

Determinants and Effects of Employing Professional Corporate Executives: A Case of Cotton Spinning Companies in Pre-war Japan

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Abstract

This paper examines how professional corporate executives diffused among cotton spinning companies in prewar Japan, and analyzes the determinants as well as implications of the employment of professional executives. While simple scale variables such as paid-in capital and production did not correlate with employment of professional executives, those variables reflecting complexity of management, such as number of factories and dummy variable indicating integrated production, have positive correlation with it. At the same time, availability of managerial capability among owners negatively correlates with employment of professional executives. Also, we found that employment of professional executives had a positive effect on corporate profitability, after controlling for the endogeneity.

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1.Introduction

One of the phenomena in modern business history which has been attracting the attention of economists, managerial scientists and lawyers, is the emergence and diffusion of corporate executives who are separated from ownership. The seminal work of Berle and Means [1932] stressed that ownership of large companies was substantially dispersed, and that as a result, a major part of corporate decision-making was handled by professional executives separated from ownership.

On the other hand, Chandler[1962, 1977] gave a new interpretation of the role of professional executives from a historical perspective. From the late nineteenth century to the early twentieth century, large corporations combining multiple functions, typically production and distribution, emerged in the U.S. as a result of active horizontal and vertical consolidations aimed at economies of scale and scope. These large corporations integrated the function of resource allocation, which had been mainly handled by the market. To put it differently, Chandler proposed a view that the “visible hand” of corporate executives substituted for the “invisible hand” of the market. This view has had a deep impact not only on research in business and economic history, but also on economic theory (Williamson 1985; Milgrom and Roberts 1992; Lamoreaux, Raff and Temin 2002).

Chandler[1962] described the attributes of the executives of these large companies as follows: “These enterprises, far too large to be managed by small family groups, came quickly to be administered by full-time professional managers” (p.24). Further, with respect to the shareholders of these corporations, “the stockholders, the legal owners, long ago abdicated this function. They had neither time, information, nor (as long as the enterprise was paying dividends) the interest to make the basic policy decisions. What little they did know about their company was told them by the manager, who spent all their working time administering its affairs” (pp.312-3). In other words, according to Chandler, the basic attributes of the executives who emerged to manage these large companies are: 1) they worked full-time for the company, and 2) they were separated from ownership. In short, expansion of the role of corporate executives due to the emergence of large integrated companies generated a new class of corporate executives, namely professional executives.

Chandler’s view has also been influential in research on Japan’s business and economic history, and literature exist on the development of large companies in Japan (Yui and Fruin 1983; Yui 1995; Takeda 1995), and on the emergence and diffusion of corporate executives (Morikawa 1981; Morikawa ed. 1991; Miyamoto and Abe 1999). In particular, Morikawa[1981], which investigated the diffusion of corporate managers

using the data of '*Zenkoku Shogaisha Yakuinroku*' (*Handbook of Corporate Executives*), is both pioneering and still very important. Morikawa found that the proportion of professional executives in the total directors of large Japanese corporations increased from the 1900s to the 1930s, and that most of them had some form of higher education. He accounted for this phenomenon with the hypothesis that their higher capabilities were necessary to cope with an increasingly complex and difficult environment.

Based on these literature, in this paper, we aim to present a historical study that examines two aspects of the Japanese corporate system. First, we explore the determinants of employment of professional executives. In particular, the attributes of companies which employed professional executives are focused on. Through this, we intend to elucidate the roles which were expected of professional executives, and the relationship between the employment of professional executives and the ownership structure. Here, we operationally define a professional corporate executive as an executive who is not one of the ten largest shareholders of the company they work for and who is not an executive of any other corporation. As such, corporate executives comprise the positions of: chairman, president, vice-president, executive director and manager. In Japan, there were and are two types of executive director, the *senmu* director and the *jomu* director, with the former in the more senior position. In order to discriminate between these positions, the terms *senmu* director and *jomu* director are used in this paper. Ordinary directors are excluded from the set of corporate executives because, in many cases, ordinary directors in pre-war Japan were engaged in governing top management, but were not in management itself (Okazaki 1999).

