Origins of the Tokyo Stock Exchange: Path Dependence of Trading Systems

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Abstract

The histories of certain stock exchanges suggest that stockbrokers were already versed in the rules and methods of existing trading types prior to the foundation of these exchanges. This paper addresses the establishment of the Tokyo Stock Exchange (TSE) during the 19th century in Japan, with a focus on the extent to which the TSE's adopted system resembled rules and methods already familiar to brokers. The majority of the primary brokers at the TSE had dealt with *yogin* trading, which involved the foreign exchange of Mexican and Japanese silver currencies. This paper finds that the evolution of the stock trading systems in the TSE is a case of path dependence in that it originates from *yogin* trading, and that the narrative that regards futures trading at Osaka Dojima in the 18th century as the prototype of stock trading is an case of the invention of tradition that has exaggerated historical facts.

Keywords: Tokyo Stock Exchange; *Yogin* trading; Path dependence; Invention of tradition.

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Path dependence, a constraint resulting from a process governed by self-reinforcing mechanisms, arises when entrepreneurs and members of an organization are entrenched in the type of knowledge and skills they have invested in (David, 1985; Arthur, 1989; North, 1990, 2005; Pierson, 2000; Thelen, 2003; Streeck and Thelen, 2005). Upon examining the histories of various exchanges, it becomes clear that stockbrokers were already well-acquainted with the rules and methods of existing trading types before these exchanges were established. Banner (1998) explores how the Buttonwood Agreement, signed by stockbrokers in 1792, significantly shaped the legal foundation of the New York Stock & Exchange Board. Michie (2001) reveals that stockbrokers at the London Stock Exchange had developed trading practices and adhered to rules governing their trading discipline before the exchange's establishment in 1801. This paper delves into the Tokyo Stock Exchange (hereafter the TSE) and its founding in the 19th century, focusing on whether the trading methods employed by the TSE resembled those to which the brokers were accustomed before the TSE's foundation.

To explore the origins of the TSE, this paper notices *yogin* trading, the foreign exchange of Mexican and Japanese silver currencies. At the foundation of the TSE, 76 brokers were present, with yogin traders constituting the core group (Tosho Saitorikaiin Kyokai, 1975). Heihachi Tanaka, a prominent figure in the *yogin* traders community, brought these brokers to the TSE and played a pivotal role as a major shareholder in its foundation. This paper explores both the *yogin* trading system and the early-stage stock trading system of the TSE. If similarities exist between these two systems, brokers might have continued to employ the familiar method. Conversely, if differences are identified, the TSE might have needed to introduce coordination mechanisms among the brokers to establish a new system.

The purpose of this paper is to compare the *yogin* trading system with the early-stage stock trading system of the TSE, with a specific focus on the development of auction methods and settlement frameworks. The current Tokyo Stock Exchange, Inc. has no records showing the detailed discussions on the trading system at the time of the TSE's establishment. Due to this limitation, we are compelled to make use of sources such as records on *yogin* trading, and writings by professionals who had practical experience during the early stages of trading at the TSE. These sources explain the various auction methods and settlement mechanisms.

This paper shows that the development of the TSE's stock trading system exemplify a case of path dependence. We find that the auction method used in stock futures trading at the time of the establishment of the TSE was identical to the auction method used in *yogin* trading. While abolishing this method, the Exchange Law of 1893 adopted a new settlement method for spot transactions. We also find that this settlement method was not novel, but a historical one previously used in *yogin* trading. The brokers could make use of their knowledge and skills developed in *yogin* trading. For these brokers, the establishment of stock trading systems would be a gradual process, not a radical change.

This paper diverges from the narrative described by Tokyo Stock Exchange (1928, 1933, 1938). The narrative explains that the *choaimai* transaction system at the Osaka Dojima rice market during the Tokugawa period was the origin of stock futures trading systems. Japan Stock Exchange Group, Inc. (2017) also provides an overview of *choaimai* transactions, which they consider to be the prototype of Japanese stock trading, referencing this narrative. Indeed, the Osaka Dojima rice market is known to have been an active futures market (Shimamoto, 1942; Ito, 1993; Melamed and Tamarkin, 1996; Takatsuki, 2018, 2022; West, 2000; Melamed, 2009).

Tracing the processes described in this narrative proves to be quite challenging. There are no existing records within the current Tokyo Stock Exchange, Inc. that suggest the existence of such a story. Eiichi Shibusawa, a significant contributor to the establishment of the TSE, authored numerous books, and his memoirs are extensively documented. Even in his accounts of events related to the founding of the TSE, Shibusawa never mentioned the Osaka Dojima rice market. In addition, while the TSE (1928, 1933, 1938) has referenced yogin trading in Yokohama as a part of its trading systems history, there is no historical records indicate any adoption of *yogin* trading methods.

This paper emphasizes the critical importance of comprehending auction methods and settlement frameworks as a key perspective for analyzing the historical development of exchanges and the issue of path dependence concerning brokers' code of conduct. By recognizing this perspective, the paper identifies similarities between stock trading and *yogin* trading at the time of the TSE's founding. These trading methods were incompatible with the trading system of the Osaka Dojima rice market. Based on the trading method in which brokers were engaged, it can be concluded that the origin of the TSE was not in the Osaka Dojima rice market, but rather in the practice of *yogin* trading in Yokohama.

Companies often use history as a tool for advertising and publicity purposes (Donzé, 2023). The problem in using history is whether there are exaggerations or distortions of historical facts. In light of our historical understanding, it could be argued that the historical narrative presented in the TSE (1928, 1933, 1938) exaggerates the connection between the Osaka Dojima rice market and the TSE. The narrative of TSE's corporate history might have exhibited bias by emphasizing continuity with the history of the Osaka Dojima rice market. while possibly overlooking the influence of *yogin* trading in Yokohama.

In the 1930s, exaggeration for the sake of national prestige could have become common in Japan. Under such circumstances, the TSE might have sought to legitimize its activities through the "invention of tradition." This practice would be commonly employed in the process of nation-building (Hobsbawm and Ranger, 1983). The narrative that regards *choaimai* transactions at Osaka Dojima as the origin of stock trading at the TSE could be seen as an instance of inventing tradition, designed to showcase that the TSE would contribute to Japan's progress through its capital markets.

While this narrative might have been incongruous with the views of individuals involved in the founding of the TSE, many of them had already passed away by the time the company history was documented in the 1930s. For instance, Eiichi Shibusawa passed away in 1931. While narratives involving invented traditions are often treated as historical facts, this paper compiles these accounts as an initial step towards a more consistent understanding of history.

The remainder of the paper is structured as follows. Section 1 describes the characteristics of *yogin* trading practices and rules in Yokohama and how they differ from those of choaimai transactions. The institutional evolution of stock trading systems before the enactment of the Exchange Law of 1893 is explained in Section 2. Section 3 outlines the institutional framework introduced by the Exchange Law of 1893. Section 4 discusses path dependence as a historical fact, the depiction of TSE's corporate history as a narrative, and the relationship between data on stock trading volume and institutional change. Finally, Section 5 concludes.

