

# **From Lyon to Kyoto: Modernization of traditional silk-weaving district in Japan, 1887- 1929**

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## **ABSTRACT**

Three craftsmen were sent by Kyoto government to Lyon in France to learn the advanced technologies in the early 1870s. Contrary to their mission to introduce brand new power looms equipped with steam engine, they brought back the flying shuttle, synthetic dyestuffs, and Jacquard to Kyoto, which had been the most advance silk weaving district producing high-quality figured fabrics in Japan since the medieval period. However, the introduction of Jacquard triggered long-term structural change and transformation which took place in Kyoto in subsequent several decades. In this paper, I explore the production trend from 1887 to 1929 to characterize growth phases in Kyoto, which can be called ‘Jacquard-led growth’, ‘downsizing growth’, and ‘upsizing growth’. In other words, drivers of growth changed depending on the diffusion of different types of technologies and the utilization of sophisticated division of labor among a large number of specialized firms including small-scale outweavers.

## SUMMARY

Learning from the West was the key to economic development in modern Japan since Japan opened the ports in the middle of 19<sup>th</sup> century. Many industries, which had not existed in Japan before contacting with Western countries, were transplanted, e.g., railways, iron and steel, shipbuilding, and mechanized cotton spinning industries (Morris-Suzuki 1994). We often call them ‘modern industries’. On the other hand, there were also many ‘traditional industries’ in Japan before Meiji period. Some declined but the others prospered by introducing modern technologies from the West (Nakamura 1983; Hashino and Saito 2004).

Weaving industry was one of the traditional industries which actively introduced modern technologies from the west. It is well known that flying-shuttle and power looms dramatically increased labor productivity in both cotton and silk weaving districts (Minami and Makino 1983; Hashino and Otsuka 2013a; Hashino and Otsuka 2013b, Hashino and Otsuka 2019). Introduction of synthetic dyestuffs and nation-wide diffusion of knowledge of chemistry for proper use were also important for improvement of the quality of fabrics (Hashino 2012).

It was Nishijin silk weaving district in Kyoto and Kyoto prefectural government that played a critical role in introducing new technologies from the west and promoting the diffusion of them all over Japan (Uchida 1960; Nakaoka 2006; Hashino 2016).

Nishijin had been the most advanced silk weaving district producing high-quality figured fabrics in Japan since the medieval period. Kyoto government sent three craftsmen to Lyon in France in 1872 shortly after Meiji Restoration. Their mission was to learn the advanced technologies and to bring brand new power looms equipped with steam engine back to Kyoto. However, they recognized not power loom but Jacquard was appropriate to Nishijin as soon as they visited a factory in Lyon to see Jacquard for the first time (Uchida 1960; Nakaoka 2006). As a result of introduction of Jacquard, labor productivity increased three or four times, compared with draw loom which was used traditionally in Nishijin. As Hareven (2002) appropriately pointed out, the introduction of Jacquard enabled women who were drawers to become potential weavers, which resulted in structural changes in Nishijin (Hareven 2002). Pioneering studies on Nishijin such as Honjo (1930) and Hattori (1948) offer important anecdotal historical facts. However, quantitative study to explore the long-term growth of production and structural changes in Nishijin is scant.

The aim of this study is to explore the development process of Nishijin from 1887 to 1929. The case of Nishijin's development as the most advanced silk weaving district in Japan offers an interesting example to show how people introduced modern technologies upon their tradition. In other words, what happened in traditional industries by the introduction of Western technologies? How did Western technologies change

indigenous production organizations in production? In addition, I would like to explore how people introduced Western technologies. Was the brand-new technology always preferred? The silk weaving industry offers interesting examples. As one of the most prosperous traditional industries in Japan, it had already ‘developed’ to a certain extent. Above all, it is of interest to inquire how Nishijin in Kyoto City, which was the most advanced silk weaving district of which major product was *obi* or sash belt for *kimono*, incorporated new technologies into indigenous production system, especially from Lyon (Vernus 2006).

