

Development in Global Economy : China since Deng Xiaoping and Russia since Gorbachev¹

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Introduction

Now we see a striking contrast between the economy of China and that of Russia, though they have several common characteristics. China has become “A Factory of the World”, whereas Russia is only a mono-cultural country exporting oil and gas. Why has appeared this difference so clearly? This paper tries to answer this question from a standpoint that the arrangement of international economic relations has played a decisive role in the process. For this purpose we must examine the events from a little bit longer time-horizon than usual comparative economics, that is, since Deng Xiaoping and Gorbachev. In section 1 the author compares the industrialization or modernization of China and the USSR/Russia under Gerschenkron perspective. In section 2 he examines the differences of preconditions of the two countries. In section 3 he analyzes the economic development of the two by using data of RCA and IO tables.

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1. China and the USSR under Gerschenkron Perspective

As is well known, Alexander Gerschenkron categorized the so-called “six propositions” as characteristics of industrialization of backward economies. He asserts that

the more backward a country’s economy,

1. the more likely was its industrialization to start discontinuously as a sudden great spurt,
2. the more pronounced was the stress in its industrialization on bigness of both plant and enterprise,
3. the greater was the stress upon producers’ goods as against consumers’ goods,
4. the heavier was the pressure upon the level of consumption of the population,
5. the greater was the part played by special institutional factors² designed to increase supply of capital to the nascent industries,
6. the less likely was its agriculture to play any active role (Gerschenkron, 1962, pp.353-354).³

If we apply these propositions to the history of Chinese economic transformation since Deng Xiaoping, we realize that the process in China was industrialization *against* Gerschenkron perspective. At the first stages of the “reform and open door policy” initiated by Deng there was a gradual development of industry (against proposition 1). The industrialization started by many small size enterprises located in rural areas (against proposition 2). The industrialization since

2 Gerschenkron regarded the bank and state as important institutional factors (Gerschenkron, 1962, pp.11-21).

3 Besides, he emphasized an importance of ideology to encourage industrialization in the backward countries (Gerschenkron, 1962, pp.22-26).

Deng has been driven by producing consumer goods designed for export (against proposition 3). Deng did not deny the desire of the people to be rich and consume more (against proposition 4). There were no special institutions designed to concentrate capital to industries at the national level, instead, the central government promoted regional initiatives to manage to get resources for industrialization by themselves (against proposition 5). It is widely known that the agriculture in China has played a decisive role in its industrialization (against proposition 6).

As for the process of the USSR/Russia since Gorbachev, the situation is more complicated. The efforts of Gorbachev to modernize the USSR cannot be called an industrialization of a “backward county”. The society at the beginning of Gorbachev’s era had an already industrialized economic structure, which had been produced by the forced industrialization under Stalin and after. Therefore we cannot simply apply Gerschenkron perspective to the case of the USSR under Gorbachev. However, some aspects of Gorbachev’s modernization resemble some of the six propositions. Under Gorbachev a policy called “acceleration” was emphasized (along with proposition 1). Gorbachev endeavored to develop high-tech large-scale machine-building industry (along with propositions 2 and 3). For the modernization of the industries the government tried to introduce financial resources from abroad by the form of bank credit instead of FDI and allocate them through the centralized financial system (along with proposition 5). The agriculture had not played any important role in the national economy under and after Gorbachev (along with proposition 6), though he tried to encourage peasants’ initiatives to promote agricultural production. Of course there is no evidence that Gorbachev did oppress the production of consumer goods and consumption of the people (against proposition 3 and 4). We must admit that he tried to activate small-scale enterprises including cooperatives (against proposition 2). However, generally speaking, we can evaluate Gorbachev’s policy as modernization along with Gerschenkron perspective.

The efforts of Gorbachev were completely frustrated in the late eighties and his tasks were handed over to new independent Russia. However, at least in the first

years of new Russia under Yeltsin, there was no special intentional policy for changing Russian industrial structure. We see a kind of laissez-fair attitude in the society, where the light industries were destroyed in the liberal trade system and only the oil and gas sector has remained as a powerful segment of the economy. After Putin got power, the attitude of the state leaders has been changed again and it seems that they are trying to revive the Gerschenkron type modernization from above. It is still open to be discussed if this new (and old) attitude would attain fruitful results.

Comparing the industrialization process since Deng Xiaoping with the modernization policies since Gorbachev, we found that China has been pursuing cautious policies of anti-Gerschenkron type continuously since 1980s till today, whereas the USSR or Russia intermittently adopted and abandoned the Gerschenkron type policies.

Now we face a problem why China's industrialization policies won the Soviet and Russian modernization policies. Or we may ask why China's industrialization of anti-Gerschenkron type has been more successful than the Soviet and Russian efforts along with Gerschenkron type modernization. Paul Gregory and Kate Zhou attributed this difference to the fact that the Chinese leaders had permitted tacitly private half-illegal economic initiatives from below, which were borne right before the new policies and has generated an atmosphere of severe competition among economic units (Gregory and Zhou, 2009). This may be one of decisive factors in the problem but the author adds another factor to this. It is international economic aspect of industrialization.

