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The Role of the Merchant Coalition in Pre-modern Japanese Economic Development: An Historical Institutional Analysis

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Abstract

This paper examines the economic role of the merchant coalition (*kabu nakama*) in Japan during the the eighteenth and the first half of the nineteenth century in Japan. During this period public sector enforcement of contracts was imperfect. *Kabu nakama* substituted for the public sector, using a multilateral punishment strategy. When the government (*Bakufu*) prohibited *kabu nakama* in 1841, the growth rate of the real money supply contracted, efficiency of price arbitrage declined, and the inflation rate increased.

Key words: merchant coalition, *kabu nakama*, Japan, institution, multilateral punishment strategy, enforcement

Introduction

This paper examines the economic role of *kabu nakama*, a coalition of merchants or artisans, in Japanese economic development during the eighteenth and the first half of the nineteenth centuries (hereafter, the Edo Era). The analysis is related to three strands of the literature. The first is the methodological literature on institutions in economic history. North and Thomas(1973); North(1990, 1991) have emphasized the role of institutions, especially public institutions for protecting property rights, as a prerequisite for modern economic development). More recently, Greif (1989, 1993) ; Aoki (2001); and Hayami and Aoki (1998) have shown self-enforcing private institutions might substitute for or complement public institutions.

The second strand is the literature on the Japanese economic development. This literature has made clear that Japan had a market economy during the Edo era (Crawcour and Yamamura 1970, Duffy and Yamamura 1971, Crawcour 1974, Smith 1973, Sinbo 1978, Ohkura and Shinbo 1978, Hanley 1983, Yasuba 1987, Sinbo and Saito 1989, Ito 1993, Wakita 1996). According to Iwahashi (1988), numerous institutions supporting economic development existed during the Edo era, including a stable political regime, a land tax system providing peasants with production incentives, the unified weights and measures, among others. However, Iwahashi (1988) does not address the issue of public enforcement of contracts, which is an essential feature of the North's framework. As discussed in Section 2, the public system for contract enforcement was seriously flawed during the Edo period.

The third strand of the literature is that on *kabu nakama*. The classic book on *kabu nakama* by Mataji Miyamoto noted that "the intermediate organizations, such as *kabu nakama*, could exist only on the condition that the state or the public authorities were not well developed … in pre-modern Japan, the statutory commercial law had not yet been legislated and the formal commercial rules did not exist … the commercial customs of *kabu nakama* were the only standards for trade, and not only did the *Bakufu's* court refer to the customs, but also each *kabu nakama* itself resolved commercial conflicts" (Miyamoto 1938, pp.151–152). That is, Miyamoto suggested that private organizations played the role of contract enforcers in a society in which the public system of third party enforcement was imperfect, but he did not develop this insight fully nor did he test it empirically.[1]

In this paper, I examine empirically the contract enforcement function of *kabu nakama*. As discussed later, the *Bakufu* prohibited and dissolved *kabu nakama* in 1842. This historical event can be regarded as a type of "natural experiment" for testing the

role of *kabu nakama*. The paper is organized as follows. In Section 2, we provide an overview of the economic development and the legal system in Edo Era Japan, from which we derive the puzzle mentioned above. In Section 3, we examine the codes of *kabu nakama*, and present the contract enforcement hypothesis of *kabu nakama*. In Section 4, we test the hypothesis. Section 5 concludes the paper.

2. Economic development and legal system in Edo Era: An overview

(1) Development of the market economy

Akashi (1989) measured economic growth in Japan from 1725 to 1856 based on estimates of the real money supply. He concluded that an upward trend in real money emerged after 1790. Assuming a constant velocity, the implication is that economic growth began in Japan just before the turn of the nineteenth century.[2] This timing is important, because it contradicts the prevailing wisdom that economic growth did not really begin until the 1820s (Akashi 1989, pp.47–48). The onset of economic growth in 1790 coincides with the so-called Tanuma Period, when *Roju* (the head of the *Bakufu* bureaucracy) Okitsugu Tanuma implemented a policy promoting *kabu nakama*.

As noted in the Introduction, there is considerable evidence of a market economy in Japan during the Edo era. Commerce was based on credit (Shinbo 1956, pp.116-117; Miyamoto 1961, p.61; Fujita, Miyamoto and Hasegawa 1978, pp.112–113). The significance of credit is illustrated by an example of Hasegawa, a major cotton wholesaler (Kitajima 1962, p.182). Hasegawa stocked cotton clothes from buyers in several cotton weaving areas. For this purpose, Hasegawa sent money to buyers in those areas in advance of delivery. In 1705, the credit given to the buyers was 22% of Hasegawa's total assets.

Iwahashi (1981) and Miyamoto (1988) examined the efficiency of the market mechanism, with a focus on price arbitrage between local rice markets. Miyamoto (1988) calculated correlation coefficients of the growth rates of rice prices in five regions, namely Edo, Osaka, Nagoya, Hiroshima and Aizu, and found that the coefficients increased from 0.57 in the second half of the seventeenth century to 0.72 in the first half of the nineteenth century (Table 1). Miyamoto (1988) also calculated correlation coefficients using the data of twelve local rice markets[3]. While an upward trend of the coefficients was not observed, the coefficients were as large as around 0.7 in the eighteenth and the first half of the nineteenth century.

Ito (1993) and Wakita(1996) tested the efficiency of the rice market using a more sophisticated methodology. The Dojima Rice Exchange in Osaka was one of the earliest

futures markets in the world (Duffie 1989). The exchange was equipped with a system of cash settlement of rice futures as well as a membership system. Rice futures were traded during a certain period. Ito (1993) tested econometrically whether the futures price on the first day of the trading period was an unbiased estimator of the price on the last day of the period, as predicted by the efficient market hypothesis. On the basis of the estimates, Ito rejected the efficient market hypothesis. However, Wakita (1996) retested the hypothesis, splitting the data by season, and showed that the efficient market hypothesis could not be rejected for the spring and autumn markets.

(2) Legal system

Assuming that a market economy existed during the Edo period one might suppose that there was public enforcement of contracts that worked tolerably well. However, this was not the case. Our knowledge of the legal system during the Edo period derives from scholarly work by Ishii (1960), Henderson (1965), Takigawa (1985), and Maki and Fujiwara(1995). As in the modern legal system, law suits were classified into the criminal affairs (*ginmi suji*) and the civil affairs (*deiri suji*).

