A Comparative Study of New Developments of the Industrial System Based on Industry–Bank Relationships in Japan and Germany after World War II

Toshio Yamazaki

ABSTRACT

This paper discusses the development of a new system of oligopolistic industrial concentration based on industry–bank relationships after World War II. Industry–bank relationships are important issues related to cooperative inter-firm relationships, the system of corporate governance, corporate development, and Japanese and German capitalism’s accumulation structures. In Japan, industry–bank relationships were restructured through the dissolution of the zaibatsu and the formation of large corporate groups that included a wide array of industries. In Germany, industry–bank relationships developed through various mechanisms such as banks’ credit and securities businesses, the shareholdings and deposited stock system, the assignment of directors from banks to corporations, and the advisory board system. First, this paper examines the postwar industrial system based on industry–bank relationships in Japan. Second, it analyzes new developments in Germany’s industrial systems based on industry–bank relationships. Drawing on these discussions, this chapter discusses the Japanese and German characteristics and the significances of their industrial systems based on industry–bank relationships.

Keywords: Corporate governance • Industrial concentration • Industry–bank relationship • Inter-firm relationship • Large corporate system • Universal banking system

RESEARCH TOPICS

This paper examines industry-bank relationships as a problem that was deeply related with that of postwar Japanese and German systems of industrial concentration and business management. The system of industrial concentration based on inter-firm relationships is deeply related with business management and economic concentration. The cooperative mechanisms for corporations are the most characteristic manifestation of large business systems, particularly in relation to ties between industries and banks. Such systems of industrial concentration were the cornerstone of Japanese and German capitalism’s accumulation structures. However, while there were general tendencies between the main countries, original developments in each nation are also evident. This holds true for both Japan and Germany. This holds true for both Japan and Germany.

Big business systems, particularly in relation to ties between industries and banks were the cornerstone of Japanese and German capitalism’s accumulation structure and were important processes in postwar German corporate development. In both Japan and Germany, industry–bank relationships were found before the war and emerged in the postwar era as a new development in the industrial system; they served as a cooperative system between industries and banks as well as among corporations themselves. Industrial systems based on industry–bank relationships secured autonomy through coordination among banks and between industries and banks, and the inclusion of bank representatives on corporate supervisory boards or board of directors. This type of industrial system brought about Japanese-style and German-style system of corporate governance.
In Japan, under the industrial groups that were formed after the dissolution of the zaibatsu, close combinations between industrial enterprises and banks were established and strengthened, with the core banks serving as the main banks of each group. In addition, the banks established a close relationship with industrial enterprises within the industrial groups by coordinating interlocking stockholdings, assigning directors, establishing presidents’ clubs, and utilizing financial business.

In Germany, industry-bank relationships developed through various mechanisms such as banks’ credit and securities businesses, the shareholdings and deposited stock system, assignment of directors from banks to corporations, and the advisory board system. German characteristics of industrial concentration, which were based on prewar industry--bank relationships, included new developments in the industrial system that coordinated interests and shared information between industry and banks and between corporations. Such systems that were based on collaborative inter-firm relationships not only demonstrated collaborative capitalism with regulative functions and a new approach toward monopolies and industrial concentration, which supported the system of large corporate groups, but also formed mechanisms for governance.

Many studies approach this theme from the perspective of economic and business histories, business management studies. However, most of them analyze such research problems only in Japan or Germany. There are also limited studies that consider the industrial systems based on industry--bank relationships in both Japan and Germany from the perspective of the international comparison. In general, in books that are edited by one or more individuals, various authors individually analyze Japanese or German conditions in separate chapters. However, it is important to compare and contrast the unique Japanese and German factors, as well as demonstrate their changes of systems of industrial concentration from a unified perspective. In addition, these studies do not always identify strategic functions that industry system based on industry-bank relationships has for business management (for these studies see books and articles cited in this paper).

Therefore, this paper discusses the restructuring of corporate group systems and the new developments in industrial systems and describe the characteristics and significance of the new industrial concentration system in postwar Japan and Germany from the perspective of the international comparison. “Industry” here refers not only to the manufacturing industry but, in a broader sense, to non-financial industries, including distribution and service industries. The industrial system based on industry--bank relationships was fundamental to the development of financial capital interests, which was based on a market control system for large corporations.

Section 2 and 3 will consider the issues of inter-firm relationships between industries and banks in an “organic” industrial system in Japan and Germany are considered, respectively. Based on these discussions, Japanese and German characteristics of postwar industrial systems based on industry-bank relationships will be examined in Section 4.

**NEW DEVELOPMENT OF AN INDUSTRIAL SYSTEM IN JAPAN BASED ON INDUSTRY--BANK RELATIONSHIPS**

First, the new development of an industrial system in Japan based on industry--bank relationships is discussed. As discussed in Chapter 2, some industrial groups were established after the dissolution of the zaibatsu, the prohibition of holding companies, and the regulation of treasury stock acquisitions. In such corporate groups, when viewed as a whole, both interlocking shareholdings and loans to affiliated companies were carried out in the
convergent form in the same industrial groups. In many cases, these were exclusive for other groups, which helped maintain the identity of the corporate groups (Sakaguchi 1968, p. 82). In both cross-stockholdings and loans to the affiliated companies, the banks in the industrial groups occupied important positions. Despite the dissolution of the zaibatsu, the banks avoided such dismantling. As a result of preserving the resources of the financial institutions, the relationships between banks and industrial enterprises in the zaibatsu continued. This was an important basis for the formation of postwar industrial groups. Although the characteristics of the zaibatsu group were lost, the overall framework of the groups was maintained through various ties such as trade between companies and personnel linkages. As a result, the relationships between banks and enterprises became closer, and the former played a leading role in rebuilding industrial groups (Kudo 1982, pp. 212-213, 223; Miyazaki 1966, pp. 48-49; Nakatani 1984, p. 18; Okumura 1976b, pp. 41, 44; Sakaguchi 1966, p. 129; Сутягинар 1973, p. 142; Fukuda 1985, pp. 131, 133). Moreover, the financing activities conducted by city banks mediated the combining of enterprises during the dissolution of the zaibatsu (Suzuki 1993, p. 57). The banks also helped control certain business activities in the group by assigning directors to the member enterprises.

Thus, this section evaluates the problems of industry–bank relationships in relation to the main banking system, the loans to affiliated companies, the interlocking stockholdings between banks and industrial enterprises, and the assignment of directors to industrial companies. Since Japanese inter-firm relationships have already been discussed in previous chapters as a means of combining enterprises in the industrial groups, the importance of banks in such relationships (as seen in industry–bank relationships) is examined in this section.

**Industry–Bank Relationships in Regard to the Main Banking System and the Loans to Affiliated Companies**

This section analyzes industry–bank relationships with regard to the main banking system and loans to affiliated companies. An important point in distinguishing the zaibatsu and the postwar industrial groups is the change in the roles of financial institutions led by banks. In each zaibatsu group, member enterprises generally conducted self-financing (Uno 1972, pp. 6-7; Miyazaki 1966, p. 235). Although industrial companies under the influence of the zaibatsu deposited funds in the banks, loans made by the banks were avoided as much as possible. In fact, banks rarely provided funds to industrial enterprises and holding companies in the zaibatsu. Conversely, among the postwar industrial groups, borrowing from banks was generally in the form of loans to affiliated companies (Morikawa 1993, pp. 72-72; Shibagaki 1971, p. 21). Whereas short-term loans were the subject of focus in prewar banks of the zaibatsu, long-term loans for equipment investment held significant importance in financing postwar city banks. Meanwhile, in the industrial groups, long-term and continuous relationships were also important. Thus, loans to affiliated companies were developed along with deposits of corporations (Sakamoto 1993, p. 28).

Since banks were not considered to be the objects of dissolution, the financial methods of the banks were maintained even after World War II. On the other hand, corporate financing assumed a structure depending on indirect finance under the finance administration in order to promote bank loans.

Relationships between industrial enterprise and banks were strengthened through loans to affiliated companies, and the system of the bank predominance in the relations between companies and banks advanced rapidly with the overborrowing by banks that depended on the Bank of Japan for financing (Uno 1972, pp. 7, 9).
An important characteristic of Japanese companies’ corporate finances after World War II was the indirect finance method. However, not all enterprises were able to receive financing from financial institutions on the same terms. Meanwhile, the large banks tended to provide funds as a main bank to companies that belonged to the same industrial group (Takamura 1977, p. 65). Although banks that formed the core of industrial groups developed loans to affiliated companies for not only enterprises within the group but also those outside of the group (Okumura 1976, p.122), affiliated banks within the group in which city banks served as the core guaranteed a stable securing of funds through the preferential allotment of capital to companies within the group. The main banking system involved banks and enterprises becoming accustomed to the reciprocal trade of financing and deposits. At its core was the system of loans to affiliated companies. Under such a system, the growth of banks within the group promoted the growth of enterprises in the same group and vice versa (Sakamoto 1996, pp. 199-200; Sakamoto 1981, pp. 55-56). Moreover, the intensive lending competition between city banks was developed under a method of funding adopted by enterprises that greatly depended on the indirect finance method. The majority of the loans made by city banks were allocated for financing to big businesses, and the concentrated finance to the affiliated firms was performed in such a way that loans to the affiliated companies expanded at a remarkable rate (Miyazaki 1966, pp. 46-47).