Gerschenkron conceived an idea of the six propositions from the investigation on European modern economic development in the 19th and early 20th century. According to him, even a backward country can be industrialized through the policies characterized by the six propositions with some strong ideology⁴ because it can enjoy the "advantages of backwardness" (Gerschenkron, 1962, p.51).⁵ Today

4 See note 2.

his idea is criticized by many scholars. For example, Akira Suehiro, prominent researcher on the economies of Thailand and Southeast Asia, criticized Gerschenkron in that Gerschenkron's assertion that a backward country can be industrialized by introducing latest technologies of developed countries is not fit for the experiences of developing countries in the late 20th century. He also says that Gerschenkron failed to capture the significance of the "disadvantages of backwardness" (Suehiro, 2000, pp.37-41). Suehiro's criticism would lead us to a conclusion that today's task for backward countries is how to overcome the disadvantages of backwardness with a variety of technologies from primitive to latest ones.

Author's main insistence is that this task can only be realized by cautious arrangement of international economic relations with developed countries. However, Gerschenkron did not explicitly mention international economic relations in his book except referring to the transfers of latest technologies from developed to backward countries. He, of course, could not be aware of the significance of FDI and international financial transactions. The experience of China since Deng Xiaoping shows us that the anti-Gerschenkron type industrialization with cautious arrangement of international economic relations would make a big success. It is because China since Deng could adopt an optimal selection of technologies and could concur the disadvantages of backwardness, both of which were possible by the help of cautious use of international economic relations.

2. Preconditions for Industrialization

First of all it is necessary to confirm that the preconditions for industrialization in Deng's China were different from those in the Soviet Union around the appearance of Gorbachev. The simplest and most important fact is difference of

5 It is important to note that Gerschenkron's idea is not an optimistic one, which would insist that any backward country could be industrialized in the same way as a developed country in the past. He calls readers' attention to "the difficulties, the strains, and the cost" of industrialization of backward countries (Gerschenkron, 1962, p.51).

demographic structure. Table 1 shows that share of population of the primary industry (mainly agriculture) in China in 1978 (beginning year of Deng’s new policies) was much higher than that of the USSR in 1985 (the first year of Gorbachev’s power). In China in the first ten years of the reform the share of the population in the primary industry declined by 10 percent point and the loss was compensated by growth of population in the secondary and tertiary industry.⁶ In this sense China stood far before the Lewisian turning point at the beginning of Deng’s reform.⁷

On the contrary the data for the USSR shows that the demographic structure had already become stable. It reveals that the Lewisian turning point had been reached long before the time of Gorbachev. Of course the percentage of share of agricultural population in China at the time of Deng Xiaoping was much higher than that of Gorbachev’s USSR. China was a predominantly agricultural society whereas

Table 1) Occupation Structures (%)

	China			USSR		
	Primary Industry	Secondary Industry	Tertiary Industry	Primary Industry	Secondary Industry	Tertiary Industry
1978	70.5	17.4	12.1			
1980	68.7	18.3	13.0	14.5	59.5	26.0
1985	62.4	20.9	16.7	14.7	59.2	26.1
1988	59.3	22.4	18.3	14.2	60.9	24.9
1989	60.0	21.7	18.3	13.9	61.9	24.2

Note) As for China, the primary industry includes farming, forestry, animal husbandry and fishery. The secondary industry includes mining and quarrying, manufacturing, construction, electricity, gas and water protection and supply. The tertiary industry includes others.

As for the USSR, the primary industry includes farming, forestry. The secondary industry includes mining, manufacturing, construction. The tertiary industry includes others.

Sources) China : *China Statistical Yearbook*, 1996 (web version). The USSR : *Narkhoz v 1990*, pp.100-101.

6 As for actual number of agricultural population, it still continued to grow until the beginning of the 90s. The outflow of agricultural population into secondary and tertiary sectors had not become a clear tendency until 1992.

7 Even today if China’s demographic structure has reached the Lewisian turning point or not is a controversial problem (See Yan, 2008).

Table 2) Openness of China and the USSR

China			USSR		
Year	Export/GDP (%)	Import/GDP (%)	Year	Export/GNP (%)	Import/GNP (%)
1978	4.60	5.14	1985	9.35	8.94
1979	5.21	5.98	1986	8.55	7.84
1980	5.99	6.41	1987	8.26	7.36
1981	7.51	7.52	1988	7.67	7.43
1982	7.77	6.72	1989	7.29	7.65
1983	7.35	7.07	1990	6.08	7.07

Source) China : The author calculated by the data of *CSY* (various years).

USSR : The author calculated by the data of *Narkhoz*, 1990, p.9, p.644.

the USSR was already an industrialized society in these senses.

This contrast teaches us a difference of the task of the two leaders at that time. Deng Xiaoping had to transfer the agricultural population to modern industries smoothly, which would increase automatically the total value of the products, therefore GDP, in the country. Gorbachev's task was more complicated. His task was to raise labor productivity in the secondary and tertiary sectors, which had already occupied a predominant part of the labor market. This task could be done only by reshuffling old industrial and service sectors and rebuilding modern and efficient ones including effective financial institutions. Managerial innovation and new system of R&D were also needed to accomplish this task. It was a difficult task in the network of vested interests in the Soviet Union.

