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The Development of Japanese Cotton Weaving Industry in Edo Period

Introduction

Prior to the Japanese industrialization which began in the late 1880s, manufacturing such as weaving, silk reeling, brewery, and the related commerce had already highly developed around the farming villages in the Edo period (1603-1868). We have many Japanese books and articles that argued about the Japanese manufacturing in the period, especially after the latter half of 18th century¹. However, most of them argue about only one industry at a specific narrow area, and neglected the development of the industry in the whole Japan. In addition, such basic facts as the starting period of the respective local industries, the transition of their production, and so on, are not necessarily known, although the literature well elucidated the differences of production forms (i.e., putting-out or manufactory).

There were lots of manufacturing industries in the Edo period. Table 1 shows the production values of the important industries in 1874, which reflect the approximate situation at the end of the Edo period. According to this table, brewery and weaving were most important, and in weaving, cotton and silk were overwhelming.

This paper focuses on the cotton weaving industry, and confirms quantitatively the transition of production volumes, further considering about some aspects of its development all over Japan.

¹ Ichikawa (1958) is an excellent survey about them.

1. Basic Data

In the Edo period, with the penetration of market economy, cotton cloth, which was the material of popular *kimono* and the other wear, came to be woven in the many local areas, closely related to the production of raw cotton and hand-spun yarn. The peasants, who were the main produces of cotton cloth, local merchants and finishers (namely, bleachers and dyers) usually gathered at the narrower areas called *sanchi* (producing centers)².

As a whole, it is difficult for a researcher to find the data on manufacturing industries in the Edo period, including the case of cotton weaving. However, we can often find the production volumes of cotton cloth at the respective *sanchi* in such sources as local histories, historical records of local trade associations which were established in and after the Meiji period (1868-1912), and the academic literature which used these sources. These data are generally rough, and their reliability does not seem to be high. Nevertheless, we need not reject them at all. This paper looks upon these data as approximately reflecting the actual situation, collects them as many as possible.

Before taking these procedures, we must select the suitable *sanchi* for consideration. The author decided them, noting the selling and buying of cotton cloth. In the Edo period, Osaka, which was the economic center of Japan, gathered many commodities including cotton cloth mainly from the western part of Japan through water transportation, and distributed them to various areas, especially to Edo (now Tokyo), which was the enormous consumption city in the world. Table 2 shows the local provinces which shipped cotton cloth to Osaka. This paper looks upon most of them as cotton weaving *sanchi*. However, as the author could not confirm whether Sanuki and Bungo produced

cotton cloth or not, these two provinces were excluded. Incidentally, on this table the statistical data about Nishijin (Yamashiro), Yamato, Settsu, Awaji, Bitchu and Awa were not acquired, although Table 3 indicates that they certainly produced cotton cloth.

Cotton cloth which was consumed in Edo was not produced only by the *sanchi* shown on Table 2. As Kitajima(ed.)(1962) and R.Hayashi (1963; 1967, pp.120-9) show, Nishi (west)-Mikawa³, Owari (the name of whole area of Bihoku, Bisai and Chita) and Seishu (the name of whole area of Ise and Matsuzaka) had shipped cotton cloth directly to Edo since about the 17th century, and some *sanchi* in Kanto region around Edo such as Mooka and Iwatsuki had followed them since 18th century. The above-mentioned areas are included the *sanchi* in this paper. However, the author could not confirm whether Bihoku produced cotton cloth or not, and could not get any information on production volumes of Nishi-Mikawa and Iwatsuki. About these two *sanchi*, look on Table 3.

Lastly, referring to Abe (1983) which scrutinized the cotton weaving *sanchi* in the early Meiji Period (1868-c.1884), this paper further added Akita (now in Akita Prefecture⁴), Kameda (Niigata Pref.), Mitsuke (Niigata Pref.), Niikawa (Toyama Pref.), Sano (Tochigi Pref.), Kita-Saitama (Saitama Pref.), Tokorozawa (Saitama Pref.) and Tarui (Osaka Prefecture⁵) to the list of *sanchi*⁶.

Thus, the author singled out the cotton weaving *sanchi* which should be considered. Next, he collected the statistical data as many as possible from the above-mentioned materials, compared with them each other, and then, decided the starting periods of

² See Nawa (1937: Part 1, Ch.1); Shinobu (1942: Part 1, Ch.1); Sanpei (1961: pp.150-).

³ Higashi (east)-Mikawa, the narrower centers of which were Miya and Gamagori, started to develop after the Meiji period. See Abe(1983), p.313.

⁴ Although its center seems to have been Yokote, which is famous by Hattori (1934 and 1935), the author took the data of all Akita prefecture.

⁵ Tarui, a part of Izumi, should be treated as an independent *sanchi* of a special thick cloth, *monpa*, for traditional Japanese socks (*tabi*).

⁶ In the *Sanchi* shown in Abe (1983), which had developed in the Edo period, Oura(Nakano) was omitted because of lack of data. As Kita-Adachi, Bingo (the name of whole area of Ashina, Numakuma and Kannabe) and Kurume began to develop at the end of Edo period, they were also excluded.

cotton cloth manufacturing, the epoch making periods of commercialization of cloth, and the production volumes. The final results of these procedures are compiled in the Appendix Table, and the data are plotted in the respective local regions on Figure 1. These data are rough, and, needless to say, we must carefully use them. However, as we can hardly get the statistical data on production of manufacturing industries in Edo period, the data must be valuable. Incidentally, Table 3 and the Appendix Table also include such information as main products, technological progress, production system and *han* (domain) monopoly⁷.

2. Observations of Data

As Appendix Table and Figure 1 indicate, there were many cotton weaving *sanchi* in Japan in the Edo period, which wove various cloths such as white cloth and striped cloth (see ‘Main Products’ in Appendix Table). According to Table 4, cotton cloth production seems to have started around in Tokai and Kinki regions in the 16th or 17th century⁸. Such *sanchi* as Nishi-Mikawa and Seishu in Tokai region, and Yamato, Settsu, Kawachi and Izumi in Kinki region had long histories and they were famous in Japan(see Table 2 and Appendix Table). Table 5 suggests that many *sanchi* except for these older ones experienced the rapid commercialization of cotton cloth after the latter half of the 18th century. So-called Tanuma period (1760-86) in Japanese history seems to have been an epoch in the development of cotton weaving industry. Also, according to the same table, newly emerging *sanchi* developing after the latter half of the 18th century strikingly

⁷ *Han* often monopolized the sale of valuable cash crops and the processed goods made from them at the national markets in Osaka and Edo in the Edo period.