1 *Yogin* Trading in Yokohama

This section explains that (1) emerging merchants in Yokohama dealt with *yogin* trading; (2) Heihachi Tanaka was a key player in *yogin* trading; and (3) the systems of *yogin* trading in Yokohama was different from those of *choaimai* transactions in Osaka Dojima during the Tokugawa period. The explanation in this section references Andrew (1904), Hernandez (2001), and Yokoyama (2023) as prior works in English as well as literature in Japanese such as Yamaguchi (1957), Hora (1977), Teranishi (1982), Ishii (1987), Mikami (1989), Yamamoto (1994), Ono (2000), Takahashi (2018), Shikano (2023), and Ishida and Yokoyama (2023a).

1.1 Beginning of *Yogin* Trading

Following the Treaty of Amity and Commerce of 1858, the Port of Yokohama officially opened the next year, providing a more conveniently located trading port. Despite merchants from Edo (now Tokyo) being involved in *yogin* trading, conducting such transactions in Edo became difficult due to the geographical separation of approximately 20 miles between Yokohama and Edo. The Kanagawa bugyo (regional inspector) introduced a licensing system and selected merchants in Yokohama to oversee *yogin* trading. These newly established brokers came to be known as *ryogae-sho*, which means money exchange.

Ryogae-sho set up *yogin* trading platforms, which were repeatedly dissolved and created: Yogin Soba Kaisho opened in 1868, Yokohama Tsusho Kaisha opened in 1869, Kinkoku Soba Kaisho opened in 1872, Yokohama Kinkoku Torihikijo opened in 1872, and Yokohama Sobasho opened in 1875. The Mexican dollar marked to some extent a deposit currency in the 1870s in Japan. In 1876, Mitsui Bank (now Sumitomo Mitsui Banking Corporation) had *yogin* deposits amounting to 2.28 million yen while yen deposits amounted to 9.09 million yen (Mitsui Bank, 1957, p. 371). On these platforms, *genbutsu torihiki* (spot trading) and *teiki torihiki* (futures trading) were conducted. *Yogin* trading was to continue in Yokohama until 1885, when it was abolished with the start of the silver convertibility system.

1.2 Heihachi Tanaka and *Yogin* Trading

Heihachi Tanaka, who took the initiative in *yogin* trading, had a strong influence in the Yokohama business community. While born in present-day Nagano Prefecture, he became based in Yokohama when he recognized the opportunities in the rice and raw silk businesses. Human networking was the most critical of the elements that supported his business. Tanaka financed a woman called O'Kura (real name Take Saito), a well-known geisha, to open a traditional Japanese restaurant named Fukiro in 1871. He often hosted politicians such as Toshimichi Okubo, Hirobumi Ito, Kaoru Inoue, Shigenobu Okuma, and Yataro Iwasaki at Fukiro. Tanaka made use of the contacts he had made in this way for business in Yokohama.

Ryogaesho-shukaisho (a meeting place for *ryogae-sho*) was established on the premises of Tanaka's private residence shortly after the establishment of Yogin Soba Kaisho opened in 1868 (Tokyo Koto Shogyo Gakko Chosabu, 1914). The name of the *yogin* trading platform was often changed by Tanaka, as were the rules for *yogin* trading, which also underwent a series of minor revisions. When Kinkoku Soba Kaisho opened in 1872, Tanaka became the president of this platform. While Tanaka expanded his business by introducing futures trading, certain merchants began to criticize his business policy that prioritized private benefit. Due to the declining reputation, trading at Kinkoku Soba Kaisho experienced a period of stagnation. *Yogin* trading temporarily shifted to the residence of Kaemon Takashima, a prominent merchant in Yokohama. However, Takashima failed to rebuild the yogin trading business and the business spontaneously disappeared. In contrast, Tanaka obtained permission from the Kanagawa Prefectural Government to continue *yogin* trading in his own store (Hora, 1977). While some merchants did not think it desirable for Tanaka to take the initiative in *yogin* trading, the brokers' trust in Tanaka could be unwavering.

In the midst of the 1870s, the government began to tighten its regulations on *yogin* trading. Since government bills became the standard currency for *yogin* trading after 1874, *yogin* prices became the price of the Mexican dollar as indicated by government bills. Amid the 1877 Civil War, known as *Seinan Senso*, the government issued a large amount of fiat money to raise funds for military expenditures. The Mexican dollar surged as inflation advanced. The government identified the speculative nature of *yogin* trading as a contributing factor to the yen's depreciation and consequently implemented stricter regulations on *yogin* trading.

In February 1879, the government banned *yogin* trading in Yokohama and set a minimum capital requirement of 100,000 yen for the establishment of a new exchange for *yogin* trading. In March 1879, the Yokohama Yogin Exchange was established as a joint-stock company with a capital of 200,000 yen. The 11 founding members included Tokyo-based entrepreneurs such as Eiichi Shibusawa, Kisaku Shibusawa, Takashi

Masuda, and Kihachiro Okura, as well as Yokohama-based businesses such as Heihachi Tanaka and Zenzaburo Hara. This exchange was not set up in the site of Tanaka's own store, but in a warehouse of the Dai-Ni Kokuritsu Ginko (one of the predecessors of the Bank of Yokohama). Each *ryogae-sho* was required to pay security deposits as a broker for the new exchange.

Yogin trading had a system called *azukeai* (see 1.3 for details). The government prohibited this system in the new exchange on the grounds that *azukeai* had fueled a speculative fever. In September 1879, the Yokohama Yogin Exchange was renamed the Yokohama Exchange, and with this name change, *azukeai* was partially permitted. This institutional change came after brokers voluntarily established a penalty fee rule in an effort to achieve this permission. However, some brokers engaged in the unauthorized part of the trade, and in December 1879 the government again prohibited *azukeai* entirely. *Azukeai* could be refined trading practices under Tanaka's initiative and so attractive to brokers that this practice had to be repeatedly prohibited by the government. While the Meiji government attempted such policy interventions to curb speculation in *yogin* trading, none of them were successful. Additionally, the priority given to securing tax revenues from the platform led to the acceptance of speculation (Yokoyama 2023).

1.3 Trading Systems of *Yogin* Trading

This subsection describes (1) *azukeai*, (2) *tsukamiai*, and (3) the similarities and differences between *yogin* trading in Yokohama and *choaimai* transactions in Osaka Dojima. *Azukeai* was conducted in *gemba torihiki* (spot transactions). *Tsukamiai* was an auction method employed in *teiki torihiki* (futures transactions). While these two trading systems have incompatible characteristics with the rules of *choaimai* transactions in Osaka Dojima, both of them were inherited by the TSE in later years.

1.3.1 *Azukeai*

Azukeai means that both exporters and importers deposit their respective currencies to *ryogae-sho*. Exporters would have needed to exchange Mexican silver for Japanese silver to pay their suppliers. If *yogin* prices were rising, exporters would have an incentive to postpone the exchange. Even in that case, it could only be postponed until the due date for payment to the suppliers. On the other hand, importers would have needed Mexican silver to pay for the goods they received from abroad. If the *yogin* market prices were rising, importers had an incentive to sell their Japanese silver quickly to obtain Mexican silver. To coordinate the interests of exporters and importers, *ryogae-sho* began to provide a service in which it would take deposits of the respective currencies of both parties and exchange them at convenient moments. To coordinate the interests of exporters and importers, *ryogae-sho* began to hold deposits of Mexican silver or Japanese silver from both exporters and importers, allowing them to exchange them at their preferred timing. This service came to be known as *azukeai*.