Second, we investigate how employment of professional executives affected corporate performance. It is important to analyze this issue quantitatively because the employment of professional executives could potentially have a negative effect on firm performance, as well as the positive effect of their professional capabilities. As is well-known, separation of ownership and control generates the agency problem between owners and management. Specifically, it is possible that moral hazard by professional executives would occur (Jensen and Meckling 1976; Milgrom and Roberts 1992). Given the potential for positive as well as negative effects, an empirical approach is required to see which of the two effects was dominant.

In addressing these two issues, we use data from the cotton spinning industry. For our purpose, it is essential that data on the attributes of corporate executives as well as data on the attributes of companies are available. The cotton spinning industry satisfies this data availability condition, and also happens to have been one of the major industries in pre-war Japan. The rest of the paper is organized as follows: section 2

describes the data and samples; section 3 overviews the distribution of the attributes of corporate executives and its change over time; section 4 econometrically analyzes the determinants and effects of employing professional executives; and, section 5 concludes the paper.

2. The Data and the Samples

Most of the cotton spinning companies in Japan were organized into an industrial association called the '*Dainihon Menshi Boseki Rengokai*' (Japan Cotton Spinning Association). From 1903, the Association edited a semiannual handbook on the cotton spinning industry, the '*Menshi Boseki Jijo Sankosho*' (*Handbook of the Cotton Spinning Industry*). The handbook contains firm-level data on the real side of corporate activities including production, input of raw materials, production capacity, and number of plants, as well as those on the financial side including capital, debt and profit. The founding year of each company is also available. We use all of the companies whose data are available in the second half-year issues of 1915, 1925 and 1935 as our primary samples. The data of 33, 51 and 59 companies are available for each year, respectively (Table 1). With respect to these primary samples, we collected data not covered in the Handbook from other sources.

First, the lists of corporate executives of each company are taken from the 1916, 1926, and 1936 issues of the '*Kabushiki Nenkan*' (*Yearbook of Corporate Stocks*) by Nomura Shoten¹, a major securities company of the time. With respect to companies whose data on 1925 and 1935 are not available in the *Kabushiki Nenkan*, we complemented the data with the 30th and 40th issues of the '*Ginko Kaisha Yoroku*' (*Directory of Banks and Companies*) by Tokyo Koshinjo, a major credit bureau of the time. With respect to companies whose data on 1915 are not available in the *Kabushiki Nenkan*, data were collected from their original business reports. The library of the Economics Department of University Tokyo has a collection of business reports from a wide range of companies, and the library at Osaka University has an almost complete collection of business reports from cotton spinning companies. These reports were donated by the *Boseki Kyokai*, the association that succeeded the *Dainihon Menshi Boseki Rengokai*.

Second, information on the positions that executives of cotton spinning companies held was collected from the 4th issue of the '*Jinji Koshinroku*' (*Directory of Personal Credit Research*), and the 30th and 40th issues of the *Ginko Kaisha Yoroku*. As the *Ginko Kaisha Yoroku* has a personal index, the data for each person's executive

¹ Nomura Shoten was renamed Osakaya Shoten in 1923.

position was easily compiled (Okazaki, Sawada and Yokoyama 2005). There were many cases where executives of cotton spinning companies held positions as ordinary directors or auditors in other companies, but as this paper focuses on the executive positions defined above, in such cases, it was assumed involvement in those other positions was insignificant.

Third, we collected data for each executive's shareholdings with respect to the company for which they worked. Specifically, we checked whether or not they were one of the ten largest shareholders. Shareholdings data were taken from the 1926 and 1936 issues of the '*Kabushiki Gaisha Nenkan*' (*Yearbook of Joint-stock Companies*) by Toyo Keizai Shinposha, a major publisher specializing in business and commerce, and from the original shareholder lists attached to the business reports discussed above. And finally, from the same data sources, we compiled data for each company's ownership structure, specifically the ownership share of the ten largest shareholders.

Out of the primary sample companies, 33, 51, and 59 companies for 1915, 1925, and 1935, respectively, we have the lists of executives and information on their external executive positions for 23, 48, and 52 of these companies, respectively. They constitute the secondary sample of companies. The reason why the ratio of the secondary sample to the primary sample is low for 1915 is that the coverage ratio of the *Jinji Koshinroku* is low for that year. Finally, for the secondary sample, we have ownership data for 22, 45, and 50 companies for the same years (Table 2). This constitutes the final sample for this paper.

