Mining Company was founded in 1906 and its capital in the early 1920's amounted to 2 million taels (Arnold, 1926:527). The company was established by the Shansi gentry to take over the concession which was repurchased from the Peking Syndicate in 1908 (Arnold, 1926:527). Between 1915 and 1922, output had risen considerably. Output in 1922 totalled 223,386 tons of anthracite coal (Arnold, 1926:527). Pao-Chin Company's Pingting coal mines employed approximately 2,000 workers in 1919³⁵.

The Chinese owned, Tung Pai Mining Company was established in 1921 with capital valued at 3 million yuan [Chinese dollars] (Arnold, 1926:527). Its capital was contributed by Shansi merchants in cooperation with Cantonese merchants.

³⁴Tls is an abbreviation for Taels. This was the main accounting unit used in the Chinese monetary system while it was based on a silver standard. During the 1930's, the Nationalist government adopted the Chinese Dollar as its primary accounting unit. This marked a change from having a specie based currency to one that was based on paper money. There was more than one type of tael, but their valuations were similar. The HK tael was the accounting unit used for foreign trade transactions, and yearly exchange rate valuations can be easily found. Refer to:

Cheng, Yu-Kwei(1956) **Foreign Trade and Industrial Development of China**. Washington, D.C.: University Press of Washington, D.C.: 262 &263.

U.S. Foreign Commerce Yearbook, 1933.: 254. - In 1920, 1 HK Tael = \$US 1.24

³⁵Chesneaux, Jean. (1968). **The Chinese Labor Movement 1919-1927**. Stanford: Stanford University Press: 38.

Output of bituminous coal in 1922 was estimated at 150,000 tons (Arnold, 1926:527).

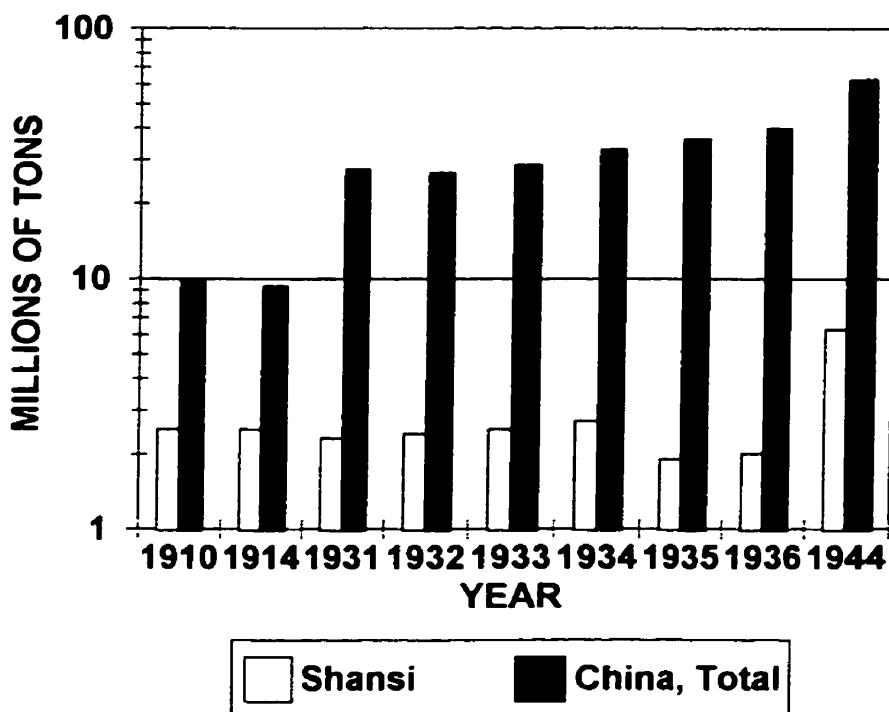
Coal output in Shansi was considerable, and the province ranked as the 3rd largest producer in China Proper in 1934. As can be seen from the chart shown below, Shansi's coal output expanded rapidly during the Sino-Japanese War (1937-45). Throughout this period the province's mineral industries were under Japanese management, and were in the process of being integrated into a North China economy which was to supply the Japanese empire with fuel (primarily coal, and ferrous and non-ferrous minerals\metals). It should also be noted that the four largest producing provinces in 1934 formed the North China region which came under direct Japanese control during the Sino-Japanese War.

Table 4.21: Estimated Coal Output In Shansi and China *
millions of tons

	1910	1914	1931	1932	1933	1934	1935	1936	1944
Shansi	2.5	2.5	2.3	2.4	2.5	2.7	1.9	2.0	6.3
Shansi's Output Shown As A % Of National Output	25%	27%	8%	9%	9%	8%	5%	5%	10%
China, Total	9.9	9.3	27.2	26.4	28.4	32.7	36.1	39.9	62.5

Chart 4.4

COAL OUTPUT IN SHANSI & CHINA MILLIONS OF TONS



The long-run trend in Shansi's coal output has been one of relative stability.

Between 1910 and 1936, the level of output fluctuated between 1.9 and 2.7 million tons per annum. It is possible that for a short time, coal output may have been as high as 4 - 5 million tons during the 1920's. This estimate is based on the fact that during the 1920's imports of foreign mining machinery increased and

more mines tried to employ contemporary mining methods³⁶. Between 1920 and 1926 coal output almost doubled, but this trend did not continue because Yen's wars with other warlords disrupted the economy³⁷. The output expansion that occurred between 1936 and 1944 marked a break with the past for three reasons. Firstly, this level of output was significantly above what was achieved during 1931-36 when Shansi was rapidly industrializing, and secondly, there was an infusion of Japanese investment, technology, and management methods during the Sino-Japanese War. Additionally, when Shansi's economy was linked with that of the Japanese Empire, the rail network of all of North China was unified and exports of surplus coal to Japan and Manchuria could be easily increased. This was in sharp contrast to the pre-war situation during which time Yen Hsi-shan sought to maintain Shansi's autonomy from the Nationalist government at Nanking.

In 1934, the coal reserves of Shansi and Suiyuan were 127,127 and 467 million tons respectively(China Year Book 1939,1974:469). Shansi's reserves were equivalent to over half of China's total coal reserves³⁸(CYB 1939,1974:469). Although most of the coal reserves were located in Shansi, most of the coal mining did not take place there.

³⁶Gillin, 1967:87

³⁷Gillin, 1967:87

My estimate of 4-5 million tons assumes that output doubled either from a base level of 2 or 2.5 million tons in 1920.

³⁸Manchuria is not included.

In 1932, the leading coal producing provinces were: Hopei, Shantung, Shansi, and Honan. Between 1932 and 1934, Shansi maintained its position as the 3rd largest producing province. It is also noteworthy that the production of coal by Shansi's principal mining companies made up a small percentage of the provinces's coal output. This disparity is especially striking when compared to Hopei which was China's leading coal producer.

The Japanese occupied North China with the aim of exploiting its rich mineral resources. "Theoretically the Provisional Government controls the four provinces of Hopei, Shantung, Honan and Shansi."(Taylor,1980:9)³⁹. These four provinces comprised the region known as North China. These provinces were China's four principal coal producers. Although it was clear that the coal industry developed rapidly under Japanese auspices, it was equally notable that pre-occupation development was relatively slow (refer to Table A4.5b).

**Table 4.22: COAL RESERVES
Geological Survey of China estimate from 1934 in millions of tons**

PROVINCE	RESERVES	PERCENT OF NATIONAL TOTAL
Shansi	127,127	53%
Suiyuan	467	Less than 1%
Hopei	3,071	1%
CHINA	238,907	100%

Source: China Year Book 1939,1974:469.

³⁹Taylor, George E. (1980) **Japanese Sponsored Regime in North China.** New York: Garland Publishing Inc.

Table 4.23: PRODUCTION OF PRINCIPAL COAL COMPANIES IN 1933
1,000's of metric tons

PROVINCE	MINING COMPANY	OUTPUT	% OF PROVINCIAL OUTPUT
Hopei (Total)	.....	6,286	100%
1.	Kailan	4,284	68%
2.	Other Principal Producers	1,643	26%
3.	Sub Total of Principal Producers	5,927	94%
Shansi (Total)	.....	2,466	100%
1.	Paochin	433	18%
2.	Chingpei	124	5%
3.	Sub Total of Principal Producers	557	23%

Source: China Year Book 1939, 1974:469.

Table 4.24: COAL OUTPUT

(1,000 TONS)

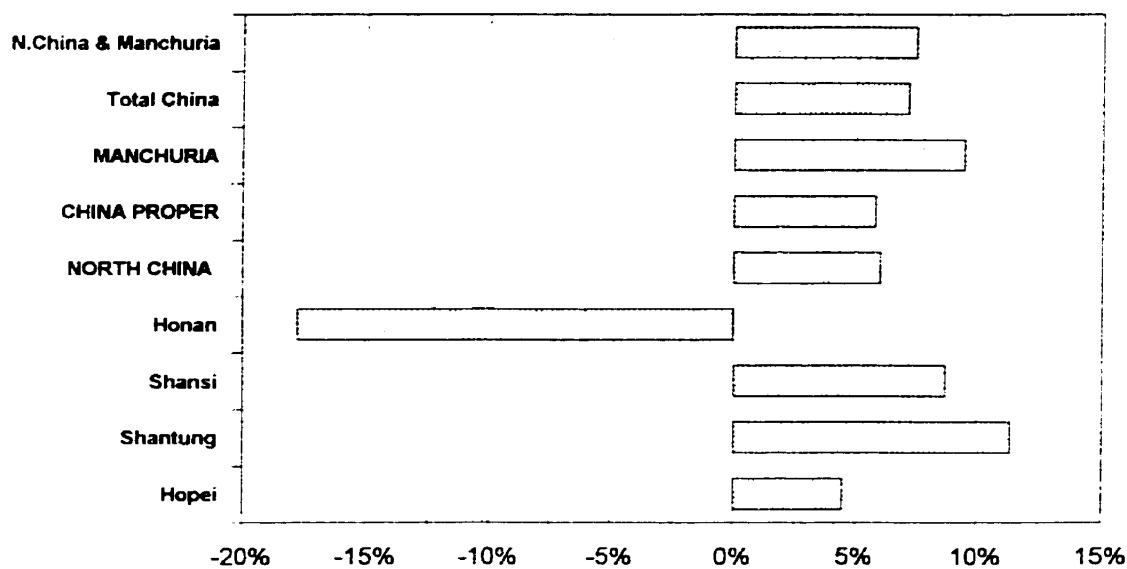
Region\Prov.	1934	% of Output*	1944	% of Output*	Annual Avg. Growth Rate
Hopei	7,740	25%	12,000	19%	4.5%
Shantung	3,504	11%	10,300	16%	11.4%
Shansi	2,700	9%	6,250	10%	8.8%
Honan	2,131	7%	300	0%	-17.8%
NORTH CHINA	16,075	51%	28,850	46%	6.0%
CHINA PROPER	20,899	67%	36,838	59%	5.8%
MANCHURIA	10,338	33%	25,627	41%	9.5%
Total China	31,237	100%	62,465	100%	7.2%
N.China & Manchuria	26,413	85%	54,477	87%	7.5%

NOTES FOR TABLE 4.24: * % of Output refers to Output of Total China

SOURCES: See Endnotes^b

Chart 4. 5

**ANNUAL GROWTH RATE OF COAL OUTPUT
1934 TO 1944**



Before the occupation of Shansi, Japan had already invested in new railways in North China so that once the province was under their control, its coal deposits could be easily accessed (Gillin, 1967:214). Coal mining was given a high priority

by Japan. Between 1937 and 1945, about \$US 62.5 million (\$Ch 213 million at the exchange rate prevailing in 1937) was invested in Shansi's coal mining sector by Japan (Gillin, 1967:215). This was a substantially larger amount of capital than what had been invested during Yen's Ten Year Plan (TYP). I estimated that the capital outlay for the mining, manufacturing, electricity, and communications sectors during Yen's TYP amounted to at least \$Ch 80 million (refer to Shansi Investment Appendix).