There were two types of *azukeai*: *katai-* and *banami-azukeai*. *Azukeai* would be terminated when one of the two parties fulfilled the exchange. At that time, the difference was exchanged according to profit or loss. Such a type of *azukeai* would be called *katai-azukeai*. In contrast to *katai-azukeai*, where actual delivery of Japanese silver and Mexican silver was required upon exchange, *banami-azukeai* did not involve the physical transfer of either Japanese silver or Mexican silver. In this derivative type, participants were able to play the money game of differential settlement. The government was particularly wary of *banami-azukeai* as it had fueled speculative fever (Hora, 1977; Yokoyama, 2023). Once *azukeai* was executed, *ryogae-sho*, who had been entrusted with both the purchase and sale, would transfer *atamakin* (the difference between the previous day's market price and the current day's market price) each time the day changed. In the case of *banami azukeai*, it was necessary to add interest to *atamakin* as part of the transfer. If *azukeai* could not be terminated, *ryogae-sho* could extend the settlement of delivery from day to day.

The Yokohama Yogin Exchange banned both *katai-* and *banami-azukeai*. When the exchange changed its name to the Yokohama Exchange in September 1879, the ban was lifted for *katai* azukeai. Some individuals who were still enticed by the allure of *banami- azukeai* speculation decided to engage in the practice. Following the discovery of this illegal activity, the government responded by banning both *azukeai* in December of the same year.

1.3.2 *Tsukamiai*

Tsukamiai as an auction method referred to a method in which both the seller and the buyer quoted the market price while the quantity to be bought or sold was offered and executed at a point where the market price was balanced. This trading system bears resemblance to the system known as *choteki-baibai* in the Osaka Dojima *choaimai* transactions, although there are some notable differences in practice.

When considering the similarities and differences between *tsukamiai* and c*hoteki-baibai*, we come across an intriguing incident documented by Yokohama City (1963, pp.329-330). In 1869, upon the establishment of Yokohama Tsusho Kaisha, Tennojiya Gohei, an Osaka merchant, submitted an opinion on yogin trading to the company. The opinion stressed the importance of avoiding drastic fluctuations during trading sessions and discouraging idle discussions about buying and selling. While Yokohama Tsusho Company demonstrated a willingness to adhere to this stance, none of its members followed Tennojiya's guidance. The principles underlying *tsukamiai* and *choteki-baibai* diverged significantly in terms of broker ethos and the shared values within the group concerning the market.

There is also a contrast between the *choaimai* system and *yogin* trading system in terms of the settlement framework. The target of *choaimai* transactions was an index security called *tatemonomai*. The orders to sell or buy were consolidated in a clearing house called *komaiba*. This clearing house was operated by merchants known as *komekata ryogae*. These merchants executed the orders they received and did not need to prompt the trader to reverse or reposition the order. *Komekata ryogae* had to execute the orders they received and also urge the counterparty to change its position. Since *tatemonomai* was an index issue, *choaimai* transactions were not designed for physical delivery from the beginning. Rollover, the continuation of a sell or buy position after the maturity date, would be strictly prevented. Settlement would be completed when the difference was transferred to and from komekata ryogae. Takatsuki (2022) emphasizes that the discipline and supervision of this clearing house supported *choaimai* transactions. On the other hand, *yogin* trading had no publicly backed clearing house, much less any functioning discipline provided by a clearing house. At the core of the market's stability, *yogin* trading differed from the Osaka Dojima system.

1.3.3 *Yogin* Trading and *Choaimai* Transactions

Takatsuki (2022) examines several factors that contributed to the well-being of the Osaka Dojima rice market during the Tokugawa period. *Hinawa*, a device used to complete transactions within the time limit of a burning rope, served as a precursor to today's circuit breaker. In *choaimai* transactions, brokers would place their funds in one of 30 *komekata ryogae* (clearing houses) that were in existence around 1730. These *komekata ryogae* closely monitored rollovers (holding on to a sell or buy position beyond its maturity date) to ensure strict control. In the Osaka Dojima rice market, there was a shared understanding that anyone who violated discipline would be expelled.

The practices and rules surrounding *yogin* trading in Yokohama would be incompatible with those of *choaimai* transactions in Osaka Dojima. In contrast to Osaka Dojima, it is difficult to find such discipline that underpinned the robustness of clearing in *yogin* trading. In *azukeai* for spot trading, extending settlement on a daily basis could be common. In futures trading, there were cases where even the recording and management of transaction history by the clearing organization were absent. Kimura (2000) investigated Heihachi Tanaka's *yogin* trading records and found that Tanaka was actively shorting futures contracts on a daily basis. His records do not always include the name of the counterparty, making it difficult to trace the transaction history. Moreover, the *yogin* trading platform did not maintain records of clearing. It is even possible that the settlement of the difference was made through an agreement between the parties without going through a financial institution.

2 Stock Trading Systems Prior to the Exchange Law of 1893

This section describes the development of stock trading systems prior to the Exchange Law of 1893. This section explains that (1) Heihachi Tanaka and Seinosuke Imamura, Tanaka's business partner participated in the establishment of TSE; and (2) *tsukamiai*, the auction method used in *yogin* trading, was adopted by the TSE. The explanation in this section references Hamao, Hoshi, and Okazaki (2009) and Nakabayashi (2019) as prior works in English as well as some Japanese literature such as Shimura (1969), Noda (1980), Kataoka (1999), Teranishi (2011), Kobayashi (2012), Teranishi and Yuki (2017), Japan Stock Exchange Group, Inc. (2017), Hirayama (2019), Kamae (2019), and Ishida and Yokoyama (2023a).

2.1 Process before the Opening of TSE in 1878

Japan’s stock trading system began with two failed attempts: one to adopt trading practices of Osaka Dojima and the other to introduce a British-style system. These two policies resulted in a conflicting situation.

The Meiji government sought to preserve the trading system of Osaka Dojima rice market. While the Dojima rice market was temporarily abolished in 1869, the establishment of Dojima Kome Shokaisho was permitted in 1871. As the first step in this policy direction, the government decided to authorize futures trading of rice in the Tokyo Shosha in 1873.

Alongside this institutional development, the government also attempted to introduce a

British-style stock trading system. In 1874, the Stock Trading Ordinance was enacted, which recommended the establishment of stock exchanges in Tokyo and Osaka, following the model of the London Stock Exchange. This ordinance emphasized the significance of spot trading. The government was determined to implement this policy and announced the abolition of contract month trading for rice and vegetable oil. Even though the Tokyo Shosha allowed rice futures trading, the Stock Trading Ordinance prohibited other merchants from trading in rice and vegetable oil futures contracts. A lot of merchants must have been dissatisfied with this ordinance.

The government would hurry to set up a legal framework for the establishment of an exchange. After the Civil War in 1877, the outstanding amount of public bonds was drastically increasing, as well as the frequent trading among wealthy individuals. National banks, which were created as issuing banks, used public bonds as collateral when issuing bank bills. The establishment of an exchange was considered essential to support the smooth trading of public bonds. In addition, the government was to encourage the founding of stock companies.

At the same time, there had been growing momentum among Tokyo entrepreneurs for the establishment of an exchange. Eiichi Shibusawa and other business entrepreneurs submitted an opinion letter to the government to amend the Stock Trading Act. Prior to the submission of this opinion letter, Seinosuke Imamura, a business partner of Heihachi Tanaka, had consulted with Eiichi Shibusawa about the creation of an exchange for trading public bonds. However, the Mitsui family entrepreneurs, Shibusawa's other business partner, were not on good terms with Yokohama-based Tanaka and Imamura at the time. Neither Tanaka nor Imamura had their names listed in the opinion letter.