The ratios of the final samples to the primary samples are 66.7%, 88.2% and 84.7% for 1915, 1925 and 1935, respectively. The ratios for 1925 and 1935 are reasonably high, but the ratio for 1915 is lower because of a potential selection bias. A major reason why some executives' information is not available in the *Jinji Koshinroku* may be that they were not well established in business society, and these cases seem to be more frequent for professional executives who were not large investors. We should therefore be mindful of this potential bias in the following analysis.

3.Changes in the Attributes of Corporate Executives

To begin, we examine the distribution of corporate executives' positions (e.g. chairman, president, etc.). Table 2 shows the number of firms per executive position. The position of president existed in 70-80 % of the sample companies for the period 1915 to 1935. The percentage of companies with the position of *senmu* director increased from 31.8% in 1915 to 50.0% in 1935. The diffusion of the *jomu* director position was more rapid. The positions of chairman, vice-president, representative director and

manager were exceptional.

Table 3 shows the number of people in each position. There were 32, 96, and 110 corporate executives in the sample firms in 1915, 1925, and 1935, respectively. This implies that on average there were approximately 1.45, 2.13, and 2.20 executives per firm for these years. In 1915, half of the executives were presidents, with *senmu* directors being the next largest group. In 1925, the numbers of *senmu* and *jomu* directors increased significantly. In particular, the number of *jomu* directors increased sharply. From 1925 to 1935, the trend for an increasing number of *senmu* and *jomu* directors continued. Roughly speaking, top management of Japanese cotton spinning firms in 1935 was composed of one president, one *senmu* director, and one *jomu* director.

Table 4 shows the attributes of these corporate executives. We identified corporate executives who did not hold an executive position in another company, who were not one of the ten largest shareholders of the company for which they worked, and who satisfied both these conditions, namely professional executives. First, it is notable that more than 80% of the companies did not have a professional executive in 1915. Even taking into account the sample bias mentioned in the previous section, this ratio is significantly high. Of the two conditions for professional executives, the ownership condition was the more restrictive. While approximately 70% of the firms had at least one executive who held no executive position in another firm, the percentage of firms which had at least one executive who was not one of the ten largest shareholders, was less than 30%.

In 1925, the percentage of firms which had no professional executives decreased to less than 60%. In other words, more firms came to have executives who did not hold an executive position in another firm and who were not one of the ten largest shareholders. In particular, the percentage of firms which did not have executives who were not one of the ten largest shareholders, decreased to 53.3%. This trend of separation of ownership and control continued, and consequently half the firms employed at least one professional executive by 1935.

Table 5 breaks down the data in Table 4 by firm scale in terms of paid-in capital. We divided the company samples into two groups: the companies whose capital was more than five million yen; and, those whose capital was less than or equal to five million yen. The data for 1915 is not reported because there were only two firms whose capital was more than five million yen. Looking at the data for 1925, we find that the distributions of the executives' attributes were substantially different between the two company groups. With respect to the smaller firm group, the percentage of companies which had no professional executive was as high as 69.7%. However, the same

percentage was only 33.3% for the larger firm group. This suggests that the scale of companies was positively associated with the employment of professional executives.

After 1925, the diffusion of professional executives was saturated with respect to the larger group, but for the smaller firm group, the percentage of companies which did not have a professional manager declined to 55.6% in 1935. At the same time, the distribution of the companies' scales shifted to the right from 1925 to 1935. We consider that the diffusion of professional managers among the smaller companies and the shift of the company scale distribution brought about the change we observed in Table 4.

Next, we look at the diffusion of professional executives by position. Table 6 shows the average number of executives per firm by position and by attribute. Reading this table down the row, we see the composition of executives for each attribute and by position, and reading the table down the columns, we see the composition of executives for each position and by attribute. In 1915, there were on average 0.182 professional executives per firm. It is notable that of these, 0.136 (74.7%) were *senmu* directors and 0.045 (25.3%) were *jomu* directors. In other words, the executive positions into which professional managers were recruited in 1915 were both *senmu* and *jomu* directors. Yui[1979, 1995] indicated that the position of *senmu* director was created in major companies, and competent people were recruited to the position from outside the largest shareholders since the end of nineteenth century, and that the position of *jomu* director had started to diffuse since the First World War. The findings in Table 6 confirm the points of Yui [1979, 1995].