Civil suits were classified into three subcategories, *honkuji* (main suits), *kanekuji* (money suits) and *nakamagoto* (mutual affairs). *Kanekuji* was a suit concerning credit with interest and credit without collateral. *Nakamagoto* was a suit concerning distribution of profit within a private organization. *Honkuji* was a civil suit other than *kanekuji* and *nakamagoto*. The claims most rigidly protected by the *Bakufu* authorities were the claims concerning *honkuji*, while the other extreme was *nakamagoto*. Regarding *nakamagoto*, the *Bakufu* authorities did not generally accept a suit, on the grounds that it should be resolved within the organization. *Kanekuji* lay in between, and protection of the plaintiff's claims was relatively weak, compared with those concerning *honkuji* (Henderson 1965, pp.106-116; Maki and Fujiwara 1995, pp.241-242).

The weakness of the plaintiff's claims concerning *kanekuji* was reflected in *Aitai Sumashi Rei*, (Mutual Settlement Decree), prescribing that the *Bakufu* authorities would not accept *kanekuji* suits. In Edo City, *Aitai Sumashi Rei* were promulgated in 1622, 1661, 1663, 1682, 1685, 1702, 1719, 1746, 1789, 1797 and 1842, which means that those decrees were not exceptional. Those decrees, except that in 1719, applied to all claims before the promulgation of the decree. The decree of 1719 applied to future claims as well, until it was repealed in 1729 (Henderson 1965, p.107). *Aitai Sumashi Rei* did not deny the claim itself, but it is notable that the Bakufu *authorities* from time to

time suspended enforcement of contracts.

3. Organization and function of *kabu nakama*

K*abu nakama* is defined as "a group composed of members who have *kabu*." *Kabu* means a business license granted by the public authorities. That license and therefore the organization of *kabu nakama* was regional, for example in Edo or in Osaka. In many cases, the grant of *kabu* was based on application by a group of merchants or artisans. Usually *kabu* was embodied in a wooden card, and was an object of inheritance, loan, pawn and trade. If a member of *kabu nakama* intended to sell his *kabu*, he needed the approval of the other members. Each *kabu nakama* had a members' meeting (*yoriai*) as an organization for decision making, and a manager (*gyoji*) as its executive (Miyamoto 1938, chapters 2, 3). The size of the membership differed from *nakama* to *nakama*. *Higaki Kaisen Tsumi Ton'ya Nakama* was a league of major *kabu nakama* in Edo. In 1813 it was composed of 63 *kabu nakama*. The size of these *nakama* varied from 1 to 113, and the average was 31[4].

Kabu nakama emerged in the seventeenth century. In the early seventeenth century, the *Bakufu* prohibited the private collusion of merchants and artisans, following the policy prohibiting coalitions (*za*) by Hideyoshi Toyotomi, who unified the nation for the first time after the *Muromachi Bakufu* lost power in the late fifteenth century. However, the policy changed in the middle of the seventeenth century. As a part of the *Kyoho* Reform in the early eighteenth century, the *Bakufu* adopted a policy promoting *kabu nakama* for the purpose of controlling prices and distribution. Moreover, as mentioned in Section 2, during the Tanuma Period in the 1770s and the 1780s, the *Bakufu* promoted *kabu nakama* still more actively to collect taxes, as well as to expand commerce (Duffy and Yamamura 1971, p.397; Inoue et al. 1988, p.823).

Miyamoto (1938) classified the functions of *kabu nakama* into four categories, namely, monopoly, protection of interest, coordination, and maintenance of reputation. Included in the categories of protection of interest and maintenance of reputation was the function of contract enforcement. For example, "The Code of Salt Wholesale Merchants" (1741) prescribed that "[i]f a broker cheats one of the members of the *kabu nakama* concerning the salt price, all of the *nakama* members should promise to suspend trade with the broker who cheated."

The mode of conduct prescribed in the Code was equivalent to the multilateral punishment strategy (MPS), which Greif (1993) argued described the behavior of Maghribis traders in medieval Mediterranean society. As Greif (1993) showed, under

the MPS, a cheater would lose future profit from trade not only with the cheated merchant but also with all of the other members of the coalition. Therefore, the agent would choose to be honest rather than to cheat for a single gain.

The cases in which *kabu nakama* adopted the MPS regarding commercial trade were not limited to the example of the salt merchants mentioned above. A systematic survey of *kabu nakama* is not available, but Miyamoto (1938) cited many codes. Among these are eleven cases prescribing the MPS concerning commercial trade. As an example of cheating worthy of punishment, nine of the eleven specified the failure to pay for commodities delivered in advance. Other examples include non-payment of commission, failure to deliver a commodity and the provision of a poor quality commodity.

Kabu nakama applied the punishment strategy not only to commodity trade, but also to organizing production, such as the putting-out system. The putting-out system played a major role in the weaving industry during the Edo era (Abe 1988). Landes (1969) asserted that embezzlement of yearn was a frequent problem in weaving.[5] The relationship between a weaver and a subcontractor can be regarded as a typical agency relationship with asymmetric information, and the weaver was always faced with the possibility of embezzlement by the subcontractor. Therefore, without an effective mechanism for overcoming this problem, the putting out system might flounder. During the Edo era the mechanism was provided by *kabu nakama*.

Consider, for example, the case of the silk weaving industry in Kiryu, where production was mainly organized by the putting out system. The silk weaving industry in Kiryu was started in the early eighteenth century. *Kabu nakama* was organized almost at the same time, namely, the Silk Broker *Nakama* in 1713, the Spreader *Nakama* in 1774 and the Weaver *Nakama* in 1797 (The Editorial Committee of the History of Kiryu Weavings 1935, pp.360–361). The Code of the Weaver *Nakama* in 1824 prescribed that "[i]f a spinner or a subcontracting weaver returns products containing less yarns than the weaver supplied, the price of the yarns deficit should be subtracted from the payment to the spinner or the subcontracting weaver. If cheating occurs, the *nakama* member should report it to the *nakama* manager. In this case, all of the *nakama* members should not entrust yarns or weaving machines to the cheater."

Another example comes from Osaka. The code of the Seven *Nakama* of Wool and Cotton prescribed that "The cloth dyeing should be entrusted to the members of a certain dyeing artisan *nakama*. If an artisan cheats one of our members, the Seven *Nakama* should agree not to entrust dyeing to the artisan, and this measure should be written down by each of our members." (Miyamoto 1938, p.200）.