Although iron, steel, and electricity output represent important indicators of industrial development, these commodities were not important to China's domestic commerce. Therefore, it would be more suitable to discuss these items in the section entitled "Shansi's Mining and Metal Industries". Some pre-war comparisons can be drawn between Shansi's iron industry and that of China Proper and Manchuria. However, war-time comparisons were difficult to make because Shansi's production was usually grouped with the other provinces of North China.

Summary Of Observations

The most notable characteristic of this comparison of important nationally traded commodities was that Shansi was an average or small producer in terms of per capita output. In terms of gross output, its production was relatively insignificant when compared to other producing regions or national output levels. Coal mining was the sole exception. Shansi possessed immense coal deposits and was one of China's leading producers of coal.

Shansi's Post-War Japanese Connection: 1945 To 1949

By the end of the Sino-Japanese War(1937-45) the Japanese had made significant investments in Shansi's industrial sector, ie., mining and manufacturing. Shansi's industrial infrastructure had been improved during the Japanese occupation, and its modern industrial sectors were efficiently run.

The post-war story of Shansi differed greatly from either Shanghai or Manchuria, because unlike these areas, the Japanese armed forces stayed to defend the province against Chinese Communist incursions⁴⁰. Additionally, Shansi's extensive, modern industrial complex remained intact and stayed under Japanese managerial control. Its industries benefited from the continued use of Japanese managerial and technical personnel. As a result of this Japanese aid, Shansi's production levels of munitions and war-materials continued at high levels, and significantly augmented what was available to anti-communist forces during China's Civil War (1945 to 1949).

Overall, Shansi's industrial economy performed well immediately following the Sino-Japanese War. The Taiyuan industrial region not only maintained wartime production levels, it even was able to increase its output (Gillin,1967:285). However, the maintenance of a food supply rapidly became a problem as Yen's forces lost direct control of much of the countryside, other than Taiyuan and its environs. At least until the end of 1946, a similar picture prevailed in the rest of Japan's former Occupied Territories in China. The Japanese Army remained intact

⁴⁰ The main source material for this section on Shansi was Donald G. Gillin and Charles Etter's article, "Staying On: Japanese Soldiers and Civilians in China, 1945-1949.", Journal of Asian Studies, Vol.42, Issue 3, May (1983): 497-518.

and fully armed. It controlled rail zones, cities, and many towns in North China and fought tenaciously against hostile Communist armies and guerrilla forces(Gillin,1983:500-501).

The Japanese Imperial forces stationed in Shansi allied themselves with the province's Warlord, General Yen Hsi-shan and Chiang Kai-shek's Nationalist government. Basically, Chiang required help from anyone who would give it to fight China's growing communist guerrilla forces; Yen needed the Japanese to protect his province against communist incursions, train his soldiers, and to aid in the continued industrialization of Shansi; and the Japanese felt that it was their patriotic duty to defend Japan against communism, and to encourage economic co-operation between Japan and Shansi, so that Shansi's natural resources, namely coal, iron, and cotton could be used for Japan's economic and military reconstruction.

Yen Hsi-shan and the Japanese wanted to secure Shansi's independence from China and to establish agricultural and industrial self-sufficiency within the province (Gillin,1983:506).

Japanese leaders in Shansi apparently wanted to turn the province into a little Manchukuo, which they would dominate in alliance with a compliant Chinese warlord just as the Japanese Kwantung Army actually had dominated a seemingly independent Manchuria under the warlord Chang Tso-lin. (Gillin,1983:506)

Also, of significance was the fact that the Japanese Army garrisoned in Shansi originally belonged to the Kwantung Army which had previously dominated Manchukuo's government and military⁴¹ (Gillin,1983:506). Jono Hiroshi, a high ranking Japanese official in Shansi persuaded many Japanese to stay in Shansi because, "by remaining in Shansi the Japanese could act as the foundation for the reconstruction of Japan" (Gillin,1983:506). If patriotic appeals to strengthen Japan and defend it against communism did not convince his comrades to stay, then economic and social incentives and privileges were offered.

Table 4.25: JAPANESE ARMED FORCES STATIONED IN SHANSI

Year	1937-38	1945	1946	1949
No. Of Soldiers	+60,000 ⁴²	15,000 ⁴³	10,000 ⁴⁴	3,000 ⁴⁵

Sources: Gillin,1967:273 and Gillin,1967:507.

⁴¹ Other than the Japanese Kwantung Army, Manchukuo had its own army of Chinese conscripts which were trained by the Japanese (Coox,1989:413-414 in Duus[1989]).

⁴² There were well over 60,000 troops involved in the invasion of Shansi. Japanese casualties alone totalled 30,000 and an equal number were wounded (Gillin,1967:273).

⁴³ Immediately following the conclusion of the Sino-Japanese War, a fighting force of 15,000 Japanese soldiers allied themselves with Yen's regime (Gillin,1983:507)..

⁴⁴ The loss of 5,000 soldiers was due to repatriation to Japan (Gillin,1983:507).

⁴⁵ The loss of 7,000 soldiers was primarily due to casualties inflicted during clashes with Chinese Communist forces (Gillin,1983:507).

Concluding Remarks

Unlike Shanghai and Manchuria, which industrialized with the aid of foreign capital, Shansi primarily relied on provincially based capital⁴⁶. In contrast to Shanghai and Manchuria, Shansi's industrialization was aimed at developing a provincial market for its industrial production, rather than becoming an export-oriented enclave economy. For the most part Shanghai's commercial and industrial firms relied on global markets and access to foreign capital to ensure their prosperity. Before the Japanese occupation of Manchuria, its agriculturally oriented export sector also relied on global markets and enjoyed access to modest amounts of foreign investment. However, after the creation of Manchukuo, Japanese industrial investment rose sharply and its commercial ties to Japan were strengthened. Japanese investment in Shansi also rose significantly after 1937, and its industrial sector was integrated into Japan's growing economy.

However, this pattern of development was in sharp contrast to the pre-war period. Shansi's manufacturers were encouraged to export surplus production, but the aim of Yen's development strategy was to create a diversified economic base which could support a military that would be capable of defending the province against rival warlords, Nationalist armies, or Japanese invaders.

Shansi's attempt at industrialization is unique. Although its economy was highly dependent on trade, foreign investment was negligible⁴⁷. This situation was totally

⁴⁶There was a small amount of Japanese investment in the form of loans and investment in mining prior to 1937.

⁴⁷Various examples, such as the magnitude of annual trade deficits, were offered throughout this chapter to indicate that Shansi was reliant on trade with the rest of China. Since Shansi did not possess any Treaty Ports, its foreign trade was not recorded by the Maritime Customs. As a result, only

unlike the economic environments existing in Shanghai and Manchuria which both received significant amounts of foreign investment. It should also be noted that Tientsin, North China's most important port city, received foreign investment from the United States, Europe, and Japan before 1937. The war-time investment and trade of Tientsin and its environs was dominated by Japan.

qualitative examples of foreign trade exposure could be offered. Railroad statistics for 1936, offered a glimpse at the composition and size of Shansi's trade. However, these figures have to be viewed cautiously because the relative shares of railroad, road, and water borne commerce were uncertain.

Chapter 4

APPENDIX

Investment And Output Statistics¹

**Table A4.1: SHANSI - INDUSTRIAL INVESTMENT DURING THE 10 YEAR PLAN
(1932-1937) - EXCLUDING TRANSPORTATION, IE. RAILWAYS, AND MINING**

* A PARTIAL ESTIMATE *

MANUFACTURING Sector, Product or Factory Type	OUTPUT	CAPITAL In Chinese Dollars
Arsenal and Machine Tool Works ²	Armaments, machine tools, locomotives, railroad cars, steel rails, electric motors, iron boilers, agricultural machinery, and hydraulic equipment	Unknown
Steel Plant - new electric furnace	20 tons of steel per day (7,300 tons per year)	Unknown
Electrolytic Salts Plant	-----	400,000
Chemical Works	Sulphuric acid, nitric acid, and other chemicals	10,000,000
Repair Shops For Automobiles and Electric Motors	-----	Unknown

¹ Unless otherwise stated, industrial investment statistics were from Gillin (1967). The capital raised for the Northwestern Industrial Co. was given on page 139. Other statistics were found on numerous pages, in various chapters.

² During the 1920's, Yen built a \$CH 600,000 machine tool factory, but investment during the Ten Year Plan was not stated (Gillin, 1967:83).

MANUFACTURING Sector, Product or Factory Type	OUTPUT	CAPITAL In Chinese Dollars
Steel/Iron Mill (Nearly completed by 1937)	<u>Est. Annual Output</u> 87,600 tons of coke 58,400 tons of cast iron 87,600 tons of steel 54,750 tons of steel rails	5,000,000
Tannery	<u>Est. Annual Output</u> 36,000 feet of leather belting 18,000 pairs of shoes	200,000
Paper Mill	<u>Est. Annual Output</u> 1,200 to 1,500 tons of newsprint	500,000
Distillery	<u>Est. Annual Output</u> 18,000 40-lb barrels of 95 proof alcohol	150,000
Printing Plant	Electroplates, lithographic and photolithographic plates, and reams of printed material	500,000
Brick Factory	<u>Est. Annual Output</u> 24,000 tons of silicon and fire- resistant bricks 2.4 million ordinary bricks	400,000
Cement Plant	175,000 tons of cement per year ³	500,000
Match and Cigarette Factories	<u>Est. Annual Output</u> 54.8 million cigarettes 8.8 million boxes of matches	750,000
Woolen Mill	<u>Est. Annual Output</u> 360,000 yards of high quality beige wool shirting 6,000 lengths of wool carpets 60,000 lbs. of woven goods	450,000

³Although Gillin stated that this was output per month, this production estimate would have to be output per year in order to be comparable to Feuerwerker(1967: 308).

MANUFACTURING Sector, Product or Factory Type	OUTPUT	CAPITAL In Chinese Dollars
Cotton Mills Expansion ⁴	Total No. of factories: 5 74,724 Spindles 2,312 Looms Output of cotton yarn (bales): 65,781 Output of cotton cloth (1,000's of square yards): 24,526	7,000,000
Hydroelectric Plant ⁵ (under construction)	327 million KWH's per annum	6,500,000
Shale Oil Extraction Plant Expansion	-----	200,000
Research Laboratories Attached To Factories	Potassium chloride and potassium carbonate A charcoal-burning engine for buses and other motor vehicles	Unknown
Academy For Research Into The Natural Sciences	-----	1,000,000
Sugar Refinery and Rayon Factory	No Output - investment capital was being raised by 1936.	NA

⁴The stated statistics are from the **Chinese Year Book 1937** (1937: 621). These figures may not truly reflect the total expansion of the cotton industry in Shansi for two reasons. Firstly, the level of industrial plant and output may have been concealed from the Nationalist Government for commercial and strategic reasons. Secondly, significant output expansion may have occurred during 1936-37, but this is uncertain. However, what is certain, is that the capital investment in the cotton industry during the Ten Year Plan was quite large. The \$CH 7 million invested, was equivalent to approximately 13% of the total capital invested in Shanghai's cotton spinning and weaving industries up to 1933-34 (Chinese Year Book, Vol.2, 1936-37, 1968 reprint: 1192). The statistics shown in the table were for March, 1936 and the output figures were annualized (Chinese Year Book 1937, 1937:621).