In 1925, the average number of professional executives increased, compared with the average in 1915. The position which contributed the most to this change was the *jomu* director. The share of *jomu* directors within the set of all professional executives was as high as 71.9%. At the same time, looking at the table down the columns, we find that 74.2% of *jomu* directors were professional executives. In other words, while a major share of professional managers were *jomu* directors, a significant fraction of these *jomu* directors were professional executives. In this sense, the position of *jomu* director was key for the diffusion of professional executives in cotton spinning firms. Meanwhile, there emerged cases where professional executives were promoted to the position of president, but these cases were still the exception in 1925.

In 1935, the share of *jomu* directors within the set of all professional executives was still high, but a little lower than in 1925. This is basically due to the fact that there were cases where professional executives were promoted to *senmu* directors and presidents. This implies that the diffusion of professional executives spread from *jomu* directors to more senior executive positions.

4. Determinants and Effects of Employing Professional Executives

In this section, we first investigate what attributes of a company were associated with the employment of professional executives. We use the sample firms of 1925 and 1935 in the previous section, excluding three firms whose production was nil, for a total 92 firm-years worth of observations. Because of the possible sample bias we do not use data from 1915.

Employment of professional executives is measured by the number of professional executives divided by the total number of executives (PROFESSIONAL). As stated in section 1, Chandler [1962] proposed a view that professional executives emerged in U.S. business society in the late nineteenth century because large companies which integrated the function of the market, needed their capabilities to manage internal resource allocation. In order to test this hypothesis we use the following four variables. The first variable is the logarithm of the paid-in capital of each firm (CAPITAL). This is a general proxy for the scale of firm activities, including production, marketing, finance, and labor management. The second variable is the logarithm of the production of cotton yarns, which measures the scale of production more directly (PRODUCTION). The third variable captures the effect that when a firm expanded to multiple plants, the workload of management increased to make professional executives necessary, so this variable uses data on the number of plants for each firm (PLANT). Finally, the integration of multiple functions would increase the demand for professional executives. In order to capture this effect, we use a dummy variable which equals 1, if a firm produced cotton cloth as well as cotton yarns, and 0, otherwise (INTEGRATE).

Chandler focused on factors which expanded the demand for managerial capabilities, which we intend to capture with the above variables. However, it is also desirable to take account of the availability of managerial capabilities among firm owners. Given the agency cost associated with employing professional executives, owner-executives would always be preferable, provided appropriate large shareholders with sufficient managerial capabilities were available. In order to capture this effect, we use the age of the firm (AGE), and the ratio of the shares of the ten largest shareholders to the total share pool (SHARE10). As the firm ages, the founders of the firm retire and the firm looks for replacement executives. However, the larger shareholders, who are deeply committed to the firm through investment, would be disposed to provide their own managerial capabilities. Finally, we add another dummy variable which equals 1, if the observation is from 1935, and 0, otherwise, to control for macro-level shocks.

An important result to note from the econometric analysis is that the explanatory variables above are positively correlated with one another (Table 7). Further, the variables indicating firm scale in a broad sense, are correlated with one another and AGE, INTEGRATE and SHARE10 are also positively correlated with the scale variables. To avoid multicollinearity, we estimate the effect of CAPITAL, FACTORY, PRODUCTION, INTEGRATE and AGE separately. Another matter is that among the 51 observations there are many where PROFESSIONAL equals 0. Taking data censoring into account, we use a Tobit model for estimation. The equation to be estimated is as follows:

$$\begin{aligned} \text{PROFESSIONAL}_{it} = & \beta_0 + \beta_1 X_{it} + \beta_2 \text{SHARE10}_{it} \\ & + \beta_3 1935\text{dummy} + e_{it} \end{aligned} \quad (1)$$

where X denotes the variables CAPITAL, PLANT, INTEGRATE or AGE, and e is the error term.