The *kabu nakama* even adopted the MPS to cope with cheating inside the firm. Some weavers in Kiryu directly employed workers in their workshops, besides subcontractors under the putting out system. With respect to these employees, the above mentioned Code in 1824 prescribed that "If a male employee, a female employee, or a temporary worker cheats one of the members, and it cannot be ignored, the cheated member should report it to the *nakama* manager. We should write the cheater's name on the black list, and never employ him or her."

Examples of the MPS concerning employment relationships are also found in the codes of the merchant *nakama.* The Code of the Rice and Exchange *Nakama* in 1751 prescribed that "[i]f a member discharges a servant, a sales clerk or a shop boy because of cheating, he should announce it to the other members. The *nakama* members should not employ the cheater, even if the ex-employer has no objection to do so." Miyamoto (1938) interpreted that this prescription aimed to prevent from draining the confidential code, skill, knowledge and the ex-employer's relationships with customers. This interpretation is reflected in the fact that Miyamoto (1938) classified these cases in the category of coordination rather than protection of interest. It is true that concerning some *kabu nakama* his interpretation is correct, because they prescribed that the other members could employ the dismissed employee, if the ex-employer approved. However, in cases where re-employment was prohibited whether the ex-employer approved or not, like the Rice and Exchange *Nakama* mentioned above, the reason cannot be to avoid leakage of knowledge. It is more appropriately interpreted as the MPS. The MPS is clearly observed in the case of the Code of Domestic Raw Indigo Broker *Nakama*. It prescribed that all the *nakama* members should not hire the ex-employee who cheated, but that if the employee was dismissed peacefully, the members could employ him after inquiries to the ex-employer. Those cases indicate that *kabu nakama* played the role of supporting the employment relationship through the MPS.

How pervasive was the MPS as a punishment strategy? It is difficult to answer this question, because a comprehensive survey of *kabu nakama* codes is not available, but some conjecture is possible. In 1868, just after the Meiji Restoration, the new government dissolved *kabu nakama*. Ten years later, the Osaka Chamber of Commerce tried to promote commercial and industrial associations by developing a model code of associations, which was adopted in 1882. In the model code, the MPS for a cheating employee was included (Miyamoto 1976, pp.815-824). This suggests that the MPS was widely accepted as a governance mechanism at least of the employment relation.

Greif (1993) showed that the MPS was a subgame-perfect equilibrium under

certain conditions. One of the conditions is that the probability that an unemployed honest agent will be rehired is not lower than the probability that an unemployed cheater will be rehired. If this condition holds, under the setting of Greif (1993), the optimal wage, namely the wage for which it is an agent's best response to be honest, is lower for an unemployed honest agent than an unemployed cheater, and hence the members who were not cheated will not hire the cheater. The difference in the optimal wage between an honest agent and a cheater is larger if (1) the difference of the probability of rehire between the two types of agents is larger (2) the probability of an exogenous discharge is lower (3) the outside option of an agent is lower and, (4) the discount factor is larger.

Referring to the Greif model, we can point out that with respect to *kabu nakama*, the number of the players of the game was limited. As mentioned above, the average number of *kabu nakama* members was approximately 31. Second, there were information transmission mechanisms for delivering the information on cheating to all the members of the *nakama*. Many of the *nakama* codes include clauses concerning this issue. The *kabu nakama* members shared the information on cheating by circulating a letter (Indigo Brokers), by registration (Firewood Wholesale Merchants, Wool and Cotton Brokers, Bowl, Basket and Turnery Artisans), and by publication (Firewood Wholesale Merchant). In many cases, the *nakama* managers (*gyoji*) played the role of mediators of information transmission (Wool and Cotton Brokers, Bowl, Basket and Turnery Artisans, Indigo Brokers). These two conditions, arguably, contributed to lower the probability that a cheater would be rehired. Third, most "agents" were engaged in repeated transactions which increased the gains from being honest (Hayashi 1967).

Finally, the outside options of the transaction counterparts were low, because *kabu nakama* had the privilege to monopolize business in a particular area. Because a cheater could find few individuals with whom to trade other than *nakama* members, he should have expected substantial loss of future profit. In this sense, the contract enforcement function of *kabu nakama* was related to the monopoly function, which has received much focus in the historical literature (Miyamoto 1938, Tsuda 1961, and Hayashi 1967).

Why was the MPS selected as the equilibrium in Edo Era Japan, as in the society of Maghribis traders (Greif 1994)? As mentioned above, the origin of *kabu nakama* was *za* in Medieval Japan. *Za* was a group of merchants and artisans, which was affiliated to a powerful aristocrat, temple or shrine (Miyamoto 1938, pp. 3-9; Wakita 1969, p. 253). Arguably, the experience of *za* gave a collectivist focal point. Also, *kabu nakama*

inherited a religious element from *za*. In many cases, members of each *kabu nakama* believed a common religion and they cooperated for the religious festivals, which strengthened the tie of *kabu nakama* (Miyamoto 1938, p.106).

4. Empirical examination of the function of *kabu nakama*: The Tempo Reform as a natural experiment

The *Bakufu*, which promoted *kabu nakama* in the eighteenth century, changed its policy in the 1840s. In the early nineteenth century, the *Bakufu*, whose major revenue source was a tax paid in terms of rice, found itself in financial difficulties. The *Roju* Tadakuni Mizuno started the Tenpo Reform in 1841 to resolve this problem. As a part of the Reform, the *Bakufu* prohibited *kabu nakama*, because it regarded *kabu nakama* as a major cause of the inflation (Duffy and Yamamura 1971, p. 399; Fujita 1989, pp. 146–147). The *Bakufu* not only abolished *kabu* but it also punished those who entered into collusive arrangements like *kabu nakama* (Koda 1928, pp. 360-368). However, the prohibition was subsequently withdrawn in 1851 for the reason explained below (Miyamoto 1938, pp.337–343)[6].

We can test the function of *kabu nakama* by comparing the economy in the period from 1842 to 1851, when *kabu nakama* was prohibited, with the economy before that period. From the hypothesis presented in the previous section that the *kabu nakama* played the role of enforcing contract, we have the implication that the prohibition of *kabu nakama* would cause disruption and contraction of trade.