I would like to show the introduction of Jacquard as is shown above triggered long-term structural change and transformation which took place in Nishijin in subsequent several decades. This study explores the production trend from 1887 to 1929 to characterize growth phases in Nishijin.

After providing an overview of the growth of production in Nishijin, I examine the conditions which facilitated the structural changes of production, the introduction of Jacquard, changes in major organization of production, and introduction of power loom. Then, I will explore the changes in production, the number of enterprises, enterprise size in terms of the number of looms per enterprise, the number of workers per loom, and labor productivity. By doing so, three phases of growth in Nishijin can be found; ‘Jacquard-led growth’, ‘downsizing growth’, and ‘upsizing growth’. In other words,

drivers of growth changed depending on the diffusion of different types of technologies and the utilization of sophisticated division of labor among a large number of specialized enterprises including small-scale out-weavers. Finally, I will utilize various historical sources including factory surveys to test the hypothesis that the drivers of growth changed.

## References

Hareven, T. K. (2002) *The Silk Weavers of Kyoto: Family and Work in a Changing Traditional Industry*, University of California Press (2002).

Hashino, T. (2012) 'Institutionalising technical education: the case of weaving districts in Meiji Japan', *Australian Economic History Review*, 52 (1), pp. 25-42.

Hashino, T. (2016) 'Contrasting development paths of silk-weaving districts in modern Japan', In Hashino, T., and Otsuka, K. *Industrial Districts in History and Developing World*, Springer.

Hashino, T. (2017) 'The Survival Strategy of the Japanese *Kimono* Industry', In Pierre-Yves Donze and Rika Fujioka eds., *Global Luxury: Organizational Change and Emerging Markets since the 1970s*, Palgrave Macmillan: Singapore.

Hashino, T., and Kurosawa, T. (2013) 'Beyond Marshallian agglomeration economies: the roles of the trade association in a weaving district', *Business History Review* 87, pp. 489-513.

- Hashino, T., and Otsuka, K. (2013a) 'Hand looms, power looms, and changing production organizations: the case of Kiryu weaving district in early twentieth-century Japan', *Economic History Review* 66 (3), pp. 785-804.
- Hashino, T., and Otsuka, K. (2013b) 'Cluster-based industrial development in contemporary developing countries and modern Japanese economic history' *Journal of the Japanese International Economies*, 30, pp. 19-32.
- Hashino, T., and Otsuka, K. (2020) 'The rise and fall of industrialisation: The case of a silk weaving district in modern Japan' *Australian Economic History Review*, 60 (1), pp. 46-72.
- Hashino, T., and Saito, O. (2004) 'Tradition and interaction: research trends in modern Japanese industrial history', *Australian Economic History Review*, 44(3), pp. 241-258.
- Hattori, S. (1948) *Nishijin Kigyo ni okeru Genshiteki Sangyo Kakumei no Tenkai* (Development of a Primary Industrial Revolution in Nishijin Industry). Kyoto: Koto Shoin.
- Honjo, E. (1930) *Nishijin Kenkyu* (Research on Nishijin), Kyoto:Kaizosha.
- Minami and Makino (1983) 'Conditions for technological diffusion: Case of power looms', *Hitotsubashi Journal of Economics* 23 (2), pp. 1-20.
- Morris-Suzuki, T. (1994) *The Technological Transformation of Japan: From the*

*Seventeenth to the Twenty-first Century*, Cambridge: Cambridge University Press.

Nakamura, T., *Economic Growth in Prewar Japan*, (New Haven, 1983).

Nakaoka, T. (2006) *Nihon Kindai Gijutsu no Keisei* (Formation of Modern Technologies in Japan), Tokyo: Asahi Shinbunsha.

Uchida, H. (1960) *Nihon Boshoku Gijutsu no Rekishi* (History of Textile Technologies in Japan), Tokyo: Chijin Shokan.

Vernus, P. (2006) *Art, Luxe, et Industrie: Bianchini Fériet, un siècle de soieries lyonnaises 1888-1992*, (Art, Luxury, and Industry: Bianchini Fériet, a Century of Lyon Silks), Grenoble: Grenoble University Press.