⁸ According to Shigeyori Matsue, *Kefukigusa* completed at the former half of the 17th century, at least the following areas yielded cotton cloth at the time. Awa, Musashi, Kai, Ise, Yamashiro, Settsu, Buzen, Bungo, Hizen and Higo.

concentrated in Kanto and Chugoku regions. Mooka and Sano in Kanto and Inaba & Hoki, Izumo and Aki in Chugoku were main *sanchi* (see Appendix Table). Cotton cloth production did newly develop near the advanced regions of production, Tokai and Kinki.

Figure 1 shows the transitions of cotton cloth production of the respective *sanchi* after their products came to be sold as commodities. In this figure it is only six *sanchi* (Niikawa in Hokuriku, Kawachi, Izumi and Himeji in Kinki, and Inaba & Hoki and Aki in Chugoku) that reached one million *tan*⁹ per year. Nevertheless, it is worth noting that most of them belonged to the regions which had actively yielded cotton cloth since the early days, as was already mentioned¹⁰.

However, it is doubtful whether all the older *sanchi* well developed or not. In fact some *sanchi* in Kinki region decreased their production volumes. According to Table 2, all of Kinai Region (i.e., Yamashiro, Yamato, Settsu, Kawachi and Izumi) and the adjacent two *sanchi*, Kishu and Awaji produced cotton cloth in 1736, but about fifty years later, the shipments of cotton cloth from Yamashiro and Yamato¹¹ to Osaka disappeared and the volumes from Settsu and Kishu were not large, compared with the other *sanchi*. Some researchers (Yagi 1962; Shinobu 1942, p.61; Fujita 1963, p.246) suggest that Settsu specialized in producing cotton gin, and Kishu and Awaji came to center in yielding hand spun cotton yarn, while all of them gradually stopped weaving cotton cloth.

On the other hand, many cotton weaving *sanchi* which emerged after the latter half of the 18th century seem to have more rapidly grown. This fact is shown on Figure 1, and is more clearly shown on Figure 2 which indicates the volumes of the sold cotton cloth

⁹ *Tan* is Japanese unit of volume of cotton cloth. The width is about 28.8 centimeters and the length is about over 9.091 meters.

¹⁰ According to the information of Table 3, Yamato seems to have been included in them.

¹¹ Yamato actively produced cotton cloth during the Edo period. See Morita and Okuno (1898), pp.2-21.

by four local merchants in Kawachi, an older *sanchi*, and one local merchant in Chita, one of the new *sanchi*.

The author would like to explain further on some additional information on Appendix Table.

(1) Technological Progress

Although we have little knowledge on the technological progress of the cotton weaving in the Edo period, we should notice two facts. One is the change of hand looms from *jibata* (*izaribata* or *shimobata*) to more sophisticated *takabata* (see Figure 3). This change are found in eight *sanchi*, Kameda, Mitsuke, Sano, Tokorozawa, Matsuzaka, Bizen, Matsuyama and Tosa. Except for Matsuzaka, an older *sanchi*, and Tosa, the developing period of which is unknown, six *sanchi* were the new ones that developed after the latter half of the 18th century. All the periods of this change were the 19th century around Bunka (1804-18) and Bunsei(1818-30) periods. Another progress is the adoption of *yoshi*, namely, machine-made cotton yarn imported from the foreign countries after opening the ports in 1859. Six *sanchi*, Mitsuke, Sano, Tokorozawa, Bisai, Matsuzaka and Bizen certainly started to use *yoshi* at the end of the Edo period, and these, except for Bisai¹², adopted *takabata*, too.

(2) Production System

Many Japanese researchers who were interested in the history of cotton weaving industry made great efforts to consider whether a manufactory, which Karl Marx argued in his *Das Kapital*, was found or not in the industry in the Edo period. Some of them (Nakamura 1968, Shiozawa & Kawaura 1957) insisted that manufactories existed in Izumi and Bisai in the 19th century, but the others denied it (H.Hayashi 1960). Anyway, these arguments are vague and lack for the quantitative evidence, and the author cannot

give any good comments on such arguments. Here this paper only shows some facts about the production system, which can be gotten from the materials. First, in eight *sanchi*, Akita, Niikawa, Mooka, Chita, Inaba & Hoki, Aki, Choshu and Imabari, *watagae* system was found. This is the system in which a local merchant lent raw cotton to a weaving peasant family and collected cotton cloth which the farmhouse wove, using the ginned raw cotton. In the most cases, a part of the ginned cotton was taken as wage by the peasant family. Secondly, in four *sanchi*, Kameda, Mitsuke, Bisai and Bizen, *debata* system developed. This is so-called putting-out system, in which a local merchant lent cotton yarn and looms (in many cases, *takabata*) to a weaving peasant family, collected the cloth made by the same family, and paid wage to the farmhouse. Judging from the cases of Kameda and Bisai, *debata* system seems to have often appeared with the improvement of weaving loom or the emergence of new type of looms. In *sanchi* of striped cloth the system seems to have started when a local merchant aiming at much more cloth lent the dyed or bleached yarn and *takabata* to peasant families. On the other hand, in the *sanchi* of white cloth, the production of which was easier than that of striped cloth, once a peasant family got ginned cotton, the farmhouse could easily produce yarn and cloth, and the local merchant could collect cloth only by lending ginned cotton¹³. The above-mentioned putting-out system is found in the newer *sanchi*. In the older *sanchi* such as Kawachi and Izumi, so-called Kaufsystem is found. Local merchants there did not lend raw materials and looms to the peasant families, and the farmhouses got them by themselves, spontaneously selling cotton cloth to the local merchants¹⁴.

(3) *Han* Monopoly

¹² In Bisai *jibata* was improved.

¹³ About the difference between *watagae* and *debata* I greatly thank for the suggestion by the late professor Hiroshi Shinbo. Judging from the description of the original sources of Appendix Table, looms used in *watagae* system seem to have been *jibata* owned by the farmhouse itself.

¹⁴ About Kawachi, see Imai (1980) besides the original sources of Appendix Table.

In the Edo period after the latter half of the 18th century, many *han* (domains) ruled by *daimyo* (feudal lords) came to suffer from the deficit of budget, and began *han* monopolies. For example, Himeji *han* in Kinki region purchased all the white cotton cloth woven by the peasant families through paying *han* note which circulated only within *han* after 1821. Only some merchants, whom Himeji *han* officially admitted, collected cloth, and directly shipped it to Edo, where Himeji *han* could earn much money¹⁵.

