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Becoming Asia's First Industrial Nation: The Absorption of Foreign Manufacturing Knowledge in Japan, 1900–1937

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Introduction

This paper aims to understand the mechanisms behind Japanese industrialisation and catch-up industrialisation more broadly. It does so by focusing on the absorption of foreign rubber manufacturing knowledge in Japan, honing in on the tyre and footwear industries in the two key clusters of Kobe and Kurume. During this period, Japan diversified its textile-driven industrial revolution into new sectors with higher value-added potential and thus consolidated its position as Asia's first industrial nation. Often overlooked by scholars in favour of heavy industries such as steel and automobiles, the emergence of Japan's chemical industry – to which rubber manufacturing belongs – was a crucial part of this process. Rubber manufacturing had close linkages with the textile industry, the first stage of Japanese industrialisation, and later with the petrochemical and motor vehicle industries which drove Japan's final wave of catch-up growth in the 1950s and 1960s.

Taking a global perspective, this paper investigates how foreign manufacturing knowledge was successfully absorbed in the Japanese rubber industry before the Second World War. In addition, this paper analyses how this process of knowledge absorption resulted in the formation of a small-business, 'low-tech' rubber cluster in Kobe but a big-business, 'high-tech' rubber cluster in Kurume. This puzzle can also be phrased as follows: why did Japan's most important tyre-maker Bridgestone originate in the provincial town of Kurume rather than in the major port city of Kobe where Dunlop's Japanese factory was located? The rubber industry is used as a lens through which to understand how Japan – uniquely in Asia before the 1930s – was able to achieve rapid technological catch-up towards the level of the early industrialisers in Western Europe and North America across a broad range of manufacturing sectors.

Sources & Methodology

The contribution of this paper to the literature is both empirical and theoretical. A bottom-up analytical narrative is constructed out of a diverse body of new primary material in Japanese and English. In both

languages, Japan's rubber industry has received minimal scholarly attention thus far.[1] The material is analysed using a novel conceptual framework which brings together the 'indigenous industries' perspective from the Japanese historiography and Steven Klepper's heritage theory from evolutionary economics.

A paucity of accessible corporate archival material from the key rubber firms identified in this paper has necessitated an indirect approach to accumulating evidence.[2] The sources utilised are a rich, exhaustive body of primary evidence largely written in Japanese. These include the archives of Mitsui Bussan and Mitsubishi Shōji (both heavily involved in Japan's rubber trade), regional industrial surveys, published corporate material, a wide range of industry journals and periodicals, and surviving archival material from British and American rubber manufacturers.[3] Most of the primary evidence for this paper was collected while the author was a visiting researcher in Tokyo in 2023-24. Primary material is supplemented with evidence from commissioned industry, company and regional histories published in Japanese. Some of this 'grey literature' offers a detailed and underutilised depository of evidence. For example, the history of the Hyogo rubber industry published in 1978 by the Hyogo Rubber Manufacturers' Association runs for over 800 pages and is rich empirically, re-printing some internal material provided to them by its member companies.[4]

The accumulated evidence is analysed by employing a traditional economic history approach rooted in the depth of engagement with the historical case. Narrowing the focus of this study to two rubber industry clusters and to the segments of tyres and footwear facilitates an in-depth, narrative analytical approach geared at improving our understanding of the concrete mechanisms behind Japanese development in this period. Morgan conceptualises such a case study approach as researching a topic as a 'whole', in which all relevant factors are considered. Such a depth of engagement with the subject allows the critical variables to be extracted and assessed with 'dense evidential materials across a range of aspects of the topic.' It is also an approach to research suited to the discovery of new phenomena, rather than the justification of existing phenomena. To borrow from statistics terminology, this methodology involves weaving a narrative of best fit based on an iterative process between evidence

[1] The exception is Mizuno Atsuhiro, 'Nihon no Toshizakka Kōgyō to Chiiki Keizai no Jizokuteki Hatten: Ryōtaisen Kanki Hyogo-ken Kōbe-shi ni okeru Matchi kara Gomu e no Tenkan o Jirei ni' [Changes in Japanese Urban Small and Medium-Sized Industries from the Perspective of Sustainable Regional Development: a Case Study of the Shift from Production of Matches to Rubber in Interwar era Kobe], *Shakai Keizai Shigaku (Socio-Economic History)* 88 (2022), pp. 231-253.