Another difference between China and the USSR lies in the situation of the international economic relations. Table 2 shows the openness of the economies. It reveals that the openness of China's economy was low at the beginning of the reform and it gradually increased. On the contrary, the openness of the Soviet economy was relatively high comparing with China at the beginning, but it stagnated during the time of Gorbachev. If we connect this contrast with the information on Table 3 on trade structure, we realize that China had ample room for structural conversion of international economic relations at the beginning.

Table 3) Trade Structure at the Beginning of the Reforms (Share %)

China			USSR ¹¹		
1980	Export	Import	1985	Export	Import
Primary goods ¹	50.2	34.7	Machines, equipment, and vehicles	13.9	21.0
(Foods ²)	(17.2)	(16.0)	Fuels and electric energy	52.7	10.9
(Agricultural materials ³)	(9.4)	(17.8)	Ores, concentrated ores, metals and products of them	7.5	13.8
(Mineral fuels ⁴)	(23.6)	(1.0)	Chemicals, fertilizers and rubber	3.9	8.3
Industrial manufactured goods ⁵	49.8	65.3	Timber materials and cellulose-paper products	3.0	2.6
(Chemicals ⁶)	(6.2)	(14.5)	Textile materials and half-manufactured products	1.3	3.9
(Crude materials except non-ferrous metals ⁷)	(22.1)	(20.8)	Food goods and materials for them	1.5	26.2
(Machines ⁸)	(4.7)	(25.6)	Industrial consumer goods	2.0	7.9
(Miscellaneous manufactured goods ⁹)	(15.7)	(2.7)			
(Others ¹⁰)	(1.1)	(1.7)			

Notes) ¹=SITC 0+1+2+3+4+68, ²=SITC 0+1+22+4, ³=SITC 2-22-27-28, ⁴=SITC 3, ⁵=SITC 5+6+7+8+9-68, ⁶=SITC 5, ⁷=SITC 6-68, ⁸=SITC 7, ⁹=SITC 8, ¹⁰=SITC 9, ¹¹=According to conventional classification of foreign trade statistical book of the USSR.

Sources) China : Ohashi, 2003, p.61, USSR : VES, 1990, pp.20-21.

Table 3 indicates that the trade structure of China was largely different from today's one. In 1980 the "mineral fuels" occupied the largest share in export (by narrower classification) and the share of "industrial manufactured goods" was lower than the half. The share of "machines" was only 4.7%. As we all know, in the following years until today this structure has changed dramatically. For example, in 2000 the share of "industrial manufactured goods" in export of China was 88.3%, in

which the share of “machines” and “miscellaneous manufactured goods” was 33.1% and 34.6% respectively (Ohashi, 2003, p.61). The share of “mineral fuels” went down to 3.6%. During this period the openness of Chinese economy has increased rapidly as well. In 2000 the export/GDP ratio had reached 20% and the import/GDP ratio was about 19%.⁸ In the late 70s China had not opened its economy and its trade structure was not fit for its capacity. In this sense China had ample room for structural conversion at that time. Since the new policy of Deng Xiaoping, China has changed its trade structure radically and opened up its economy to the globalizing world. In this way, China has used its potential resources, which had not been fully used at the beginning, for pursuing anti-Gerschenkron industrialization.

The situation is different as for the USSR and the Russia Federation. Right after the collapse of the USSR the openness of the Russian economy was relatively higher than that of the USSR. In the late 90s and early 2000s it had increased to an astonishing level, especially in the case of export/GDP ratio, mainly because of high oil price.⁹ Notwithstanding this change, the trade structure of Russia did not change since the time of Gorbachev. In 2000 the share of “mineral products” in the Russian export against the world was 54.2% (*TAM*, 2000, p.14).¹⁰ The share jumped up to 66.3% in 2006 (*TAM*, 2006, p.13). Considering the figures in Table 3, we can conclude that the opening up of the Soviet/Russian economy could not alter the trade structure, instead it preserved and even “exaggerated” the old structure.

In short, one aspect of the preconditions at the beginning of the reform of China was ample room for structural change in the sphere of demography and international economic relations, whereas the USSR/Russia had already a stable structure, which was not easy to alter. Hereafter, let us consider the course of this change/non-change in the two countries by the precise foreign trade data and IO tables.

8 The author calculated by the data of *CSY*, 2009 (various pages). According to the same data, in 2006 the ratios reached the highest point of 36.61% and 29.91% respectively.

9 The highest export/GDP ratio was 44.1% in 2000 and the highest import/GDP ratio was 27.5% in 1998 (calculated from the data of *IFS*).