In Appendix Table in thirteen *sanchi*, Niikawa, Bisai, Chita, Oumi, Kishu, Himeji, Inaba & Hoki, Bizen, Aki, Choshu, Imabari, Matsuyama and Bizen, may *han* monopolies be found, although it is questionable whether all of them are called *han* monopolies or not. Most of thirteen *sanchi* were located in such western parts of Japan as Tokai and Kinki regions. The periods when the *han* monopolies were vitalized were in and after Bunka and Bunsei periods in the 19th century. As we have already argued it, such *sanchi* marvelously developed in these periods, many *han* seem to have tried to directly control over the cotton weaving industry. Among them some *han* such as Imabari positively fostered the industry, and succeeded in it. The relation between *han*'s industrial policy and the development of some industries should be scrutinized further.

Here the author tried to consider the development of only one industry, but we will be able to form the total image of industrial development of Japan in the Edo period, through collecting the data of the other industries besides the cotton weaving.

¹⁵ Hozumi (1970).

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Table 1. *Relative Positions of Various Product*

Categories in 1874		
Product Categories	Produced Value (thousand yen)	%
Farm Products	227,287	61.0%
Manufacturing Products	111,892	30.1%
Brewed Goods	31,081	8.3%
Textiles	17,159	4.6%
Cotton	10,856	2.9%
Silk	4,581	1.2%
Raw Silk	6,165	1.7%
Oil	5,443	1.5%
Paper	5,167	1.4%
Forest Products	14,565	3.9%
Livestock	7,478	2.0%
Marine Products	7,276	2.0%
Minerals	3,809	1.0%
Total	372,307	100.0%

Note: Figures of brewed goods represent the total of *sake*, soy sauce and bean paste.

Source: Abe (1983), p. 296.

Table 2. Inflow of Cotton Cloth into Osaka

		c. 1679	1736	c. 1786		c. 1790
<i>Sanchi</i>	Contemporary Prefecture		White Cotton Cloth	Striped Cotton Cloth	White Cotton Cloth	Striped Cotton Cloth
unit: 10,000 <i>tan</i> per year						
Echizen	Fukui	*				
Oumi	Shiga	*				
Yamashiro	Kyoto			*		
Yamato	Nara		*			*
Settsu	Osaka & Hyogo		*	*	5	8
Kawachi	Osaka	*	*		10	8
Izumi	Osaka	*	*	*	20	8
Kishu	Wakayama	*	*	*		8
Awaji	Hyogo	*	*		40	
Harima	Hyogo	*	*		70	
Hoki	Tottori					*
Izumo	Shimane	*			10	*
Bizen	Okayama		*		40	*
Bicchu	Okayama					*
Aki	Hiroshima				10	*
Nagato	Yamaguchi					*
Suho	Yamaguchi	*	*		40	8
Sanuki	Kagawa				5	*
Awa	Tokushima		*		5	*
Imabari	Ehime	*	*		10	*
Matsuyama	Ehime					*
Tosa	Kochi				10	*
Buzen	Fukuoka & Oita		*			*
Bungo	Oita		*		10	

Notes:

1. Mark * means that the cotton cloth made in the sanchi was brought about to Osaka. Data in blanks are 'not available'
2. Provinces in c.1679 are those written near the names of cotton cloth merchants in *Kaichu Naniwa Suzume [Osaka's Sparrow in Pocket]* published in 1679. Harima and Nagato are written also respectively as Akashi and Choshu in the sources. The whole area of Imabari and Matsuyama is often called Iyo. The author deemed Iyo in the original source of c.1790 as Imabari and Matsuyama. Another name of Kishu is Kii.

Sources: c. 1679: Sakudo (1977), pp.119-20; c.1790: Kitajima (ed.) (1962), p. 333; The others: Osaka-shi Sanji-kai (ed.) (1913), pp. 774 and 1096-97.

Table 3. *Sanchi* the Production Volumes of Which are Unknown

No.	<i>Sanchi</i> (Contemporary Prefecture)	Main Products	Starting Periods of Cotton Weaving	Epoch of Commercializat ion of Cotton Cloth	Comments (A: Technology, B: Production System, C: <i>Han</i> Monopoly, D: Others)
1	Iwatsuki (Saitama)	W	1601 +	1764-1781	A: <i>Jibata</i> until the end of Edo period.
2	Nishi-Mikawa (Aichi)	W	1510 +	1688-1711	
3	Nishijin (Kyoto)	<i>santomejima</i>			D. Yamashiro on Table 2 may be Nishijin. At latest by the end of Edo period, production volumes decreased. A: <i>Jibata</i> until the end of Edo period. D. As Wataya Sakubei at Higashi Bojo-mura of Takaichi-gun sold 713,000 tan to the eastern regions in 1838, the production volumes must have been large.
4	Yamato (Nara)	W, S, <i>kasuri</i>	1665 +		D. Compared with Kawachi and Izumi, weaving was inactive.
5	Settsu (Osaka & Hyogo)	W, S	16th Century		C. <i>Han</i> Monopoly is found.
6	Awaji (Hyogo)				D. At least around in 1782 many places in Awaji actively produced cotton cloth. But the industry declined by the early Meiji period.
7	Bicchu (Okayama)	S			A. At latest in 1848-54 Bicchu introduced <i>takabata</i> . B. Lord, the Hitotsubashi family promoted <i>watagae</i> system at latest by the period of 1848-54.
8	Awa (Tokushima)	S		1818	C. In 1825 cotton cloth became one of the most important commodities produced in Awa.

Notes:

1. Data in blanks are 'not available'.

2. W, B, S and C at the column of 'Main Products' respectively mean white cotton cloth, bleached cotton cloth, striped cotton cloth and crape.

3. Mark + at the column of 'Starting Periods of Cotton Weaving' is the earliest period found in the sources.

4. Another name of *sanchi* of No.8 is Ashu.

5. Relating to Nishi-Mikawa, volumes of cotton cloth, which were sold for Edo from two bureaus of Chiga and Nomura at Ohama Port, are as follows; 97,000 *tan* in 1840, 76,000 *tan* in 1848, and 156,000 *tan* in 1851 (Mori-hara, 1960, p.58). Small volumes bought and sold around the *sanchi* are excluded.