[2] Attempts to access corporate material connected to this study are documented and discussed in Tom Learmouth, 'The Trials and Tribulations of Accessing Corporate Archives in Japan', *Shashi: The Journal of Japanese Business and Company History* 8 (2024), pp. 42-46.

[3] The sources for Kurume are discussed in more detail in Tom Learmouth, 'Upgrading Traditional Industries in Interwar Japan: From Cotton Tabi to Bridgestone Tyres', *Economic History Working Papers* 389 (2025). London School of Economics and Political Science.

[4] Teranishi Yūsō, *Hyōgo Gomu Kōgyō-Shi* [History of the Hyogo Rubber Industry] (Kobe: Hyogo Rubber Manufacturers' Association, 1978).

and theories.[5] For the case of Kobe, this approach is supplemented by the geo-referencing and mapping via QGIS of the multitude of rubber factories concentrated in the city.

Literature Review & Conceptual Contribution

O'Rourke and Williamson highlight the importance of factor endowments in the uneven spread of modern industry to the global periphery during this period. Labour abundant and resource scarce East Asian countries are seen to have had an advantage over labour scarce regions such as Sub-Saharan Africa and Latin America in that they 'could enter at the bottom of the ladder, producing and exporting labour-intensive products'.[6] Such a model of catch-up development has been termed 'labour-intensive industrialisation' by Sugihara and Austin.[7] However, this study suggests we also need to consider the adaptability and dynamism of traditional manufacturing which, along with agriculture, produced this reservoir of cheap labour. China and India possessed similarly cheap labour to Japan and their traditional manufacturing sectors remained a key part of the industrial sectors of both countries in the first half of the twentieth century. However, in comparison with Japanese traditional industries, Chinese and Indian traditional industries were less able to adapt and upgrade in response to the threat of competition from Western manufactures and the opportunities provided by new access to Western technology.[8] They also had weaker links with modern industry than in Japan. To be sure, both China and India imported foreign technology and established modern factories during this period. But in contrast to Japan, the import of foreign technology into China and India failed to kick-start a process of sustained structural change capable of driving income convergence towards the level of Western countries.

The importance of traditional, indigenous industries (*zairai sangyō*) in Japanese economic development was first emphasised by Nakamura Takafusa who highlighted the 'mutually dependent relationship' between modern and traditional industries.[9] More recently, Tanimoto has put indigenous industry at the centre of his suggestion that Japan trod down its own path of 'indigenous industrialization'. Such a path is conceptualised as largely separate to Japan's parallel path of industrialisation through the importation of Western technology by large modern firms. Growing out of research into small-scale weaving,

[5] Mary S. Morgan, 'Case Studies: One Observation or Many? Justification or Discovery?', *Philosophy of Science* 79 (2012), pp. 667–677.
[6] Kevin Hjortshøj O'Rourke and Jeffrey Gale Williamson, 'Introduction', in Kevin Hjortshøj O'Rourke and Jeffrey Gale Williamson eds, *The Spread of Modern Industry to the Periphery since 1871* (Oxford: Oxford University Press, 2017).
[7] Sugihara Kaoru, 'Labour-Intensive Industrialisation in Global History: An Interpretation of East Asian Experiences', in Gareth Austin and Sugihara Kaoru eds., *Labour-Intensive Industrialization in Global History* (London: Routledge, 2013).
[8] For India see Tirthankar Roy, *Traditional Industry in the Economy of Colonial India* (Cambridge: Cambridge University Press, 1999).
[9] Nakamura Takafusa, 'The Modern Industries and the Traditional Industries at the Early Stage of the Japanese Economy', *Developing Economies* 4 (1966), pp. 567-590 (p. 588).

Tanimoto identified a non-factory development path in Japan which did not morph into but remained independent from large-scale production. Usually, the indigenous sector specialised in traditional goods for the domestic market while modern sectors focused on Western goods and were more reliant on exports. [10] However, Abe and Nakamura Naofumi and have returned to Nakamura Takafusa's notion of mutual dependence in arguing that Tanimoto's indigenous development theory overlooks the links between indigenous and modern industry. Abe & Nakamura visualise modern industry as emerging like dots of islands from beneath the vast seas of indigenous industry from the late-1880s onwards.[11] The case study of focus remains the pioneering textile industry, chiefly during the first phase of Japanese industrialisation before the First World War. Linkages between indigenous industry and modern industry are rarely emphasised by scholars analysing the development of heavy & chemical industries after WWI.