On December 26, 1877, Ryozo Fukagawa, Eiichi Shibusawa, Akira Komatsu, Takaaki Mitsui, Takahisa Mitsui, Takashi Masuda, and other Tokyo entrepreneurs applied to the Tokyo Prefectural Government and the Ministry of Finance The plan to establish a stock exchange was filed with the Tokyo Prefectural Government and the Ministry of

Finance. The plan was approved two days after filing. In May 1878, the Stock Trading Ordinance was repealed and a new Stock Exchange Ordinance was promulgated. In June of the same year, the TSE was established. Akira Komatsu, one of the founding members, became the first president of the TSE.

Table 1: List of TSE's Top 10 Shareholders at the Time of Its Founding

Registration Number	Name	Number of shares held
1	Fukagawa, Ryozo	140
2	Shibusawa, Eiichi	98
3	Imamura, Seinosuke	98
4	Mitsui, Yonosuke	82
5	Mitsui, Takenosuke	82
6	Masuda, Takashi	82
7	Minomura, Risuke	82
8	Komuro, Nobuo	82
9	Kobayashi, Ginjiro	82
10	Heihachi, Tanaka	82

Source: Japan Stock Exchange Group (2017, p.118)

Table 1 shows a list of TSE's Top 10 shareholders at the time of its founding. The total number of shares issued was 2,000 and the total number of shareholders was 95. It is worth noting that Seinosuke Imamura was a major shareholder with the same number of shares as Eiichi Shibusawa. In addition, Heihachi Tanaka was ranked in the 10th position. The top 10 shareholders include four members of the Mitsui family: Yonosuke Mitsui, Takenosuke Mitsui, Takashi Masuda, and Risuke Minomura. Both the Mitsui family and Yokohama-based entrepreneurs Imamura and Tanaka could have become major shareholders as a result of Eiichi Shibusawa's coordination of their interests (Japan Stock Exchange Group, Inc. 2017).

While Heihachi Tanaka directed the Yokohama *yogin* traders, he was not the only one who had an impact on the TSE's stock trading. The *yogin* traders who had followed his lead now began to engage in stock trading as brokers for the TSE. Tosho Saitorikaiin

Kyokai (1975), based on the recollections of TSE practitioners, notes that at the time of its establishment, the TSE had 76 brokers, including middle-ranking and lower-ranking *ryogae-sho*, *yogin* traders in Yokohama, and rice merchants, and that y*ogin* traders were the mainstay of the group.

2.2 Stock Trading System at the Beginning of the TSE's Operation

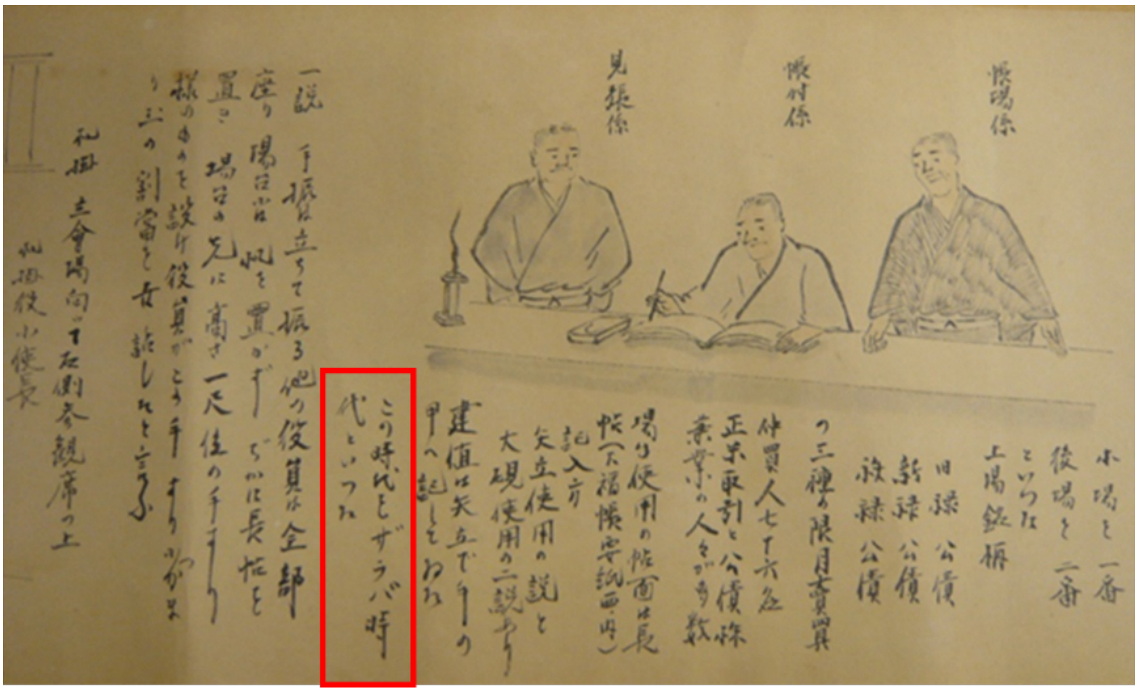
At the time of TSE's opening, there were four listed stocks and five listed government bonds. For these nine issues, forward and futures trading were conducted. There were two types of forward transactions, distinguished by the difference in delivery deadlines: *jiki torihiki* (within 5 days) and *nobe torihiki* (within 150 days). The term *torihiki* means transactions. Futures were called t*eiki* transactions, and the contract month was set at three months. As is well known, stock trading in the 19th century centered on futures. This paper focuses on the institutional structure of *teiki* transactions.

The TSE had two trading sessions, known as *homba* (now referred to as the morning session) and *niban* (now referred to the afternoon session), respectively. Both *homba* and *niban* were further divided into two *setsu*. For each *setsu*, trading was conducted for *togiri*, *nakagiri*, and *sakigiri* of each stock (corresponding to the current month contract, next month contract, and the following two months' contracts in the modern era, respectively). In 1878, during the opening year, there were three contract months available for the four listed stocks and five bonds, resulting in two *setsu* for both *homba* and *niban*, leading to a total of 108 stock auctions per day (9 × 3 × 2 × 2). Trading days were limited to the 5th and 20th of each month. The number of trading days was gradually increased, and from September 1883, trading days became every day except holidays. As the number of listed stocks grew, the above structure was maintained, relying on the ingenuity and ingenuity of the exchange staff to shorten auction times or to conduct auctions of two or even three stocks simultaneously at the same time.

Niwa (1915) described the auction method in *teiki torihiki* as *tsukamiai*. A few officers would stand on a high stage, while dozens to a hundred or so brokers would stand below them. These brokers would negotiate with each other to determine the buying or selling price, and as the next step, they were saying to each other the number of shares they would buy or sell, to conclude the transaction. Nonaka (1887) described the situation as "a hustle and bustle," and described it as being like "quarreling and arguing" when viewed by outsiders. *Tsukamiai* in stock trading at the time of the opening of the TSE was the same as that of *yogin* trading described in Section 1.