Whereas city banks built the close positive relationships of main trading with a few specific corporate groups, there were negative outcomes when they only financed limited capital for many corporate groups that were the main customers of other banks (Washio 1968a, p. 113). The system of loans to affiliated companies limited or excluded the competition and fluid relation among city banks when dealing with large enterprises as the borrower under such exclusive and close relations between big banks and big companies within the group (Washio 1964, p. 118). In addition, since many big businesses formed large corporate groups wherein they held subsidiary companies and affiliated firms as the top of the pyramid, the phenomenon in which city banks became the main banks for large companies meant that they became the main banks for the entire pyramid of large corporate groups (Washio 1968b, pp. 101, 103).

In general, interlocking stockholdings supported loans to affiliated companies. Mutual trade was developed and reinforced through such cross-shareholdings. Meanwhile, the main banks reduced their financing to enterprises outside of the groups and refocused their efforts by providing financing to enterprises within the groups, which greatly helped the latter (Okumura 1975a, p. 172; Okumura 1975b, pp. 327-328; Okumura 1976, p. 123). The primary objective of main banks was to “grasp exclusive financial ties between the major city banks and large enterprises” (Suzuki 2008, pp. 55-56). Overall, main banks’ ratio of shareholdings was high in the companies wherein the financing ratio of the banks in the group was also high (Kobayash 1976, p. 107). In this way, dependence of large companies on banks did not exist as mutual relations between the big businesses and the representative banks but under the special affiliation system that was typically found in industrial groups (Futatsugi 1975, p. 29). This reveals an important Japanese characteristic of industry–bank relationships.

The financing relations that large banks (particularly city banks) within industrial groups formed with the companies in the same group were developed in many industries. This is another important Japanese characteristic of industry–bank relationships. In addition, affiliated financing was not a system that merely gathered corporate groups that had a common main bank in a mechanical manner. The industrial arrangement of many enterprises in industrial groups reflected the financing strategies of city banks (Suzuki 1993, pp. 90-91). Competition among city banks over the affiliation with companies also aimed at securing a system of financial circulation within groups and improving financing efficiency through
industrial linkages (Sakamoto 1980, p. 52). The condition that supported the system in which payment settlements were concluded within the banks was “the exclusive trading relations between banks and large enterprises that showed one-set-like industrial placement” (Suzuki 1993, p. 15). Meanwhile, affiliated financing was an aspect that embodied such relations (Suzuki 1998, p. 23). Banks also pursued strategies that supported companies wherein the banks became the main banks of each group in order to adapt to any change in the industrial structure, as seen in the increasing proportion of the heavy and chemical industries in the entire industry (Okazaki 1992, p. 317). In addition, as considered in Chapter 2, loans to affiliated companies were supported by the system of joint loans. Thus, a remarkable characteristic of the main banks’ relationships in these two types of loans is evident (Suzuki 1993, p.134; Suzuki 2008, p. 56).

Overall, industrial groups comprised large banks that were designated as the main banks for each group. These banks flexibly and resiliently supplied the payments and settlements required for credit creation. These banks adopted the keiretsu financing system and capital procurement methods because Japanese corporations generally used indirect financing in the postwar era. These banks also advised large corporations on issues such as external financing (Suzuki 1993, p. 140). Keiretsu financing was, from the perspective of the six industrial groups’ main banks, a method of distributing risk and avoiding an extreme concentration of borrowers. Moreover, it enabled the expansion of lending while reducing banks’ screening and monitoring costs (Miyajima 1992b, p. 238).

In addition, the debt guarantees made by banks for the member corporations in the same industrial groups were through the substantial loans to the affiliated companies. During periods of high economic growth, banks in the same industrial groups, particularly the city banks that belonged to presidents’ clubs, supported the funding of group companies by bearing their last credit risks in the form of debt guarantees (Okazaki 1999, preface, pp. ii, 234-235, 319-322).

Although the main banking system played a significant role in periods of high economic growth, the ratio of the banks borrowing in companies decreased rapidly at the industrial-group level after the latter half of the 1970s. Meanwhile, the rate and role of financing through the capital market in corporate finance increased. As a result, not only did the dependence on main banks declined but the dependence of banks on the industrial groups decreased. Thus, companies generally avoided banks and banks generally avoided industrial groups (Suzuki 1985, pp. 86, 88-89, 102), which affected the industry–bank financial relationships.

In the Mitsubishi Group, the independent ratios of member companies of the industrial groups (listed companies in the first section of the stock exchange) in 1955, 1960, 1965, 1970, 1975, 1980, 1985, and 1990 (for 1965, the figure is for the first half; for 1970 and 1975, the figures are for September; for 1980, 1985, and 1990, the figures are for March) were 19.95%, 20.94%, 18.15%, 27.31%, 26.95, 24.0%, 23.44%, and 20.15%, respectively. For the same years, the relevant numerical values in the Sumitomo Group were 21.3%, 18.16%, 17.8%, 28.12%, 25.22%, 23.29%, 22.28%, and 14.11%, respectively, and those for Mitsui Group were 20.6%, 16.16%, 14.31%, 23.32%, 20.43%, 17.04%, 16.01%, and 15.63%, respectively. Likewise, for the same years, the relevant figures in the Fuji (Fuyo) Group were 25.7%, 22.34%, 20.57%, 27.03%, 25.99%, 22.18%, 19.73%, and 18.93%, respectively, and those for the Sanwa Group were 24.8%, 22.99%, 19.23%, 21.96%, 21.82%, 20.6%, 18.31%, and 18.39%, respectively. Again, for the same years, the relevant numerical values for the Daiichi Kango Ginko Group (for 1965 and 1970, the Daiichi Ginko Group) were 20.4%, 15.36%, 13.85%, 12.92%, 18.02%,
15.25%, 14.82%, and 15.83%, respectively; those for the six industrial groups in average were 22.05%, 19.33%, 17.32%, 23.44%, 23.07%, 20.39%, 19.1%, and 17.17%, respectively; those for the three old zaibatsu groups in average were 22.05%, 19.33%, 17.32%, 23.44%, 23.07%, 20.39%, 19.1%, and 17.17%, respectively; those for the three non-zaibatsu groups were 23.63%, 20.23%, 17.88%, 20.64%, 21.94%, 19.34%, 17.62%, and 17.72%, respectively (Shadan hoin keizai chosa kyokai 1961, p. 24; Shadan hoin keizai chosa kyokai 1968, p. 3; Shadan hoin keizai chosa kyokai 1978, p. 10; Shadan hoin keizai chosa kyokai 1983, the general condition, p. 8; Shadan hoinkeizai chosa kyokai 1990, the general condition, p. 2; Shadan hoin keizia chosa kyokai 1993, p. 3).

Regarding the financing ratios of the financing provided by city banks in industrial groups to member enterprises of the presidents’ clubs, these values for the Mitsubishi Group in 1974, 1984, and 1994 were 13.66%, 11.71%, and 9.93%, respectively. For the same years, the relevant numerical values in the Sumitomo Group were 13.66%, 14.11%, and 11.4%, respectively; those for the Mitsui Group were 11.49%, 9.31%, and 9.33%, respectively; those for the Fuji (Fuyo) Group were 13.19%, 9.94%, and 8.43%, respectively; those for the Sanwa Group 13.65%, 11.7%, and 10.16%, respectively; and those for the Daiichi Kango Ginko Group were 11.42%, 10.09%, and 10.38%, respectively. Meanwhile, in the same years, the financing ratios of the financing to group companies (except members of the presidents’ clubs) for the Mitsubishi Group were 24.27%, 22.9%, and 29.08%, respectively; those for the Sumitomo Group were 18.1%, 22.92%, and 24.98%, respectively; those for the Mitsui Group were 14.81%, 21.88%, and 23.51%, respectively; those for the Fuji group were 17.79%, 21.71%, and 22.77%, respectively; those for the Sanwa Group were 26.82%, 28.45%, and 21.56%, respectively; and those for the Daiichi Kango Ginko Group were 44.56%, 51.91%, and 44.45%, respectively.

Furthermore, in the same years (i.e., 1974, 1984, and 1994), the financing ratios of the financing provided by trust banks to member firms of the presidents’ clubs for the Mitsubishi Group were 10.46%, 7.64%, and 6.2%, respectively; those for the Sumitomo Group were 12.61%, 9.8%, and 6.43%, respectively; those for the Mitsui Group were 7.17%, 6.61%, and 6.62%, respectively; those for the Fuji Group were 8.2%, 5.88%, and 4.91%, respectively; and those for the Sanwa Group were 6.51%, 5.43%, and 4.44%, respectively. For the same years, the financing ratios of the financing by trust banks to member enterprises (except for members of the presidents’ clubs) for the Mitsubishi Group were 14.18%, 12.67%, and 7.78%, respectively; those for the Sumitomo Group were 15.6%, 14.54%, and 11.25%, respectively; those for the Mitsui Group were 16.42%, 12.52%, and 10.37%, respectively; those for the Fuji Group were 16.73%, 12.7%, and 12.01%, respectively; and those for the Sanwa Group were 12.1%, 6.68%, and 10.77%, respectively (Tokyo daigaku shakaikagaku kenkyusho 2000, pp. 90-91).