⁵ Although a capital investment figure was not shown for electric power plants, it was known that electricity output increased significantly during the 1930's. Between 1929 and 1937, at least ten new generating plants were constructed (Gillin, 1967: 188). During this period, electric power generating capacity was estimated to have risen at least 9-fold, but may have risen 14-fold (Gillin, 1967: 188-189).

MANUFACTURING Sector, Product or Factory Type	OUTPUT	CAPITAL In Chinese Dollars
TOTAL CAPITAL (Partial Estimate) in Chinese Dollars For manufacturing and related facilities.		33,550,000

Some of the above mentioned factories may have been part of the Northwestern Industrial Company, a state controlled enterprise, charged with the task of developing heavy industry in Shansi. As was already mentioned, Yen Hsi-shan did not want the Nationalist Government to know the extent or success of his province-wide industrialization program. This was the probable reason why the only activities of the company which were reported to the Central government were related to light industry and mining, that is, coal mining, animal husbandry, leather tanning, and the manufacture of cotton textiles (Gillin,1967:192).

Additional evidence to support industrial concealment was readily available. For example, publications of the Nationalist Government seldom mentioned Shansi, and Gillin stated that, "...in an otherwise exceedingly comprehensive statistical report issued by the provincial authorities in 1934 there is virtually no information about the factories operated by the Northwestern Industrial Company" (Gillin,1967:192). A machine tool works and a locomotives factory were examples of facilities which were controlled by the Northwestern Industrial Company.

In fact, it would appear that much of Shansi's new industrial sector must have been controlled by the Northwestern Industrial Company. The total amount of capital raised for the company between 1932 and 1936 was \$US 24.5 million,

equivalent to \$CH 79 million. This was about the same as the partial estimate of total new industrial investment made during the Ten Year Plan.

Table A4.2: Estimates of Investment in Mining and Communications During the Ten Year Plan

ECONOMIC SECTOR	OUTPUT	CAPITAL
Mining ⁶ (Development Funding for new mines)	Coal output in 1934 was 4.1 million tons	\$CH 1,500,000
Railroads ⁷ (Completed)	At least 600 miles of narrow gauge railroad, <i>ie.</i> the T'ung-Pu Railroad Monthly profits ranged from about \$CH 85 to 200 thousand.	20,000,000
Railroads (Planned)	1,500 miles of branch lines	25,000,000
Telephone Network	Greater than a 3-fold increase in the size of the telephone system.	Unknown
TOTAL CAPITAL (Partial Estimate) in Chinese Dollars For Mining and Communications		46,500,000
TOTAL CAPITAL (Partial Estimate) in Chinese Dollars For Manufacturing and its related industries, Mining, and Communications		80,050,000

⁶\$CH 360,000 was invested in Shansi's Northwestern Colliery Number One (Gillin, 1967:185). This large coal mine was located in the eastern part of the province.

⁷Most of the steel rails, 45 locomotives, and other railway equipment were imported from Germany (Gillin, 1967:183).

**Table A4.3: CAPITAL ALLOCATED TO INDUSTRIAL PROJECTS
IN SHANSI FOR THE PERIOD, 1932 TO 1945**

Project	Year(s)	\$US millions	Exchange Rate ⁸	\$Chinese millions
Capital of the Northwestern Industrial Co. ⁹	1932	2.0	4.60	9.2
	1933-1936	22.5	3.10	69.8
	Total: 1932-1936		24.5	79.0
Ten Year Plan: TOTAL CAPITAL (Partial Estimate) in Chinese Dollars For Manufacturing and its related industries, Mining, and Communications	1932-1937	Not Applicable, original data given in Chinese dollars		80.1
Estimate of Japanese Investment in the Coal Mining Industry ¹⁰	1937-1945	62.5	3.41	213.3

Table A4.4: REGISTRATIONS FOR COMPANIES IN SHANSI FOR THE PERIOD, FEB. 1929 TO DEC. 1935
Capital in Chinese Standard Dollars

ECONOMIC SECTOR	NO. OF COMPANIES	CAPITAL (MILLIONS)	PERCENT DISTRIBUTION OF CAPITAL
Mineral	3	\$Ch 1.8	17
Industrial	13	6.5	62
Commercial	31	1.7	16
Transportation & Communications	1	0.5	5
TOTAL	48	10.5	100

Source for Table A4.4: Chinese Year Book 1937, 1937: 645

⁸ Exchange Rate: Chinese dollars per American dollar

⁹ Gillin (1967). The capital raised for the Northwestern Industrial Co. was given on page 139.

¹⁰ Gillin, 1967: 214-215 - Gillin's figure is given in American dollars.

**Table A4.5a: REGISTRATIONS FOR COMPANIES FOR THE PERIOD
FEB. 1929 TO DEC. 1935**
Selected Provinces
Capital in Chinese Standard Dollars

PROVINCE OR CITY	NO. OF COMPANIES	CAPITAL (MILLIONS)	PERCENT DISTRIBUTION OF CAPITAL
Shansi (N.China)	48	10.5	1.8
Suiyuan (N.China)	3	0.8	0.1
Peiping (N.China)	31	35.6	6.1
Tientsin (N.China)	99	91.0	15.6
Shantung (N.China)	69	13.0	2.2
Tsingtao (Shantung)	58	13.9	2.4
Kiangsu	148	24.4	4.2
Shanghai (Kiangsu)	1,008	282.8	48.3
Nanking (Kiangsu)	145	6.8	1.2
Liaoning (Manchuria)	25	13.2	2.3
Kirin (Manchuria)	15	3.1	0.5
Heilungkiang (Manchuria)	3	1.3	0.2
CHINA, Total	2,131	585.1	100.0

Source: Chinese Yearbook 1937, 1937:645

Table A4.5b: COMPARATIVE FIGURES FOR PRE-WAR AND WARTIME PRODUCTION OF COAL IN NORTH CHINA (Output In 1,000's Of Tons)

PROVINCE	<u>1931</u>	<u>1936</u>	% Change Per Year	<u>1944</u>	<u>1936 - 1944</u>
			<u>1931 - 1936</u>		
Hopei	7,660	6,658	-2.8%	12,000	7.6%
Shantung	2,094	4,377	15.9%	10,300	11.3%
Shansi	2,266	2,000	-2.5%	6,250	15.3%
Honan	1,845	1,765	-0.9%	300	-19.9%
NORTH CHINA	13,865	14,800	1.3%	28,850	8.7%

Sources: Chinese Year Book 1936-37, 1968:1368; Chinese Year Book 1937, 1937:743; and Cressey, 1955:137.

Trade Statistics

Table A4.6: SHANSI, Provincial Domestic Trade

National Railways Commodity Shipments in 1936 In Metric Tons

Note: 1 picul (tan or shih tan) = 0.05 metric tons
20 piculs = 1 metric ton

Commodity	Imports	Exports	Net Exports
Rice and Paddy	209	142	-67
Millet	0	1,583	1,583
Wheat	1,414	42,879	41,465
Beans, Yellow	0	1,770	1,770
Beans, Black	0	2,076	2,076
Kaoliang	0	21,860	21,860
Groundnuts	1,498	0	-1,498
Sesamun Seeds	306	30	-276
Maize	0	710	710
Cotton, Raw	668	5,863	5,195
Tobacco leaf	684	1,117	433
Coal, Fume	26,400	447,684	421,284
Coal, Anthracite	0	843,702	843,702
Coke	564	0	-564
Kerosene Oil	4,204	30	-4,174
Salt	4,248	0	-4,248
Gypsum	0	1,950	1,950
Wheat Flour	345	4,216	3,871
Cotton Yarn	27	2,287	2,260
Cotton Piece Goods	4,899	16	-4,883
Cigarettes	537	636	99
Cement	20	1,440	1,420
Sugar	5,535	60	-5,475
Groundnut Oil	818	0	-818
Paper	1,582	0	-1,582
Tobacco, Prepared	0	3	3
Iron & Brass Ware	0	6,760	6,760
Wood & Timber	1,478	2,350	872
Linseed	0	1,453	1,453
Tea	1,070	143	-927
Pig	0	306	306
Leather	0	581	581
Wool, Goat & Camel	0	2,723	2,723
Egg & Egg Products	154	1,265	1,111
TOTAL	56,660	1,395,635	1,338,975

Table A4.7: FARM PRICES IN 1933

<u>Note:</u> 1 picul (tan or shih tan) = 0.05 metric tons; 20 piculs = 1 metric ton	
Beans, Yellow	The export price is shown.
Groundnuts	The export price is shown.
Sesamun Seeds	The export price is shown.
Kerosene Oil	Rough approximation is made by using the crude oil price
Cotton Yarn	The export price is shown.
Cigarettes	The export price is shown.
Groundnut Oil	The export price is shown.
Tobacco, Prepared	The export price is shown.
Iron & Brass Ware	Rough approximation is made by using the avg. of the pig iron & steel prices.
Tea	The export price is shown.
Leather	The export price is shown for hides, buffalo and cow.
Wool, Goat & Camel	Shansi provincial price.

Table A4.8: SHANSI, Value Of Trade

Commodity	1933 Prices	1933 Prices	Value in Chinese dollars (yuan)		
	Yuan/Picul	Yuan/Metric Ton	Imports	Exports	Net Exports
Rice and Paddy	3.5	70.0	14,630	9,940	-4,690
Millet	3.6	72.0	0	113,976	113,976
Wheat	4.6	92.0	130,088	3,944,868	3,814,780
Beans, Yellow	5.7	114.8	0	203,181	203,181
Beans, Black	3.4	68.0	0	141,168	141,168
Kaoliang	2.8	56.0	0	1,224,160	1,224,160
Groundnuts	6.7	134.2	200,957	0	-200,957
Sesamun Seeds	9.4	187.8	57,459	5,633	-51,826
Maize	2.9	58.0	0	41,180	41,180
Cotton, Raw	31.4	628.0	419,504	3,681,964	3,262,460
Tobacco leaf	17.0	340.0	232,560	379,780	147,220
Coal, Furne		5.0	132,000	2,238,420	2,106,420
Coal, Anthracite		5.0	0	4,218,510	4,218,510
Coke		11.0	6,204	0	-6,204
Kerosene Oil		140.0	588,560	4,200	-584,360
Salt		20.0	84,960	0	-84,960
Gypsum		17.0	0	33,150	33,150
Wheat Flour		113.0	38,985	476,408	437,423
Cotton Yarn	74.0	1,479.4	39,943	3,383,323	3,343,380
Cotton Piece Goods	NA		0	0	0
Cigarettes	95.7	1,913.8	1,027,735	1,217,206	189,471
Cement		35.0	700	50,400	49,700
Sugar		280.0	1,549,800	16,800	-1,533,000
Groundnut Oil	18.2	364.8	298,383	0	-298,383
Paper	NA		0	0	0
Tobacco, Prepared	64.3	1,286.7	0	3,860	3,860
Iron & Brass Ware		75.5	0	510,380	510,380
Wood & Timber	NA		0	0	0
Linseed	NA		0	0	0
Tea	49.3	985.9	1,054,890	140,981	-913,910
Pig (price per head)	17.4	NA	0	106,488	106,488
Leather	42.4	847.2	0	492,243	492,243
Wool, Goat & Camel	26.4	528.0	0	1,437,744	1,437,744
Egg & Egg Products	NA		0	0	0
TOTAL			\$5,877,359	\$24,075,963	18,198,604
TOTAL TRADE (X+I)	\$29,953,323				