We can observe the interdependence between the *yogin* trading system and the TSE system. The Yokohama Yogin Exchange, which opened one year after the TSE, adopted the *setsu* system. This adoption indicates that the TSE system influenced the change in the *yogin* trading system. When the TSE opened, it did not have a modern stock price index or announce market quotes. Instead, it established *setsu* and conducted repeated auctions each time a market price was formed, allowing attending investors to closely monitor market conditions. This benefit, shared by brokers, might have been the reason why setsu was newly introduced at the Yokohama Yogin Exchange.

Picture 1 Kabuto-cho in Those Days by Ryuta Shimizu (1934):



Note: In the red frame, “This period was called the *zaraba* era” in Japanese.

(Japan Stock Exchange Group Website, URL: https://www.jpx.co.jp/)

Picture 1 displays an illustration titled "Kabuto-cho in Those Days" within a picture scroll by Ryuta Shimizu, a well-known painter (Kabuto-cho is the location of TSE). The illustration includes explanatory text sentences, one of which states, "This period was called the *zaraba* era." The painter based this description on interviews with those who were familiar with TSE at the time of its founding. For those involved in the exchange at the time, *zaraba* could have been a term that symbolized the era. Today, *zaraba* refers to the trading hours from market opening to market closing.

During the TSE’s founding, brokers auctioned securities using *hinawa*, a rope set on fire, as a time limit until it burned out. In contrast, in Osaka Dojima’s *choaimai* transactions, *hinawa* was used only for the last trade of the day. Since the TSE had *setsu* as a unit of trading time, *hinawa* would be used in each setsu during the day. The TSE’s “*zaraba* era” might have celebrated a new era in which traders could come to pay attention to price movements during *zaraba*, i.e., beyond the market's closing hours.

3 Stock Trading System Established by the Exchange Law of 1893

This section explains the enactment of the Exchange Law of 1893, focusing on four points: (1) the background circumstances surrounding the enactment of the Exchange Act, (2) new auction method called *kyobaibai*, (3) reverse repurchase, which supported *teiki* transactions, futures trading, and (4) *azukeai*, a practice used in *jiki* transactions, spot trading. The explanation in this section references Hamao, Hoshi, and Okazaki (2009) and Nakabayashi (2019) as prior works in English as well as some Japanese literature such as Shimamoto (1961), Shimura (1969) Noda (1980), Kataoka (1999), Teranishi (2011), Kobayashi (2012), Teranishi and Yuki (2017), Japan Stock Exchange Group, Inc. (2017), Hirayama (2019), Kamae (2019), and Ishida and Yokoyama (2023a).

3.1 Background of the Exchange Law

In 1887, the Exchange Ordinance was enacted. The purpose of the government was to promote spot trading through the introduction of a French-style stock trading system. Officials of the exchanges opposed this ordinance, calling it a "*burusu* ordinance," as it was not in line with the situation of the exchanges that were developing in Japan (burusu was based on the French pronunciation of the word *bourse*). A crucial aspect for the exchanges was that the *burusu* ordinance defined the stock exchanges as membership organizations. Implementing the ordinance would result in the TSE and other stock company-organized exchanges having to undertake organizational reform, incurring both time and costs.

In 1893, the Exchange Law was enacted as a result of a series of discussions between the government and selected exchange officials, who proposed a new legal framework after visiting foreign countries. The law allowed for both membership organizations and stock company organizations. Existing stock exchanges such as the TSE and the Osaka Stock Exchange were allowed to restart as joint-stock companies.

The Exchange Law established the following framework for stock trading. Stock trading was divided into three categories: *teiki* transactions (futures contracts with delivery at the end of the month for a maximum of three months), *nobe* transactions (futures contracts with delivery within 150 days), and *jiki* transactions (forward contracts with delivery within five days). However, since the size of *nobe* transactions was negligible, there were effectively two types of stock transactions: *teiki* and *jiki*.

The following four points were stipulated to enhance the function of the stock exchange: (1) one-third of the capital should be paid to the regional office as a business deposit, (2) only brokers who had paid security deposits to the exchange may trade on the stock exchange, (3) the security deposits should be used to compensate for losses incurred by defaulters in trading, and (4) off-floor similar transactions were prohibited.

Provisions (2) and (3) regarding the security deposits could be common to the system of Osaka Dojima, where the brokerage house paid the security deposits.

3.2 *Kyobaibai*

The Exchange Law stipulates that the method of trading shall be determined by imperial decree. 21 July 1893, it was stipulated by imperial decree that the method of trading would be *kyobaibai*.

Kyobaibai was defined as an auction system in which buy and sell orders were executed at a provisional market price and then traded at the final bidding price. This method follows the principle of time priority for execution, while employing the principle of price priority for executing at one market price.

The key factor in *Kyobaibai* was the ability of the attendants to grasp the situation. These attendants were called *gekitaku* due to their use of wooden clappers called *gekitaku*. Their main task was to announce the market price, listen to sell and buy orders, and determine the market price at which the trading volume would be balanced.

For example, in the case of stock A, there was an announcement of “100 yen per share of stock A” and sell orders were placed for 50 shares and buy orders were placed for 40 shares. In this case, *gekitaku* announced “105 yen per share” in order to increase the number of buy orders. When an additional buy order for 10 shares was placed, the auction would be closed. In the absence of additional orders, *gekitaku* would have to ask brokers to place orders to make up the shortfall. In the case of stock A, 50 shares were to be traded at 105 yen.

After the enactment of the Exchange Law, the Osaka Stock Exchange (hereafter, the OSE) had already started *kyobaibai*. The TSE sent its staff member, Wataru Ishikawa, who later became a member of the TSE Board of Directors, to the OSE for two months to learn the kyobaibai method.

The OSE had adopted an auction method similar to *kyobaibai* before the enactment of the Exchange Act. The method was called *tsukiawase* or *katagen tsukiawase.* This type of auction market did not distinguish the time of order entry, and the opening price would be determined based on the principle of price priority. *Tsukiawase* could be likened to the modern *itayose* method in Japan. Shimamoto (1961) points out that *tsukiawase* was invented at the Dojima Rice Exchange in Osaka, which was established in 1876. However, Niwa (1915) notes that the auction method in the OSE before the Exchange Act was also called *kyobaibai*. The history of *kyobaibai* is still unclear in some respects due to the circumstances of the time. Further research is expected to explore the details.

3.3 Reverse Repurchase

The Exchange Law of 1893 allows reverse repurchases. This provision remains in effect today. A reverse repurchase involves buying and selling the opposite side of an open contract between the time the order is placed and the expiration date. In other words, it entails converting a sell position into a buy position or vice versa and settling the difference between the two. In the example of stock A, an investor who placed an order to buy at 100 yen at the auction would have to buy at 105 yen per share if the market price at the auction was set at 105 yen. The Exchange Law of 1893 made it possible for investors to cancel their purchases by engaging in resale repurchase transactions.

Settlement through reverse repurchase cannot be completed by the party who executed the contract alone, so the intervention of a third party is indispensable. Clear provisions regarding this third party should be required when stipulating resale and repurchase. The Stock Exchange Ordinance of 1878 already permitted resale, but the Ordinance did not specifically provide for third-party intervention. the 1882 amendment to the Ordinance clearly stated the responsibility of the stock exchange. It stipulated that the

Exchange would calculate the profit or loss on resale and repurchase, and that the difference would be paid out of the broker's margin when it was given to the broker for settlement. However, when the ordinance was amended in 1887 in accordance with the policy of the *burusu* ordinance, the reverse repurchase provision was removed. Exchange officials were opposed to the *burusu* ordinance in part because of the inconsistencies it created in trading practices. The Exchange Law's provision of authority and responsibility to intervene in reverse repurchases provides a legal basis for the exchanges to act as clearinghouses.