10 By the code of TN VED (almost same as HS), the category of “mineral products” includes 25, 26 and 27.

3. Comparative Advantage and Industrial Structure of Domestic Economy

3-1 RCA

Table 4 and 5 show Balassa's RCA (Revealed Comparative Advantage)¹¹ for China and the USSR/Russia. The figures for China are calculated from the data of UN COMTRADE, whereas the figures for the USSR and the Russian Federation are calculated from the author's original database, in which he converted old foreign trade figures (according to the CMEA Trade nomenclature) through 1990, and figures since 1995 (according to TN VED¹²), into those according to SITC revision 3.¹³

Table 4 indicates that China was a country whose comparative advantage lay in mineral fuels and other related goods (SITC 3) as the USSR in the first stage of the reform. As the reform deepened, however, the goods of SITC 3 became to lose its significance in the Chinese foreign trade and the "miscellaneous manufactured articles" (SITC 8) had become to record high scores of RCA. The goods in SITC 8 include articles of apparel and clothing accessories, footwear, miscellaneous manufactured articles, and others. Therefore they are products of labor-intensive industries, for which China had comparative advantage in the world market. China has made good use of its advantage.

At the same time it is worth noting that the RCA of SITC 6 became higher than 1 since 1990, which means that goods in this category exported from China were also competitive by the world standard then. The category of SITC 6 includes paper, textile yarn, iron and steel, non-ferrous metals, manufactured metal and others. They are half-finished manufactured products, which do not need high technology

11 RCA of a country j for good i is $(X_{ij}/X_j)/(X_{iw}/X_w)$, where X_{ij} =country j 's export of good i , X_j =total export of country j , X_{iw} =world export of good i , X_w =world's total export.

12 System mainly based on the so-called Harmonized System.

13 See Uegaki (2004).

Table 4) RCA of China

		A		B				
		1980	1985	1985	1990	1995	2000	2005
SITC ¹ 0	Food and live animals	1.89	1.65	1.23	1.48	0.94	0.94	0.57
SITC 1	Beverages and tobacco	0.47	0.53	0.14	0.44	0.81	0.34	0.19
SITC 2	Crude materials, inedible, except fuels	0.07	0.07	1.45	1.23	0.73	0.59	0.31
SITC 3	Mineral fuels, lubricants and related materials	1.65	1.38	1.95	1.38	0.65	0.32	0.19
SITC 4	Animal and vegetable oils, fats and waxes	0.71	0.75	0.62	0.69	0.56	0.15	0.09
SITC 5	Chemicals and related products, n.e.s.	0.95	0.75	0.38	0.64	0.63	0.54	0.44
SITC 6	Manufactured goods classified chiefly by material	1.50	1.52	0.72	1.22	1.33	1.24	1.22
SITC 7	Machinery and transport equipment	0.12	0.13	0.05	0.44	0.53	0.80	1.20
SITC 8	Miscellaneous manufactured articles	2.05	2.68	0.92	2.31	2.84	2.82	2.21
SITC 9 ²	Commodities and transactions not classified elsewhere in SITC	N.D.	N.D.	5.49	0.92	0.08	0.05	0.06

Note) ¹=SITC versions very year by year. ²=The figures for “SITC 9” are calculated as residuals.
Source) A : Yeats, 1991, p.16 ; B : Calculated by the author using the data of UN COMTRADE.

but would be basis for further industrialization. China had made efforts to strengthen this branch of the industry and could become a country, which had capacity to export goods in this category.

It is more interesting that these two groups of goods have stopped to increase their significance recently. The recent remarkable thing is that the RCA of SITC 7 has reached the level higher than 1 in 2005. The SITC 7 is the category of “machinery and transport equipment”, therefore the fact that the RCA of this category was higher than 1 in China means that China has become a kind of industrialized country. Table 4 as a whole shows that China has been experienced strong dynamic structural transformation in its international economic relations since

Table 5) RCA of the USSR/Russia

		USSR			Russia		
		1980	1985	1990	1995	2000	2005
SITC 0	Food and live animals	0.16	0.14	0.22	0.16	0.17	0.25
SITC 1	Beverages and tobacco	0.14	0.11	0.14	0.29	0.09	0.22
SITC 2	Crude materials, inedible, except fuels	0.80	0.74	0.99	1.02	1.06	0.97
SITC 3	Mineral fuels, lubricants and related materials	2.90	3.99	6.60	7.06	5.08	5.03
SITC 4	Animal and vegetable oils, fats and waxes	0.45	0.31	0.60	0.08	0.28	0.27
SITC 5	Chemicals and related products, n.e.s.	0.33	0.37	0.81	0.88	0.67	0.47
SITC 6	Manufactured goods classified chiefly by material	0.29	0.29	0.33	1.53	1.39	1.11
SITC 7	Machinery and transport equipment	0.51	0.38	0.42	0.24	0.18	0.13
SITC 8	Miscellaneous manufactured articles	0.06	0.05	0.09	0.67	0.57	0.36
SITC 9 ¹	Commodities and transactions not classified elsewhere in SITC	7.82	9.20	10.89	1.31	1.35	1.13

Note) ¹ = The figures for “SITC 9” are calculated as residuals.

Source) Calculated from the database made by the author.

the inauguration of Deng Xiaoping’s reforms.

Table 5 shows a totally different picture of the USSR and Russia. First of all “mineral fuels, lubricants and related materials” (SITC 3) have been the most competitive goods since the early 80s until recently. The dissolution of the USSR did not change this structure and the RCA of SITC 3 even increased after the independence of Russia though the figure declined slightly in the new century.