In framing indigenous industries as platforms for the absorption of foreign manufacturing knowledge, this paper also introduces Steven Klepper's heritage theory to technology transfer in economic history. Originating from the field of evolutionary economics, Klepper takes an endogenous approach to the formation of industrial agglomerations which emphasises the importance of one or two leading firms which generate spin-off firms and sustain a cluster without any need for external agglomeration economies. [12] The key concept of use here is that of the firm-specific heritage of manufacturing knowledge. The implication is that not all foreign (or Western) knowledge is of equal value to late industrialisers. The trajectory of an indigenous industry absorbing and adapting foreign technology can be shaped to a large extent by the nature of the foreign firm such technological knowledge originates from.

[10] Tanimoto Masayuki, *Nihon ni Okeru Zairai-teki Keizai Hatten to Orimono-gyō: Shijō Keisei to Kazoku Keizai* [The Weaving Industry and Indigenous Economic Development in Japan: Market Formation and the Household Economy] (Nagoya: Nagoya University Press, 1998) [in Japanese]; Tanimoto Masayuki, 'The Role of Tradition in Japan's Industrialization: Another Path to Industrialization', in Tanimoto Masayuki ed., *The Role of Tradition in Japan's Industrialization: Another Path to Industrialization* (Oxford: Oxford University Press, 2006).

[11] Abe Takeshi and Nakamura Naofumi, 'Nihon no Sangyō Kakumei to Kigyō-keiei' [Japan's Industrial Revolution and Business Administration] in Abe Takeshi and Naofumi Nakamura eds., *Nihon Keiei-shi 2 Sangyō Kakumei to Kigyō-keiei 1882-1914* [Business History of Japan 2: Industrial Revolution and Business Administration] (Kyoto: Minerva Shobo, 2010) [in Japanese], p. 10.

[12] For Klepper's heritage theory see Guido Buenstorf and Steven Klepper, 'Heritage and Agglomeration: The Akron Tyre Cluster Revisited', *Economic Journal* 119 (2009), pp. 705–733; Steven Klepper, 'The Origin and Growth of Industry Clusters: The Making of Silicon Valley and Detroit', *Journal of Urban Economics* 67 (2010), pp. 15-32; Steven Klepper, 'Nano-Economics, Spinoffs, and the Wealth of Regions', *Small Business Economics* 37 (2011), pp. 141–154.

The Emergence of a Small Business Footwear Cluster in Kobe

British trading house H. & W. Greer seeded a rubber industry in Kobe (Hyogo Prefecture) by establishing factories in the city on behalf of J. G. Ingram & Son in 1908 and Dunlop Rubber in 1909.[13] Dunlop was Britain's premier tyre-maker and represented a new era of British big business. Ingram produced surgical rubber goods and was tied to an older, workshop-based era of British rubber manufacturing.[14] The Dunlop factory in eastern Kobe was thus much larger than the Ingram factory on the western edge of the city. Both Ingram Japan and Dunlop Far East spawned Japanese spin-off firms which clustered around the two British factories on either side of the city. However, it was the Ingram cluster which swelled rapidly and came to dominate Kobe's rubber industry after 1918 as it pivoted from bicycle and rickshaw tyres towards rubber shoes. Ingram spin-offs such as Naigai Rubber and Hanshin Rubber interacted with remnants of Kobe's match industry which had been a key export industry in Meiji Japan (1868-1912) but endured a severe downturn following the end of Japan's First World War export boom.[15] For example, households in western Kobe were able to switch from sticking together matchboxes to moulding together rubber shoes as rubber goods replaced matches as the chief export item for Kobe's chemical industry during the 1920s.[16] This interaction between modestly sized Ingram-style factories and tiny workshops which had previously supported the 'indigenous' match industry created a small-business rubber cluster in inter-war Kobe conducive to the manufacture of cheap footwear using labour-intensive techniques. The spatial clustering of the Kobe rubber industry is visualised in figure 1.

[13] Tom Learmouth, 'British Trading Companies and Tacit Knowledge Seeding: Diversifying Japanese Industrialisation, 1906–1918', *forthcoming*; Geoffrey Jones, 'The Growth and Performance of British Multinational Firms before 1939: The Case of Dunlop', *Economic History Review* 37 (1984), pp. 35-53.
[14] *A Century of Progress and Development of J.G. Ingram & Son Ltd, 1847-1947* (London: Ingram, 1947); Claire L. Jones, *The Business of Birth Control: Contraception and Commerce in Britain before the Sexual Revolution* (Manchester: Manchester University Press, 2020), pp. 34-39.
[15] Mizuno, 'Matchi kara Gomu e'.
[16] *Hyōgo Gomu Kōgyō-Shi*, p. 57; *Shinshū Kōbe-shi Shi: Sangyō Keizai Hen Vol. 2* [A New History of Kobe City, Economy & Industry Edition: Volume 2] (Kobe: Kobe City, 2000), p. 444.