**Industry–Bank Relationships Based on Interlocking Stockholdings**

The close relationships between industrial enterprises and banks were established through interlocking stockholdings as well as financing relations. In these relationships, the stockholding relations in the industrial groups were particularly important. Moreover, interlocking shareholdings were seen conspicuously within industrial groups. In such groups, financial institutions in the same group became the main shareholders of the major industrial companies in the groups and other industrial enterprises of the group complemented such interlocking stockholdings. Cross-stockholdings were strengthened by reinforcing mutual connections in a way that the industrial companies and other financial institutions in the groups became the stockholders for the main financial institutions (Fujii 1979, p. 68; Futatsugi 1975, p. 27). Overall, the interlocking shareholdings that characterized inter-firm relations in
Japan were those among corporations. The cross-stockholdings between banks and industrial enterprises played a central role in the interlocking shareholdings. In addition, cross-shareholdings also existed between financial institutions (Matsumura 2001, p. 69). The relations in which bank became the axis of interlocking stockholdings of companies in the same group came into existence after World War II. The shareholdings of member companies by industrial enterprise that had pushed ahead the rebuilding advanced afterwards and a model of the cross stockholding was completed in around 1955 (Suzuki 1993, p.43). Interlocking stockholdings in the decade after 1955 promoted capital increase by payment of the company in the group smoothly and played the role of the finance to promote more borrowing from the bank (Masaki 1985, p.92). The shareholdings by bank aimed at strengthening the loan to affiliated companies and the affiliation of enterprise. Therefore, it was heterogeneous with the pure investment based on the judgement of the investment value (Sakano 1967, p.227). There was a clear positive relation between stockholding and financing in each bank which belonged to the industrial group. Increase of stockholdings by corporations that advanced in the latter half of the 1960s was based on the intention to secure the stable shareholder of the company which issued stocks and to maintain and expand the trade relationship of the financial institution (Okazaki 1992, pp.312, 320; Kobayashi 1976, p.107). In this period, the stockholding rate by bank showed tendency to increase while the financing ratio to member companies in the industrial group tended to fall. The interlocking stockholding between group enterprises had a more important significance than the preferential loan by bank as means of strengthening unity (Kobayashi 1977, pp.123-124, 127).

The high ratio of stockholdings held by financial institutions in the industrial groups reflected the versatile linkages of trade in the groups (Kudo 1982, p. 235). The roles that city banks assumed as the core of industrial groups widely differed between the loans to affiliated companies and the interlocking shareholdings. In addition, the contributions of the banks were not necessarily large in the cross-shareholdings (Kikkawa 1996, p. 187). However, the universality of the banking transactions was the basis of the cross-shareholdings (Suzuki 1998, pp. 106, 108-109, 112). Interlocking stockholdings between industrial enterprises in the groups made the financial power of the financial institutions the starting point (Futatsugi 1975, p. 29). Even in the interlocking stockholdings between industrial firms, the close financing relationships between the banks and the industrial enterprises formed the basis of the cross-stockholdings. Therefore, the roles that large banks played in the cross-shareholdings were significant. Furthermore, in regard to the ownership structure and the execution of voting rights, since Japanese banks are not universal banks, they were unable to execute voting rights by using the deposited stocks, as seen in Germany. However, combining the cross-stockholdings within industrial groups played an important role in securing management autonomy by creating stable shareholders.

In 1953, 1958, 1963, 1968, 1974, 1984, and 1994, the shareholding ratios provided to member companies of the presidents’ clubs by city banks belonging to same group for the Mitsubishi Group were 1.89%, 2.48%, 2.9%, 3.3%, 4.6%, 4.02%, and 3.78%, respectively; those for the Sumitomo Group were 1.82%, 3.7%, 5.22%, 4.69%, 4.81%, 3.69%, and 3.52%, respectively; those for the Mitsui Group were 0.88%, 1.31%, 2.49%, 2.48%, 3.25%, 3.56%, and 3.44%, respectively; those for the Fuji (Fuyo) Group were 1.13%, 2.56%, 3.99%, 4.19%, 4.57%, 3.99%, and 3.5%, respectively; those for the Sanwa Group were 1.08%, 2.48%, 2.55%, 4.29%, 4.15%, 3.93%, and 3.5%, respectively; and those for the Daiichi Kangyo Ginko Group (for 1953, 1958,
1963, and 1968, the Daiichi Ginko Group) were 0.33%, 2.1%, 2.19%, 3.93%, 4.19%, 4.09%, and 3.18%, respectively. In the same years, the stockholding ratios provided by city banks to companies within the groups (except for member companies of the presidents’ clubs) for Mitsubishi Group were 0.58%, 1.43%, 2.25%, 3.35%, 5.29%, 5.2%, and 4.33%, respectively; those for the Sumitomo Group were 1.42%, 2.74%, 2.96%, 4.01%, 4.12%, 4.15%, and 4.03%, respectively; those for the Mitsui Group were 1.02%, 1.48%, 1.97%, 2.37%, 3.9%, 3.59%, and 3.84%, respectively; those for the Fuji Group were 0.98%, 2.5%, 2.98%, 4.3%, 5.6%, 4.99%, and 4.46%; those for the Sanwa Group were 1.77%, 2.71%, 4.16%, 4.61%, 6.9%, 6.52%, and 6.24%, respectively; and those for the Daiichi Kango Ginko Group (for 1953, 1958, 1963, and 1968, the Daiich Ginko Group) were 0.55%, 1.58%, 1.97%, 3.47%, 5%, 4.82%, and 4.02%, respectively.

In the same years (i.e., 1953, 1958, 1963, 1968, 1974, 1984, and 1994), the stockholding ratios provided by trust banks to member companies of the presidents’ clubs in the same group for the Mitsubishi Group were 2.56%, 3.69%, 4.23%, 1.18%, 2.51%, 2.51%, and 4.27%, respectively; those for the Sumitomo Group were 3.59%, 3.09%, 5.64%, 2.79%, 2.76%, 3.36%, and 4.88%, respectively; those for the Mitsui Group were 0.55%, 0.81%, 1.26%, 1.43%, 2.36%, 2.09%, and 3.48%, respectively; those for the Fuji Group were 0.04%, 0.05%, 0.58%, 1.23%, 1.31%, 1.66%, and 2.76%; and those for the Sanwa Group were 0%, 0%, 2.63%, 0.97%, 0.74%, 1.19%, and 2.49%, respectively. However, for the Daiichi Kango Ginko Group (the Daich Ginko Group), the numerical values were 0% in all the years. In the same years, the shareholding ratios provided by trust banks to enterprises in the same group (except for the member companies of the presidents’ clubs) for the Mitsubishi Group were 3.4%, 3.05%, 3.59%, 1.01%, 2.72%, 3.28%, and 3.9%, respectively; those for the Sumitomo Group were 1.47%, 1.29%, 3.93%, 0.87%, 2.12%, 2.27%, and 3.51%, respectively; those for the Mitsui Group were 1.42%, 1.17%, 1.27%, 0.6%, 3.15%, 2.87%, and 3.23%, respectively; those for the Fuji Group were 0.03%, 0.02%, 0.14%, 0.68%, 2.82%, 3.47%, and 4.28%, respectively; and those for the Sanwa Group were 0%, 0%, 3.69%, 0.5%, 1.66%, 2.6%, and 4.3%, respectively. However, for the Daiichi Kango Ginko Group (the Daich Ginko Group), all of the figures were 0%, except for 0.03% in 1958 (Tokyo daigaku shakaikagaku kenkyusho 1999, pp. 74-81).

Industry–Bank Relationships Based on the Assignment of Directors

Another means of forming relationships between industrial enterprises and banks was the assignment of directors. After World War II, as parent companies of the zaibatsu dissolved, such assignments to other enterprises held a significant meaning in industrial groups that were rebuilt after the implementation of the dissolution policy. Since personnel from banks were assigned to leading posts in each member company, the personnel linkages between banks and industrial enterprises rapidly developed. This also meant that banks (to some extent) took control of the industrial groups’ duties (Гутигина 1973, p. 153).

The assignment of directors from financial institutions in the groups also increased through stock ownership. Meanwhile, the number of assignment of directors depended on not only the loans to affiliated companies and the quantity of stockholdings but also the strength of relationship among the industrial groups. Unlike the situation in the period before World War II, assigned directors (in many cases) were full-time directors who assumed responsibility of executive duties (Uno 1972, pp. 7, 20; Miyazaki 1966, p. 233). The directors assigned from the banks were also salaried managers who were, in many cases, in charge of accounting. They did not play any role in the control of other companies in the group. Thus, the situation in which the directors were assigned greatly differed from that prior to World War II (Miyazaki 1966, p. 233).
The assignment of directors was not performed without stockholdings and trade relations. The root of the power for groups was based on the relevant relationships between banks and industrial enterprises (Futatsugi 1993, p. 124). In the corporate groups of independent large companies that did not belong to the industrial groups and were organized as organic parent–subsidiary groups, there were many cases wherein directors were assigned from large companies located at the top of the pyramid to subsidiary companies and associated firms. In contrast, in industrial groups, many of the assigned directors were assigned from financial institutions and trading companies (Kobayashi 1980, p. 145). In particular, there were numerous instances of directors being assigned from banks to industrial companies within the group. This was because banks were not only large shareholders of many companies but also, as the main bank, had numerous customers through their loans to affiliated companies (Okumura 1978, p. 101). This trend was deeply related to the main banking system, which aimed at monitoring customers for the preservation of credit as well as accumulation of information on borrowers, rather than influencing their activities (Miyajima 1992, pp. 233-234).

In addition, the higher the stockholding and financing rates were, the greater was the number of directors assigned from banks to companies (Sumiya 1982, p.135). Meanwhile, the differences in the power of the banks that appeared in the capital interlockings through stockholdings and financing activities was reflected through personnel connections (Nakamura 1968, p. 198). However, as pointed out by Hadley, personnel ties between banks and core companies of groups did not always have a high correlation with the most important companies of the groups, bank ownership in the companies, or the scale of borrowing from banks.