It is also impressive that the RCA of SITC 6 increased after the independence of Russia reaching over 1.5 in 1995. More detailed data from author’s database show that the increase of RCA of SITC 6 can be attributed to growth of export of “iron and steel” (SITC 67) and “non-ferrous metals” (SITC 68). The share of these two categories of goods in the total export of the USSR in 1980, 1985 and 1990 was 4.71%, 4.26% and 4.73% respectively. The share in the total export of the Russian Federation in 1995 jumped up to 17.98%. The open-up of the country made

Russia's comparative advantage in these hard and heavy materials distinctive. However we need notice that the degree of the advantage is much lower than that of fuels.

Thirdly the RCA of machinery and transport equipment (SITC 7) was low in the USSR and the figure even declined since the independence of Russia. Russia's machinery industry was, and is far from competitive by the world standard. This is a critical point where Russia differs from China.¹⁴

The following 4 charts show more detailed trend of RCA in the recent years. As is mentioned above, "iron and steel" and "non-ferrous metals" exported from Russia are few exceptional examples whose comparative advantage was relatively high after the independence of Russia, but Chart 1 reveals that the "iron and steel" of Russia has been losing its comparative advantage recently. On the contrary, the RCA of "iron and steel" of China has been increasing and catching up to the level of Russia.

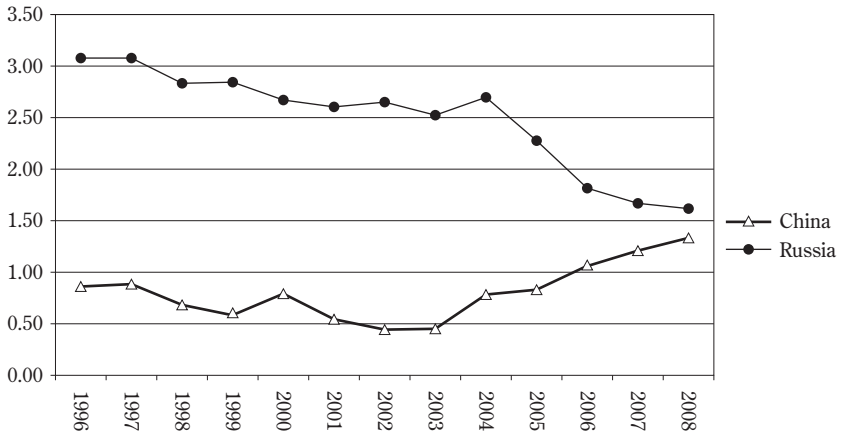
Chart 2 indicates a striking difference between the two countries. While China has been improving its status in the world export market of SITC 74, Russia has not played any active role there. SITC 74 consists of core articles of machine-building industry, therefore China has at last become a relatively strong machine exporting country in 2008.

More exaggerated contrast can be seen in Chart 3, which shows a rapid improvement of China's comparative advantage of "office machines and data processing machines". China is already a world leading exporting country of the modern high-tech goods, whereas Russia is almost zero in this market.

Chart 4 is interesting because it teaches that the sector, where China was thought to have advantage because of its endowments (labor forces), has been

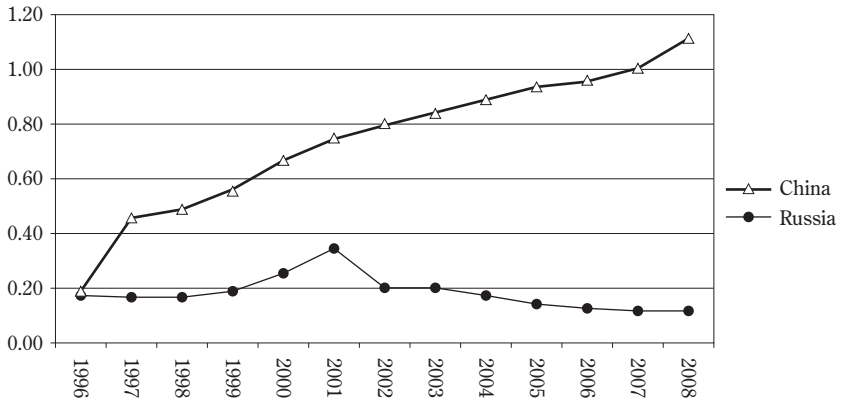
14 It is necessary here to comment on the figures of SITC 9. The data for SITC 9 in Table 4 and 5 are calculated as residuals (the official total value of export minus sum of export value of SITC 1 to 8). Therefore the figures of SITC 9 may be too much because of inability of statistical offices and of secrecy of both governments, especially in the USSR case. It might include "export of gold" and "export of military goods". We cannot treat the figures of SITC 9 as reliable for our analysis.