Miyamoto (1938) argued that as a result of the *kabu nakama* prohibition, production decreased, the distribution system was disrupted, and a credit crunch occurred. The evidence he relied on was a memorandum of the governor of Edo (Edo *Machi Bugyo*) Kagemoto Toyama in 1848. In the memorandum, Toyama wrote that while the *kabu* was abolished, credit became difficult to obtain, prices did not fall, and the people became still more distressed (p.330). In the Edo Era, most of the wholesale transaction was based on credit as mentioned above, and *kabu nakama* governed the transaction with credit (Miyamoto 1938, pp.195-201). That is why a credit crunch occurred after the prohibition[7].

Also, the governor of Osaka (Osaka *Machi Bugyo*) Masayuki Abe wrote “Since *kabu nakama* was prohibited and the people have become able to trade every commodity freely, trade has become disrupted, prices have been unstable, and monitoring has become difficult. Consequently, commodities have become unevenly distributed, local

provinces are faced with inconvenience as to everyday goods [.]" (Kawaura 1959, p.130–131). The withdrawal of the prohibition of *kabu nakama* in 1851 was the result of the *Bakufu's* accepting these opinions.

In 1856, after the withdrawal of the prohibition, the *Bakufu* made bureaucrats (*Shoshiki Gakari Myoshu*)[8] investigate the influence of the prohibition, and found that the distribution system was malfunctioning during the prohibition period (Honjo 1931). In addition, Honjo (1930, pp. 47-48) cited the following petition of the authority in charge of weavers and weaving in Nishijin, the center of traditional silk weaving in Kyoto:

> Nishijin weavings have been the most famous specialty of this region. However, in recent years, not only weavers but also people engaged in the distribution of yarns have been beset by difficulties. Consequently, the traditional discipline has waned … weavers who entered the industry after the prohibition of *kabu nakama* and do not have serious intentions learn dishonest manipulation, which will damage the reputation of the specialty of Nishijin.

This quotation suggests that the prohibition of *kabu nakama* damaged the governance of transactions in the Nishijin area.

Figure 2 shows the sales of the Edo branch of *Echigoya*, a kimono shop managed by Mitsui Family. The sales declined sharply in 1842, just after the prohibition of *kabu nakama*, and stagnated at a low level after that. It is apparent that a structural change took place between 1841 and 1842. However, the sales by a certain enterprise might reflect influences specific to it, and especially in this case there might be a bias that *Echigoya* had enjoyed the privilege of being a member of a *kabu nakama*. In order to avoid these problems, it is desirable to test the hypothesis using sectoral or macro data.

For this purpose, I return to the data on the money supply referred to in Figure 1. Here, as the deflator, I use the average of the price indices in Edo and Osaka, explained below. Figure 3 shows the growth rate of real money supply and the famine index of Akashi (1989). This index classifies the agricultural harvest of each year into five categories, from "famine" (4) to "good harvest" (0), based on Mukoyama (1917) and Society Section of Education Department, Tokyo Prefecture (1975). In a society like Edo Japan that depended heavily on agriculture, agricultural supply shocks could easily exert a substantial influence on the aggregate economy. We use the famine index to control for these supply shocks.

While the average growth rate of the real money supply in the period when *kabu*

nakama was prohibited (1842–1850) was -0.28%, in the nine-year period just before the prohibition (1833–1841), the rate was -0.40% per year. Although the growth rate of real money supply was almost the same, the period before the prohibition includes the two famine while there were no famine years prior to prohibition.

More formally, I regressed the growth rate of real money supply on a dummy variable, which equals to 1 if *kabu nakama* was prohibited in the year, and 0 otherwise (*PROHIB*), a dummy variable which equals to 1 if the famine index was 4 in the year, and 0 otherwise (*FAMINE I*), a time trend (*TIME*), and a constant. The expected sign of the two dummy variables are negative. Table 2 shows the results. Observation years are from 1831 to 1852, just before General Perry came to Japan. The coefficients of *PROHIB* and *FAMINE I* are negative and statistically significant at 5% level. In addition, the absolute value of the coefficient of *PROHIB* is 0.0718, which means that the growth rate of the real money supply was 7.2% lower in the period when *kabu nakama* was prohibited than in the other period. Instead of the famine dummy, we can use famine index directly (*FAMINE II*). While the significance level is slightly lower than 10% (p-value=0.117), the sign of *PROHIB* is still negative and its absolute value is substantial.

The decline of economic performance in the period of *kabu nakama* prohibition is confirmed from another standpoint. As stated in Section 2, price correlations have been used to measure the development of the market economy. Shinbo and Hasegawa (1988, pp. 262-263) pointed out that *kabu nakama* of merchants trading soy sauce from other regions was established in Kyoto in 1780, which formed a distribution system for soy sauce from the other regions and brought about soy sauce production in Tatsuno. This is an example indicating that *kabu nakama* contributed to form a distribution network. If *kabu nakama* supported the distribution network, we expect that the correlations of the prices in different regional market would decline in the period of *kabu nakama* prohibition. Focusing on the price correlations is also useful to discriminate between the contract-enforcement function and the conventional monopoly hypothesis.

Concerning the price correlations, Shinbo (1982, p. 11) pointed out that the trend of the relative price in Osaka, compared with that in Edo, substantially changed around 1840. While Shinbo (1982) used the price index of a five years moving average, it is appropriate to use the original series for the purpose of this paper. A new price index was compiled by the same method using the original sources on which Shinbo (1982) relied, namely Kin'yu Kenkyukai (1937), Mitsui Bunko (1952), and Miyamoto (1963). The commodities included were unpolished rice, polished rice, barley, soybeans, raw

cotton, wax, muscovado, bean paste, soy sauce, and sake. The weight is 0.30 for unpolished rice and 0.07 for the other items. Figure 4 shows the price indices in Edo and Osaka[9]. While the two were very closely correlated until the early 1840s, the correlation subsequently declined. The correlation coefficient was 0.961 in the period from 1833 to 1841, while it was 0.788 in the period from 1842 to 1850.

Focusing on the rice price, we can perform a similar test for many areas including Edo and Osaka. Iwahashi (1981) compiled time series of the rice prices for Osaka, Omi, Banshu, Fukuchiyama, Hiroshima, Bocho, Saga, Kumamoto, Edo, Nagoya, Shinshu, Aizu and Dewa. The series from Osaka to Kumamoto are in terms of silver, while the others are in terms of gold. We converted the series in terms of silver into ones in terms of gold, using the gold price in Osaka available in Shinbo (1978, p.173).