The estimation results are reported in Table 8. The coefficients of the variables indicating the scale of the firm (i.e. CAPITAL and PRODUCTION) are positive, but not statistically significant. However, the coefficients of the variables indicating the complexity of firm activities (i.e. PLANT and INTEGRATE) are positive and statistically significant. It was not, therefore, the scale of the firms' activities, but the complexity of the activities that brought about the employment of professional executives.

With respect to the variables indicating the availability of owner-executives, the coefficient of AGE is positive and statistically significant, and the coefficient of SHARE10 is negative and statistically significant. As expected, the availability of owner-executives was negatively associated with the employment of professional executives. Finally, the coefficient of the year dummy for 1935 is not statistically significant. This result is important because it implies that the "macro" interpretations of the diffusion of professional executives are inappropriate. For example, hypotheses such as the supply of professional executives increased overall, or that changes in social environment encouraged firms to promote professional executives, are not supported by the data.

Next, we explore how the employment of professional executives affected firm performance. For this, we use the ratio of professional executives to the total number of executives in 1925 as an explanatory variable, as well as other control variables. The dependent variable is each firm's return on equity (ROE) from 1925 to 1934. The

equation to be estimated is as follows:

$$\text{ROE}_{it} = \gamma_0 + \gamma_1 \text{PROFESSIONAL}_{1925} + \gamma_2 X_{it} + \gamma_3 \text{ER}_{it} + \sum \gamma \text{YEAR}_t + e_{it} \quad (2)$$

where X is the same as in equation (1), ER refers to the ratio of equity to debt to control for the effect of capital structure on profitability, and YEAR is the year dummies to control for macro-level shocks. First, we estimate equation (2) by OLS. The results are reported in column (a)~(c) of Table 9. In all cases, the coefficients of PROFESSIONAL are positive, and except for the case where we use PLANT for X, the coefficients are statistically significant. These results suggest that the employment of professional executives had a positive impact on the profitability of the firm.

However, we should be careful about the endogeneity of PROFESSIONAL. We actually treated this as an endogenous variable in equation (1), and hence, we choose an instrumental variable referring to the estimation results of equation (1). Among the explanatory variables, the variable whose statistical significance is highest is SHARE10. So we estimate equation (2) using SHARE10 as the instrument. The results are reported in column (d)~(f) of Table 9. The results are qualitatively the same as those by plain OLS. All of the coefficients of PROFESSIONAL are positive, and except for the case where we use PLANT for X, the coefficients are statistically significant. It is therefore confirmed that employment of professional executives improved firm profitability even after controlling for the endogeneity.

5. Concluding Remarks

Professional corporate executives have been attracting the attention of economists and lawyers ever since the seminal work of Berle and Means in 1932. In this paper, we explored the process of their diffusion in Japanese business society in detail, using data from cotton spinning companies, and analyzed the determinants and effects of this phenomenon quantitatively.

Companies which had at least one executive without an executive position in another company were already numerous in 1915. However, companies which had at least one executive who was not one of the ten largest shareholders were few at the time. From 1915 to 1925, the number of companies which employed professional executives separated from ownership increased, and this trend continued until 1935. In 1935, half of the cotton spinning companies had at least one professional executive. The employment of professional executives was positively associated with company scale.

With respect to companies whose paid-in capital was larger than five million yen, the ratio of companies which had at least one professional executive had already reached two thirds in 1925. In many cases, professional executives were recruited for the position of *jomu* director.

The Japanese cotton spinning companies of this period, when professional executives were diffusing throughout the industry, provide us with a good opportunity to see the determinants and effects of employing them. In this paper, assuming a framework where the demand for professional executives of a company depends upon the scale and complexity of its activities, as well as upon the availability of managerial capabilities among owners, we conducted regression analyses on the determinants of employing professional executives. It was confirmed that it was not simply firm scale, but the complexity of their activities, captured by multiple plants and forward integration that drove firms to employ professional executives. Further, companies where the ownership shares of the ten largest shareholders were small, and established long beforehand, tended to employ professional executives. This is arguably because the availability of managerial capabilities is lower for these companies. Finally, we examined the effect of employing professional executives on profitability, and found that it had a positive effect on ROE after controlling for endogeneity of it.