Figure 1. Map of Rubber Factories in Kobe in 1927

Notes: Red dots represent Japanese-owned rubber factories. Blue stars represent Ingram Japan (left) and Dunlop Far East (right) factories. Note the Ingram factory no longer existed. n = 118.

Sources: Map produced by author on QGIS using 1923 map of Kobe from *Konjaku Mappu* <<https://ktgis.net/kjmapw/>> Factory locations georeferenced from Kobe City, *Kōbe-shi Kōgyō Jinmeiroku Shōwa 2-nen* [Kobe Manufacturing Directory for 1927]. National Diet Library (NDL) Digital Collections.

From the late-1920s, Kobe rubber footwear flooded global export markets. The price competitiveness of Kobe footwear was supercharged by the sharp depreciation in the yen after Japan left the Gold Standard in December 1931. Led by the British Empire and the United States, heavy dumping duties were imposed on Japanese footwear across global markets in the early 1930s. As a region with lighter protection from Japanese imports, Sub-Saharan Africa emerged as a crucial export market for Kobe footwear in the mid-1930s.[17] Cheap Kobe rubber shoes became a means of protecting against hookworm infection amongst many African consumers who were previously unable to afford footwear.[18] Rooted in small business, the inter-war Kobe rubber cluster achieved significant success in the manufacture and export of 'low-tech' rubber goods such as footwear and bicycle tyres. However,

[17] *Kōbe-kō Gaikoku Bōeki Gairan: Shōwa 9-11 nen* (Kobe Customs: 1934, 1935, 1936). NDL Digital Collections.

[18] 'The Future of Colonial Trusteeship', *The Round Table (The Commonwealth Journal of International Affairs and Policy Studies)* 24:96 (1934), pp. 732-745 (pp. 738-739).

this industry structure was not conducive to absorbing Dunlop Far East's motor tyre manufacturing knowledge which required a foundation in big business and mass production. For example, Naigai's automobile tyre factory established in 1923 lacked the scale and technological expertise to mount any challenge to Dunlop and imported U.S. tyres, which monopolised the domestic motor tyre market.[19]

A New Rubber Town: Big Business Kurume

The contrasting development path of rubber manufacturing in Kurume (Fukuoka Prefecture), from which Bridgestone emerged, highlights how the diverse trajectories of indigenous industries in each sector and region in inter-war Japan could interact with different streams of foreign manufacturing knowledge to produce starkly different results. At the end of the Meiji period (1868-1912), Kurume had emerged as a mechanised cotton textile town specialising in traditional *kasuri* cloth.[20] In 1894, the only *tabi* shop in Kurume, Tsuchiya Tabi, became the first *tabi* producer in Japan to purchase and use foreign sewing machines. Cotton *tabi* were a traditional split-toed form of footwear generally worn indoors or with outdoor footwear such a *waraji* (straw sandals). At this time, Tsuchiya still depended on wholesalers from rival producing regions in Osaka and Saitama for thick cloth suitable for making *tabi*.[21] To internalise these high transaction costs, Tsuchiya decided to backwardly integrate by building a cotton weaving factory in 1907.[22] The same year, Ishibashi Shōjirō converted his father's Kurume tailoring shop into a *tabi* factory named Asahi Tabi and followed Tsuchiya's path towards integrated mechanisation. By 1917, Tsuchiya Tabi and Asahi Tabi (renamed Nihon Tabi the same year) employed more than 500 workers each and ranked alongside the local branches of Kanegafuchi Spinning (Kanebō) as the largest textile factories in Fukuoka Prefecture.[23]

In 1920, Tsuchiya signed an agreement with Dunlop Far East to research cementing a rubber sole onto *tabi* to create a durable form of outdoor footwear. In 1922, Nihon Tabi purchased a patent for a cemented rubber-soled *tabi* (known as a *jika tabi*) from a rubber manufacturer in Osaka. Nihon Tabi used this patent to make a more decisive shift into rubber manufacturing than Tsuchiya Tabi who maintained a significant presence in the old, fully cotton *tabi* industry. Around this time, Ishibashi Shōjirō and Nihon also began cultivating a connection with the Mitsui *zaibatsu* (family conglomerate) through their relationship with a senior politician closely linked to Mitsui named Noda Utarō. Mitsui Bussan's Miike