The TSE established a bylaw regarding *teiki* transactions, which included provisions for reverse repurchase in the Articles of Incorporation. The articles stipulated that brokers had to report the results of the profit and loss calculations to the exchange, and transactions had to be terminated either by surrendering the loss or profit to the exchange, or by the exchange paying the profit or loss.

These provisions could be considered as a reduction of transaction costs within the stock exchange. The exchanges became able to transfer profits and losses without having to keep track of who the broker traded with. Brokers no longer required to keep track of their trades on the floor. This system of reducing transaction costs could not only support the efficiency of the exchange organization, but also contribute to the liquidity of the stock market.

3.4 *Azukeai* and *Jiki*

The government regarded *jiki* transactions as a transaction method that encouraged prompt delivery. In principle, *jiki* transactions involved negotiated transactions, although *kyobaibai* was conducted for a limited number of issues, such as Nippon Yusen and TSE shares. Negotiated transactions were considered acceptable if both the seller and the buyer agreed to delivery within five days.

Despite the government's intentions, speculation became rampant in *jiki* transactions as a result of the approval of *azukeai*. There were two methods of *jiki* transactions: delivery by 4:00 p.m. on the day of the transaction, and *azukeai*. The latter method, *azukeai*, was chosen to formally complete the delivery but postpone the settlement to a more convenient time. By opting for *azukeai*, traders could delay the settlement and settle the difference at a more favorable time while still giving the appearance that the delivery had been completed.

Azukeai in *jiki* transactions would correspond to the *banami-azukeai* method used in *yogin* transactions in Yokohama, i.e., settling the difference without actually delivering the asset that is the subject of the transaction. Tosho Saitorikaiin Kyokai (1975) notes that *azukeai* used in *jiki* transactions was derived from the method used in *yogin* trading in Yokohama, and that the term "*jiki*" itself became used as slang by investors to refer to speculation by *jiki* transactions.

4 Discussion

This section discusses three points: (1) the relationship between TSE's stock trading and *yogin* trading at the time of its founding as an example of path dependence; (2) the relationship between narratives and historical facts in TSE's corporate history; and (3) a note on trading volume data.

4.1 Path Dependence

Path dependence indicates that alternatives for people could be constrained by past processes. An essential aspect of path dependence is that newly defined mechanisms could be nearly identical to existing ones or only slightly modified versions of them. The stock trading methods adopted by the TSE, which was the same method once used in *yogin* trading in Yokohama, could be an example of path dependence.

This paper has explained two instances of path-dependent institutional changes. The first instance involved the adoption of *tsukamiai* as an auction method in compliance with the Stock Exchange Ordinance of 1878. In this context, it would be crucial to highlight the presence of brokers with prior *yogin* trading experience, who transitioned to the TSE from Yokohama alongside Heihachi Tanaka. For the TSE, *tsukamiai* represented a method that marked the dawn of a new era in stock trading. Conversely, for those involved in *yogin* trading, it was the auction method already familiar to them.

Another example of channel dependence described in this paper is the revival of *banami-azukeai* in *yogin* trading as *azukeai* in *jiki* transactions after the Exchange Law of 1893. Although the process of this revival is unclear due to the lack of historical records, it is documented that around 1890, banami-azukeai was used to settle differences in illegal transactions conducted outside the exchanges (Tosho Saitorikaiin Kyokai, 1975). The settlement method might have been inherited by people who knew the Yokohama practice and continued this practice away from the exchange.

4.2 Interpreting the TSE's Company History

The TSE compiled and published three corporate histories in book form: TSE (1928), TSE (1933), and TSE (1938). While each of these histories begins by describing the Osaka Dojima Rice Market as the origin of the exchange, the writing style differs slightly. Each of the three is quoted below.

Quote 1 Tokyo Stock Exchange (1928, p.1)
"The system of exchanges in Japan has its ancient origins in the choaimai system of the Tokugawa Shogunate period. This system developed especially in Osaka, the center of commerce. On the other hand, it was 198 years ago (in 1730) that a rice exchange was officially authorized in Edo."

Quote 2 Tokyo Stock Exchange (1933, p.1)

“The history of the stock exchange system in Japan can be traced back to the trading of kuramai during the feudal era in the Middle Ages. Exchanges developed especially in Osaka, which was the center of commerce. The method of choaimai trading, conceived and implemented during the Tokugawa Shogunate period, is the prototype of the trading method used on exchanges in Japan today.”

Quote 3 Tokyo Stock Exchange (1938, p.1)

“The history of Japan's stock exchange system can be traced back to the kuramai trading in the ancient Tokugawa period, which developed in Osaka, the center of commerce. The choaimai trading method conceived and implemented during this period is the prototype of the trading method used on Japanese exchanges today.”

These three quotations emphasize the historical continuity between the Osaka Dojima Rice Exchange and the TSE. Quote 1 presents a straightforward arrangement of historical facts. However, Quotes 2 and 3 go further by specifying the similarity between the TSE's stock trading and ledger rice trading, using the term 'prototype.' These explicit statements indicate the abandonment of the adoption of *tsukamiai* and *azukeai*, which originated from *yogin* trading.

There are two possible reasons for the abandonment, one of which is straightforward. The stock trading system during the Meiji period underwent a complex transition. A simpler narrative might have been preferred. Since most of the people familiar with the actual business scene were likely not involved in the company history compilation project, few would have objected to such an abstraction.

Another reason is the 'invention of tradition.' This concept of the 'invention of tradition' is a measure used to authorize a nation through historical narratives (Hobsbawm and Ranger 1983). Both Tokyo Stock Exchange (1933) and Tokyo Stock Exchange (1938) carried opening statements by the then TSE presidents (Kuniomi Okazaki and Kisei Sugino, respectively). The opening sentences of both publications were written to promote national prestige, which was the prevailing trend at the time. A portion of each is quoted below.

Quote 4 Tokyo Stock Exchange (1933, Preface, p.4)

"In recent years, with the increasing complexity of domestic and international economies and the changing global landscape, the securities market has emerged as a focal point in the business world. This movement has attracted the attention of society as a whole. This holds especially true for the TSE, which serves as Japan's central market and holds international significance. The national economy faces numerous challenges, while the world economy eagerly anticipates a new phase of development. Consequently, the responsibility of the TSE has grown even more substantial."

Quote 5 Tokyo Stock Exchange (1938, Preface, p.2)

"Since 1933, the situation at home and abroad has become increasingly critical with events such as Japan's withdrawal from the League of Nations, the February 26 incident in 1936, and international tensions. The Sino-Japanese War broke out last summer, leading our country's economy to transition from a quasi-wartime regime to a full wartime regime. As a result, the securities market entered a state of abnormal alert. However, these developments reflect the fact that our country is now on the verge of taking another significant leap forward and establishing peace in the East. Additionally, the TSE's development over the past few years has been truly groundbreaking. In particular, the TSE deserves high appreciation for its role as a central institution in Japan's burgeoning economy and its significant contribution to the implementation of Japan's expansionary fiscal policy and the growth of its productive capacity."