Table A4.9: IMPORTS CLASSIFIED BY TYPE OF COMMODITY
Value in Chinese dollars (yuan)

Commodity	Imports	
Rice and Paddy	14,630	
Millet	0	
Wheat	130,088	
Beans, Yellow	0	
Beans, Black	0	
Kaoliang	0	
Groundnuts	200,957	
Sesamun Seeds	57,459	
Maize	0	
Cotton, Raw	419,504	
Tobacco leaf	232,560	Crops, Unprocessed
Coal, Fume	132,000	
Coal, Anthracite	0	
Coke	6,204	
Kerosene Oil	588,560	Fuels
Salt	84,960	Salt
Wheat Flour	38,985	
Cotton Yarn	39,943	
Cigarettes	1,027,735	
Sugar	1,549,800	
Groundnut Oil	298,383	Agriculture, Processed
Tea	1,054,890	Tea
Cement	700	Cement
TOTAL	\$5,877,359	

Chart A4.1
SHANSI: Major Imports By Value

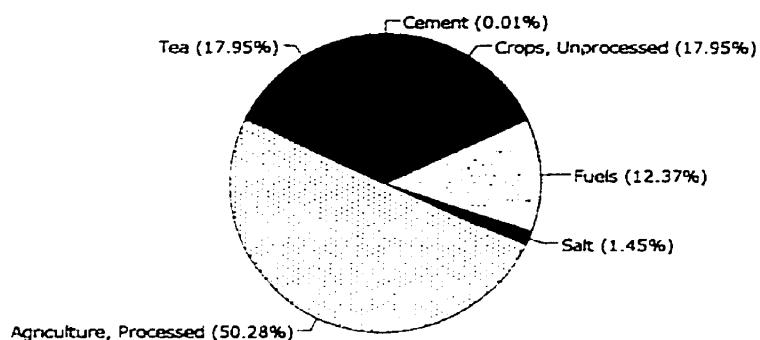
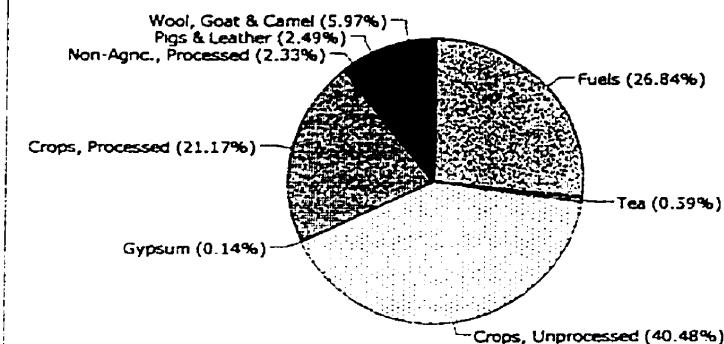


Table A4.10: EXPORTS CLASSIFIED BY TYPE OF COMMODITY
Value in Chinese Dollars (yuan)

Commodity	Exports	
Coal, Fume	2,238,420	
Coal, Anthracite	4,218,510	
Kerosene Oil	4,200	Fuels
Tea	140,981	Tea
Rice and Paddy	9,940	
Millet	113,976	
Wheat	3,944,868	
Beans, Yellow	203,181	
Beans, Black	141,168	
Kaoliang	1,224,160	
Sesamun Seeds	5,633	
Maize	41,180	
Cotton, Raw	3,681,964	
Tobacco leaf	379,780	Crops, Unprocessed
Gypsum	33,150	Gypsum
Wheat Flour	476,408	
Cotton Yarn	3,383,323	
Cigarettes	1,217,206	
Sugar	16,800	
Tobacco, Prepared	3,860	Crops, Processed
Iron & Brass Ware	510,380	
Cement	50,400	Non-Agric., Processed
Pigs	106,488	
Leather	492,243	Pigs & Leather
Wool, Goat & Camel	1,437,744	Wool, Goat & Camel
TOTAL	\$24,075,963	\$24,075,963

Chart A4.2
SHANSI: Exports By Value



**Table A4.11: SUIYUAN
Provincial Domestic Trade**
National Railways Commodity Shipments in 1936
In Metric Tons

Commodity	Imports	Exports	Net Exports
Rice and Paddy	1,984	20	-1,964
Millet	0	1,959	1,959
Wheat	0	39,459	39,459
Kaoliang	0	1,180	1,180
Groundnuts	358	0	-358
Sesamun Seeds	5	0	-5
Cotton, Raw	332	60	-272
Tobacco leaf	704	0	-704
Coal, Fume	73,029	0	-73,029
Kerosene Oil	256	0	-256
Salt	0	122	122
Wheat Flour	0	2,572	2,572
Cotton Yarn	78	0	-78
Cotton Piece Goods	5,667	0	-5,667
Cigarettes	1,372	0	-1,372
Sugar	3,503	40	-3,463
Paper	22	0	-22
Tobacco, Prepared	3	1,671	1,668
Wood and Timber	1,939	16	-1,923
Linseed	0	3,468	3,468
Tea	2,219	0	-2,219
Sheep and Goats	0	1,802	1,802
Pig	0	40	40
Wool, Goat & Camel	0	18,852	18,852
Egg and Egg Products	0	662	662
TOTAL	91,471	71,923	-19,548

Table A4.12: INTERPROVINCE TRADE (Likin Estimate)

1 haikwan tael = 1.4 yuan (generally representative for the period: 1880-1914)
 Columns 1-4: 1870 to 1908 in taels; 1936 in Chinese dollars
 Column 5: in Hk Taels
 Annual Averages (1,000's)

Year	1	2	3	4	5
	Likin	Likin	Likin	Likin	+China Maritime Customs Domestic Interport Trade Imports+Exports
	Kiangsu	Shansi	Manchuria	China	
1870-79	49,560	7,330	30,000	407,340	NA
1880-89	45,000	8,870	37,000	420,180	105,330
1890-99	50,540	4,330	39,000	420,030	155,350
^1900-08	73,320	11,870	64,000	516,860	281,060
*1936	NA	29,953	NA	1,389,400	1,810,210

SOURCES AND NOTES:

^ 1900-1909 for China - Maritime Customs Domestic Interport Trade.

*Estimate for China is Domestic Trade taken by railroads, annual avg. for 1932-36.
 Estimate was in Chinese dollars. - see Chinese Yearbook 1937 p.576.

*Shipments by railroad for Shansi valued at 1933 prices in Chinese dollars

+ Annual Averages in Hk Taels for all years, including 1930-36.
 After 1931 the trade of Manchuria was not included in
 the customs report for China. see Perkins(1969):p.349.

INTERPROVINCE TRADE (likin estimate)

1 haikwan tael = 1.4 yuan (generally representative for the period: 1880-1914)
 1870 to 1908 in taels; 1936 in Chinese dollars

Columns 1-3 & 5 Shown As A Percentage of China's Total Domestic Trade (column 4)

Year	1	2	3	4	5
	Likin	Likin	Likin	Likin	+China Maritime Customs Domestic Interport Trade Imports+Exports
	Kiangsu	Shansi	Manchuria	China	
1870-79	12.2%	1.8%	7.4%	100.0%	0.0%
1880-89	10.7%	2.1%	8.8%	100.0%	25.1%
1890-99	12.0%	1.0%	9.3%	100.0%	37.0%
^1900-08	14.2%	2.3%	12.4%	100.0%	54.4%
*1936	NA	2.2%	NA	100.0%	130.3%

SOURCES FOR TRADE TABLES

Domestic Trade via National Railways

For Shansi and Suiyuan:
The Chinese Year Book, 1937 issue: pp.609 & 611.

Price Data for Shansi is from:

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*meat per head for pigs given on p.52.

Hsiao, Liang-lin. (1974) China's Foreign Trade Statistics, 1864-1949.
* export and import prices

Liu & Yeh. (1965) The Economy of the Chinese Mainland: National Income & Income & Economic Development, 1933-1959.

*national and provincial price data - unless otherwise specified, prices are from this source.

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Chu, Samuel C. (1965) Reformer in Modern China: Chang Chien, 1853-1926. New York: Columbia University Press.

*Hk tael to yuan exchange rate given on p. xviii.

Perkins, Dwight H. (1969) Agricultural Development in China 1368-1968.

*trade statistics: pp.349-356.

Chapter 5

CONCLUSIONS: A COMPARISON OF THE INDUSTRIALIZATION EXPERIENCES OF SHANGHAI, MANCHURIA, AND SHANSI

Industrialization first took root in Shanghai, then in Manchuria, and was followed by Shansi. Shansi's late industrialization was largely due to its remoteness from foreign influences. Over-all, in terms of geographic coverage, Japan was the most important foreign investor in modern sector enterprises. It was the only major foreign investor which was common to all three regions. Other important foreign investors in Shanghai were British, Americans, and French. The only other large foreign investor in Manchuria other than Japan was Russia, while the sole foreign investor in Shansi was Japan.

Shanghai, Manchuria, and Shansi were chosen as three examples of regional industrialization patterns because each geographical area was unique in its development. Shanghai, China's leading coastal port city, was primarily a commercial centre with easy access to foreign capital which could be invested in modern industry. In contrast, Manchuria was a large geographic area which was located in northeastern China. Although it had port cities, it was reliant on an inland railway system to link the interior with its port cities. On the other hand, Shansi was totally land-locked and was reliant on the development of a railroad network to link it with the rest of China. In contrast to Manchuria and Shansi,

Shanghai depended on river and oceanic trade routes to a much larger degree. Road and rail transport infrastructure existed, but was of lesser importance.

Other than geographic differences, the development of modern industry occurred along divergent paths in each locality. Shanghai's openness to foreigners encouraged the importation of foreign technologies in the 19th century¹. By the 1930's, the cotton textiles sector dominated Shanghai's industrial sector. It was also noteworthy that a significant share of its productive capacity was owned and controlled by foreign capital. The importance of textiles to the city's economy was even more striking if all three sub-sectors were considered - cotton, silk, and wool.

Shanghai's industrial growth between 1890 and 1937 was phenomenal. However, its industrial sector was heavily biased towards the consumer goods sector (light industry). Shanghai's leading industries were: cotton, silk, and wool textiles; flour; rubber; dyeing and washing; machinery; and paper. This was the sharpest contrast between Shanghai's modern industrial development and that of the other two regions.

The industrial growth of Manchuria and Shansi was much more reliant on the development of fully functioning producer goods sectors (heavy industry).

¹ Shanghai was an important commercial city, both in terms of foreign and domestic trade activity. The Qing government's investment in the modern sector, *i.e.*, the Chinese Self-Strengthening Enterprises, and their adoption of other measures to modernize the economy helped to create an atmosphere that encouraged private individuals to establish their own modern sector firms during the 19th century. The Qing government founded language and technical schools, sent students abroad, exempted Chinese machine produced goods from the likin tax, granted monopoly rights to certain types of manufactures, awarded official ranks to certain entrepreneurs, and guaranteed dividends to stockholders of certain industrial corporations (Hou, 1965: 217).

Initially, Manchuria's economic growth, like Shanghai's was based on the development of light industry. However, from the outset, the region's prosperity depended on the construction of a railway system, that is, the South Manchuria Railway and the Chinese Eastern Railway. Such agricultural product and agri-food processing industries as flour milling; breweries, and distilleries; and bean oil, and cake processing were the mainstays of its export driven economy until the Great Depression. The uses of Manchuria's beans and bean products were diverse. Unprocessed beans could be used as food. Processed bean products included: bean cake(fertilizer and animal feed), bean oil(food and lighting), and vermicelli (Hosie,1980:242).