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Table 1 Description of the Sample Firms

	Number of firms		
	Total number of Cotton Spinning Companies	Data on the Attributes of Corporate Executives are Available	Data on the Shareholding are available
1915	33	23	22
1925	51	48	45
1935	59	52	50

Source: Dainihon Menshi Boseki Rengokai, Menshi Boseki Jijo Sankosho, the second half year issues of 1915, 1925 and 1935. Jinji Koshinjo. Jinji Koshin Roku, the 4th edition, Tokyo Koshinjo, Ginko Kaisha Yoroku, the 30th and 40th editions.

Table2 Distribution of Executive Positions

		Chairman	President	Vice-presi	Senmu dir	Jomu dire	Representat	Manager
Number of fi	1915	3	16	0	7	3	0	2
	1925	4	35	4	19	19	2	0
	1935	2	42	0	25	23	0	1
Percentage	1915	13.6	72.7	0.0	31.8	13.6	0.0	9.1
	1925	8.9	77.8	8.9	42.2	42.2	4.4	0.0
	1935	4.0	84.0	0.0	50.0	46.0	0.0	2.0

Source: See the text.

Table 3 Executives of the Sample Firms

	Number of firms	Total	Per firm	Chairman	President	Vice-president	Senior director	Junior director	Representative director	Manager
1915	22	32	(1.45)	3	16	0	8	3	0	2
1925	45	96	(2.13)	4	35	4	19	31	3	0
1935	50	110	(2.20)	2	42	0	27	38	0	1

Source: See the text.

Table 4 Distribution of Firms by Number of Executives of Each Attribute

	Total	Number of	0	More than 0	1	2	3	4	5	6	%
	Sample	Firms									
1915 Total Executives	100.0	(22)	0.0	100.0	59.1	36.4	4.5	0.0	0.0	0.0	
No Executive Position in Another Firm	100.0	(22)	31.8	68.2	59.1	4.5	4.5	0.0	0.0	0.0	
Separated from Ownership	100.0	(22)	72.7	27.3	22.7	4.5	0.0	0.0	0.0	0.0	
Professional Executives	100.0	(22)	81.8	18.2	18.2	0.0	0.0	0.0	0.0	0.0	
1925 Total Executives	100.0	(45)	0.0	100.0	26.7	53.3	8.9	6.7	0.0	4.4	
No Executive Position in Another Firm	100.0	(45)	15.6	84.4	46.7	22.2	6.7	4.4	2.2	2.2	
Separated from Ownership	100.0	(45)	53.3	46.7	31.1	8.9	2.2	0.0	4.4	0.0	
Professional Executives	100.0	(45)	60.0	40.0	24.4	8.9	2.2	0.0	4.4	0.0	
1935 Total Executives	100.0	(50)	0.0	100.0	26.0	46.0	16.0	6.0	6.0	0.0	
No Executive Position in Another Firm	100.0	(50)	18.0	82.0	32.0	40.0	8.0	2.0	0.0	0.0	
Separated from Ownership	100.0	(50)	40.0	58.0	30.0	10.0	14.0	4.0	0.0	0.0	
Professional Executives	100.0	(50)	52.0	48.0	26.0	16.0	6.0	0.0	0.0	0.0	

Source: See the text.

Table 5 Distribution of Firms by Number of Executives of Each Attribute: By Paid-in Capital