Table 3 shows the correlation matrix of the series for the periods 1833–1841 and 1842–1850. The averages of the correlation coefficients were 0.824 and 0.487 respectively. Comparing each coefficient with its counterpart in the other period, we find that in 70 out of 78 cases, the coefficients decreased in 1842–1850. Concerning 11, 18 and 15 cases out of 70 cases in which the coefficients decreased, the differences are statistically significant at 1%, 5% and 10% levels respectively. Clearly, price arbitrage declined in the period of *kabu nakama* prohibition.

Another test focuses on the inflation rate. The monopoly hypothesis predicts that the inflation rate would decline, while the contract enforcement hypothesis predicts that the inflation rate would rise. The inflation rate was regressed on the growth rate of money (*MONEY*), *PROHIB* and *FAMINE II*（Table4）. Inflation rates were calculated from the price indices in Edo and Osaka as explained above. The years included are from 1831 to 1852. When the average inflation rate in Edo and Osaka is used, the coefficient of *PROHIB* is positive and significant at 10% level, which is consistent with the contract enforcement hypothesis. When just the inflation rate in Edo is used, the coefficient is again positive and significant at 5% level. However, when just the Osaka inflation rate is used, the coefficient is positive but not significant. While Edo was characterized as a center of consumption, Osaka was a center of distribution (Takeuchi 1969, pp.128-129; Shinbo and Hasegawa 1988, pp.230-231). Therefore, while in Edo the disruption of distribution mainly resulted in decline of supply from other areas, in Osaka the disruption brought about decline of supply to other areas as well as decline of supply from other areas.

5.Concluding remarks

Economic growth in Japan started around 1790, before the Meiji Restoration. At the same time, public enforcement of contracts was poorly implemented. In this sense, the pre-modern Japanese economic development provides an interesting counter-example to the view that a public system of such enforcement is a prerequisite for economic development.

Kabu nakama, a coalition of merchants or artisans, played the role of contract enforcement, substituting for the public authority. Many of the codes of *kabu nakama* included articles prescribing that all of the *nakama* members should suspend trade with a person who has cheated one of their own. It implies that *kabu nakam*a adopted a type of Multilateral Punishment Strategy (MPS), similar to that adopted by the coalition of Maghribis traders in medieval Mediterranean society. As Greif(1993) addressed, the MPS of Maghribis traders reduced the incentive for the trade counterpart to cheat, and through it enabled expansion of trade under the condition that third party enforcement by the public authority was insufficient. *Kabu nakama* in Edo Era Japan adopted the MPS not only for ordinary commercial transactions, but also for the putting out system and employment, and thereby, it contributed to organizing production as well as to expanding commerce.

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[1] In the 1960s and early 1970s, research on *kabu nakama* focused on its role as a part of the political regime in the Edo Era (Tsuda 1961; Hayashi 1967; Nakai 1971). In recent years, many researchers have focused on the *kabu nakama* as a social group composing the city community (Yoshida 1985; Imai 1989).

[2] Commercialization and financial development would raise k. So, the real money supply is an index which reflects wider aspects of economic development

[3] Besides the above five regions, Banshu, Fukuchiyama, Bocho, Saga, Kumamoto, Shinshu and Dewa are included.

[4] Calculated from Table 43 of Hayashi(1967)(p.43). One *kabu nakama* whose number of members is not available is excluded from the average.

[5] Embezzling in the putting out system was observed also in early twentieth-century Japan. Abe (1990, pp. 203-204) reports that the subcontracting weavers cheated the entrusting weavers through the embezzling of yarn and default on obligations in Osaka.

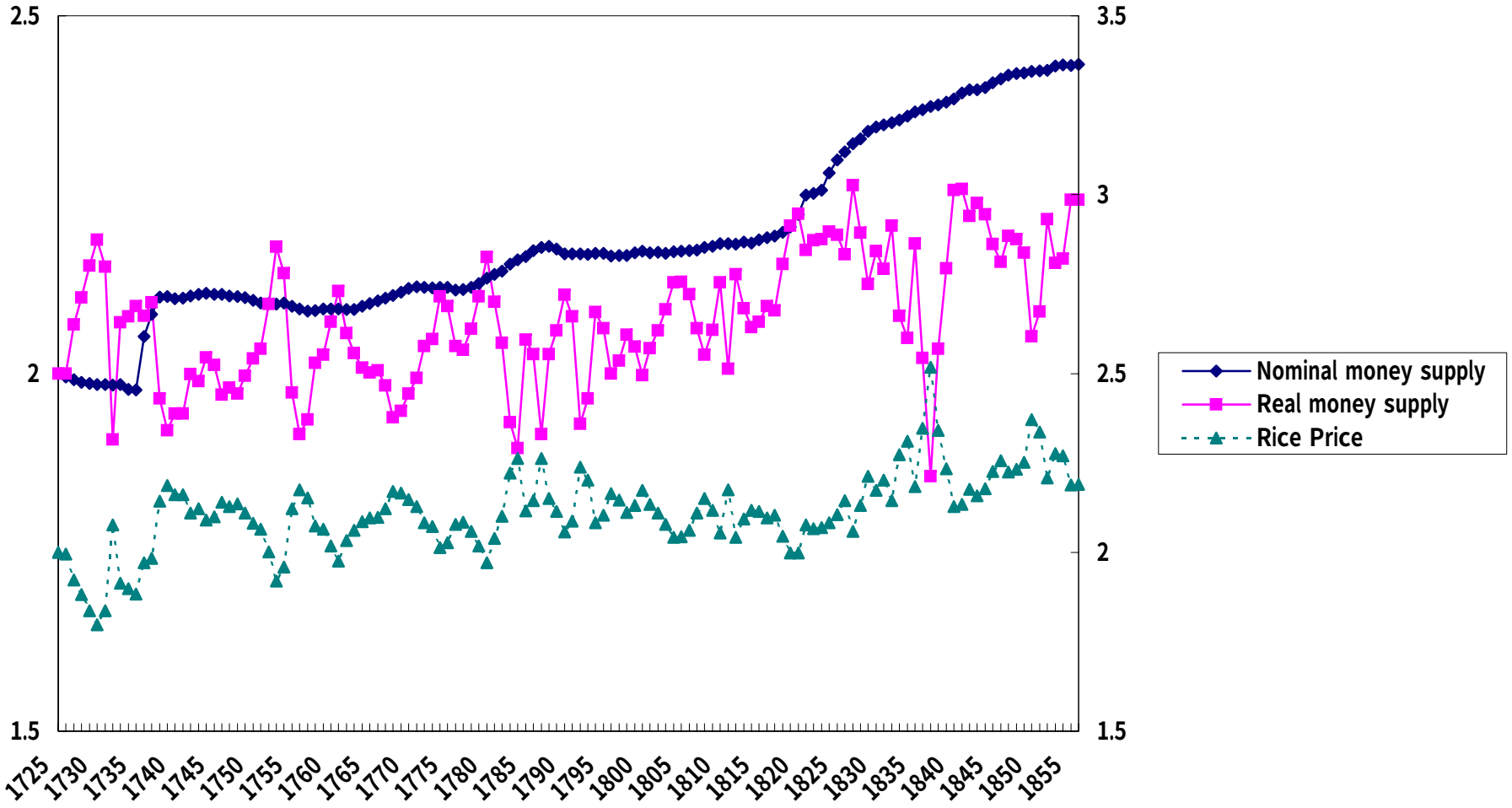
[6] However, this measure did not completely restore the regime before 1841 in the following respects. First, the *Bakufu* did not issue the wooden card that certified the business privilege (*kabu fuda*), and did not collect tax (*myogakin*) from *kabu nakama*. Second, the *Bakufu* instructed *kabu nakama* to approve new memberships on request, and not to restrict their membership without an obvious reason (Miyamoto 1938, pp.324-338).