Between 1930 and 1945, Manchuria's economic growth became dependent on the expansion of the producer goods sector. Manchuria's most important industries during this period were: iron, steel, coal mining, and their associated manufacturing industries; high-technology products(aeroplanes and automobiles); machine tools; and electric power. This shift from light industry to heavy industry was partly in response to falling global commodity prices for Manchuria's agri-food exports, and it was also a reaction to the new economic policy which the Japanese laid out for their newly created puppet state of Manchukuo. Modern industrial growth in Shanghai and Manchuria benefited from large inflows of foreign capital. Investment capital was mostly provided by British and Japanese investors in Shanghai, and primarily by Russian and Japanese ones in Manchuria. This was not the case in Shansi until the Japanese Occupation (1937-1945).

Shansi's attempt at industrialization was unique. Although its economy was highly dependent on trade, foreign investment was negligible². This lack of foreign investment largely accounts for Shansi's inability to industrialize earlier. In contrast to Shanghai and Manchuria, Shansi was a late industrializer because of its remoteness from foreign influences. This situation was totally unlike the economic environments existing in Shanghai and Manchuria which both received significant amounts of foreign investment. This early inflow of foreign investment allowed self-sustaining industrialization to occur much earlier in Shanghai and Manchuria.

During the 19th century, Shansi's bankers and merchants enjoyed a high level of commercial prosperity. Although Shansi's business sector should have had knowledge of the Imperial government's 'Self Strengthening' initiative, and its aim to industrialize China, it did not act to introduce modern technologies to the province's industrial sector. Partially as a result of the 1911 Republican Revolution, the prosperity of the Shansi bankers declined and Shansi's commercial sector entered a period of decline and stagnation. The window of opportunity had passed.

Some industrialization projects were initiated during the 1920's, but Shansi would not embark on the process of large-scale industrialization until the 1930's. State led industrialization was initiated by Yen Hsi-shan's government during the 1930's.

²Various examples, such as the magnitude of annual trade deficits, were offered throughout this chapter to indicate that Shansi was reliant on trade with the rest of China. Since Shansi did not possess any Treaty Ports, its foreign trade was not recorded by the Maritime Customs. As a result, only qualitative examples of foreign trade exposure could be offered. Railroad statistics for 1936, offered a glimpse at the composition and size of Shansi's trade. However, these figures have to be viewed cautiously because the relative shares of railroad, road, and water borne commerce were uncertain.

The process of industrialization continued under Japanese tutelage during the Sino-Japanese War. After the war, between 1945 and 1949, the Japanese allied themselves with Yen, and they continued to play a significant role in the management and maintenance of Shansi's modern sector industries. Before the Japanese occupation of Shansi, little foreign capital flowed into the province's industrial sector. However, there was some Japanese investment in mining and match factories before the war³.

Shansi's consumers were resistant to flour milled in modern mills.

For a number of years after a modern flour mill had been established in Shansi province, its products were shipped to neighbouring provinces because of the preference of Shansi people for flour from the native mills, a preference due in part to its particular qualities and in part to its lower price.

(Orchard, 1937:21)

However, some of this resistance was to be expected if flour milled in a modern mill cost the consumer more than flour produced by a native mill using pre-modern technology.

Once large-scale industrialization started in the 1930's, it was based on the development of producer goods industries and was financed from domestically raised capital. However, between 1937 and 1945, during the Japanese

³ Chesneaux, 1968:421 - In 1919 there were 6 match factories in the Taiyuan industrial region, of which 5 were Chinese, and 1 was Japanese.

occupation, its industrial development paralleled that of Manchukuo. Foreign capital was pumped into the mining and metallurgical industries, and the industrial workforce was augmented by Japanese managerial and technical personnel as had been done previously in Manchukuo. Between 1930 and 1945, emphasis was placed on the development of heavy industry(iron, steel, coal, electricity and their associated manufacturing industries). Although there was a lower level of processing than in Manchukuo, a wide variety of goods were manufactured. There was even some growth of the consumer goods/light industries sectors before the Japanese occupation. Examples of the province's manufactures included: machine tools; locomotives; electric motors; agricultural machinery; hydraulic equipment; matches; cigarettes; and wool and cotton textiles.

Foreign workers were used by foreign firms operating in Shanghai, but the need for them was not as great as in Manchukuo and Shansi. In Manchukuo and Shansi, the application and spread of new technologies was vital to Japan's economic and military survival. The successful expansion of military related industries were a necessity for Japan because it was waging war on three fronts - the Soviet Union on its northeastern frontier, Chinese Nationalist and Communist forces in China Proper, and the United States in the Pacific.

It is difficult to make direct comparisons in the pattern of foreign trade that prevailed in Shanghai, Manchuria, and Shansi. The main reason for this problem was that I did not have access to foreign trade statistics for Shansi. However, it was likely that a significant amount of the mining machinery and machine tools

used in its modern industries had to be imported from foreign countries because of the relative backwardness of Chinese industry.

Between 1922 and 1932, China Proper's share of Manchuria's total trade(foreign trade plus that of China Proper) fluctuated from a low of 16% to a high of 31% (Field,1934:444). By 1941, this ratio had fallen to 12% (Cheng,1956:198).

Between 1932 and 1941, the importance of Manchuria's imports from China Proper noticeably declined. However, China Proper remained an important export market.

Although the expansion of foreign trade provided the stimulus for the industrialization of Shanghai, domestic trade was of equal or greater importance. As well as being China's leading centre for foreign trade, it also controlled a sizable percentage of domestic commerce.

Table 5.1: SHANGHAI'S FOREIGN AND DOMESTIC TRADE

Gross Values In Millions Of Haikwan Taels

1870		1900		1920	
FOREIGN	DOMESTIC	FOREIGN	DOMESTIC	FOREIGN	DOMESTIC
90	96	160	181	504	532

Source: Murphey,1953:121.

Between 1925 and 1935, Shanghai acted as China Proper's most important centre for domestic and international trade. It controlled 55% and 38% respectively of China's foreign and domestic trade (Murphey, 1953:121).

There were three main foreign influences which were acting on all three regions.

1. Foreign Direct Investment (FDI)
2. Technology Transfer
3. Market Access

FDI played a leading role in the early stages of industrialization in Shanghai and Manchuria. Unlike these two regions, the foundations of Shansi's modern industrial sector were financed through domestic savings. Ultimately, this meant that competition from foreign firms was of minor significance within the province. It was likely that the scarcity of competition from technologically advanced foreign firms minimized the need for the province's firms to adopt modern technologies as fast as Chinese owned firms in Manchuria and Shanghai.

Technology transfer was responsible for the successful industrialization of all three regions. This occurred via published materials; foreign workers living in China; and from Chinese students, and workers being given a Western-style education which embodied the learning of scientific and technical skills. Manchuria and Shanghai benefited from the use of foreign workers before and during the Sino-Japanese War(1937-45). However, foreign workers were not used on a similar scale in Shansi until the Japanese occupation(1937-45).

Shanghai and Manchuria possessed port facilities which gave both regions ready access to foreign markets. Shansi lacked such port facilities and was totally

dependent on their railways to transport products to ports in neighbouring provinces. Access to foreign markets and products were undoubtedly restricted during periods of inter-provincial warfare which occurred between 1911 and 1928⁴.

Most of the industrialization which occurred in Shanghai and Manchuria(ca.1900 to 1931) was profit motivated. However, this was not the case in Manchuria after the Japanese occupation(1932-1945) or Shansi(ca.1920's to 1949).

By and large, industrialization was motivated by strategic and military concerns. Nonetheless, the growth of the modern sector in Shansi during the 1930's had the positive effect of raising the level of employment in manufacturing and mining. The creation of these new jobs helped to lower the level of unemployment and helped to alleviate poverty within the province. Although, the same process of modern sector job creation occurred in Shanghai and Manchuria, these regions did not suffer from the same level of acute poverty which had become widespread in Shansi before it industrialized.

The following table sums up the industrial characteristics of the three regions under discussion.

⁴ In 1911, the Imperial government collapsed. An ineffectual Republican government nominally controlled China between 1911 and 1928. In fact, most provinces were governed by Warlords who did not recognize the authority of the Central government. In 1928, Chiang Kai-chek's Nationalist regime extended its control across China, *ie.*, from Canton to Manchuria. As a result of this unification, interprovincial warfare was minimized.

Table 5.2: PATTERNS OF INDUSTRIALIZATION IN SHANGHAI, MANCHURIA, AND SHANXI

REGION	MAIN PERIOD(S) OF SUSTAINED INDUSTRIAL GROWTH	PRODUCTS PRODUCED	SOURCES OF FOREIGN CAPITAL	PRIMARY MODE OF MODERN TRANSPORTATION	REASON FOR INDUSTRIALIZATION
SHANGHAI	Ca.1890 to 1945	Mostly light industry Cotton, silk, & wool textiles, flour, rubber, dyeing & washing, machinery, and paper	Britain Japan USA France	Shanghai was a river and oceanic port which was served by steamships. Road and rail transport were of lesser importance	Profit Motivated
MANCHURIA	Ca.1900 to 1931	Light industry based on the agri-food sector.	Russia Japan	Railways, primarily the SMR and CER linked to sea ports.	Profit motivated

REGION	MAIN PERIOD(S) OF SUSTAINED INDUSTRIAL GROWTH	PRODUCTS PRODUCED	SOURCES OF FOREIGN CAPITAL	PRIMARY MODE OF MODERN TRANSPORTATION	REASON FOR INDUSTRIALIZATION
MANCHUKUO	1932 to 1945	Heavy industry machine tools, iron, steel, coal & associated manufacturing industries	Japan	Various sea and river ports linked to the interior by railroads.	Integration with the Japanese economy and military & strategic concerns