Chart 1) RCA of Iron & Steel (SITC*67)



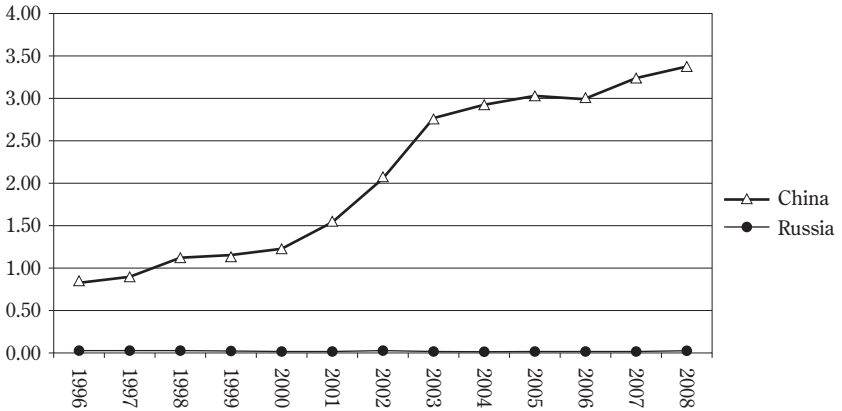
Source) Calculated by the author using the data of UN COMTRADE
* = Rev. 3

Chart 2) RCA of General Industrial Machinery and Equipment, and Machine Parts (SITC*74)



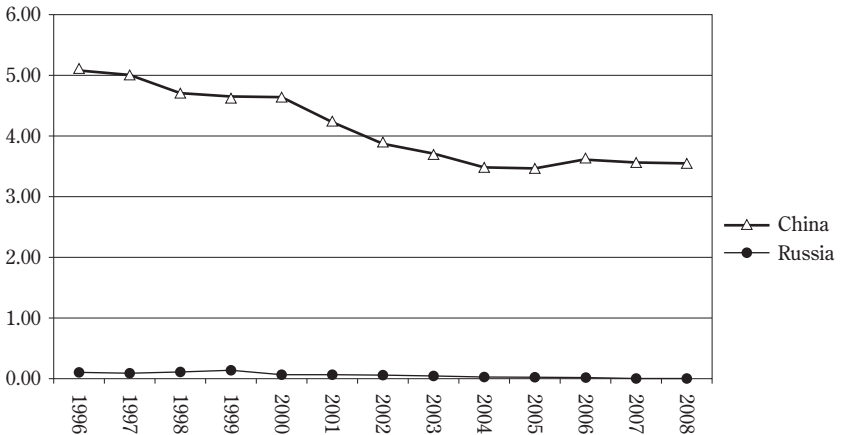
Source) Calculated by the author using the data of UN COMTRADE
* = Rev. 3

Chart 3) RCA of Office Machines and Data Processing Machines (SITC*75)



Source) Calculated by the author using the data of UN COMTRADE
 * = Rev. 3

Chart 4) RCA of Articles of Apparel and Clothing Accessories (SITC*84)



Source) Calculated by the author using the data of UN COMTRADE
 * = Rev. 3

gradually losing its status since the late 90s. Here again Russia is nothing in the world market.

All the charts reveal that China has experienced structural, but gradual, transformation from a labor-intensive to a “high-tech” economy¹⁵ on relatively strong basis of material industry. On the contrary, any significant structural change has not taken place in Russia recently since Yeltsin through Putin/Medvedev. One exception is that the “iron and steel” has been losing its status in the world.

3-2 IO Structure and International Economic Relations

Let us examine relationship between domestic industrial structure and international economic relations of the two countries. Tables 6-8 are made from IO data for this purpose. The tables show the Rasmussen’s Index of Power of Dispersion (IPD) and the Index of Sensitivity of Dispersion (ISD) calculated from the IO tables with the data of exports.¹⁶ IPD_{*j*} is defined as

$$IPD_j = \frac{\sum_i B_{ij}}{\left\{ \frac{1}{N} \left(\sum_j \sum_i B_{ij} \right) \right\}},$$

where B_{ij} is an ij factor of Leontiev inverse matrix in an $N \times N$ input-output table.¹⁷ ISD_{*i*} is defined as

15 Tomoo Marukawa points out that the Chinese industries have developed by vertical dis-integration (splitting) instead of vertical integration and that some parts of them were built not on the basis of massive R & D investment at the early stage of their development, but on the skillful application of “not so high technology” by primitive small scale enterprises (Marukawa, 2007). In this sense the Chinese “high-tech” sectors are not necessarily capital-intensive sectors. On the other hand, the FDI of the developed countries like Japan and the USA into China has also played an important role in the structural change. We need to investigate the relationship between these two elements.

16 The data for exports here are also taken from IO tables. Therefore the figures here do not necessarily correspond to the data mentioned before.

$$ISD_i = \frac{\sum_j B_{ij}}{\left\{ \frac{1}{N} \left(\sum_i \sum_j B_{ij} \right) \right\}}$$

The IPD is an index to show how much the economy as a whole would increase its production when the industry j increases its production by one unit. The index is shown in a form of a ratio to the average of all the industries listed. Therefore if the IPD $_i$ is higher than 1, “the ripple effect” of the industry j to the whole economy is stronger than average. On the contrary, the ISD is an index to show how much the industry i would increase its production when every industry listed increases each production by one unit. It is also shown as a ratio to the average.

Table 6 indicates that in 1985 the leading exporting sectors such as “textile”, “agriculture”, and “mining” had still low IPD.¹⁸ It means that the export of China did not have strong impact on the domestic economy then. However, it must be also noted that “textile”, “agriculture” and “mining” are labor-intensive sectors, which fitted for China’s endowments and that these sectors would be foundation to produce goods like “miscellaneous manufactured articles” (SITC 8), “food” (SITC 0), “mineral fuels” (SITC 3) whose RCA figures were relatively high in the first period of the reform (see Table 4). Of course export of these goods bore financial resources to import capital goods for further industrialization. The industrialization of China started slowly by using labor forces, which could produce competitive exportable goods.