Considering the problems of personnel connection arising from the assignment of directors in relation to the organization of top management, the assignment itself by banks in Japan was performed by the board of directors under their one-tier system of management. Whereas trading companies were often tied to many enterprises through the interlocking directorate, financial institutions dispatched numerous directors (Nakata et al 1997, pp. 143, 149, 151, 168).

Next, the conditions of personnel linkages through the assignment of directors from banks are discussed. In 1970, 1975, and 1980, the number directors assigned from the core city banks to member companies in each industrial group (listed corporations in the first section of the stock exchange) for the Mitsubishi Group were 69, 86, and 106, respectively; those for the Sumitomo Group were 41, 65, and 70, respectively; those for the Mitsui Group were 31, 38, and 47, respectively; those for the Fuji (Fuyo) Group were 56, 67, and 91, respectively; those for the Sanwa Group were 33, 45, and 52, respectively; and those for the Daichi Kangyo Ginko Group (for 1970, the Daichi Ginko Group) were 29, 82, and 122, respectively. Meanwhile, in the same years, the number of assigned directors from trust banks to member companies in the same group for the Mitsubishi Group were 15, 21, and 25, respectively; those for the Sumitomo Group were 7, 14, and 19, respectively; those for the Mitsui Group were 8, 10, and 13, respectively; those for the Fuji Group were 1, 2, and 3, respectively; and those for the Sanwa Group were 0, 2, and 1, respectively. Thus, the number of assigned directors from trust banks was remarkably few in comparison with that from city banks (Shadan hojin keizai chosa kyokai 1970, p.8; Shadan hojin keizai chosa kyokai 1975, p. 11; Shadan hojin keizai chosa kyokai 1980, p. 11).

URL: http://dx.doi.org/10.14738/abr.74.6377.
In fiscal years 1977, 1981, 1985, and 1987, the ratios of member companies that were assigned directors from banks within the industrial group to all member companies of the groups for the six industrial groups on average were 55.51%, 58.97%, 58.14%, and 57.79%, respectively; those for the three old zaibatsu-type groups on average were 62.05%, 59.92%, 55.96%, and 55.96%, respectively; and those for the three non-zaibatsu and bank-type groups on average were 48.96%, 58.02%, 60.32%, and 59.61%, respectively. Furthermore, in the same years, the ratios of the number of assigned directors from banks to member companies within the industrial group to the total number of directors in the member companies for the six industrial groups on average were 3.56%, 3.65%, 3.64%, and 3.92%, respectively; those for the three old zaibatsu-type groups on average were 3.95%, 3.6%, 3.97%, and 4.18%, respectively; and those for the three bank-type groups on average were 3.17%, 3.5%, 3.3%, and 3.65%, respectively (Ueno 1989, pp. 49-50).

Although the ratios of the member enterprises that received assigned directors from city banks and trust banks in the same industrial groups to all member enterprises in the group generally declined after fiscal year 1981, the numerical values in fiscal year 1992 was still 41.28%. In addition, the ratio of member companies that received assigned directors from city banks to all member companies was 37.95% in the same year. However, the ratios of member enterprises that received assigned directors from city banks and trust banks in the same industrial groups to all member enterprises in the groups declined to 17.08% in fiscal year 1996. In the Mitsubishi Group, the ratio of member enterprises that were assigned directors from banks of the same groups to all member companies was 39.29% for fiscal year 1996, which was the highest numerical value among the six industrial groups. Meanwhile, the same ratio for the Sumitomo group was 0%. Moreover, the ratio of the number of assigned directors from banks in the groups to the total number of assigned directors for the six industrial groups on average significantly fell from 44% in fiscal year 1992 to 16.3% in fiscal year 1996. Even in the Fuji Group, which had the highest figures in this regard, the rate in fiscal year 1996 was only approximately 30% (Kosei torihiki iinkai jimukyoku 1998, pp. 56-58; Funahashi 1994, pp. 30, 32).

Furthermore, analyzing the role of banks in the coordination within industrial groups, the presidents’ clubs held an important role in maintaining the close industry–bank relationships as well as in assigning directors to member companies from the banks (Kosei torihiki iinkai jimukyoku 1994, p. 13; Ueda 1994, pp. 130-131, 133, 135). Six large industrial groups coordinated among themselves through the Network of Presidents. However, banks did not always have an absolute advantage, even though financial institutions formed the core of the Network of Presidents. (Miyazaki 1966, pp. 225).

Through mechanisms such as the presidents’ clubs, large banks in Japan certainly participated in the exchange of information and the adjustment of interests in the industrial groups. However, other banks occupied core positions in different industrial groups since the banks that belonged to specific industrial groups did not establish close relationships with many enterprises in other industrial or corporate groups. Therefore, it was difficult (and sometimes impossible) for banks in the industrial groups to adjust interests between the groups; this situation significantly differs from the situation in Germany.

**Industry–Bank Relationships and Corporate Governance**

Industry–bank relationships are deeply concerned with the system of corporate governance. Although the function of large banks, as the main banks for industrial companies, conspicuously appeared in the same corporate groups, this also occurred in the companies outside of the groups. In addition to corporate financing, another important function of the
main banking system was corporate governance and monitoring (Aoki and Patrick 1994, p. xxii). However, there was a strong trend of large banks in Japan assuming financing roles in industrial groups. In addition, Japanese banks did not necessarily participate in the corporate governance that exceeded the sphere of the group in order to link their combination relations with numerous corporate groups.

NEW DEVELOPMENT OF INDUSTRIAL SYSTEMS BASED ON INDUSTRY–BANK RELATIONSHIPS IN GERMANY

Next, new development of industrial systems based on Industry–Bank relationships in Germany will be examined. First, Section 3.1 considers industrial system mechanisms based on inter-firm relationships. Next, Section 3.2 analyzes them from the perspective of corporate governance. The significance of the postwar development of industry–bank relationships will be explained in Section 3.3. In addition to the primary focus of this book, which is the period from the 1950s to the 1970s, we will further consider the period that immediately follows as well as more current circumstances.

The supervisory board, which held a central role in the assignment of directors from banks to corporations, appointed and dismissed directors, provided the board of directors with guidance on business management, and functioned beyond deliberation by approving rights in various critical matters. According to Herrhausen (1973), supervisory boards at the time were transforming from supervisory to advisory bodies for boards of directors; they exerted necessary control on the decision-making process to proactively avoid erroneous actions or measures (Herrhausen 1973, p. 32). This observation was noted in the 1986 annual report of Deutsche Bank as well (Deutsche Bank 1986, p. 17). Supervisory boards could indirectly influence business management through the appointment and dismissal of directors (Bleicher et al. 1984, pp. 28–29). The supervisory board was also involved in corporate policy decision-making by means of deliberation (Gutenberg 1970, pp. 3, 5–6). Corporate law regulations allowed for the involvement of the supervisory board in business policy decision-making through the approval of rights by specific board of directors by means of by-laws or supervisory board decisions. In these cases, the supervisory board formed a second decision-making body along with the board of directors (Bleicher et al. 1989, p. 55; Gutenberg 1970, p. 6). For instance, if the supervisory board executed its advisory function and delivered an opinion on the board of directors’ decision making, the chairman of the supervisory board played an important role as corporate policies were collaboratively created (Bohm 1992, p. 206). Although explicit guidance by the supervisory board to the board of directors was forbidden by corporate law, it was regularly observed; in fact, some research notes the significant gap between the law and actual practice (Bleicher et al. 1989, p. 55). Nevertheless, the relationship between the supervisory board and the board of directors assumed diverse forms depending on the company.

Industrial System Mechanisms Based on Industry–Bank Relationships

Banks’ Influence on Corporations through Credit and Securities Businesses

Let us now examine bank credit and securities businesses and the influence of banks on corporations based on these businesses. Jeidels (1905) noted that, in bank and industrial alliances, the formation of regular business relationships that were primarily financial in nature was the most basic type of alliance, and personal links through the assignment of directors to supervisory boards was a method complementing these relationships (Jeidels 1905). Regarding creditor–debtor relationships, a 1979 report by the Gessler Committee, an advisory council to the Ministry of Finance, noted that most large corporations were able to

URL: http://dx.doi.org/10.14738/abr.74.6377.
procure capital outside of bank credit. In addition, the 30 largest corporations receiving credit had a considerable number of creditor–debtor relationships with financial institutions and credit organizations. Thus, we surmise that, apart from crises with debtor corporations, banks could not exert much influence on corporations through the supply of credit and house bank relationships did not exist in large corporations (Vgl. Bundesministerium der Finanzen 1979, pp. 157–158, 160–162). However, Gerhardt (1982) noted that creditor–debtor relationships between banks and their debtors were not sufficiently examined by the Committee (Gerhardt 1982, p. 192). He emphasized that credit-based financial relationships were strongly influencing corporate business policy (Gerhardt 1982, p. 107). In addition, although Eglau (1990) mentioned instances of banks assigning supervisory board members to family-owned private corporations and German subsidiaries of large foreign corporate groups, the positions of supervisory board members usually depended on long-term house bank-like relationships with the corporation (Eglau 1990, pp. 181, 261–263). It was likely that banks’ exercising of management functions was facilitated by its character as a creditor and its supervisory post (Hopt 1979, p. 237). For example, large banks and corporations formed close alliances through the creditor–debtor relationship and proposals presented at annual meetings were generally coordinated in advance (Aizawa 1994, p. 117).