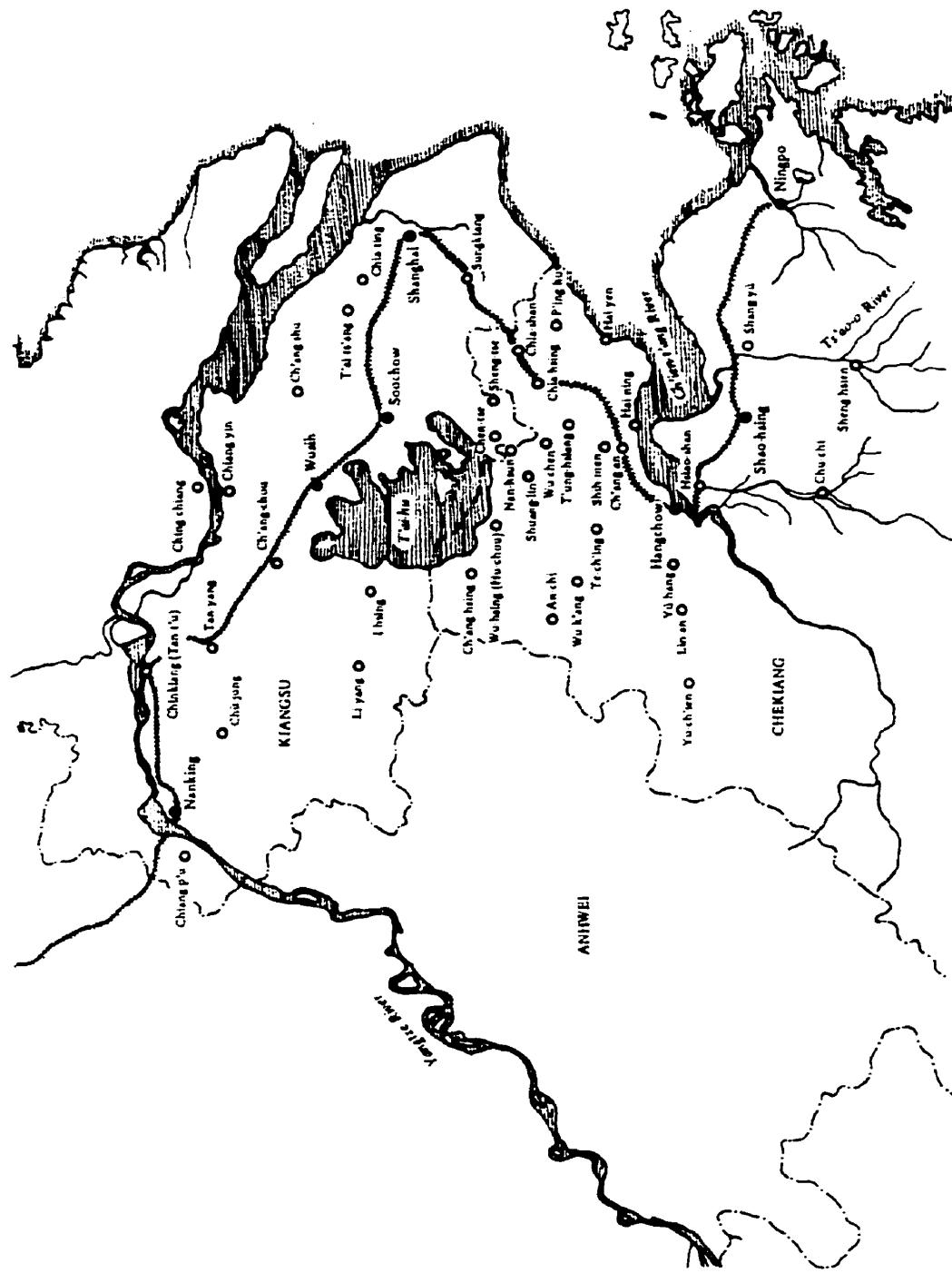
REGION	MAIN PERIOD(S) OF SUSTAINED INDUSTRIAL GROWTH	PRODUCTS PRODUCED	SOURCES OF FOREIGN CAPITAL	PRIMARY MODE OF MODERN TRANSPORTATION	REASON FOR INDUSTRIALIZATION
SHANSI	Ca. 1930 to 1945	Mostly heavy industry ⁵ Iron, steel, coal, & associated manufacturing industries	Japan ⁶	Strategic and military concerns Political and economic policy to alleviate poverty by increasing industrial employment	Provincial railways connected Shansi to the rest of China.

, There generally was a lower level of processing than Manchukuo, with some development of light industry. Products produced included: machine tools, locomotives, electric motors, agricultural machinery, hydraulic equipment, matches, cigarettes, wool & cotton textiles.

⁶

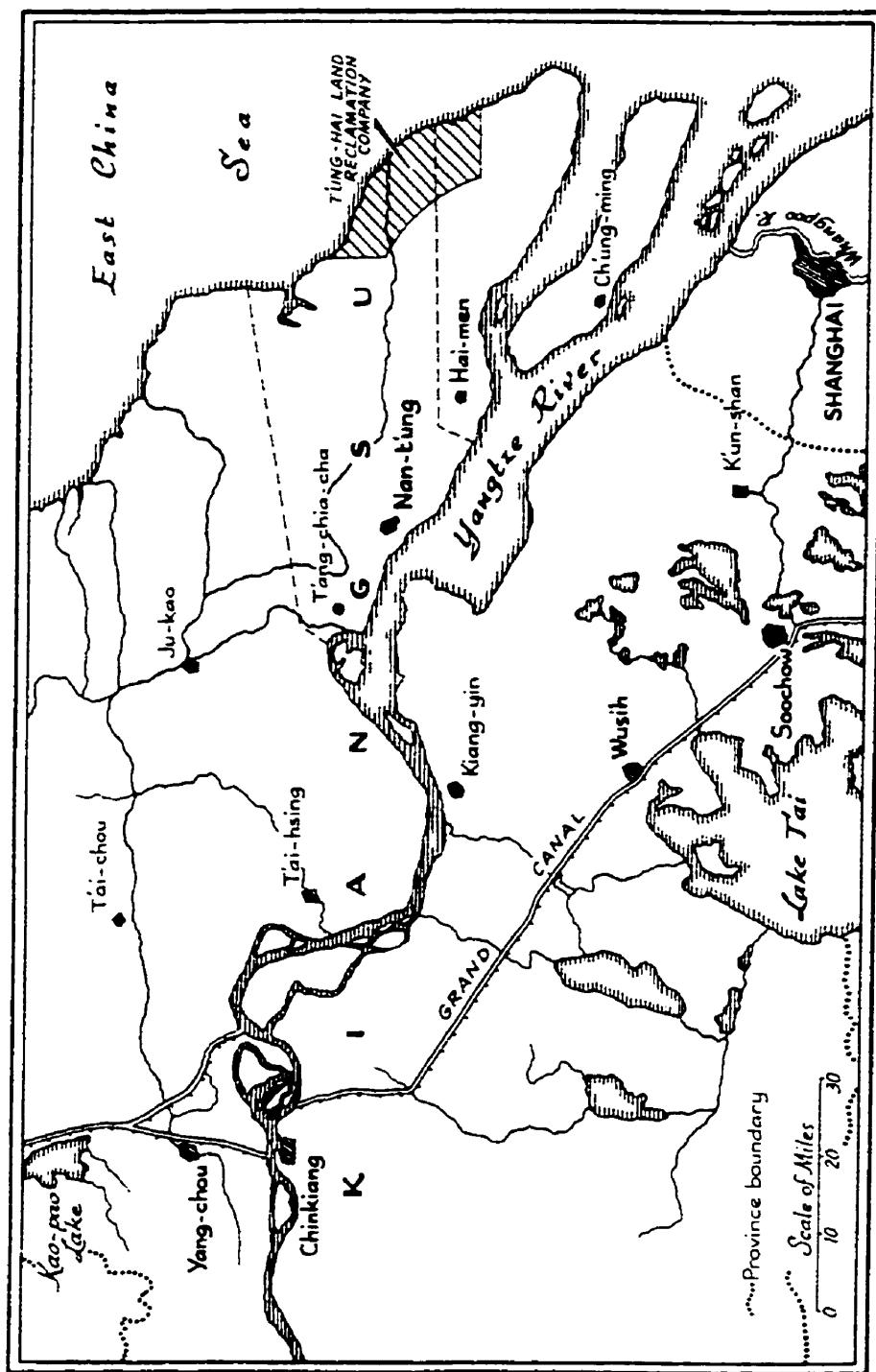
Although there did not seem to be a significant amount of German investment in Shansi, Germany acted as Yen Hsi-shan's main source of technical assistance, and also supplied most of the machinery which was purchased from foreign firms for the province's new modern sector industries (Gillin, 1967: 168).

Map 1: SHANGHAI AND ITS HINTERLAND



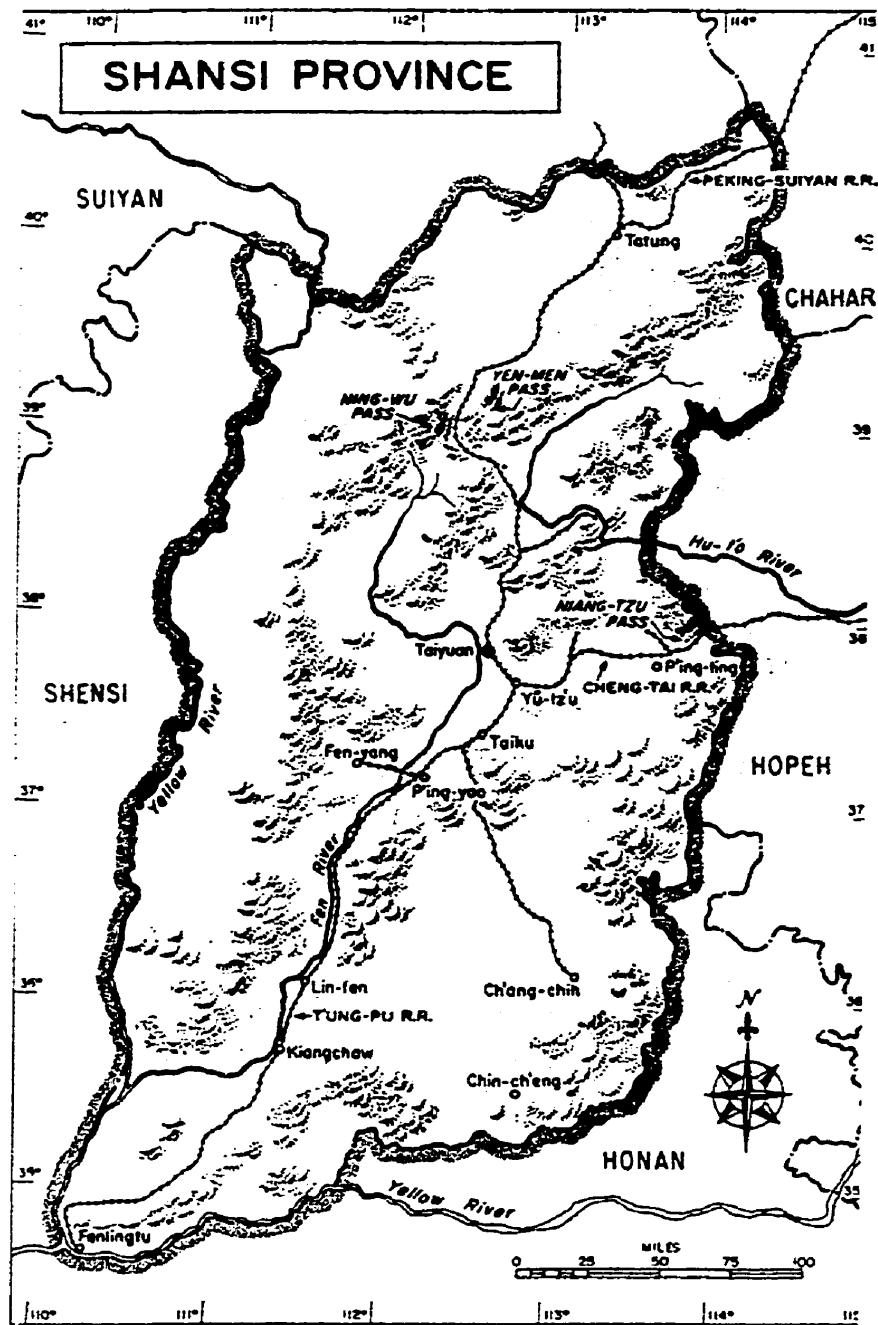
Source: Li, 1981: 104.