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7. Kitajima (ed.) (p.367); Tokushima-ken Shi Hensan Inkai, *Tokushima-ken Shi* [History of Tokushima Prefecture], Vol.4 (1965, p.192).

Table 4. Starting Periods of Cotton Weaving (Unit: Number of *sanchi*)

	Tohoku	Hokuriku	Kanto	Tokai	Kinki	Chugoku	Shikoku	Kyushu	Total
16th-17th Century	1	1	1	3	3	1	1	0	11
Former Half of 18th Century	0	1	1	0	0	0	0	1	3
Latter Half of 18th Century	0	0	1	1	1	0	0	0	3
Former Half of 19th Century	0	0	1	0	0	0	0	0	1
Total	1	2	4	4	4	1	1	1	18

Note: Culculated from Appendix Table.

Table 5. Epoch of Commercialization of Cotton Cloth

	Tohoku	Hokuriku	Kanto	Tokai	Kinki	Chugoku	Shikoku	Total
17th Century	0	0	0	2	1	0	0	3
Former Half of 18th Century	0	0	0	0	0	1	1	2
Latter Half of 18th Century	0	2	1	1	1	4	0	9
Former Half of 19th Century	0	1	2	1	0	0	1	5
Latter Half of 19th Century	1	0	1	0	0	0	0	2
Total	1	3	4	4	2	5	2	21

Notes:

1. Culculated from Appendix Table.
2. Periods of No.15 and No.18 of *sanchi* on Appendix Table were deemed respectively as the 17th century and the latter half of the 18th century.