Table 7 shows a radical change during the seventeen years. According to Table 7, the top five exporting sectors (from “machinery and equipment” to “metal

17 Here the author used the non-competitive import type model.

18 “Wholesale and retail trades, hotels and catering services” and “Transportation, postal and telecommunication services,” are not goods-exporting sectors. Therefore we do not analyze these sectors here.

Table 6) Export Share, IPD and ISD : China in 1985

(From the IO table 1985)¹

Sector	Export Share ² (%)	Index of Power of Dispersion	Index of Sensitivity of Dispersion
Textile, Sewing, Leather and Furs Products	19.31	1.118	1.189
Agriculture	12.41	0.603	1.670
Wholesale and Retail Trades, Hotels and Catering Services	11.37	0.333	0.827
Transportation, Postal and Telecommunication Services	10.32	1.357	1.124
Mining and Quarrying	8.58	0.817	1.065
Foodstuff	8.15	1.723	1.086
Machinery and Equipment	7.48	3.708	2.762
Other Manufacturing	5.89	0.823	0.753
Coking, Gas and Petroleum Refining	4.03	0.538	0.531
Other Services	2.67	1.699	1.308
Metal Products	2.41	0.691	1.093
Banking and Insurance	2.15	0.086	0.324
Chemical Industry	1.27	1.914	0.639
Building Materials and Non-metal Mineral Products	0.93	1.159	0.807
Production and Supply of Electric Power, Heat Power and Water	0.01	0.276	0.518
Construction	0.00	0.186	0.079
Real Estate, Leasing and Business Services	0.00	0.129	0.079

Notes) ¹= According to a non-competitive import type model. Calculated at producers' prices.

²= "Export Share" means export value of a given sector divided by the total export.

Source) IED, 1991, pp.45-46 ; p.166 (the author re-compiled 106×106 table into 17×17 table).

products" except "wholesale and retail trades, hotels and catering services") have relatively high IPD. It means that these industries have close connection with domestic economy and the increase of exports would lead to increase of the whole production of the country. As for "machinery and equipment", "chemical industry"

Table 7) Export Share, IPD, and ISD : China in 2002(From the IO table of 2002)¹

Sector	Export Share ² (%)	Index of Power of Dispersion	Index of Sensitivity of Dispersion
Machinery and Equipment	33.75	1.452	2.452
Textile, Sewing, Leather and Furs Products	17.76	1.349	0.676
Wholesale and Retail Trades, Hotels and Catering Services	9.33	0.792	1.218
Chemical Industry	7.03	1.288	2.009
Other Manufacturing	6.72	1.112	0.933
Metal Products	4.93	1.316	1.755
Transportation, Postal and Telecommunication Services	4.69	0.883	1.047
Other Services	3.89	0.806	0.333
Real Estate, Leasing and Business Services	3.24	0.719	0.751
Foodstuff	2.89	1.016	0.448
Agriculture	1.53	0.643	1.160
Mining and Quarrying	1.45	0.712	1.624
Building Materials and Non-metal Mineral Products	1.35	1.093	0.324
Coking, Gas and Petroleum Refining	0.85	1.148	0.696
Construction	0.34	1.327	0.133
Production and Supply of Electric Power, Heat Power and Water	0.17	0.797	0.824
Banking and Insurance	0.07	0.547	0.620

Notes) ¹=According to a competitive import type model. Calculated at producers' prices.²=“Export Share” means export value of a given sector divided by the total export.

Source) IO table of China in 2002, CSY, 2007, pp.89-91.

and “metal products”, figures of their ISD are also high. It means high growth of Chinese economy as a whole would in turn lead to growth of these sectors. We see here a virtuous circle of Chinese economy. At the beginning of the new century, we do not see anymore a structure where “cheap labor” is used to produce exportable

labor-intensive goods. In the seventeen years the Chinese economy has accumulated skills and technology to make “high-tech” products, which do not necessarily need to resort to competitiveness by simple cheap labor.¹⁹

On the other hand, in the case of Russia, the first leading exporting industry (“products of oil and gas”²⁰) had very low IPD (Table 8) in 2003.²¹ The export of oil and gas had very small “ripple effect” in Russia and its increase would not produce strong power to pull up the whole economy. It is natural that the IPD of oil and gas industry is small, but the problem lies in the fact that such an industry is the leading exporting industry of Russia.²²

Looking at the data of the USSR, we find that the structure where the sectors with low IPD are the leading export sectors was not so clear at least in the beginning of 1970s. For example, in 1972 it is true that the leading export item was “petroleum and related materials” (SITC 33), but its export share was only 13%. Other leading export goods were “iron and steel” (9.45%, SITC 67), “metal working machinery” (8.19%, SITC 72), “non-ferrous metals” (5.67%, SITC 68), “road vehicles” (5.15%, SITC 78), “textile fibers and their wastes” (3.79%, SITC 26), and “machinery specified for particular industries” (3.47%, SITC 79)²³ and the IPD of these goods were relatively high (except the case of “non-ferrous metals”).²⁴ It was in the 1980s when the structure began to resemble today’s one. We need to analyze the IO tables of the Soviet economy in 1980s. However they are not available in a detailed format as of now.