Regarding securities business in financial institutions, the Gessler Committee reported concentration in only few large banks and ties between large corporations and banks, with securities business functioning as intermediaries. From the period of the 1950s to the 1970s, specifically 1966–1975, top ten financial institutions accounted for 44.7% of financial institutions participating in the Consortium for Issuance of Securities; domestic issuers of stocks, convertible bonds, and option bonds totaled 58.3% and foreign issuers totaled 70%. Among the 71 publicly traded companies, the three large banks—Deutsche Bank, Dresdner Bank, and Commerz Bank—accounted for more than 98.6% of issuances among all banks. These three banks accounted for a high percentage of consortium leaders and co-managers at 81.7% and 80%, respectively (Bundesministerium der Finanzen 1979, pp. 452, 457). Edwards and Fischer (1994) revealed that the leaders of securities issuance syndicates were normally corporate house banks of joint stock companies, namely the three abovementioned banks (Edwards and Fischer 1994, pp. 215–221).

Because the securities business grew in scale, house bank functions in the creditor–debtor relationship and the security issue business became an important pillar of the industry–bank relationship. For example, Deutsche Bank had considerable power in both corporate finance and the overall economy because it offered payment of copious accounts, working capital, and fixed investment capital and made possible the underwriting of corporate capital increases and bond issues as a universal bank (Aizawa 1994, p. 4).

Regarding industry–bank relationships, in addition to the functions of the house bank in the security issue business and the intelligence that banks obtained by acting as intermediaries in the credit business, banks also exerted influence by exercising voting rights through bank-owned and deposited stocks; this laid the foundation for close ties. Thus, it is critical to comprehensively examine the interplay between the credit and securities businesses.

**Banks’ Influence on Industry through Shareholdings and the Deposited Stock System**

Let us now examine banks’ influence on industries in relation to bank shareholdings and the deposited stock system. According to the 1976/1977 report by the Monopoly Committee, the provision of essential competitive information to corporations by financial institutions, which owned stocks in those corporations, and the voting rights through proprietary ownership stocks or deposited stocks that were supplementary thereof, enabled banks to exert direct and
indirect influence on the business policies of non-bank corporations (Monopolkommission 1978, p. 338, Tz.604). Such stock deposits in banks and banks’ proxies exercising the voting rights were a long-standing practice in Germany (Vgl. Schaad 1972, pp. 14–16), and were legalized by the 1937 Corporations Law (Lindhardt 1958, pp. 169, 171; Gottschalk 1990, p. 11; Schaad 1972, p. 17).

However, before World War II, a portion of shares deposited in banks was not exercised in annual meetings and large private shareholders often exercised their own shares (Kuhlmann 1949, p. 489). The exercising of voting rights as an industrial system based on industry–bank relationships and banks’ assignment of members to supervisory boards were not significant until after World War II.

Regarding the banks’ influence on corporations, the impact of banks exercising voting rights through the deposited stock system was more important than the banks’ shareholding itself. However, even in this case, the influence from deposited stock voting rights was more often dependent on the shareholder ownership structure of these corporations, and this was most likely for publicly traded corporations with scattered holdings and no control over shareholders (Hein and Floter 1975, p. 352; Kustler et al. 2006, p. 78).

Shares of individually or family owned corporations that were dispersed among small individual shareholders were sold through banks, which had cooperative relationships with the share issuing companies; often the voting rights associated with those shares were entrusted to the banks due to the friendly relationships with the issuing companies. The cooperative relationships between the banks and corporations were based on the latter’s direction. Such reciprocal relationships could also be observed in corporations with widely distributed shares. In contrast, among management-controlled corporations with widely distributed shares, the board of directors had a commanding position over the supervisory board, particularly in the top-level decision making and selection of supervisory board members from banks during the annual meeting; there were instances where the banks cooperatively exercised voting rights with the management (Sakuma 2003, pp. 69–70, 75).

Regarding the exercise of voting rights including bank deposited stocks, the total value of deposited stocks for instance increased from DM 28.9 billion at the end of 1970 to DM 36.5 billion by the end of 1975. At the end of the 1970, 73.7% of those stocks were deposited in credit banks, and by the end of 1975, the number declined to 71.3%, which was nonetheless a high rate (Hansen 1977, pp. 161–162). According to a report by the Monopoly Committee, in terms of revenue, of the top 100 companies 56 corporations had 5% or more of their voting rights held by banks in the mid-1970s. Of those, 18 corporations had 75% of their voting rights held by banks, 12 between 50% and 75%, 11 between 25% and 50%, and 15 between 5% and 25% (Monopolkommission 1978, p. 296). In addition, examining the ratio of banks’ voting rights in representative corporations effective 1975, we see that AEG had 89.29%, Hoechst 88.62%, BASF 87.15%, Siemens 81.02%, and Bayer 79.09%, all rather high figures. August Thyssen held a relatively low rate at 45.28%. However, the proportion of owner-held stock voting rights held by banks in these corporations was not greater than 1% (Vgl. Monopolkommission 1978, p. 560), whereas banks exercising voting rights through the deposited stocks system were significant.

According to a survey by Gottschalk on the 32 of the 100 largest corporations with widespread shareholding or bank-owned stocks at 50% or more, in terms of added value in 1984, the percentage of voting rights for all banks in 1986 (or for a portion of the corporations in 1987)
was on average 82.67%. For 22 of those corporations, banks held voting rights greater than the 75%, required to make decisions on critical issues such as amending by-laws. Of the 32 corporations, the top three banks on average held 45.44% of the exercisable voting rights and over 50% in 15 corporations (Vgl. Gottschalk 1988, pp. 297–299). A 1992 survey by Baums and Fraune, which analyzed in terms of added value 24 of the largest 100 public corporations that had a majority of widespread shareholding, showed that the percentage of voting rights held by banks at these companies’ annual meetings was on average 84.09% and those through the deposited stocks system was 60.95%. In addition, there were 11 corporations with greater than 75% of voting rights through deposited stocks alone, 18 corporations with banks holding 75% of their voting rights, and 17 corporations at more than 90% (Vgl. Baums and Fraune 1995, pp. 98, 103). A 1994 research by Edwards and Fischer also showed that German banks, in particular the top three banks, had a great deal of control over voting rights in corporations, and this control was primarily through proxy voting rights through the deposited stocks system (Edwards and Fischer 1994, p. 226).

**Assignment of Directors from Banks to Corporations**

The impact of exercising voting rights based on the deposited stocks system and bank shareholding was further realized though the assignment of directors from banks. The most secure foundation for banks to exert influence was built through personal ties with corporations, the assignment of supervisory board members that acted as information conduits, selection of directors, and the involvement in business policies. Thus, close ties between non-bank corporations and banks were the most important factor in generating the power held by banks (Volkmann and Kronenberg 1994, p. 481). The influence of two particular factors, capital holding and voting rights through the deposited stocks system that were executed by supervisory board members, began to be felt, and these positions became a mechanism for the transfer of this power (Vgl. Bohm 1992, p. 222). Therefore, next this point is considered.

**Information Sharing System and Banks’ Assignment of Directors**

First, this Section examines information sharing systems enabled by the assignment of directors from banks to corporations. By integrating finance-based information with that obtained from the assigned supervisory board members, it became possible for banks to fill an advisory and leadership capacity in these corporations and obtain information valuable to external borrowers. By obtaining information on borrowers, corporate sales, and financial statuses of supplies of credit, banks could gather substantial inside information on multiple corporations; it enabled them to act as storehouses of information and information conduits (Uetake 1997, p. 104). Specialized financial information and experience and guidance necessary to help the board of directors avoid mistakes were important factors in strengthening the role and significance of supervisory board member positions (Vgl. Deutsche Bank 1986, p. 17). Regarding corporations being assigned supervisory board members from banks, the preferential status of easier access to good information sources helped them form closer relationships (Eglau 1990, p. 192).

From a corporation's internal functional perspective, banks sharing information, particularly know-how, often acted as a type of corporate consultant. On the other hand, for external functioning, this system of information sharing among corporations, with bank representatives on the supervisory board acting as intermediaries, spread further contingent on the likelihood of contact between corporations and the supervisory board, that is, mainly through bank-assigned supervisory board member (Hopt 1979, pp. 235–238).
The assignment of supervisory board members was also important for coordination among various departments, and the most decisive point for the overall system (Hopt 1979, p. 238). Banks were familiar with issues within industries and provided advice and guidance for decision-making to corporate borrowers across the broad categories of management. For corporations receiving the directors, the assignment of directors from banks was very significant for obtaining opinions on the overall management as well as for procuring capital (Busse 1962, p. 51). Although relatively few banks were represented on the supervisory board, banks performed overall coordination in the best manner possible; however, this allowed the control of large banks' positions through supervisory board representation (Edwards and Fischer 1994, p. 220).

The supervisory board chairman could obtain all sorts of important and internal information through the directors' reports on critical matters (Bundesministerium der Finanzen 1979, p. 116). If a bank representative was assigned to a corporation and later appointed the chairman of the supervisory board, the representative could exert tremendous influence on decision-making in the corporation as opposed to other supervisory board members.