[7] Another reason of credit crunch relating to *kabu nakama* was, kabu was used as a collateral for credit (Miyamoto 1938, p.318).

[8] The Monitors of the Commodity Prices were appointed from the city managers (*myoshu*) by the *Bakufu* in 1843 (Koda 1928, p.373).

[9] Shinbo (1982) substituted the prices concerning bean paste, soy sauce, sake and polished rice in Kyoto for those in Osaka, and converted them into prices in terms of gold using the gold price in Kyoto, using Miyamoto (1981). We followed Shinbo(1982).

Figure1 Macro-economy of Japan in 18th and 19th Century

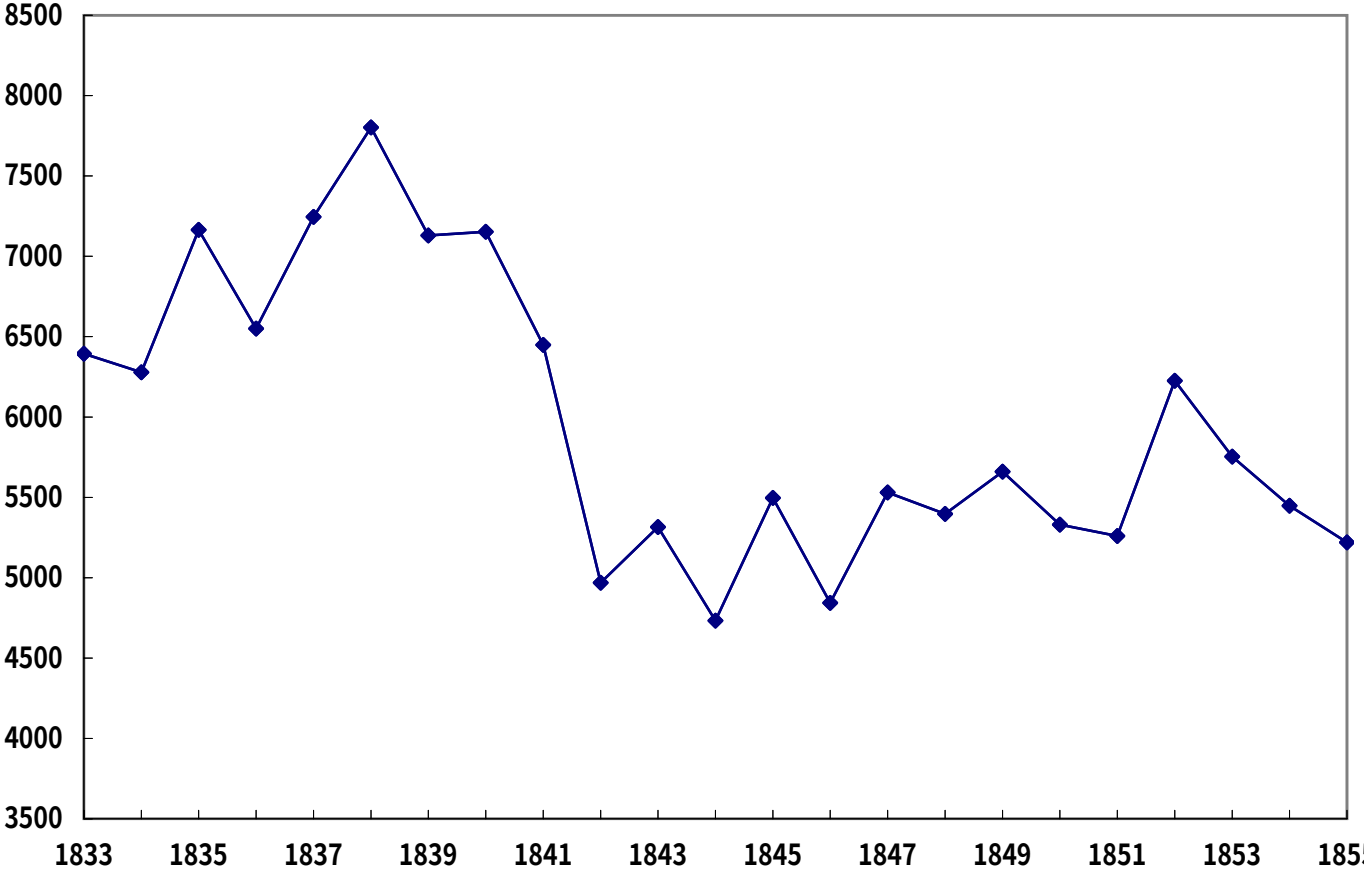


Source: Akashi[1989].

Note: Each series is a logarthm of the index 1725 base.