Map 2: NAN-T'UNG AND LOWER KIANGSU



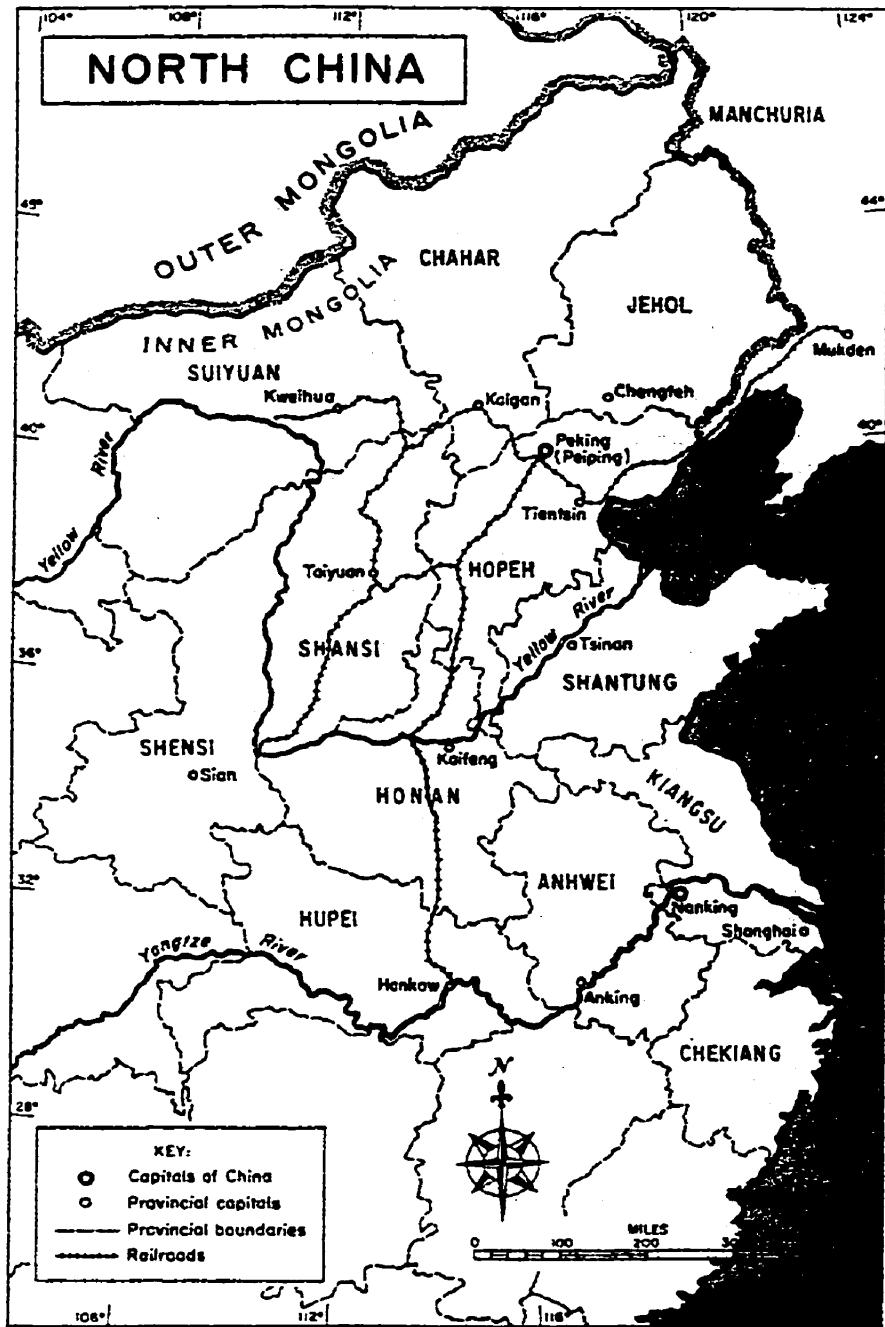
Source: Chu, 1965: 119.

Map 3: SHANSI PROVINCE



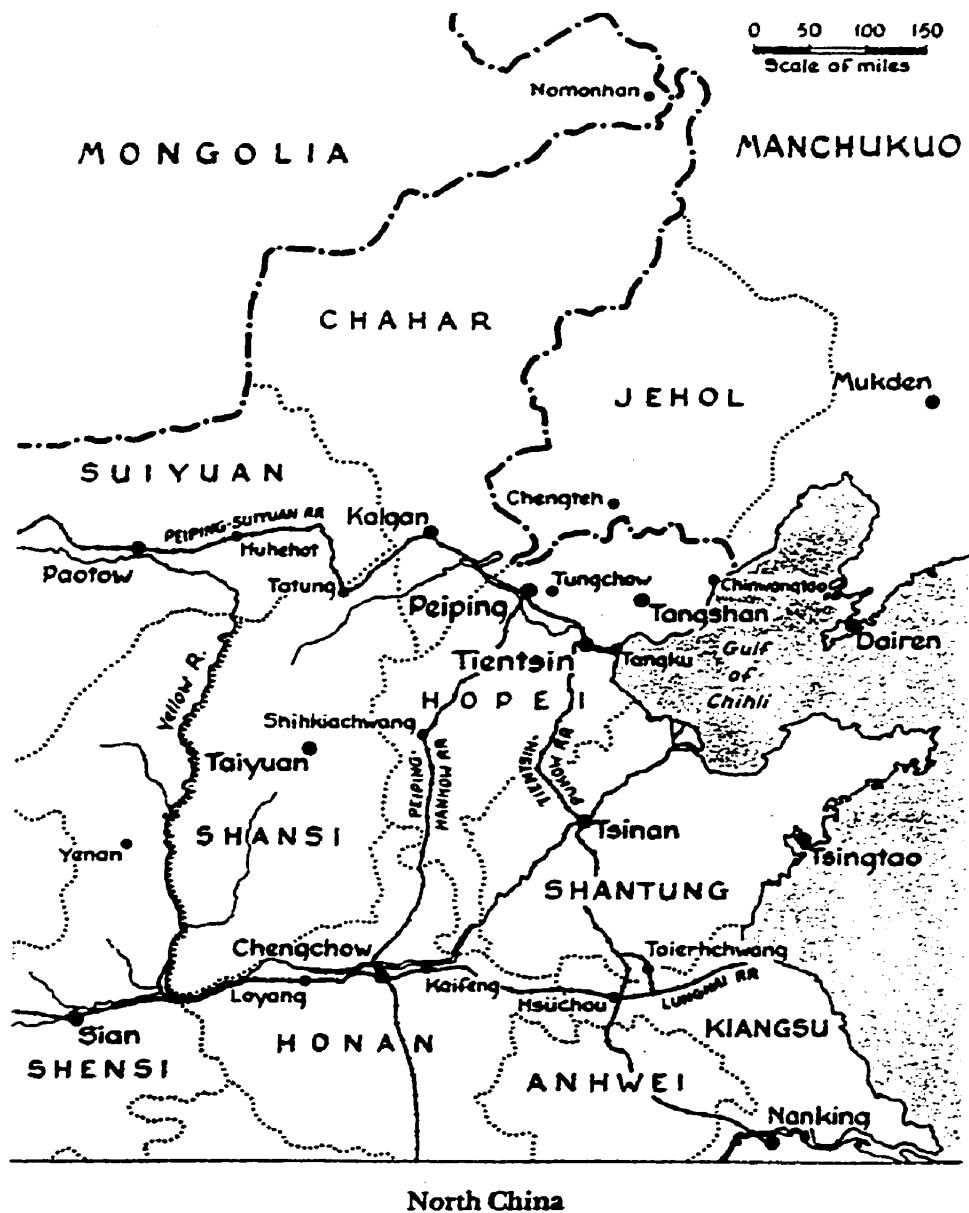
Source: Gillin, 1967: 7.

Map 4: NORTH CHINA



Source: Gillin, 1967: 5.

Map 5: NORTH CHINA AND MANCHUKUO



Source: Boyle, 1972: Map Insert.

Map 6: NORTH CHINA AND MANCHURIA

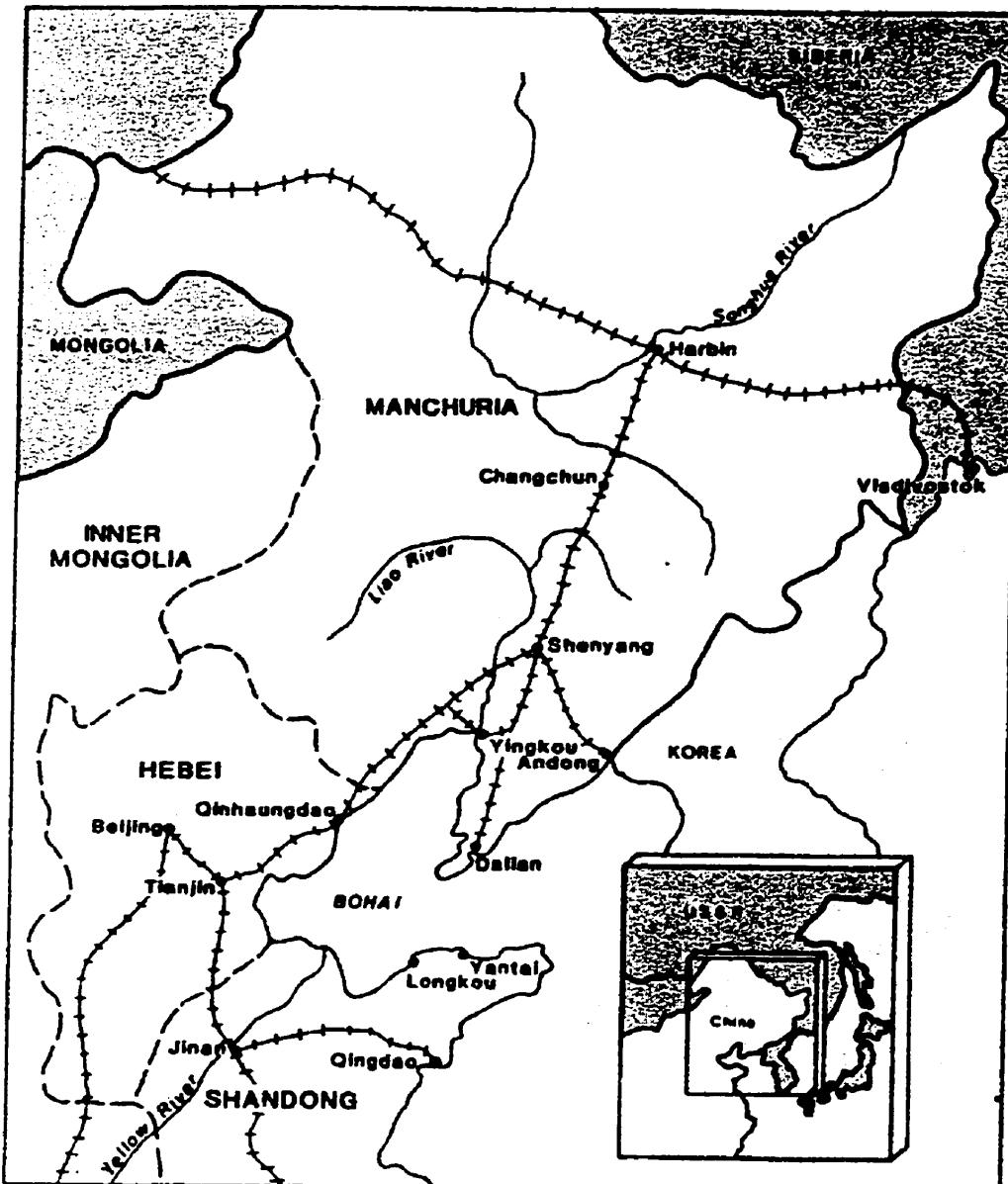
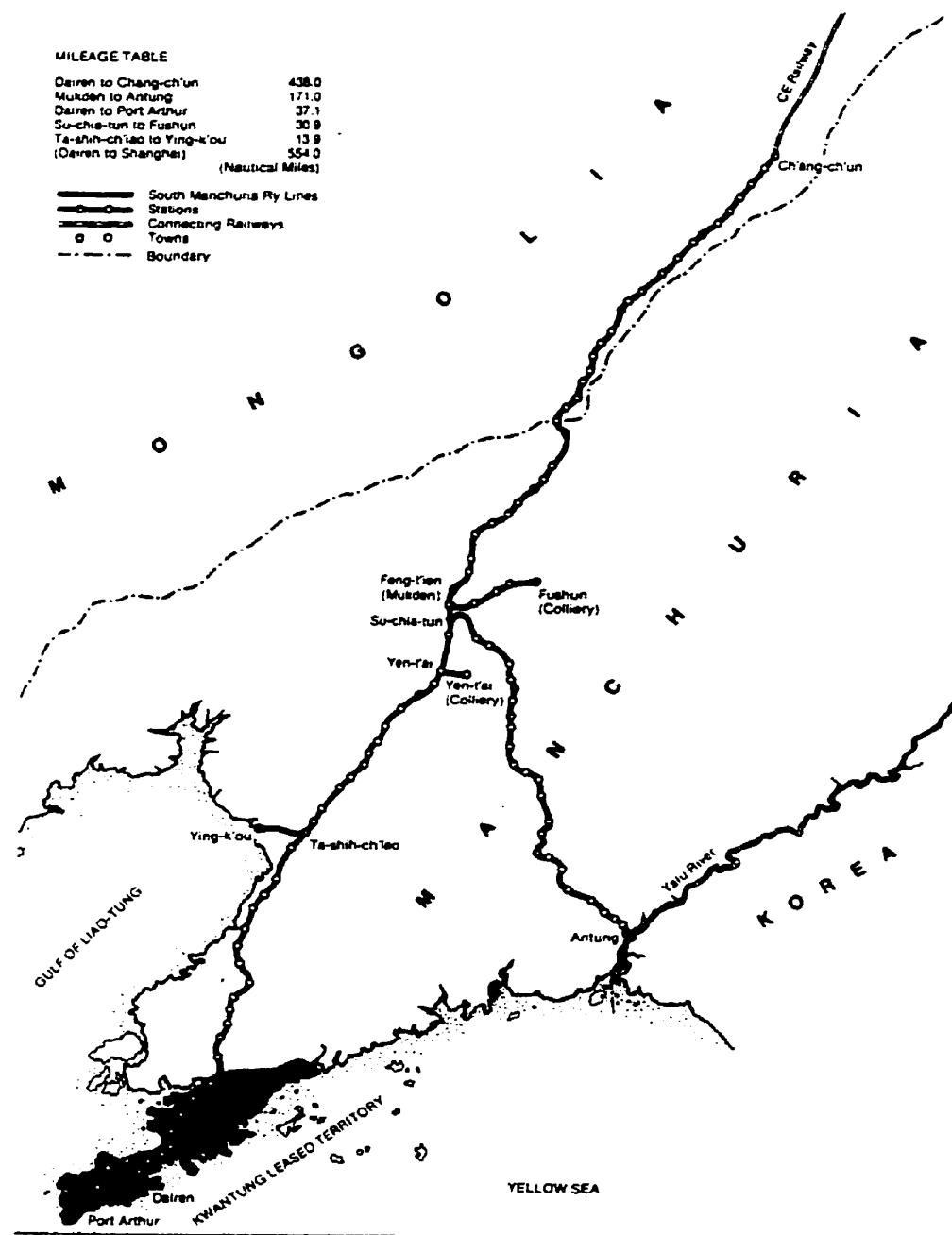