Assignment of Directors and Collaborative Relations Among Banks

Next, the assignment of directors that were based on collaborative relationships among banks will be examined. For example, we see that the top three banks, being the largest shareholders, could exercise voting rights through the deposited stocks system. Furthermore, these banks created collaborative relationships with combined capital complementing the voting rights of banks (Uetake 1997, p. 106). This could be seen in the banks’ annual meetings with banks exercising voting rights. Gottschalk's survey analyzed the total number of shares and deposited stocks owned by investment firms and their parent banks and noted that the percentage of Deutsche Bank's voting rights in 1986 was 47.17% and that for the top three banks was 60.36%. Dresdner Bank's percentages of shares and deposited stocks were 47.08% and 64.04%, respectively, while Commerz Bank's percentages were 34.58% and 60.81%, respectively; these were considerably high rates (Gottschalk 1988, pp. 297–298). In addition, against the total rate of voting rights, the 1992 research by Baums and Fraune revealed that Deutsche Bank's rate of voting rights was 32.07% and that among the top three banks was 49.24%. At Dresdner Bank these percentages were 44.19% and 53.66% and at Commerz Bank they were 18.49% and 48.27% (Vgl. Baums and Fraune 1995, p. 106). Thus, the top three banks held a very high percentage of shares with voting rights, enabling them to collaboratively and effectively control their annual meetings (Bohm 1992, p. 75). H. Pfeiffer observed that the controller of large banks were the large banks themselves (Pfeiffer 1986, p. 475). These collaborative inter-bank relationships laid the foundation for control over large banks and such control influenced and controlled many industrial corporations. In addition to the collaborative relationships that could be found in joint funding between banks (Vgl. Monopolkommission 2003, p. 231), in the exercising of voting rights through the deposited stocks system, banks could transfer voting rights deposited by customers to third parties such as other trusted banks (Yamaguchi 1981, p. 113). Even the transfer of voting rights through the deposited stocks system from smaller banks to large banks strengthened the influence of these collaborative inter-bank relationships on corporations (Busse 1962, p. 65; Bundesministerium der Finanzen 1979, p. 568).

Banks had similar collaborative systems for financing because, in the case of the top three banks’ consortium for issuance of securities, positions, rankings, and allocations were approved in a fixed fashion (Poullain 1979, p. 80). Edwards and Fischer (1994) research noted that for a long period of time the structure of this bank syndicate was extremely stable.
(Edwards and Fischer 1994, p. 215). The top three banks acted collaboratively in the exercise of voting rights at annual meetings, and for the most part, were immovable as supervisory positions in the companies with which they dealt (Vgl. Gottschalk 1988, pp. 299–300). Other banks also tended to collaborate with the top three banks (Gottschalk 1988, p. 300; Bundesministerium der Finanzen 1979, p. 173). Further, voting rights and deposited stocks provided opportunities to constrain and suppress industrial relationships and competition among banks for industry work (Busse 1962, pp. 64, 66). This served an important role even in activities that included the assignment of members to the supervisory board. On this point, the creation of a “strong shareholder” system based on the universal banking system was important for the selection of supervisory board members, who acted as capital-side representatives during their annual meetings (Takahashi 1997, p. 51).

Assigning of supervisory board members occurred in financial institutions as well (Vgl. Bundesministerium der Finanzen 1979, p. 591). The collection and exchange of valuable information regarding borrower corporations or corporations to which supervisory board members had been assigned based on personal ties were extremely critical.

**Assignment of Directors between Banks and Industries**

In examining the assignment of directors between banks and industries, we find that, for example, according to a Monopoly Committee 1976/1977 report, among 51 surveyed corporations, there were 137 instances of supervisory board members being selected from financial institutions and 57 instances of financial institution assignees being chairmen or vice-chairmen. The numbers coming from the top three banks were 76 board members and 35 chairmen or vice-chairmen, accounting for more than 55.5% and 61.4%, respectively, of the total assignees from financial institutions (Monopolkommission 1978, pp. 574–577). For these 51 corporations, if financial institutions had more than 25% of the voting rights, they had without exception secured at least one supervisory position, and if the financial institutions had more than 25% stock holding, they procured chairman or vice-chairman positions on the supervisory board. Among the largest 100 corporations, 31 had financial institution representatives serving as chairmen of the supervisory board, 35 corporations had representatives serving as vice-chairmen. The top three banks had 21 chairmen and 19 vice-chairmen in these corporations (Monopolkommission 1978, pp. 303–304, 307–308). The Gessler Committee reported that, in 74 publicly traded corporations surveyed in 1974 and 1975, 182 had supervisory board members assigned from financial institutions and 37 had chairmen of the supervisory board from financial institutions. The numbers of supervisory board members and chairman assigned from the top three banks were 101 and 25, and respectively, accounted for 55.5% and 67.6% of those assigned from financial institutions. Of these 74 publicly traded corporations, that is, where a bank held at least 25% of the voting rights in a particular corporation, the same banks also held chairmanship of the supervisory board in many instances, and in an overwhelming number of cases, two supervisory positions (Vgl. Bundesministerium der Finanzen 1979, pp. 173–174, 436, 438–439, 443–445).

In subsequent periods as well, the Gottschalk survey noted that in 1986, bankers or former bankers had 69 (27%) of the 256 supervisory positions within 27 non-bank corporations. Of these, 50 positions, or roughly three-fourths, were populated by representatives of the top three banks (Gottschalk 1988, p. 300). According to Ziegler, two if not all three of the top three banks had representatives serving as supervisory board members among larger manufacturers. One decisive factor in the banks having so many representatives was the economic importance of the companies accepting the representatives (Vgl. Ziegler 1984, p. 597). Pfeiffer in 1993 found that the top three banks had assigned 1,053 directors to other corporations’ supervisory boards in the 1990s, with 170 of them acting as supervisory board
(or other management) chairmen, and 92 as vice-chairmen (Vgl. Pfeiffer 1993, pp. 151, 172, 182–183). At least one bank representative served as a supervisory board member in the 261 publicly traded corporations surveyed by Hansen in 1993, and 372 supervisory board members were assigned from financial institutions. Of these, 192 (51.6%) were from the top three banks and 59 companies had bank representatives serving as supervisory board chairmen. The corporations comprising the DAX30 had 73 supervisory positions filled by bank representatives, with 13 corporations having bank directors in the supervisory board chairman position. The top three banks had a total of 56 supervisory positions in the DAX30 corporations, or 76.7% of the total (Hansen 1994a, R.78). In roughly the same time period, one-fourth of the total market value of German stocks was owned by foreigners, with more than one-fifth being owned by private investors. However, the percentage of supervisory board positions in the DAX30 accounted for by these two groups of investors was no greater than roughly 5% each (Hansen 1994b, R.404).

The mutual assignments of directors from industries to banks was also common; Pfeiffer (1993) noted that there were up to 5,286 cases including assignment of (1) directors and supervisory board members from non-bank corporations to the supervisory boards or boards of directors of the top three banks, (2) supervisory board members from the top three banks to the supervisory boards or boards of directors of non-bank corporations (Vgl. Pfeiffer 1993). Further, cases of corporate representatives participating in bank committees and other organizations existed as well. For example, the chairman of the board of chemical giant BASF belonged to a Deutsche Bank committee, and BASF’s supervisory board chairman traditionally belonged to a similar organization at Commerz Bank (Pfeiffer 1989, p. 15). Thus, supervisory board assignments from the top three banks to non-bank corporations and vice versa accounted for many of the personal ties between banks and industries.

**System of Corporate-Bank and Inter-Corporate Information Sharing Through the Advisory Board System**

The banks’ personnel exchange structure for the sharing of information had an important role in complementing industry–bank relationships through the assignment of directors from banks. The advisory board, created for banks’ head offices and for each region, functioned as a focal point of information exchange between corporations and banks as well as among corporations themselves.

Major corporations assigned members to a central advisory board, where industry leaders regularly reported to each other on their markets’ conditions. As they performed their board roles, they received advice and guidance on various business issues (Eglau 1990, pp. 192–193). The central advisory board acted as a coordinating body between banks and industrial corporations and could be seen in Dresdner Bank prior to 1966. These boards were established by banks to maintain the level of personal ties, previously enjoyed in response to the 1965 Corporations Law’s regulation on the number of supervisory board members (Vgl. Pfeiffer 1993, p. 477; Stanzick 1968, p. 72). Region specific advisory boards had existed in Deutsche and Dresdner Banks since before the war and postwar in Commerz Bank. Regional advisory boards included management representatives from various corporate sectors that served large banking customers and their regional organizational units. One reason for the existence of regional advisory boards was that they strengthened relationships among various corporations across business sectors and in each region for matters of business policy (Vgl. Buschgen 1983, pp. 242–243; Koubek 1971, p. 261). Pfeiffer’s (1993) research states that, among many medium-sized businesses, the supervisory board’s functions of regulation, consultation, and guidance were undertaken by the advisory board (Pfeiffer 1993, p. 181;
Commerz Bank 1970, p. 142). Persons appointed by the top three banks to the supervisory or an advisory board were considered “friendly” (Gottschalk 1988, p. 301). For example, it was important for Deutsche Bank’s advisory board to create strong ties with the banks’ customers through its business and propose new operations through those ties (Vgl. Schwarz 2003, p. 32).

In addition, several hundred business associations shared ties with banks through the top three banks’ supervisory board, central advisory board, or regional advisory board members (Vgl. Pfeiffer 1987, pp. 29–31). With these personal organizational ties, close relationships between banks and industries created information conduits, and were not only based on direct relationships between the two groups but also complemented by intermediary relationships of economic associations such as business and industrial associations and industry–bank relationships (Vgl. Koubek 1971, pp. 262–266).

**Corporate Governance and Industry–Bank Relationships**

**Collaborative System of Corporate Governance Based on Industry–Bank Relationships**

The industrial system based on industry–bank relationships created a collaborative system of corporate governance that has German characteristics, a phenomenon we will now examine.