19 It must be noted that the “high-tech” products are not necessarily made by capital-intensive industries (see note 15).

20 It includes extracting of oil and gas.

21 We must not compare an IPD of Russia’s one industry (for example, products of oil and gas industry) with an IPD of China’s another industry (machinery and equipment industry) directly. Comparison of IPDs (and ISDs) is meaningful only when it is done in the same framework of one national economy.

22 Kuboniwa has found out this fact for the first time by using Russia’s IO tables of 1995 (1999, pp.100-101).

23 Calculated from author’s database. Of course this structure reflects the existence of the CMEA market.

24 Kuboniwa calculated IPD of the highest and lowest ten sectors from IO table of 1972 (Kuboniwa, 1989, pp.133-134).

Table 8) Export Share, IPD and ISD : Russia in 2003(From the IO table of 2003)¹

Sector	Export Share ² (%)	Index of Power of Dispersion	Index of Sensitivity of Dispersion
Products of Oil and Gas Industry	46.53	0.799	1.665
Precious Metal	9.87	1.112	1.437
Machines and Equipment, Metal-Processing Products	8.77	1.286	1.738
Ferrous Metal	7.14	1.223	1.257
Chemical and Oil-chemical Industry	5.71	1.388	1.276
Services of Transportation and Communication	4.32	0.773	2.624
Products of Wood, Timber-Processing and Cellulose and Paper Industry	3.50	1.169	0.796
Products of Food Industry	2.96	1.311	0.634
Commerce-Intermediary Services	1.38	0.466	3.678
Buildings	1.20	0.898	0.563
Other Industrial Products	1.15	1.188	0.377
Coal	1.14	1.222	0.470
Agricultural Products, Services for Agriculture and Products of Forestry	0.95	0.737	0.888
Products of Light Industry	0.82	1.387	0.778
Electric and Heat Energy	0.34	0.919	1.787
Products of Other Types of Activities	0.32	0.648	0.275
Construction Materials	0.31	1.129	0.455
Services of Financial Intermediary, Insurance, Administration and Social Associations	0.21	0.671	0.367
Services of Sciences, Geology, Investigation of Underground Resources, Surveying and Meteorological Water-Supply Work	0.20	0.906	0.538
Services of Health, Sports, Social Security, Education and Culture and Art	0.14	0.627	0.041
Services of Housing and Public Economy and Non-Productive Type of People's Welfare	0.08	0.752	0.328
Oil Shale and Peat	0.01	1.346	0.028

Notes) ¹= According to a competitive import type model. Calculated at basic prices.²= "Export Share" means export value of a given sector divided by the total export.Source) *STZV 2003*, pp.14-19 ; pp.112-114.

Concluding Remarks

China has pursued anti-Gerschenkron industrialization policies and has become “A Factory of the World”. In the process a sort of cautious arrangement of international economic relations has played a decisive role. The main finding of this paper is that the leading exporting sectors have changed from ones with low IPD and high labor-intensiveness to ones with high IPD and relatively “high-technology” in China. This means that the Chinese leaders tried to escape from the disadvantage of the preconditions and alter the preconditions themselves.

On the contrary, Russia has not been able to change the structure, which already existed in the period of Gorbachev. The leaders of the USSR and Russia intermittently tried to alter the structure by resorting to Gerschenkron type modernization, but in vain at least until now. However, we cannot accuse the leaders too severely because the preconditions at the beginning of the reform were far more complicated in the USSR/Russia than in China.

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Abbreviations of Statistical books and Address of Internet Web Sites

[****=Year that appears on the cover of statistical book]

- CSY [National Bureau of Statistics, People’s Republic of China, *China Statistical Yearbook*, ****].
- IFS [International Monetary Fund, *International Financial Statistics*, various issues].
- Narkhoz [Tsentral’noe statisticheskoe upravlenie SSSR, *Narodnoe Khoziaistvo SSSR v *****].
- National Bureau of Statistics of China [<http://www.stats.gov.cn/english/>].
- STZV 2003, [Rosstat, *Sistem Tablits “Zatraty-Vypusk” Rossii za 2003*], Moscow, 2006.
- TAM [Gosudarstvennyi tamozhennyi komitet Rossiiskoi Federatsii, *Tamozhennaia statistika vneshei torgovli Rossiiskoi Federatsii, Godovoi sbornik, *****].
- UN COMTRADE [United Nations, Commodity Trade Statistics Database][<http://comtrade.un.org/db/>].
- VES [Ministerstvo vneshnikh ekonomicheskikh sviazei SSSR i Gosudarstvennyi komitet SSSR po statistiki, *Vneshnie ekonomicheskie viazi SSSR v *****].
- VT [Ministerstvo vneshnei torgovli, Glavnoe planvo-ekonomicheskoe upravlenie, *Vneshniaia torgovlia SSSR v *****].