Figure 1. Product Volumes of Main Cotton Weaving Sanchi

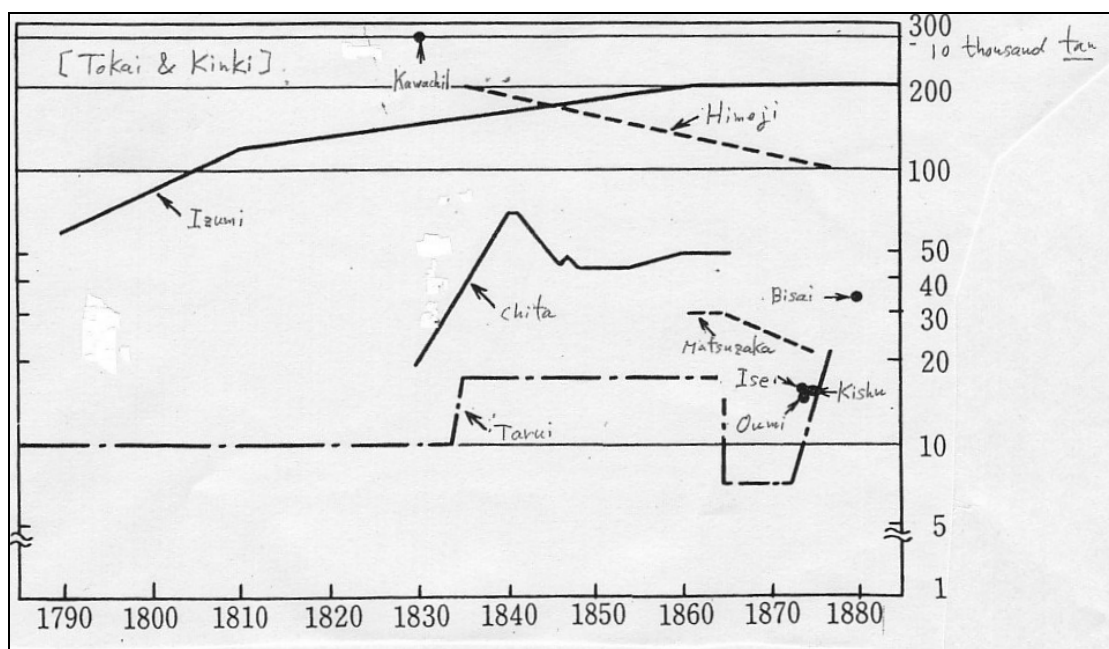
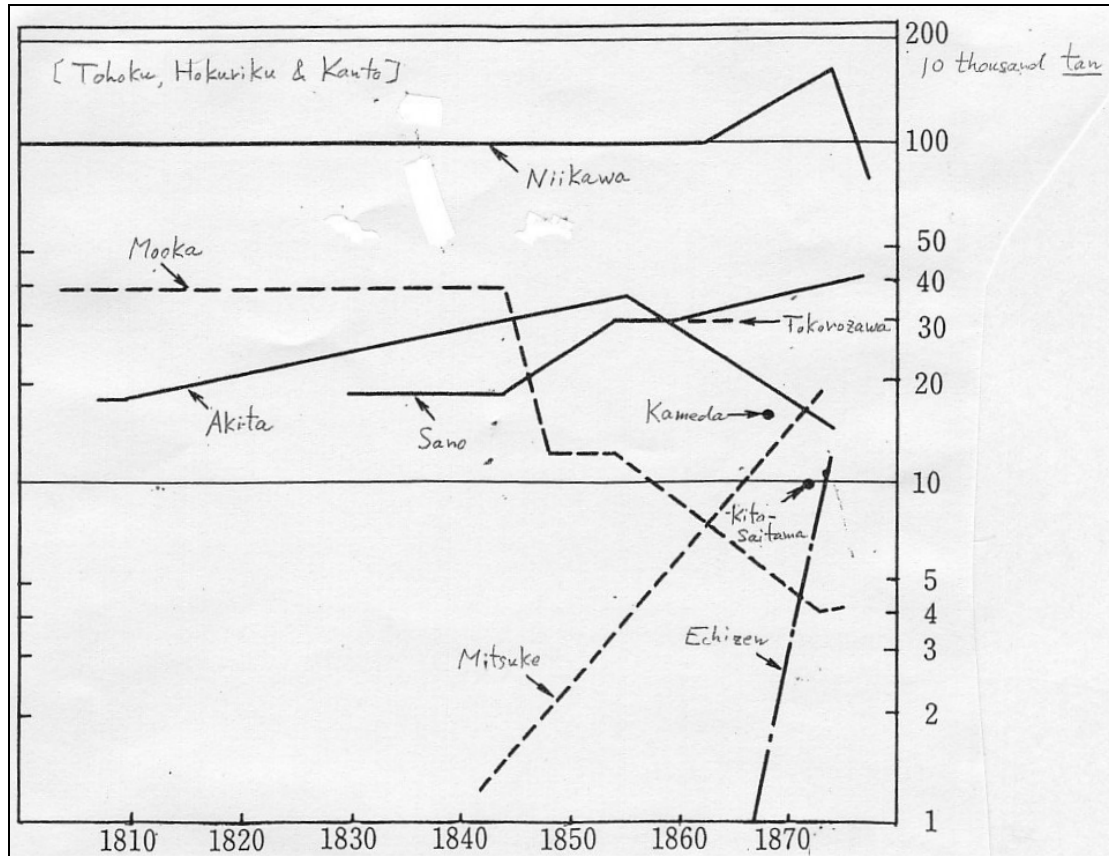
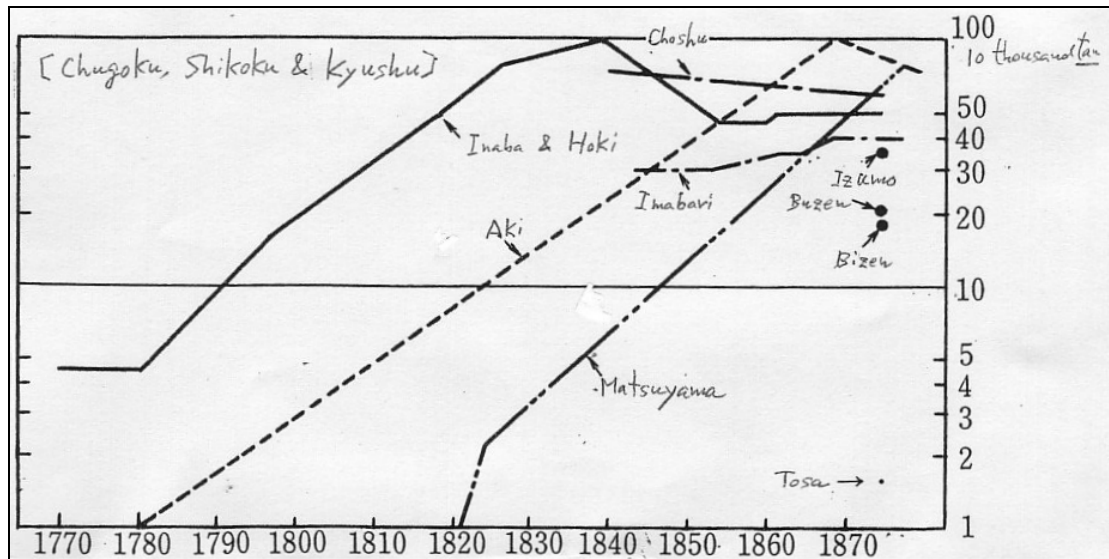
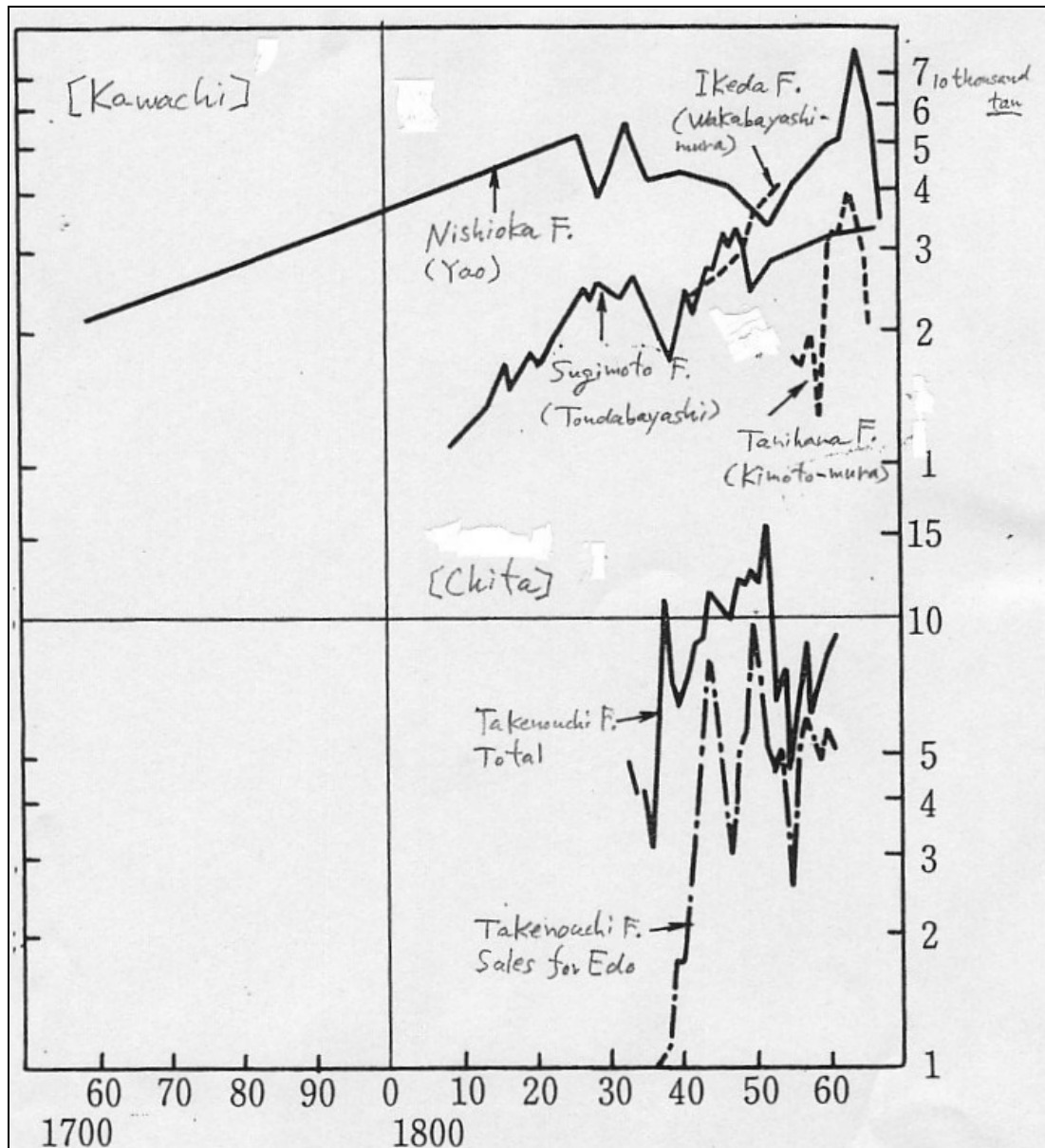