The German segregation of authority into a two-layered system of top management for supervisory boards and boards of directors facilitated debates between those outside the corporation offering much valuable advice and those actually running the business. This dynamic’s ability to expand corporations’ views and clearly delineate responsibility was significant (Winnacker 1972, p. 467). As bank representatives acting as supervisory board members offer guidance on the basis of the banks’ wealth of information and know-how, this German management system demonstrates its importance and effectiveness as an industrial system based on industry–bank relationships. With such decision-making mechanisms, functions to monitor and regulate are exhibited by business functions centered on the board of directors.

The high percentage of voting rights held by banks, including voting rights through deposited stocks, the assignment of supervisory board members, and industry–bank relationships based on personal ties through representatives on advisory boards, enabled defensive mechanism against capital market pressures. Here, we see German characteristics in the corporate governance systems. With the progress of financial globalization since the 1990s, there was pressure on shareholder value-oriented management through investment funds, execution of business strategy, and selection of supervisory board members at annual meetings. Compared with other European countries, the US, and Japan, conditions in this environment reveal that the German industrial system enabled banks to secure management stability not only in corporations in which they held shares but also with borrowers.

However, with greater capital market pressures in today’s financial globalization, this stable system is sometimes rocked to its foundation. Beginning in the 1990s, large banks transited from their traditional lending business toward investment banking, and the assignment of directors from banks to corporations declined. Further, banks began accepting fewer corporation representatives for the positions of a supervisory board chairman (Vgl. Zugehor 2003, pp. 68–70, 92–93, 173). These changes by banks were another step toward globalized capitalism, and banks themselves were regulated by changes in the conditions for capital accumulations. From the perspective of corporate relationships, banks were forced to intensify their relationships based on “selection and concentration” to achieve greater efficiency.
Codetermination and Collaborative Systems of Corporate Governance in Industry–Bank Relationships

It is important to consider the relationship between issues of corporate governance based on close ties between industries and banks and the codetermination system at the supervisory board level.

The authority of the supervisory board chairman was expanded under the 1976 Law on Codetermination. The law granted two votes to the chairman in cases of conflicts between shareholders and labor representatives on the supervisory board. Conditions that were in the interest of the investors were important for coordinating interests with the supervisory board chairman. In addition, the number of labor representatives on the supervisory board being equal to that of shareholder representatives necessitated the formation of groups. Also, the supervisory board chairman held authority that enabled governance of certain types of opinions within the groups (Vgl. Eglau 1990, pp. 178–179). Primarily based on this, when bank representatives served as supervisory board chairmen in corporations, they found it easier to demonstrate the governing and coordinating functions of their role on the basis of abundant data.

With the deployment of the 1976 Law on Codetermination, the supervisory board would regulate its meetings that were occasionally conducted to eliminate controversial issues from discussion; however, some have pointed out that the supervisory board tended to lose its authoritative position in matters of corporate policy being discussed in a critical fashion. Rather than an expansive board, the supervisory board chairman often took on the role of a critical debater for the board of directors (Eglau 1990, pp. 166–167). In these circumstances, when bank representatives took over the position of the supervisory board chairman, it became easy to coordinate group interests based on, both internal and external, critical corporate information, obtained by the supervisory board chairman from banks, which were information sources.

The codetermination system decreases the rate of investors in the supervisory board and provided opportunities for autonomous corporate management. In particular, with the Codetermination Act for the Coal, Iron and Steel Industries and the 1976 Law on Codetermination requiring the proportion of labor representatives to be half of the supervisory board, the number of external members in the board fell. From the latter half of the 1970s, the 1976 Law on Codetermination tended to reduce the number of bank representatives on the supervisory boards representing German corporations (Cable 1985, p. 33). Corporations used this as an opportunity to reduce potential external influence and involvement.

However, the decrease in supervisory positions held by shareholders allowed for conditions of easier fulfillment of banks’ interests, with banks and inter-bank alliances holding a superior position in exercising voting rights through deposited stocks. Further, through collaborations between banks and the corporations to which they assigned directors, the latter had greater decision-making ability, including those regarding the remaining supervisory board members and suppressing outside influences. For these reasons, collaboration with banks took on further significance for corporations.

As mentioned, the codetermination system created conditions for a more strong functioning industrial system based on industry–bank relationships, while suppressing the influence of
external shareholders. For banks, this was a mechanism for regulating their own interests and fulfilling bank interests in corporations to which banks assigned directors.

Under the codetermination system, opportunities for corporations to collaborate with labor representatives on the supervisory board were fortified as a defense mechanism against external pressures, which were heavily oriented toward the pursuit of short-term interests and represented by investment funds in present-day terms. From the objectives of labor, it secured soundness and security in employment and corporate management. This feature further strengthened collaboration between corporations and labor. For capital supervisory board members, there is an industrial system based on industry–bank relationships in the form of collaborative network for broad personal ties. In this type of industrial system collaboration with supervisory board comprising capital members, such as bank representatives, the exercise of a defensive function becomes even stronger.

Thus, preconditions for effective, direct control through the assignment of bank representatives to corporate supervisory boards are met within joint-stock and limited liability companies under the 1976 Law of Codetermination or the Codetermination Act for the Coal, Iron and Steel Industries. The Act requires corporations to have codetermination with equal labor representation. In corporations with this type of codetermination, supervisory positions that banks held as creditors were effective for surveillance and providing approvals required by the management (Wiendieck 1992, p. 172, p. 176).

From the foregoing discussion, we see that Germany developed a system that had functions similar to that of corporate defense, developed to counter external pressures, and contrasted that of interlocking stockholdings, which characterized postwar Japan. This type of corporate system was supported by the industrial and codetermination systems based on industry–bank relationships at the supervisory board level, forming an important characteristic of German corporate governance.

**Significance of New Developments in Industry–Bank Relationships**

Our discussions to this point have examined new developments in postwar industry–bank relationships and the industrial system upon which they were based. We will discuss the types and possible significance of future developments that were different from those in the prewar era.

First, we will establish the development of an industrial and corporate governance system based on banks exercising voting rights through the deposited stock system. The issuance business was prominent in the securities business that was based on the prewar universal banking system. However, in the postwar era, with the expansion of general investments in securities, the position of the securities business in the secondary market also grew. As a result, a system of bank agents exercising voting rights through the deposited stocks system was fully established. This practice built the essential foundation for both capital and personal ties for the postwar development of industrial concentration and the establishment of a uniquely German industrial system, facilitating information sharing between industries and banks and regulating their interests.

Second, we will observe the full-scale development of a network for sharing information between banks and industries and among corporations through the bank's advisory board system and a system for regulating interests through that network. Although there were prewar cases of regional advisory boards, in the postwar period, central advisory boards were established and became the cornerstone of the advisory board system. Through the
combination of central and regional advisory boards, a national and regional system of information sharing between banks and industries and among corporations themselves was established. These systems differed from those based on the assignment of directors and were used for regulating interests between banks and investors and those among corporations.

Third, the weakening influences and pressures from external shareholders, which emerged due to the codetermination system program proposing equal labor representation on the supervisory board, established and strengthened a corporate governance system based on industry–bank relationships; its roles differed from those featured during the prewar era. In addition, the strengthened industry–bank relationships and the industrial system on which they were based revealed the system’s importance.

Examining the significance of new postwar developments in industry–bank relationships and the cooperative characteristics of German capitalism (Chandler 1990), reveals that the strong influence exerted by banks on industries was due to the collaborative relationships between the two groups, rather than the banks’ desire to control the industries. The framework for bank shareholdings, the assignment of supervisory board members according to the exercising of voting rights based on the deposited stocks system, and the advisory board system resulted in information sharing and a support system dependent upon advice from banks and collaborative relationships with industrial corporations. Banks’ involvement in the joint responsibility for industrial policy and several corporate business policies (Busse 1962, p. 61) was an important element supporting the collaborative system, through which banks regulated inter-corporate interests. Directors from banks and insurance firms often played an important role in the formation of personal ties among competing corporations (Vgl. Pfannschmidt 1993, p. 274). Further, the German-style system of corporate governance based on the codetermination system and the inter-corporate collaborations that the system supported complemented this industrial system’s collaborative structure. The industrial system was further complemented by the inter-corporate assignment of directors and interlocking of directorates (Vgl. Schonwitz and Weber 1982; Decher 1990; Pfannschmidt 1993). This postwar German-style industrial system based on industry–bank relationships combined these elements and functioned in a framework that deeply connected each element.

Although major changes can be seen in the 1990s and thereafter, this collaborative structure in the postwar era enabled corporate management to not only plan for business expansion from a long-term perspective but also suppress the influence of external shareholders and the pressures of the capital market. This structure constituted significant German development within the Americanization of business management, as management pursued business expansion with a long-term perspective in line with German and European market structures, which were central to German exports.

**CONCLUDING REMARKS: JAPANESE AND GERMAN CHARACTERISTICS OF INDUSTRIAL SYSTEM BASED ON INDUSTRY–BANK RELATIONSHIPS**

The previous sections examined new developments in the industrial system based on industry–bank relationships in Japan and Germany after World War II. Building on previous discussions, this section considers Japanese and German characteristics of such an industrial system, particularly in relation to the role of banks.