Kan

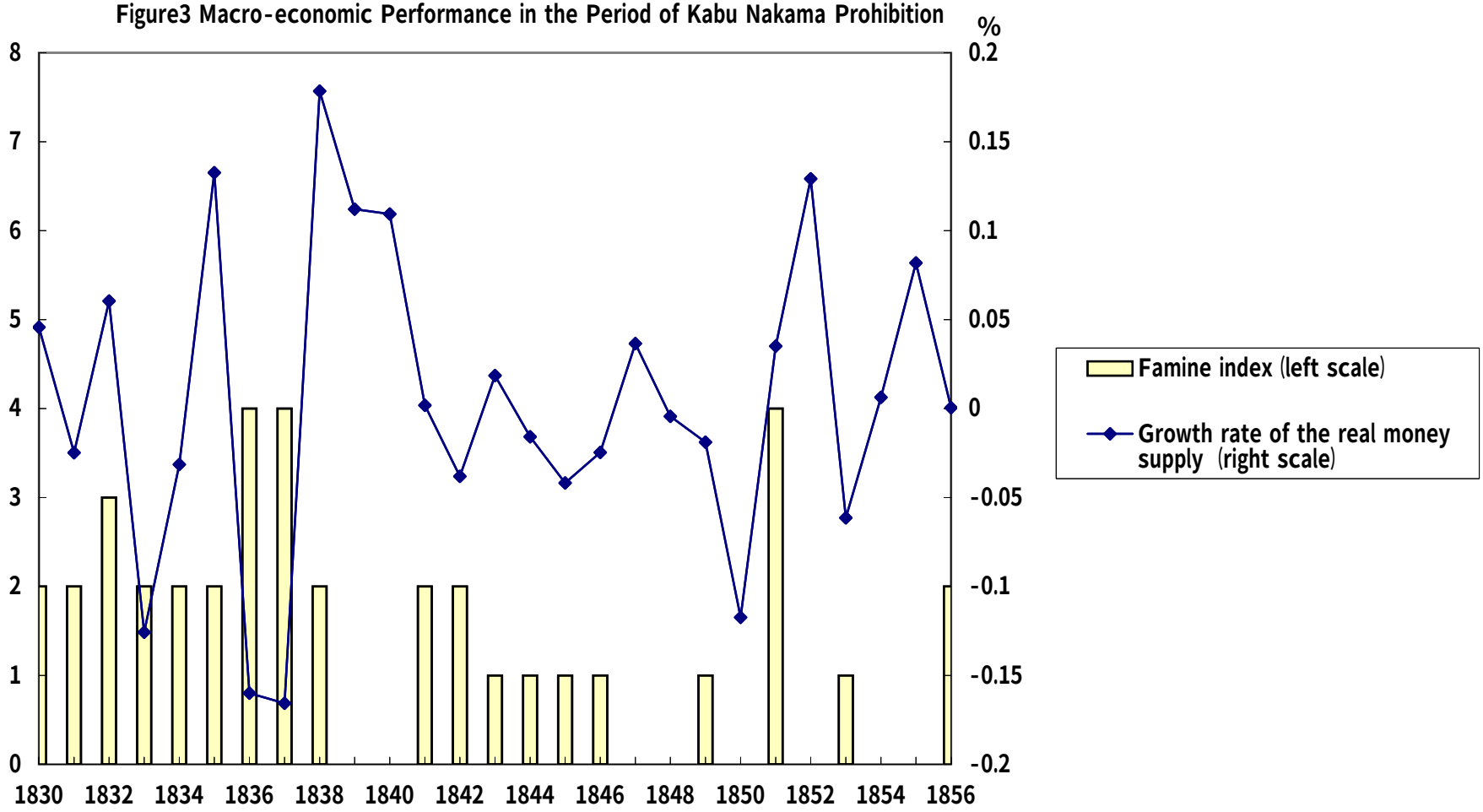
Figure 2 The Sales of Edo Store of Echigoya



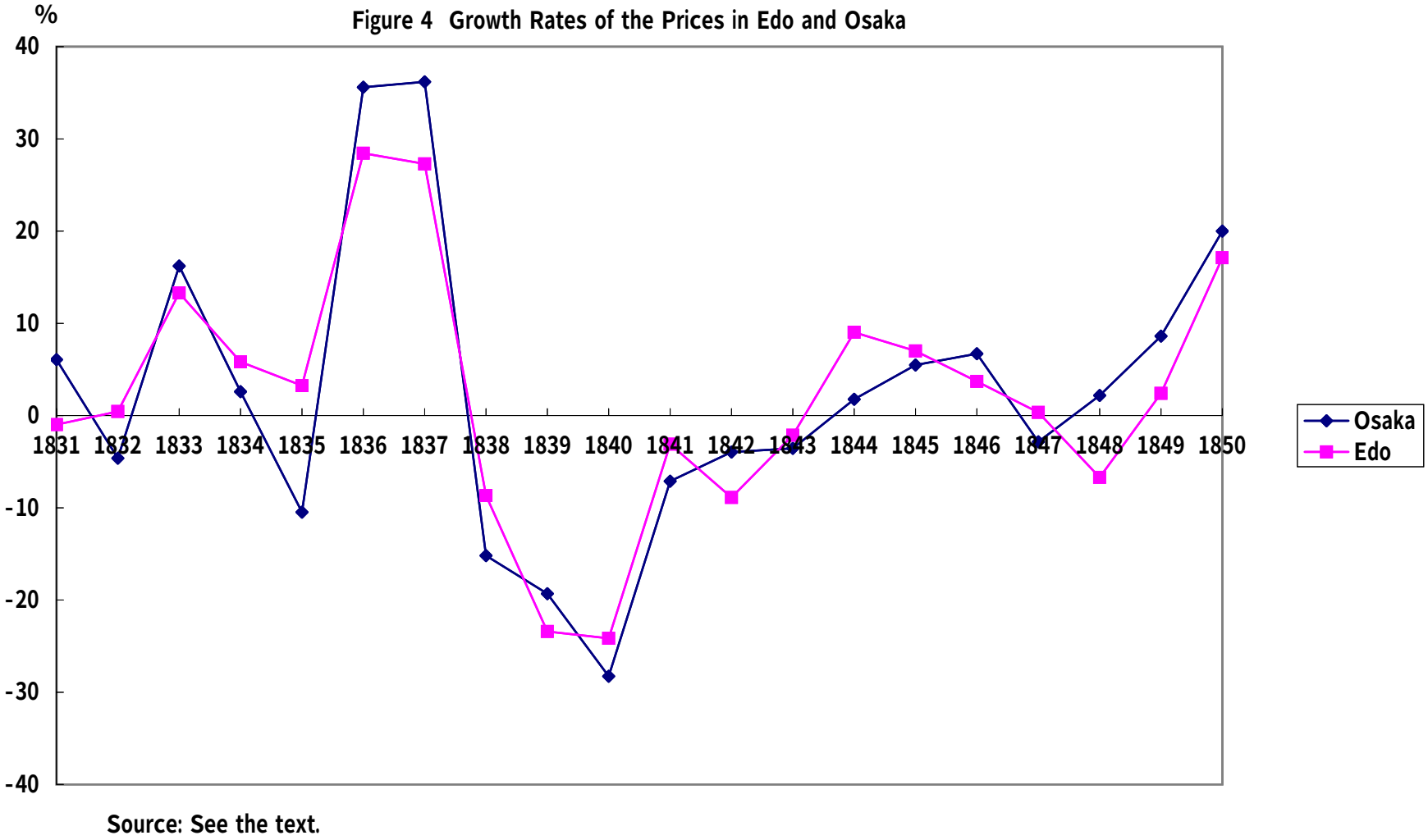
Source:The accounting books of Echigoya (Mokuroku Ginmi Yori) of various years, possesed by the Mitsui