[19] Namita Kyōichi, 'Honpō Gomu Kōgyō no Shōrai ni kan suru – Kōsatsu', *Gomu* 1 (1929), pp. 150-152. << https://doi.org/10.2324/gomu1929.1.150>>
[20] Nakamura Naofumi, 'Reconsidering the Japanese Industrial Revolution: Local Entrepreneurs in the Cotton Textile Industry during the Meiji Era', *Social Science Japan Journal* 18 (2015), pp. 23-44.
[21] *Kurume-shi Shi: Zoku, Ge* (Kurume, 1955), p. 68. NDL Digital Collections.
[22] On the theoretical basis of this explanation see Oliver Williamson, *Markets and Hierarchies: Analysis and Antitrust Implications: A Study in the Economics of Internal Organization* (New York: Free Press, 1975), pp. 82 & 104.
[23] *Fukuokaken-shi, Tsūhihen, Kindai, Sangyō Keizai 2* [History of Fukuoka Prefecture, Modern Era, Industry and Economy: Volume 2] (Fukuoka: Western Japan Cultural Association, 2000), p. 20.

branch chief later declared in 1931 that all Ishibashi had achieved was owed to Noda.[24] From the late-1920s, Nihon and Tsuchiya also began manufacturing rubber-soled canvas shoes for the export market. The Moji branches of general trading houses (*sōgō shōsha*) Mitsui Bussan and Mitsubishi Shōji had supplied Nihon and Tsuchiya with raw rubber since both firms had begun manufacturing *jika tabi*. In July 1928, Nihon signed an exclusive overseas sales contract with Mitsui Bussan.[25] Tsuchiya did the same with Mitsubishi Shōji in April 1929.[26] The Nihon-Mitsui partnership in particular generated major export success. For example, Mitsui sold five million pairs of Nihon Tabi footwear in British India in 1931.[27] General trading companies thus provided the Kurume *tabi* firms with the 'borrowed capacity' required to compete in international business.[28] Nihon-Mitsui and Tsuchiya-Mitsubishi marketed branded footwear using English-language catalogues to distinguish their products from cheaper Kobe footwear. Nihon's footwear were branded as Asahi shoes, while Tsuchiya's were branded as Moonstar shoes. Figure 2 shows the stark differences in the size of Nihon and Tsuchiya when compared with even the largest rubber footwear producers in Kobe (Hyogo Prefecture).

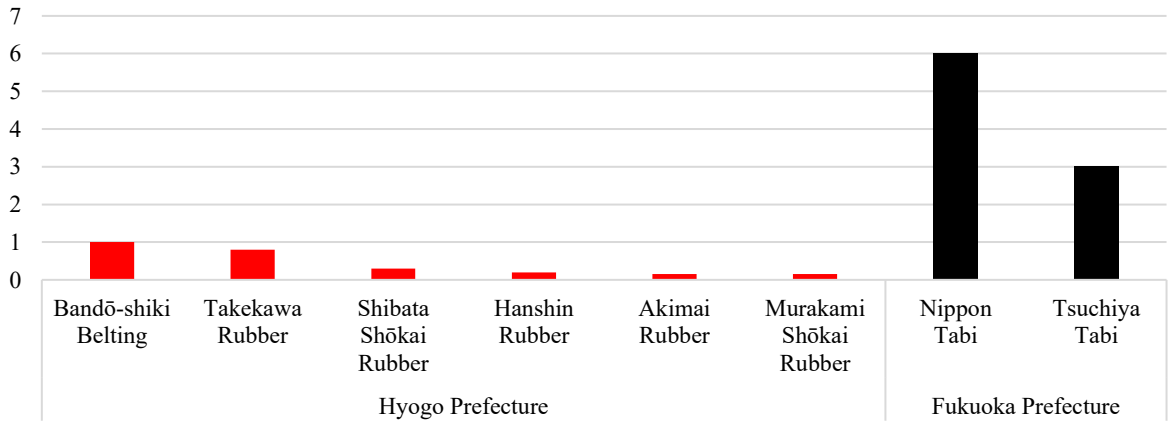

Figure 2. Largest Rubber Footwear Firms in Hyogo and Fukuoka by Capital (Million Yen, 1934)

Source: Kōbe Zeikan, *II: Yushutsu Gomu Kutsu oyobi Hanpu-sei Gomu-soko Kutsu* (February 1934), in Kōbe-kō Shuyō Bōeki-hin Chōsa-gyō (Kobe: 1934), pp. 22-24.