In Japan, six industrial groups were formed as the system of postwar industrial concentration. These industrial groups comprised large companies that were equally connected with one another and enterprises that were concentrated by interlocking stockholdings in the groups.
The large corporate groups that formed in postwar Japan spanned several industries, and financing, interlocking shareholdings, mutual business transactions, and joint investments were internally developed. In addition, banks played significant roles in these activities and occupied core positions in the industrial groups that they belonged to. However, securing stable shareholders and ensuring management autonomy were somewhat dependent on the ownership structure of each company within the group, despite the fact that banks were deeply involved in interlocking stockholdings. In this regard, German banks exerted considerable influences on the industrial enterprises by executing voting rights (through deposited stocks and stockholdings) and establishing more direct relationships, such as participation in the business policy of the industrial firm.

Regarding the instruments for inter-corporate information sharing and coordination of interests, six large corporate groups coordinated among themselves through an organization, the Network of Presidents, with decisions primarily made by those in a certain position, such as presidents of group companies in Japan. Even though financial institutions formed the core of the Network of Presidents, banks did not always an absolute advantage. Moreover, although industrial groups comprising full sets of industries were broadening, from the standpoint of inter-firm information sharing, the Network did not always adopt mechanisms that supported banks–industry relationships, as was the case in Germany. In contrast, the advisory board, created for banks' head offices and for each region, and business and industrial associations functioned as a focal point of information exchange between banks and corporations as well as among corporations themselves in Germany. It had an important role in complementing industry–bank relationships through the assignment of directors from banks. In this regard, the role of Japanese banks greatly differed from that of German banks.

In Japan, banks assumed the core positions in each industrial group and the major banks served as the main banks in the industrial groups to which they belonged. However, large banks that composed industrial groups did not establish combination relations with many corporate groups, including other industrial groups. As a result, Japanese banks were unable to perform functions beyond the sphere of the industrial group to which they belonged, such as information exchanges and the adjustment of interests. Compared with Japanese banks, banks in Germany broadly associated with large corporate groups rather than with a specific corporate group (Maekawa 1997, p. 58). These ties were significant for the mechanisms and functions of information sharing and coordination, particularly in the interest of industrial system-based relationships between industries and banks. Such differences between Japan and Germany were deeply related to the competitive structure and the function of industrial concentration that avoided competition, particularly price competition.

In addition, when considering the system of industrial concentration based on industry–bank relationships in relation to corporate governance, the following points are important. First, regarding the issue of monitoring of companies by banks as an important function in the Japanese main banking system, the rule of industrial enterprises by banks has been relatively weak. Japanese banks are not universal banks and are therefore unable to exert voting rights through deposited stocks, as is seen in Germany. In Japan, in addition to the assignment of directors, interlocking shareholdings within the industrial groups played a significant role in the combination between companies. In contrast, German banks used voting rights (including those through deposited stocks) in order to establish combination relationships across various corporate groups (not limited to a specific corporate group) that were in competition against each other. Therefore, the system of industrial concentration and the roles of banks in Germany were much greater than those in Japan. In addition, the codetermination system under the Codetermination Act in 1976 that was based on a structure comprising an equal
number of labor and capital market members at the supervisory board level weakened the influence of shareholders in capital markets. Moreover, because the system of corporate governance was based on industry–bank coordination, it further strengthened in collaboration with the codetermination system.

Concerning the organization of top management, in Germany, the directors assigned occupied significant positions under the two-tier system, which was composed of supervisory boards and boards of directors. This was related to the circumstance in which supervisory board members are elected in general meetings by the stockholders. In contrast, the Japanese system is a one-tier system, which consists of boards of directors. Therefore, the dispatch of top management members includes assignments to the boards of directors. However, it is also important that whereas financial institutions particularly undertook such assignments, trading companies occupied core positions in the network of interlocking directorate. The latter condition was mainly because of the fact that trading companies in Japan assumed significant roles in the industrial groups.

Moreover, in considering the industrial system based on industry–bank relationships in relation to the structure of the postwar corporate groups (as discussed in Chapter 2), such groups in Germany were not formed under the full-set type of industrial structure. Instead, they were formed under the group structure, which was developed around a single industrial system in order to maintain economic consistency of fundamental functions such as production, sales, and purchase. In this German type of large corporate group, not only the functional benefits based on the division of labor and the specialization among companies in the groups (as seen in the pursuit of “the division of labor complementary to each product”) but also the relations with such complementary, product-based division of labor were established among the corporate groups. Such a system became the basis for avoiding intensive price competition, the emphasizing on strategies for quality competition, and developing management methods to support such a strategy. This greatly differed from the situation in Japan. Furthermore, German banks did not establish fixed relations with specific corporate groups; rather, they widely developed relations of combination with many groups in the competitive market and companies belonging to such groups. This had significance in the adjustment of interests between competing enterprises, which was crucial for the evasion or mitigation of competition. The cooperative characteristic of German capitalism, as seen in the restraint of competition through the complementary division of labor in the product fields between companies or large corporate groups, was supported by the system of industrial concentration based on industry–bank relationships.

References
Baums T (Trans. by Maruyama H) (1994) Doitsu ni okeru koporeto • gabansansu— Seido to saikin no tenkai—. Shoji homu 1363: 70-82

URL: http://dx.doi.org/10.14738/abr.74.6377.

Bundesministerium der Finanzen (ed) (1979) Bericht der Studienkommission. Grundsatzfragen der Kreditwirtschaft (Schriftenreihe des Bundesministeriums der Finanzen, Heft 28). Stöffluss, Frankfurt am Main


Curtis MB (1973) Mitsubishi. Наука, Москва


Kobayashi Y (1976) Kigyo shudan to sangyo soshiki (2). Keizaigaku kenkyu 26 (4): 41-113


Kosei torihiki iinkai jimukyoku (ed) (1994) Saishin rokudai kigyo shudan no jittai: Kosei torihiki iinkai dai gokai chosa hokokusho „Kigyo shudan no jittai ni tsuite”. Toyo keizai shinposha, Tokyo
Matsumura K (1997) Nihonteki keiei zaimu to koporeto · gabanansu. Chuo keizaisha, Tokyo
Miyazaki G (1966) Sengo nihon no keizai kiko. Shin hyoron, Tokyo
Okazaki K (1999) Kigyo shudan to keiretsu yushi—Kodo keizai seichoki no ginko hoshio karite ni kansuru kenkyu—. Bunshindo, Tokyo
Okumura H (1975a) Hojin shihonshugi no kozo—Nihon no kabushiki shoyu—. Nihon hyoronsha, Tokyo
Okumura H (1975b) Nihon no kigyo shudan—Sono kozo to kino—. Kikan chuo koron 51: 314-336
Okumura H (1976) Nihon no rokudai kigyo shudan. Daidamondosha, Tokyo

URL: http://dx.doi.org/10.14738/abr.74.6377.

Poullain L (1979) Tätigkeitsbericht. Seewald, Stuttgart-Degerloch

Sakaguchi A (1966) Mitsubishi. Chuo koronsha, Tokyo


Schaad H-P (1972) Das Depotstimmrecht der Banken nach schweizerischem und deutschem Recht. Schulthess Polygraphischer Verlag, Zurich


Shadan hojin keizai chosa kyokai (1968) Nenpo keiretsu no kenkyu—Dai ichibu kyojo kigyo—, 1968 nen ban. Shadan hojin keizai chosa kyokai, Tokyo


Shadan hojin keizai chosa kyokai (1975) Nenpo keiretsu no kenkyu—Dai ichibu kyojo kigyo—, 1975 nen ban. Shadan hojin keizai chosa kyokai, Tokyo

Shadan hojin keizai chosa kyokai (1978) Nenpo keiretsu no kenkyu—Dai ichibu kyojo kigyo—, 1978 nen ban. Shadan hojin keizai chosa kyokai, Tokyo


Shadan hojin keizai chosa kyokai (1990) Nenpo keiretsu no kenkyu—Dai ichibu kyojo kigyo—, 1990 nen ban. Shadan hojin keizai chosa kyokai, Tokyo


Shibagaki K (1971) “Zaibatsu” kara “kigyo shudan” he—Kinyu shihon no keitai henka to sono igi—. Keizi hyoron 20 (3): 17-28


Suzuki K (1985) Sangyo · kinyu saihenka no kigyo shudan ( II )—70 nendai kohan iko no daikigyo to daiginko no „ketsugo” kankei—. Momoyama gakuin daigaku keizai keiei ronshu 27 (3): 81-105
Suzuki K (1998) Mein banku to kigyo shudan—Sengo nihon no kigyokan shisutem— Mineruva shobo, Kyoto
Suzuki K (2008) Rokudai kigyo shudan no hokai—Saihen sareru daikigyo taisei—Shinnihon shuppansha, Tokyo
Takahashi T (2006) Koporeto · gabanansu no kokusai hikaku: Bei, ei, doku, futsu, nicho no kigyo to keiei. Chuo keizaisha, Tokyo
Uno H (1972) Sengo no kigyo shudan to sono mondaiten. Gakushuin daigaku keizai ronshu 8 (3): 3-30
Washio T (1968a) Toshi ginko ni okeru keiretsu yushi 3 —Bigu bijinesu to ginko—. Ginko kenkyu 443: 110-114
Washio T (1968b) Toshi ginko ni okeru keiretsu yushi 7 —Bigu bijinesu to ginko—. Ginko kenkyu 449: 100-104
Winnacker K (1972) Nie den Mut verlieren. Erinnerungen an Schicksalsjahr der deutschen Chemie. Econ Verlag, Dusseldorf
Yamaguchi H (1981) Nishi doitsu ni okeru ginko to kigyo no kankei—Futatsu no iinkai no chosa to bunseki—. Shoken keizai 135: 103-131

URL: http://dx.doi.org/10.14738/abr.74.6377. 136