Note: We owe the data to Takayuki Kagawa and Kurato Kumon.

Figure3 Macro-economic Performance in the Period of Kabu Nakama Prohibition



Source: Akashi[1989].



Source: See the text.

Table1 Correlation coefficients of the growth rates of the rice prices across regions

	5 regions	12 regions
1651-1700	0.566	-
1701-1750	0.606	0.715
1751-1800	0.641	0.664
1801-1850	0.720	0.684

Source: Miyamoto[1988] p.398.
Note: See the text.

Table 2 Influence of the Prohibition of Kabu Nakama on Economic Growth

Constant	0.0009	0.0634	0.0656
	(0.0429)	(1.866)	(2.747)
TIME	0.0042	0.0002	
	(2.176)	(0.094)	
PROHIB	-0.0718	-0.0457	-0.0445
	(-2.738)	(-1.644)	(-1.856)
FAMINE I	-0.1309		
	(-4.206)		
FAMINE II		-0.0302	-0.0304
		(-3.088)	(-3.327)
adR2	0.435	0.267	0.305
N	22	22	22

Note: See the text.
t-values in parentheses.

Table 3-A Correlation Matrix of the Growth Rates of the Regional Rice Prices (1833-1841)

	Osaka	Omi	Banshu	Fukuchiyama	Hiroshima	Bocho	Saga	Kumamot	Edo	Nagoya	Shinshu	Aizu	Dewa	Average
Osaka	1.000													0.892
Omi	0.969	1.000												0.853
Banshu	0.937	0.909	1.000											0.877
Fukuchiyama	0.974	0.962	0.979	1.000										0.893
Hiroshima	0.976	0.964	0.956	0.973	1.000									0.894
Bocho	0.969	0.910	0.941	0.966	0.951	1.000								0.888
Saga	0.937	0.895	0.977	0.975	0.944	0.952	1.000							0.873
Kumamoto	0.821	0.776	0.911	0.889	0.876	0.875	0.903	1.000						0.815
Edo	0.892	0.940	0.864	0.916	0.886	0.819	0.830	0.777	1.000					0.797
Nagoya	0.992	0.972	0.912	0.961	0.955	0.941	0.909	0.790	0.924	1.000				0.874
Shinshu	0.341	0.123	0.356	0.280	0.336	0.418	0.379	0.481	0.108	0.302	1.000			0.325
Aozu	0.947	0.889	0.900	0.915	0.962	0.951	0.885	0.860	0.811	0.918	0.511	1.000		0.874
Dewa	0.943	0.928	0.879	0.929	0.952	0.960	0.888	0.824	0.800	0.909	0.268	0.941	1.000	0.852
Average														0.824

Note: See the text.

Table 3-B Correlation Matrix of the Growth Rates of the Regional Rice Prices (1842-1850)

	Osaka	Omi	Banshu	Fukuchiyama	Hiroshima	Bocho	Saga	Kumamot	Edo	Nagoya	Shinshu	Aizu	Dewa	Average
Osaka	1.000													0.642
Omi	0.867	1.000												0.572
Banshu	0.893	0.888	1.000											0.676
Fukuchiyama	0.829	0.807	0.939	1.000										0.659
Hiroshima	0.458	0.259	0.450	0.663	1.000									0.400
Bocho	0.851	0.819	0.924	0.971	0.631	1.000								0.667
Saga	0.603	0.633	0.789	0.912	0.736	0.921	1.000							0.569
Kumamoto	0.702	0.695	0.779	0.832	0.765	0.847	0.874	1.000						0.582
Edo	0.086	-0.212	0.037	-0.014	0.144	-0.044	-0.069	-0.092	1.000					0.001
Nagoya	0.481	0.284	0.274	0.216	0.281	0.316	0.189	0.310	0.646	1.000				0.237
Shinshu	0.624	0.691	0.634	0.430	-0.095	0.532	0.316	0.442	-0.379	0.041	1.000			0.373
Aozu	0.649	0.616	0.763	0.605	0.149	0.567	0.400	0.449	-0.088	-0.100	0.750	1.000		0.468
Dewa	0.656	0.518	0.735	0.719	0.359	0.673	0.524	0.385	-0.003	-0.090	0.494	0.852	1.000	0.485
Average														0.487

Note: See the text.

Table 4 Influence of the Prohibition of Kabu Nakama on Inflation Rates

	Average of Edo and Osaka	Edo	Osaka
Constant	-0.1294	-0.1530	-0.1070
	(-1.879)	(-2.036)	(-1.542)
MONEY	-1.9670	-3.0540	-0.9640
	(-0.361)	(-0.514)	(-0.176)
PROHIB	0.1059	0.1339	0.0794
	(1.872)	(2.167)	(1.396)
FAMINE II	0.0709	0.0819	0.0605
	(3.296)	(3.485)	(2.799)
adR2	0.277	0.188	0.314
N	22	22	22

Note: See the text.
t-values in parentheses.