[24] Mitsui Bussan. *Kyū Mitsui Bussan Shiten-chō Kaigi Gijiroku* 16, Shōwa 6-nen (1931). Miike Shiten-chō, p. 144. <<elib.maruzen.co.jp>>
[25] Mitsui Bunko (Mitsui Archives), Tokyo. Mitsui Bussan 2382. *Kaigi Tsuzuri*, 10th July 1928.
[26] *Seized Correspondence of the General Merchandise Department of Mitsubishi Shoji Kaisha Ltd of Seattle* (NAID: 6773703), Box 74, Japanese Rubber Shoes – Tsuchiya Tabi Gomei Kaisha (1930). U.S. National Archives and Records Administration (NARA), Archives II College Park.
[27] *Mitsui Bussan Shiten-chō Kaigi Gijiroku* 16. Moji Shiten-chō (1931), p. 32.
[28] On 'borrowed capacity' see Karolina Hutková, Ernesto Dal Bó, Lukas Leucht, and Noam Yuchtman, 'Company-State at Home: The East India Company and the Fiscal System in Eighteenth-Century Britain', *Past & Present* (2025): gtaf009.

This foundation in large-scale, mechanised footwear production gave the Kurume *tabi* firms the 'knowledge base' required to absorb high-tech motor tyre manufacturing knowledge.[29] Nihon Tabi began test production of motor tyres in 1929. The speculative venture received crucial early backing from Kimijima Takeo, a professor of applied chemistry at Kyushu Imperial University, and Dan Takuma, leader of the Mitsui *zaibatsu*. Under Dan's encouragement, Nihon's tyre division was spun out as Bridgestone in January 1931. The same year, Bridgestone poached senior Dunlop Far East engineers Suzuta Masatatsu and Matsudaira Nobutaka before hiring a third Dunlop engineer, Isayama Kōgoro, in February 1932. The hiring of senior Dunlop engineers, who were also engineering graduates of Imperial universities, gradually allowed Bridgestone to manufacture a reliable car tyre capable of competing with Dunlop and U.S. tyre-maker BF Goodrich in the domestic market. Dunlop Far East was thus the technological foundation for high-tech tyre manufacturing in Kurume. In partnership with Mitsubishi, Tsuchiya drew up plans to follow Nihon into motor tyre production with capital from Goodyear.[30] However, the leading U.S. tyre-maker declined the proposal. In November 1933, Bridgestone followed its sister company by signing an exclusive overseas sales contract with the Moji branch of Mitsui Bussan.[31] Marketed by Mitsui, Bridgestone tyres made immediate export inroads in foreign markets such as British India.[32]

Conclusion

Indigenous industry served as a platform for the absorption of foreign rubber manufacturing knowledge in both Kobe and Kurume. However, each cluster evolved along starkly different paths due to the interaction of differing indigenous industry structures with different kinds of foreign manufacturing knowledge. Kobe developed into a small-business rubber footwear cluster centred on modestly sized factories with industry knowledge inherited from Ingram Japan and over one hundred tiny shoe-moulding workshops which had previously supported the match industry. By contrast, Kurume emerged as a big-business rubber cluster centred on two large *tabi* firms. Kurume's isolation from the major *tabi* producing regions had already put the indigenous industry on a path towards integrated production and mechanisation before the shift into rubber manufacturing. In the inter-war period, Nihon Tabi and Tsuchiya Tabi further evolved in giant footwear factories through the integration of rubber manufacturing and the development of leading global canvas shoe brands in partnership with Japan's

[29] For a discussion of the term 'knowledge base' see Paolo Saviotti, *Technological Evolution, Variety, and the Economy* (Cheltenham: Edward Elgar, 1996), p. 172; Joel Mokyr, *The Gifts of Athena: Historical Origins of the Knowledge Economy* (Princeton: Princeton University Press, 2002), p. 154.
[30] *Kagaku Kōgyō Nenkan Shōwa 8-nen* [Annual Report on the Chemical Industry 1933] (Tokyo: Kagaku Kōgyō Jiho-sha, 1932), p. 168; *Ritsugyō Bōeki Roku* (Mitsubishi Shōji) (Shashi de miru Nihon Keizai-shi, Dai 34-ken), Jō (Volume 1) (Tokyo: Yumani Shobō, 2009), p. 257.
[31] Mitsui Bussan 2393. *Kaigi Tsuzuri*. 11th November 1933.
[32] *Seized Correspondence Regarding Import and Export of Sundry Commodities of Mitsui and Company Ltd. of Seattle* (NAID: 6856957), Box 37, Rubber 1936-41. NARA.