Figure 1. Continued



Source: 'Production volume' on Appendix Table

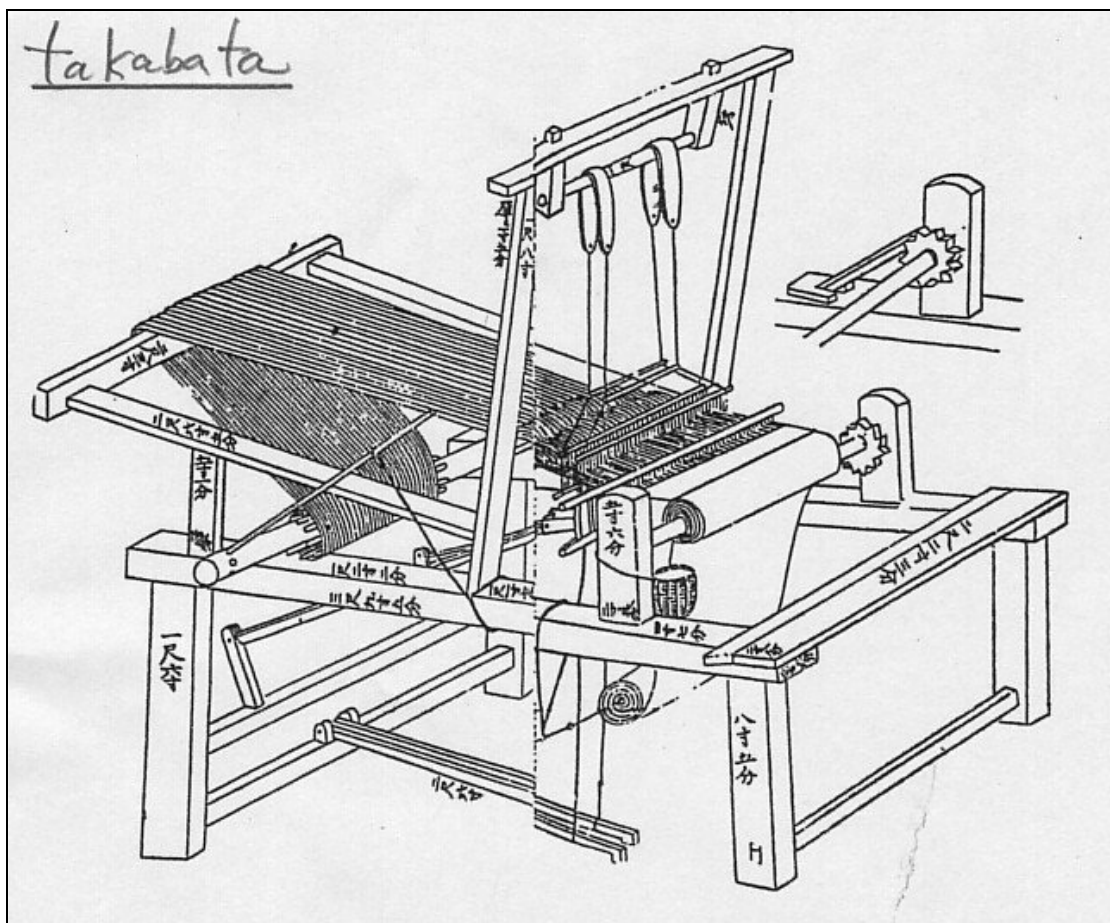
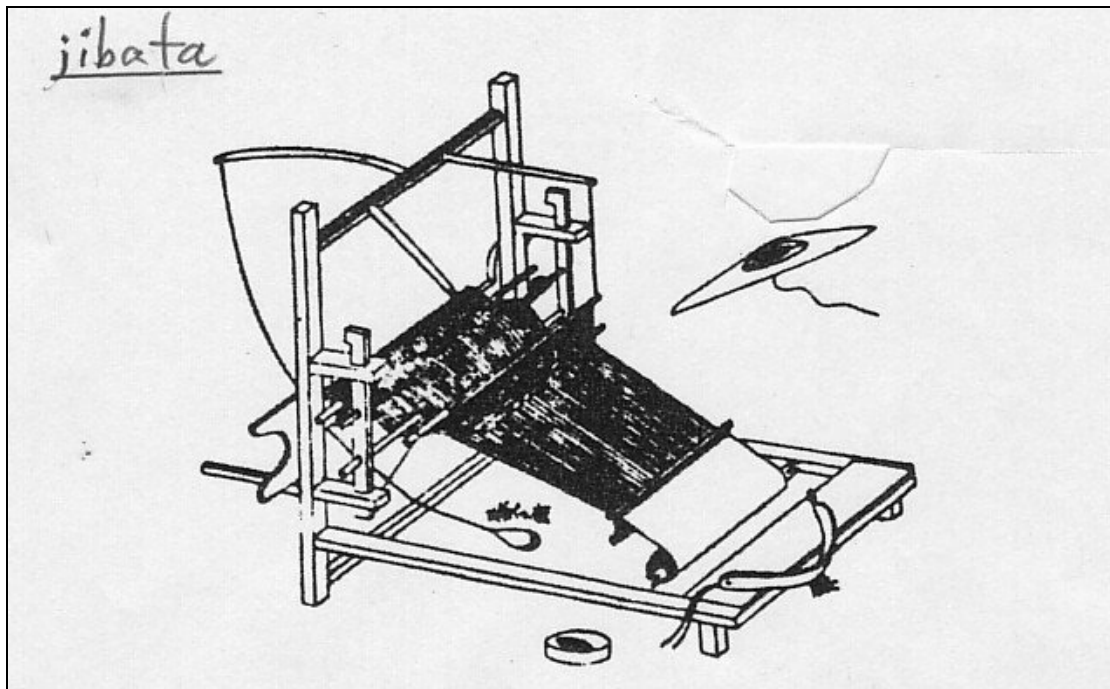
Figure 2. Volumes of Cotton Cloth Sold by Local Merchants of Kawachi and Chita



Note: F = Family

Sources: Nishioka F.: Takebe (1981, pp. 160-1); the others in Kawachi: Imai (1980, pp. 277-9); Chita: H. Hayashi (1965, Appendix Table 1).