The statements in Quotes 4 and 5 suggest that the TSE's company history compilation project was a manifestation of the momentum to position the exchange as a central player in the Japanese economy. The hypothesis presented in this paper is that the TSE attempted to create a tradition that would position the *choaimai* transaction as the prototype for the TSE's stock trading system. To test this hypothesis, the circumstances surrounding the compilation of the TSE's corporate history should be investigated. However, there are no historical documents in the current Tokyo Stock Exchange of the Japan Securities Exchange Group that would provide clues for such an investigation.

4.3 Data on Stock Trading Volume

The succession of *banami-azukeai* under the name of *azukeai* in *jiki* trading holds significant implications. Traditional studies on Japan's financial history, such as Shimura (1969) and Noda (1980), have emphasized the active nature of speculative trading in the 19th century, based on the low ratio of delivered stocks to trading volume.

Table 2: Stock Trading Volume in the TSE

	Gemba transactions	*Teiki* transactions		$\frac{A+C}{A+B+C}$
	Trading volume (Shares, A)	Trading volume (Shares, B)	Actual delivery volume (Shares, C)	
1878	82	171	136	0.560
1883	0	5,701	1,690	0.229
1888	50	907,669	64,191	0.066
1893	142	2,657,146	235,375	0.081
1898	59,427	3,817,792	305,918	0.087

Source: Tokyo Stock Exchange, (1928)

Table 2 presents the trading volume of gemba transactions (A), the trading volume of *teiki* transactions (B), the actual delivery volume of *teiki* transactions (C), and the ratio $\frac{A+C}{A+B+C}$ for each five-year period spanning from the opening of the TSE in 1878 to 1898. Shimura (1969) has interpreted that the smaller $\frac{A+C}{A+B+C}$ was, the more speculative the transactions could be. From Shimura's (1969) perspective, it might appear that speculativeness eased somewhat in 1898. However, this interpretation could be misleading. In 1898, *azukeai* was introduced in jiki trading. In this regard, it is more likely that speculative trading became more active rather than the delivery of shares being advanced.

We also need to consider another aspect of teiki trading volume: reverse repurchases. In order to execute transactions in *kyobaibai*, orders were placed with the anticipation of cancellation due to reverse repurchase. Such cancellations would be more likely to occur during periods of significant price movements. For example, during a stock price rise, there might have been a shortage of sell orders, leading to an increase in buy orders. Conversely, during a market downturn, a scarcity of buy orders could result in a rush of sell orders. To facilitate the execution of trades, additional orders were placed to compensate for these shortages. As a result, these orders could contribute to an increase in trading volume beyond the actual stock delivery, driven by factors other than speculation. For further studies on the statistical relationship between stock prices and trading volume, it's crucial to recognize that the 19th and early 20th-century Japanese stock market possesses intriguing institutional characteristics.

5 Conclusion

The evolution of the stock trading systems on the TSE is a case of path dependence in that it originated from *yogin* trading, not from the choaimai transactions in Tokugawa period. This new interpretation is based not only on the analysis presented in this paper for *yogin* trading or stock trading, but also on detailed analyses like Takatsuki (2022) for *choaimai* trading.

The narrative that emphasizes the inheritance of the choaimai system could be a case of the invention of tradition. Despite this aspect, we cannot overlook the fact that brokers of the Meiji era were making use of the legacy that had been cultivated since the Tokugawa era, such as the soroban, a traditional Japanese abacus. This calculator was used at the TSE until the 1940s as a convenient and quick way to perform arithmetic operations and calculate interest rates. With this long-term perspective, it can be inferred that TSE brokers acquired similar knowledge and skills as the brokers involved in *choaimai* transactions during the Tokugawa period. However, the essence of the *choaimai* system was not directly passed down.

The stock trading system would operate as a composite of path-dependent elements, with each element influenced by distinct historical contexts. When attempting policy-driven modifications to one of these constituent elements, some form of coordination, alongside a period for adjustment, would be necessary. Public propositions would play a significant role in facilitating such coordination (Aoki, 2013). The evolution of the stock trading system during the Meiji period can be seen as an ongoing process of trial and error aimed at achieving coordination. In developing the exchange system, the Meiji government had to consider public propositions regarding the type of system brokers were familiar with, while also referring to foreign systems. Amidst these institutional changes, the methods employed in *yogin* trading often emerged as central components and focal points.

References

Andrew, A. Piatt. (1904). The End of the Mexican Dollar. The Quarterly Journal of Economics, 18(3): 321-356.

Aoki, Masahiko. (2013). Historical Sources of Institutional Trajectories in Economic Development: China, Japan and Korea Compared. Socio-Economic Review, 11(2): 233-263.

Arthur, W. Brian. (1989). Competing Technologies, Increasing Returns, and Lock-In by Historical Events. The Economic Journal, 99 (394): 116-131.

Banner, Stuart. (1998). The Origin of the New York Stock Exchange, 1791–1860. The

Journal of Legal Studies, 27(1): 113-140.

David, Paul A. (1985). Clio and the Economics of QWERTY, The American Economic Review, 75 (2): 332-337.

Donzé, Pierre-Yves. (2023). Selling Europe to the World: The Rise of the Luxury Fashion Industry, 1980-2020. Bloomsbury Publishing.

Hernandez, Luis A. (2001). The Gold Standard and the Disappearance of the Mexican Silver Dollar as International Currency in Japan and East Asia Markets, 1850-1905. Available at SSRN: https://ssrn.com/abstract=1763213.

Hamao, Yasushi, Takeo Hoshi, and Tetsuji Okazaki. (2009). "Listing Policy and Development of the Tokyo Stock Exchange in the Pre-War Period?" in Ito Takatoshi and Andrew K. Rose eds., Financial Sector Development in the Pacific Rim". Chicago, IL: University of Chicago Press, pp.51-87.

Hirayama, Kenichi. (2019). *Senzen-Senjiki no Kin'yu Shijo* (Financial markets in Prewar-Wartime Periods). Nihon Keizai Shibunsha: Tokyo.

Hobsbawm, Eric and Terence Ranger. (edit) (1983). The Invention of Tradition. Cambridge University Press: Cambridge.

Hora, Tomio. (1977). *Bakumatsu-Ishinki no Gaiatsu to Teiko* (External Pressure and Resistance during the Bakumatsu Restoration Period). Tokyo: Azekura Shobo.

Ishida, Shigehiro and Kazuki Yokoyama. (2023a). *Meijiki Tokyo Kabushiki Torihikijo no Kabushiki Torihiki Seido* (Stock Trading Institutions in the Tokyo Stock Exchange during the Meiji Period). JPX Working Paper No.41 (the Japanese version), Japan Exchange Group, Japan.

Ishida, Shigehiro and Kazuki Yokoyama. (2023b). Origins of the Tokyo Stock Exchange: Path Dependence of Trading Systems. JPX Working Paper No.41 (the English version), Japan Exchange Group, Japan.

Ishii, Takashi. (1987). *Bakumatsu-Kaikoki Keizaishi Kenkyu* (Research on the Economic History of the Opening of Ports at the End of the Edo Period). Tokyo: Yurindo.

Ito, Takatoshi. (1993). 1*8 Seiki Dojima Kome Shijo no Kouritsusei nitsuite* (Efficiency of the Rice Futures Market in Osaka in the 18th Century), Keizai Kenkyu, 44(4): 339-350.