general trading companies. Both clusters achieved major export success. However, only the large Kurume firms possessed the knowledge base required to absorb advanced motor tyre manufacturing expertise from the Kobe subsidiary of the large British tyre-maker Dunlop. In the 1930s, Nihon Tabi's Bridgestone developed into Asia's only competitive motor tyre manufacturer.

Bibliography

Abe Takeshi and Nakamura Naofumi, 'Nihon no Sangyō Kakumei to Kigyō-keiei' [Japan's Industrial Revolution and Business Administration] in Abe Takeshi and Naofumi Nakamura eds., *Nihon Keiei-shi 2 Sangyō Kakumei to Kigyō-keiei 1882-1914* [Business History of Japan 2: Industrial Revolution and Business Administration] (Kyoto: Minerva Shobo, 2010).

Buenstorf, Guido and Steven Klepper, 'Heritage and Agglomeration: The Akron Tyre Cluster Revisited', *Economic Journal* 119 (2009), pp. 705–733.

A Century of Progress and Development of J.G. Ingram & Son Ltd, 1847-1947 (London: Ingram, 1947).

'The Future of Colonial Trusteeship', *The Round Table (The Commonwealth Journal of International Affairs and Policy Studies)* 24:96 (1934), pp. 732-745.

Fukuokaken-shi, Tsūhihen, Kindai, Sangyō Keizai 2 [History of Fukuoka Prefecture, Modern Era, Industry and Economy: Volume 2] (Fukuoka: Western Japan Cultural Association, 2000).

Hutková, Karolina, Ernesto Dal Bó, Lukas Leucht, and Noam Yuchtman, 'Company-State at Home: The East India Company and the Fiscal System in Eighteenth-Century Britain', *Past & Present* (2025): gtaf009.

Hyōgo Gomu Kōgyō-Shi [History of the Hyogo Rubber Industry] (Kobe: Hyogo Rubber Manufacturers' Association, 1978).

Jones, Claire L., *The Business of Birth Control: Contraception and Commerce in Britain before the Sexual Revolution* (Manchester: Manchester University Press, 2020).

Jones, Geoffrey, 'The Growth and Performance of British Multinational Firms before 1939: The Case of Dunlop', *Economic History Review* 37 (1984), pp. 35-53.

Kagaku Kōgyō Nenkan Shōwa 8-nen [Annual Report on the Chemical Industry 1933] (Tokyo: Kagaku Kōgyō Jiho-sha, 1932).

Klepper, Steven, 'The Origin and Growth of Industry Clusters: The Making of Silicon Valley and Detroit', *Journal of Urban Economics* 67 (2010), pp. 15-32.

Klepper, Steven, 'Nano-Economics, Spinoffs, and the Wealth of Regions', *Small Business Economics* 37 (2011), pp. 141–154.

Kobe City, *Kōbe-shi Kōgyō Jinmeiroku Shōwa 2-nen* [Kobe Manufacturing Directory for 1927]. National Diet Library (NDL) Digital Collections.

Kōbe-kō Gaikoku Bōeki Gairan: Shōwa 9-11 nen (Kobe Customs: 1934, 1935, 1936). NDL Digital Collections.

Kōbe Zeikan, *II: Yushutsu Gomu Kutsu oyobi Hanpu-sei Gomu-soko Kutsu* (February 1934), in Kōbe-kō Shuyō Bōeki-hin Chōsa-gyō (Kobe: 1934).

Konjaku Mappu <<https://ktgis.net/kjmapw/>>

Kurume-shi Shi: Zoku, Ge (Kurume, 1955). NDL Digital Collections.

Learmouth, Tom, 'The Trials and Tribulations of Accessing Corporate Archives in Japan', *Shashi: The Journal of Japanese Business and Company History* 8 (2024), pp. 42-46.

Learmouth, Tom, 'Upgrading Traditional Industries in Interwar Japan: From Cotton Tabi to Bridgestone Tyres', *Economic History Working Papers* 389 (2025). London School of Economics and Political Science.