Figure 3. Jiabata and takabata



Notes on Appendix

1. Data in blanks are 'not available'.
2. W, B, S and C at the column of 'Main Products' respectively mean white cotton cloth, bleached cotton cloth, striped cotton cloth and crape.
3. Mark * at the column of 'Production Volume' is apparent assumption.
4. Another names of *sanchi* of No.18, No.21 and No.22 are respectively Wakayama, Unshu and Kojima. The whole area of No.25 and No.26 is called Iyo. No.26 is composed of three smaller producing places, Aoya, Kurayoshi and Hamanome.
5. 1) Total volume of white and striped cotton cloth.
2) A source records the period of 1716-36.
3) Shimo-Niikawa-gun, *Simo-Niikawa-gun Shi Ko [History of Shimo-Niikawa-gun]*, Vol.2(1909, pp.1130-1) records the data of 1,050,000 *tan* per year in 1865-c.1877 and 350,000 *tan* per year in 1880.
4) Total volume of cotton crape and white cotton cloth on Shiga Prefecture.
5) Shinohara, Kazumiki (ed.), *Shimodate-cho Kyodo Shi [History of Shimodate-cho]*(1940, p.196) records the datum of one million *tan* per year at the most prosperous period. Saito, Mikizo (ed.), *Ibaragi Kenshi Zen [History of Ibaragi Prefecture]*(1930, p.226) shows the datum of two million *tan* per year in around 1804-30.
6) Total volumes of the collected cotton cloth from three towns, Hanyu, Kazo and Kisai.
7) The period when the production way of *santomejima* diffused from Nishijin to Mino.
8) Data of Nakajima-gun, Aichi Prefecture.
9) *Aichi-ken Kiyo* (see Source No.11. p.169) and *Aichi-ken Shi* (see Source No.11. pp.10-43) record 20,000 *tan*.
10) The volumes of cotton cloth that was loaded down in Edo are shown. They are underestimated because they do not include the volumes which were sold near Chita.
11) White and striped cotton cloths in Mie Prefecture.
12) The volumes of cotton cloth that was formally sold in Edo are shown. They are underestimated on the same reason as note 10). Source No.20, Mitsui Bunko (ed.) p.414 includes the following volumes of Ise cotton cloth shipped for merchants of Matsuzaka in Ise; 562,000 *tan* in 1789, 563,000 *tan* in 1790, 557,000 *tan* in 1792 and 553,000 *tan* in 1793.
13) White and striped cotton cloths in Watarai Prefecture.
14) Total volume of cotton cloth and cotton crape.
15) Data within Kishiwada *han*.
16) Total volume of four *gun* areas except for the domain of Tayasu *han*.
17) Total volume of white and striped cotton cloth, and *unsai*. Yearly production volumes of *monpa*, the important commodity, seems to have been 150,000-160,000 *tan* at the end of the Edo period(see Ando, p.347 at Source No.18).

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19) Sold volume to the other *han*.

20) Except for about thirty *soku* of Iwai-gun.

21) Cotton cloth and *unsai* in Tottori Prefecture.

22) Cotton cloth and dyed cotton cloth in Shimane Prefecture.

23) Cotton cloth, *unsai*, *kokura*, striped and dyed cotton cloth in Okayama Prefecture.

24) Data of Nomi Island.

25) Except for the *han* branches of Iwakuni, Tokuyama, Shimizu and Nagato.

26) Total volume of white and striped cotton cloth, and white cotton crape.

27) Total volume of cotton cloth in Kokura Prefecture in Oita Prefecture.

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Appendix Table Production Volumes of Main Cotton Weaving *Sanchi* in Japan in the Edo Period

No.	Larger Region	<i>Sanchi</i> (Contemporary Prefecture)	Main Prod	Starting Peri Cotton Weav	Epoch of Commer of Cotton Cloth	Production Volume per Year (Unit: 10,000 <i>tan</i>)			Comments(A: Technology,B:Production System, C: <i>Han</i> Monopoly, D: Others)
1	Tohoku	Akita (Akita)	W, D, S	1624-44	Around 1868	(1)	1808-10	18.0 *	A: Improvement of dyeing after 1781-89. B: Diffusion of <i>watagae</i> system around at 1789-1801.
						(2)	1855	36.0 *	
						(3)	1874	14.2 1)	
2	Hokuriku	Kameda (Niigata)	S		1789-1801	2) (1)	1868	15.0-16.0	A: Introduction of <i>takabata</i> in 1808; Improvement of dyeing in around 1830. B: <i>Debata</i> system after introduction of <i>takabata</i>
3	Hokuriku	Mitsuke (Niigata)	S	1715	* 1830	(1)	1842	1.0-1.5	A: In 1827 Introduction of <i>takabata</i> and employment of two weavers from Ashikaga; In 1930 introduction of improved <i>takabata</i> from Yuki and employment five weavers and dyers; Introduction of imported yarn after 1859. B: Diffusion of <i>debata</i> system in 1830-44.
						(2)	1873	18.0	
4	Hokuriku	Niikawa (Toyama)	W	1596-1615	1789-1801	(1)	C.1830	100.0	B: <i>Watagae</i> system. C. Start of direct sale of cotton cloth to Edo by han in 1828.
						(2)	C.1863	100.0	
						(3)	1874	162.7	
						(4)	1877	83.0	
						(5)	1883	44.0 3)	
5	Hokuriku	Echizen (Fukui)	W, S, C			(1)	C.1868	1.0	
						(2)	1874	11.3 4)	
6	Kanto	Mooka (Tochigi)	B	1684-88	1764-81	(1)	1804-44	38.0 5)	A: <i>Jibata</i> until the end of Edo period. B: <i>Watagae</i> system. D: Most of the cloths were actually woven at the south-eastern part of contemporary Ibaragi Prefecture around Shimodate area.
						(2)	1848-54	12.0	
						(3)	1972-73	4.0	
						(4)	1875	4.1	
						(5)	1881	1.5	
7	Kanto	Sano (Tochigi)	S	1744-48	1818-44	(1)	1830-44	18.0 *	A: Introduction of <i>takabata</i> in 1823-24; Introduction of imported yarn in 1866.
						(2)	1854-60	30.0 *	
						(3)	1877	40.0 *	
8	Kanto	Kita Saitama (Saitama)	S, <i>mekura</i>	C.1781-89	C.1818-44	(1)	1872	9.6 6)	A: <i>Jibata</i> until the end of Edo period.
9	Kanto	Tokorozawa (Saitama)	S, <i>kasuri</i>	Early 19th C	1854-60	(1)	C.1868	30.0	A: Diffusion of <i>takabata</i> in 1861-68; Introduction of imported yarn after 1859. B: Neither <i>watagae</i> system and nor <i>debata</i> system was found.
10	Tokai	Bisai (Aichi)	S	1764-72	7) C.1818-44	(1)	1880	35.0 8)	A: Improvement of <i>jibata</i> in 1830-48; Introduction of imported yarn in 1861-64. B: Diffusion of <i>debata</i> system after improvement