Japan Stock Exchange Group, Inc. (2017). *Nihon Keizai no Shinzo Shoken Shijo Tanjo!* (Heart of Japanese Economy, Birth of Securities Markets!). Editorial Supervision by Shigeru Kashima. Shueisha: Tokyo.

Kamae, Hiroshi. (2019). *Senzenki Kabushiki Shijo no Koritsusei* (Efficiency of the Japanese Stock Markets in the Prewar Period). School of Business Administration, Working Paper Series No. 151 (Hitotsubashi University).

Kataoka, Yutaka. (1999). Senzenki no Kabushiki Torihikijo to Jogai Shijo (The Stock Exchange and the Outside Dealing in pre-war Japan). Hakuoh Daigaku Ronshu (Hakuoh University Journal), 13(2): 133-154.

Kimura, Haruhisa. (2000). *Meiji Yokohama niokeru Yogin Sakimono Keiei — Tanaka Heihachi no Yogin Teiki Torihiki* (Management of Western Bank Futures in Yokohama at the Beginning of the Meiji Era: Futures *Yogin* Trading by Heihachi Tanaka). Matsusho-Tandai-Ronso (The journal of Matsusho Gakuen Junior College), 49: 27-51.

Melamed, Leo, and Bob Tamarkin. (1996). Escape to the Futures. Wiley.

Melamed, Leo. (2009). For Crying Out Land: From Open Outcry to the Electronic Screen, Wiley.

Michie, Ranald. (2001). The London Stock Exchange: A History Oxford University Press: Oxford

Mikami, Ryuzo. (1989). *En no Tanjo* (Birth of the Yen). Toyo Keizai Shimposha: Tokyo.

Mitsui Bank. (1957). *Mitsui Ginko Hachijunenshi* (80 Years History of Mitsui Bank).

Nakabayashi, Masaki. (2019). Ownership structure and market efficiency: Stockholder/manager conflicts at the dawn of Japanese capitalism. Journal of International Financial Markets, Institutions and Money, 61: 189-212.

Niwa, Hiroshi. (1894). *Kome-Akinai Hikkei Shi- Katsuyoho* (Must-Have for Rice Trading). Matsumotodo: Tsu.

Niwa, Yutaka. (1915). *Kabushiki Soba Monogatari* (The Story of the Stock Market). Dobunkan: Tokyo.

Noda, Masaho. (1980). *Nippon Shoken Shijo Seiritsu-Shi* (History of the Establishment of the Japanese Securities Market: Railroads and Corporation Finance in the Meiji Era). Yuhikaku: Tokyo.

Nonaka, Makoto. (1887). *Shogyo Yosho* (Commercial Essentials). Jitsuyosha: Tokyo.

North, Douglass. C. (1990). Institutions, Institutional Change and Economic Performance. Cambridge University Press: Cambridge.

North, Douglass. C. (2005). Understanding the Process of Economic Change. Princeton University Press: Princeton.

Ono, Kazuichiro. (2000). *Kindai Nihon Heisei to Higashi-Ajia Ginkaken* (Modern Japanese Monetary System and East-Asia Silver Coinage Area). Minerva Shobo: Kyoto.

Pierson, Paul (2000): Increasing Returns, Path Dependence, and the Study of Politics. American Political Science Review, 94: 251- 267.

Senda, Yasumasa. (2018). *Meiji 150 nen Shoken Shijo Tanjo Monogatari: Meiji no Shin-Keizaijintachi* (Meiji 150 Years, the Story of the Birth of the Security Market: New Business Persons in the Meiji Era). Shoken Rebyu (Securities Review, Japan Securities Research Institute), 58(5): 1-48.

Shikano, Yoshiaki. (2023). *Boeki Shushi, Yogin Soba to Kinginka no Ryushutsu: Kin-hon'i-sei kara "Shihei Sen'yo no Sei" heno Hen'yo* (How Did Japanese Trade Deficits Affect the Japanese Silver Exchange Rate and Monetary System Established in 1871?). Keizaigaku Ronso (Doshisha University), 74 (4): 367-413.

Shimamoto, Tokuichi. (1961). Securities Theory Course 6: Securities Trading Practices. Diamond-Sha: Tokyo.

Streeck, Wolfgang and Kathleen Thelen. (2005). Introduction: Institutional Change in Advanced Political Economies, in : Wolfgang Streeck and Kathleen Thelen (eds.): Beyond Continuity: Institutional Change in Advanced Political Economies. Oxford University Press: Oxford, 3-39.

Takahashi, Shuetsu. (2018). *Bakumatsu no Kinka Ryushutsu to Yokohama Yogin Soba* (Gold Coin Outflow at the End of the Edo Period and the Yokohama *Yogin* Market). Nihon Hyoronsha: Tokyo.

Teranishi, Juro. (1982). *Nihon Keizai no Hatten to Kin'yu* (Japanese Economic Development and Financial System). Iwanami Shoten: Tokyo.

Takatsuki, Yasuo. (2022). The Dojima Rice Exchange -From Rice Trading to Index Futures Trading in Edo-Period Japan-. (Translated by Louisa Rubinfien). Japan Publishing Industry Foundation for Culture.

Thelen, Kathleen. (2003). How Institutions Evolve. Insights from Comparative Historical Analyses, in: James Mahoney and Dietrich Rueschemeyer (eds.): Comparative Historical Analyses in the Social Sciences, Cambridge University Press: Cambridge, 208-240.

Tokyo Koto Shogyo Gakko Chosabu. (1914). *Yokohama Kaiko Toji no Boeki Jotai narabini Yogin Soba Torihiki no Enkaku* (The State of Trade at the Time of the Opening of the Port of Yokohama and the History of *Yogin* Market Transactions). Tokyo Shogyo Gakko Chosabu (The Research Club of Tokyo Higher Commercial School).

Tokyo Stock Exchange. (1928). *Tokyo Kabushiki Torihikijo Gojunen'shi* (Fifty Year History of the Tokyo Stock Exchange).

Tokyo Stock Exchange. (1933). *Tokyo Kabushiki Torihikijo Gojunen'shi Dai Ni Kan* (Fifty Year History of the Tokyo Stock Exchange, Vol.2).

Tokyo Stock Exchange. (1938). *Tokyo Kabushiki Torihikijo Gojunen'shi Dai San Kan* (Fifty Year History of the Tokyo Stock Exchange, Vol.3).

Tosho Saitorikaiin Kyokai. (1975). *Saitorishi* (History of Brokerage). Toyo Keizai Shimposha: Tokyo.

Yamaguchi, Shigeru. (1957). *Kokusai Kin'yu* (International Monetary Economics).

Shunjusha: Tokyo.

Yamamoto, Yuzo. (1994). *Ryo kara Yen e: Bakumatsu Meiji Zenki Kahei Mondai Kenkyu* (from Ryo to Yen: Research on Monetary Issues at the End of the Edo period and the Beginning of the Meiji Period). Minerva Shobo: Kyoto.

Yokohama City. (1963). The History of Yokohama, Vol.3, Part 1.

Yokoyama, Kazuki. (2023). Whispers of Chaos: Intervention on the Mexican Dollar Quotes in Japan, 1869-1885. Discussion Paper in Economics, No.691 (Society of Economics Nagoya City University).

West, Mark D. (2000). Private Ordering at the World's First Futures Exchange. Michigan Law Review, 98(8): 2574-2615.