Learmouth, Tom, 'British Trading Companies and Tacit Knowledge Seeding: Diversifying Japanese Industrialisation, 1906–1918', *forthcoming*.

Mitsui Bunko (Mitsui Archives), Tokyo. Mitsui Bussan.

Mitsui Bussan. *Kyū Mitsui Bussan Shiten-chō Kaigi Gijiroku*. <<elib.maruzen.co.jp>>

Mizuno Atsuhiro, 'Nihon no Toshizakka Kōgyō to Chiiki Keizai no Jizokuteki Hatten: Ryōtaisen Kanki Hyogo-ken Kōbe-shi ni okeru Matchi kara Gomu e no Tenkan o Jirei ni' [Changes in Japanese Urban Small and Medium-Sized Industries from the Perspective of Sustainable Regional Development: a Case Study of the Shift from Production of Matches to Rubber in Interwar era Kobe], *Shakai Keizai Shigaku (Socio-Economic History)* 88 (2022), pp. 231-253.

Mokyr, Joel, *The Gifts of Athena: Historical Origins of the Knowledge Economy* (Princeton: Princeton University Press, 2002).

Morgan, Mary S., 'Case Studies: One Observation or Many? Justification or Discovery?', *Philosophy of Science* 79 (2012), pp. 667–677.

Nakamura Naofumi, 'Reconsidering the Japanese Industrial Revolution: Local Entrepreneurs in the Cotton Textile Industry during the Meiji Era', *Social Science Japan Journal* 18 (2015), pp. 23-44.

Nakamura Takafusa, 'The Modern Industries and the Traditional Industries at the Early Stage of the Japanese Economy', *Developing Economies* 4 (1966), pp. 567-590.

Namita Kyōichi, 'Honpō Gomu Kōgyō no Shōrai ni kan suru – Kōsatsu', *Gomu* 1 (1929).

O'Rourke, Kevin Hjortshøj and Jeffrey Gale Williamson, 'Introduction', in Kevin Hjortshøj O'Rourke and Jeffrey Gale Williamson eds, *The Spread of Modern Industry to the Periphery since 1871* (Oxford: Oxford University Press, 2017).

Ritsugyō Bōeki Roku (Mitsubishi Shōji) (Shashi de miru Nihon Keizai-shi, Dai 34-ken), Jō (Volume 1) (Tokyo: Yumani Shobō, 2009).

Roy, Tirthankar, *Traditional Industry in the Economy of Colonial India* (Cambridge: Cambridge University Press, 1999).

Saviotti, Paolo, *Technological Evolution, Variety, and the Economy* (Cheltenham: Edward Elgar, 1996).

Seized Correspondence of the General Merchandise Department of Mitsubishi Shoji Kaisha Ltd of Seattle (NAID: 6773703), Box 74, Japanese Rubber Shoes – Tsuchiya Tabi Gomei Kaisha (1930). U.S. National Archives and Records Administration (NARA), Archives II College Park.

Seized Correspondence Regarding Import and Export of Sundry Commodities of Mitsui and Company Ltd. of Seattle (NAID: 6856957), Box 37, Rubber 1936-41. NARA.

Shinshū Kōbe-shi Shi: Sangyō Keizai Hen Vol. 2 [A New History of Kobe City, Economy & Industry Edition: Volume 2] (Kobe: Kobe City, 2000).

Sugihara Kaoru, 'Labour-Intensive Industrialisation in Global History: An Interpretation of East Asian Experiences', in Gareth Austin and Sugihara Kaoru eds., *Labour-Intensive Industrialization in Global History* (London: Routledge, 2013).

Tanimoto Masayuki, *Nihon ni Okeru Zairai-teki Keizai Hatten to Orimono-gyō: Shijō Keisei to Kazoku Keizai* [The Weaving Industry and Indigenous Economic Development in Japan: Market Formation and the Household Economy] (Nagoya: Nagoya University Press, 1998).

Tanimoto Masayuki, 'The Role of Tradition in Japan's Industrialization: Another Path to Industrialization', in Tanimoto Masayuki ed., *The Role of Tradition in Japan's Industrialization: Another Path to Industrialization* (Oxford: Oxford University Press, 2006).

Williamson, Oliver, *Markets and Hierarchies: Analysis and Antitrust Implications: A Study in the Economics of Internal Organization* (New York: Free Press, 1975).