									of <i>jibata</i> . C: Bureau of <i>han</i> monopoly in 1842-53. D: Mino (a part of contemporary Gifu Pre.) should be included in Bisai. However, the center of production moved from Mino to Bisai in 1830-44.
11	Tokai	Chita (Aichi)	B	1596-161 *	1781-89	(1)	1830	20.0 9)	A: Introduction of technology of dyeing from Ise in 1881-89; Improvement of <i>jibata</i> at the end of Edo period.
						(2)	C.1841-42	70.0 *	
						(3)	1846	46.0 10)	
						(4)	1847	48.8 10)	B: <i>Watagae</i> system after 1854-60.
						(5)	1848	44.3 10)	C: Bureau of <i>han</i> monopoly in 1842-53, which promoted direct sale of cotton cloth to Edo.
						(6)	1848-54	40.0-50.0	
						(7)	C.1868	About 50.0 10)	
12	Tokai	Ise (Mie)	W, B, S	C.1592-96	1596-1644	(1)	1874	15.9 11)	
13	Tokai	Matsuzaka (Mie)	B, S	1573-92 *	C.1681-84	(1)	1861-64	30.0 12)	A: Introduction of <i>takabata</i> in 1818-44; Introduction of imported yarn in 1854-60.
						(2)	1874	22.4 13)	D: Decrease of production after 1865-68.
14	Kinki	Oumi (Shiga)				(1)	1874	15.2 14)	C: Cotton cloth in Hikone Province became one of the important commodities of <i>han</i> .
15	Kinki	Kawachi (Osaka)	W, S, <i>uns</i>	1521-32	C.1688-1704	(1)	C.1830	300.0 *	D: Decrease of production after 1844-48.
16	Kinki	Izumi (Osaka)	W	1596-161 *		(1)	C.1790	60.0 15)	
						(2)	C.1810	120.0 16)	
						(3)	1861-64	200.0	
17	Kinki	Tarui (Osaka)	<i>monpa</i>	The Latter Half of the 18th Century		(1)	C.1804-34	10.0	
						(2)	C.1835-65	17.2	
						(3)	C.1865-75	7.2	
						(4)	1877	22.5	
18	Kinki	Kishu (Wakayama)	B, <i>monpa</i>	1629	Mid- 18th Century	(1)	1874	15.5 17)	C: Kurayashiki adopted tender system of cotton cloth of Kishu in 1825. D: Production volumes of bleached cotton cloth and <i>monpa</i> seem to have decreased at latest at the end of Edo period.
19	Kinki	Himeji (Hyogo)	B			(1)	1836	200.0 18)	C: Bureau of <i>han</i> monopoly in 1821-71.
						(2)	1878	100.0	Direct sale of cotton cloth to Edo.
20	Chugoku	Inaba & Hoki (Totto	W	1782		(1)	C.1770-80	4.0-5.0 19)	B. <i>Watagae</i> system after start of Echigoya's activity shown at D.
						(2)	1797	16.7 20)	
						(3)	1818	50.0	C: Control of circulation of cotton cloth by <i>han</i> in 1818-23 and in 1852-68.
						(4)	1826	80.0	

					(5)	1839	100.0	19)	D: In 1782 the draper, Echigoya (the Mitsui family), had a shop to buy in cotton cloth.
					(6)	1854-60	47.0		
					(7)	1861-64	50.0		
					(8)	1874	51.0	21)	
21	Chugoku	Izumo (Shinmane)	W	1772-81	(1)	1874	34.4	22)	D: In 1800 the draper, Echigoya, had a shop to buy in cotton cloth.
22	Chugoku	Bizen (Okayama)	sanada ,ha	1789-1801	(1)	1874	18.0	23)	A: Introduction of <i>takabata</i> and imported yarn at latest at the end of Edo peroid. B: <i>Debata</i> system at latest in 1830-44. C: Start of direct sale of <i>kokura</i> to Osaka in 1849; Start of direct sale of sanada and hakama-ji to Osaka around in 1849.
23	Chugoku	Aki (Hiroshima)	W	C.1751-64	(1)	C.1780	1.0	19)	A: <i>Jibata</i> until the end of Edo period.
					(2)	C.1868	100.0	24)	B: <i>Watagae</i> system.
					(3)	1879	70.0-80.0	24)	C: In 1824 cotton cloth of Aki became one of the important commodities of <i>han</i> . In c.1845 the <i>han</i> consigned cotton cloth produced at Nomi island, main producing place, for sale to a merchant, Osaka Tanba-ya Shichibei.
24	Chugoku	Choshu (Yamaguchi)	W, C, S	C.1592-1615	(1)	C.1840	74.7	25)	A: <i>Jibata</i> until the end of Edo period.
					(2)	1874	61.4	26)	B: <i>Watagae</i> system.
									C: In 1825 cotton cloth of Choshu became one of the important commodities of <i>han</i> .
25	Shikoku	Imabari (Ehime)	W	1711-36	(1)	1843-53	30.0		B: <i>Watagae</i> system.
					(2)	1861-64	35.0		C: In 1863-71 the han appointed some cotton cloth merchants as special ones, and promoted the prodcuton of the cloth by <i>watagae</i> system.
					(3)	1868	40.0		
					(4)	1877	40.0		
26	Shikoku	Matsuyama (Ehime)	S	1573-92 *	(1)	1818	0.0		A: Introduction of <i>takabata</i> in 1804-18.
					(2)	1821	0.4		C: Establishment of bureau of <i>han</i> monopoly in 1854.
					(3)	1824	2.2		
					(4)	C.1877	80.0		
27	Shikoku	Tosa (kochi)			(1)	1874	1.6		A: Introduction of <i>takabata</i> in 1854-60.
28	Kyushu	Buzen (Fukuoka & Oita)		1724 *	(1)	1874	20.4	27)	C: In 1831 cotton cloth of Nakatsu became one of the important commodities of <i>han</i> . D: Main producing place seems to have been Nakatsu.