FIG. 1.—North China and Manchuria: major railways and cities, circa 1920 (1970 boundaries).

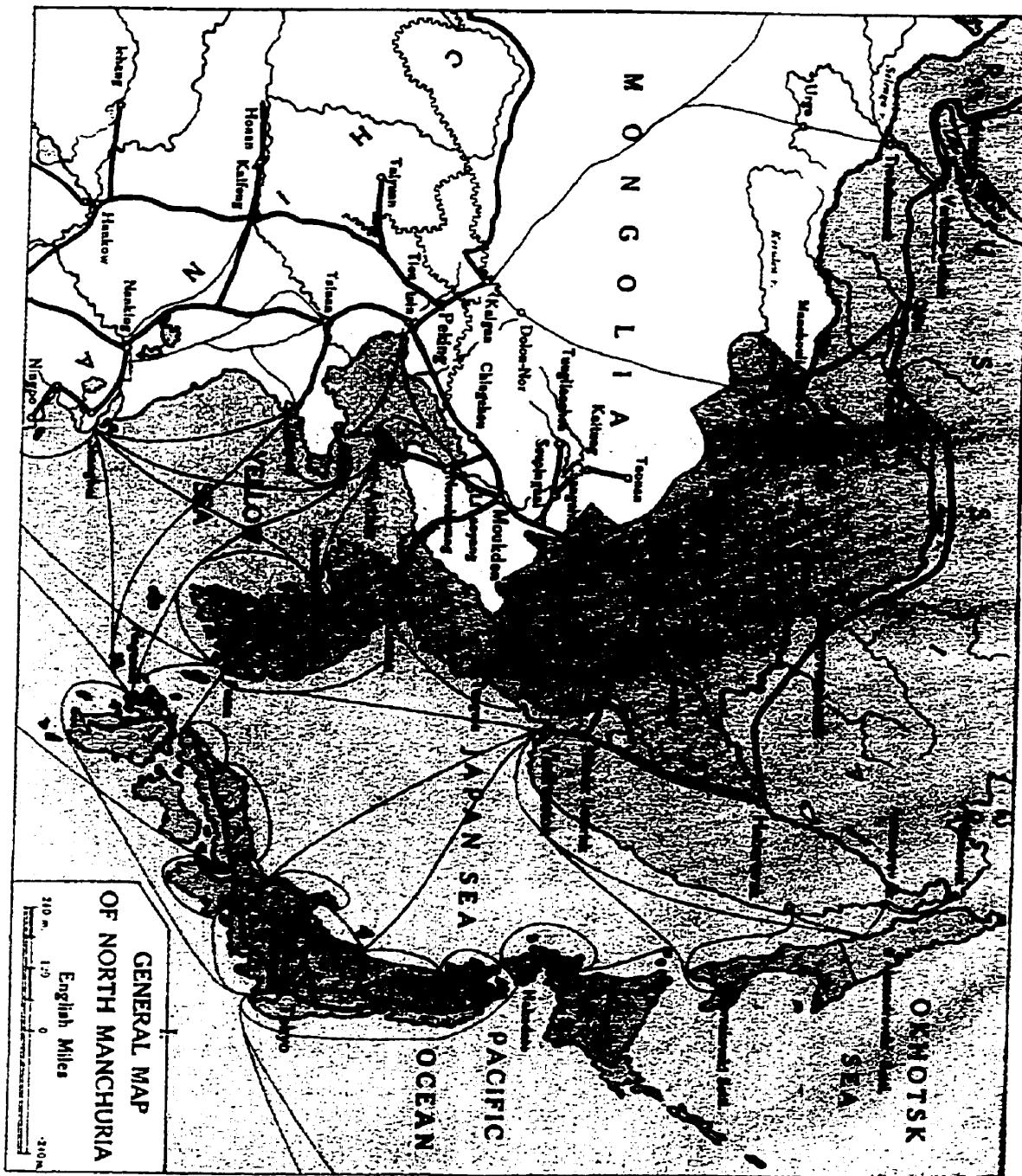
Source: Gottschang, 1987: 467.

Map 7: SOUTH MANCHURIA AND THE KWANTUNG LEASED TERRITORY



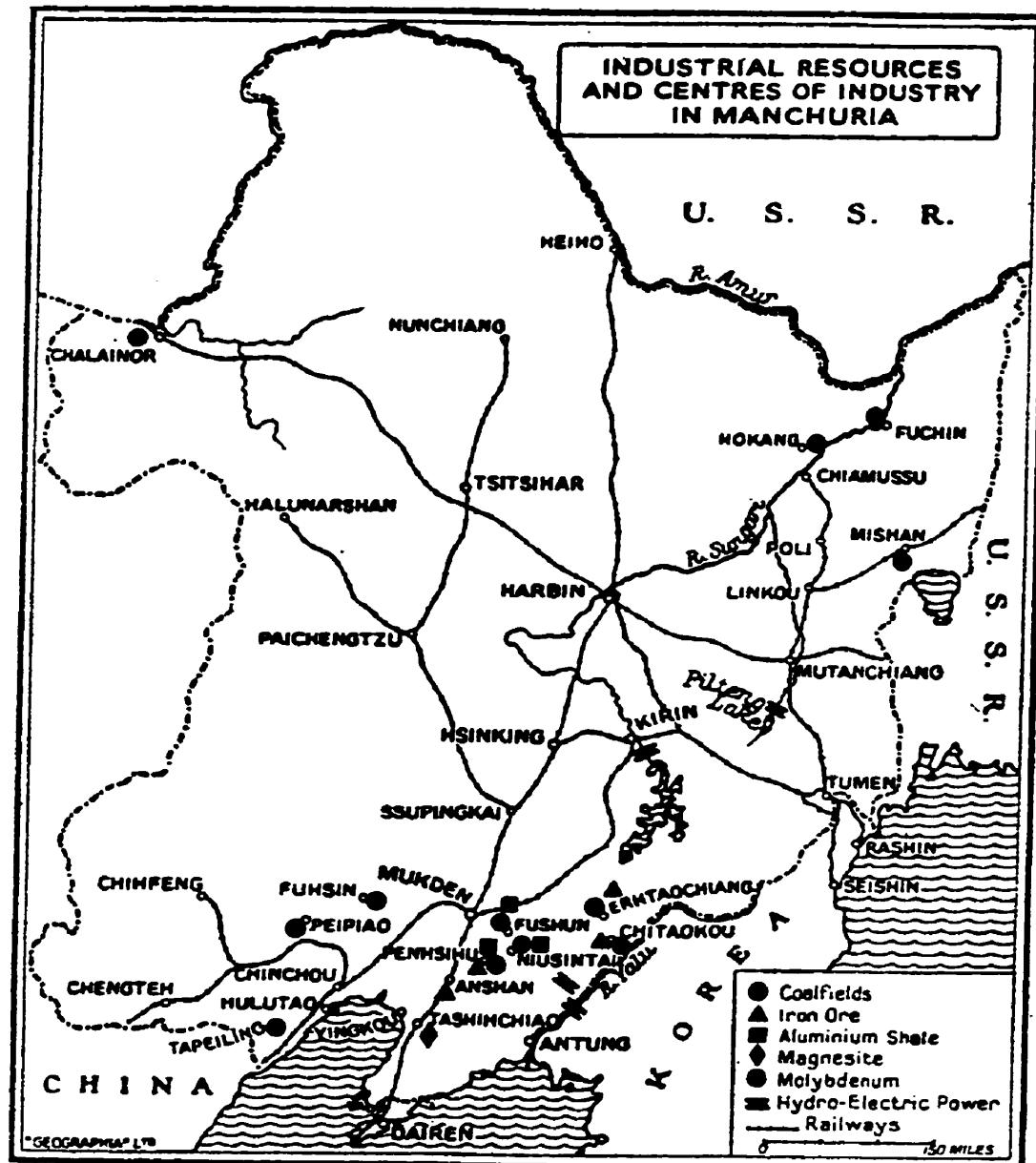
Source: Duus, et al., 1989: 103.

Map 8: NORTH MANCHURIA



Source: Economic Bureau of the CER, 1924: Map Insert between page 8 and page 9.

Map 9: MANCHURIA, CIRCA MID 1930's



Source: Jones, 1949: 165.

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