%

		Total	Number of	0	More than 0	1	2	3	4	5	6
			Sample								
1925 Not larger than 500 million yen	Total Executives	100.0	(33)	0.0	100.0	24.2	60.6	6.1	9.1	0.0	0.0
	No Executive Position in Another Firm	100.0	(33)	18.2	81.8	45.5	24.2	6.1	6.1	0.0	0.0
	Separated from Ownership	100.0	(33)	63.6	36.4	27.3	6.1	3.0	0.0	0.0	0.0
Larger than 500 million yen	Professional Executives	100.0	(33)	69.7	30.3	21.2	6.1	3.0	0.0	0.0	0.0
	Total Executives	100.0	(12)	0.0	100.0	33.3	33.3	16.7	0.0	0.0	16.7
	No Executive Position in Another Firm	100.0	(12)	8.3	91.7	50.0	16.7	8.3	0.0	8.3	8.3
1935 Not larger than 500 million yen	Separated from Ownership	100.0	(12)	25.0	75.0	41.7	16.7	0.0	0.0	16.7	0.0
	Professional Executives	100.0	(12)	33.3	66.7	33.3	16.7	0.0	0.0	16.7	0.0
	Total Executives	100.0	(27)	0.0	100.0	44.4	44.4	11.1	0.0	0.0	0.0
Larger than 500 million yen	No Executive Position in Another Firm	100.0	(27)	18.5	81.5	44.4	37.0	0.0	0.0	0.0	0.0
	Separated from Ownership	100.0	(27)	59.3	40.7	29.6	7.4	3.7	0.0	0.0	0.0
	Professional Executives	100.0	(27)	55.6	44.4	40.7	3.7	0.0	0.0	0.0	0.0
1935 Not larger than 500 million yen	Total Executives	100.0	(23)	0.0	100.0	4.3	47.8	21.7	13.0	13.0	0.0
	No Executive Position in Another Firm	100.0	(23)	17.4	82.6	17.4	43.5	17.4	4.3	0.0	0.0
	Separated from Ownership	100.0	(23)	21.7	78.3	30.4	13.0	26.1	8.7	0.0	0.0
Larger than 500 million yen	Professional Executives	100.0	(23)	39.1	60.9	17.4	30.4	13.0	0.0	0.0	0.0

Source: See the text.

Table 6 Average Number of Executives by Position and by Attribute

	Total	Chairman	President	Vice- president	Senmu director	Jomu director	The others
1915 Total Executives	1.455	0.136	0.727	0.000	0.364	0.136	0.091
No Executive Position in Another Firm	0.818	0.045	0.364	0.000	0.318	0.091	0.000
Separated from Ownership	0.318	0.045	0.000	0.000	0.136	0.091	0.045
Professional Executives	0.182	0.000	0.000	0.000	0.136	0.045	0.000
1925 Total Executives	2.133	0.089	0.778	0.089	0.422	0.689	0.067
No Executive Position in Another Firm	1.533	0.044	0.311	0.089	0.378	0.644	0.067
Separated from Ownership	0.778	0.022	0.067	0.044	0.089	0.511	0.044
Professional Executives	0.711	0.000	0.022	0.044	0.089	0.511	0.044
1935 Total Executives	2.157	0.039	0.824	0.000	0.529	0.745	0.020
No Executive Position in Another Firm	1.412	0.000	0.314	0.000	0.392	0.686	0.020
Separated from Ownership	1.059	0.020	0.176	0.000	0.294	0.569	0.000
Professional Executives	0.745	0.000	0.078	0.000	0.196	0.471	0.000

Source: See the text.

Table 7 Correlation Matrix of the Explanatory Variables

	CAPITAL	PLANT	PRODUCTION	AGE	SHARE10	INTEGRATION
CAPITAL	1.000					
PLANT	0.653	1.000				
PRODUCTION	0.826	0.710	1.000			
AGE	0.496	0.541	0.562	1.000		
SHARE10	-0.466	-0.433	-0.462	-0.443	1.000	
INTEGRATION	0.295	0.236	0.223	0.275	-0.168	1.000

Table 8 Determinants of Employment of Professional Executives

Dependent variable: Ratio of professional executives

Estimation method: Tobit

	(a)	(b)	(c)	(d)	(e)
Constant	-0.802 (1.6141)	0.364 (0.3037)	-0.431 (1.0388)	0.2372 (0.3590)	0.217 (0.3574)
CAPITAL	0.089 (0.0967)				
PLANT		0.024 (0.0138) *			
PRODUCTION			0.102 (0.0940)		
INTEGTATION				0.4541 (0.2737) *	
AGE					0.016 (0.0090) *
SHARE10	-1.314 (0.5142) **	-1.174 (0.4825) **	-1.304 (0.5001)	-1.45 (0.4531) ***	-1.179 (0.4834) **
1935 dummy	0.047 (0.2011)	0.061 (0.1978)	0.031 (0.0202)	0.0683 (0.2004)	-0.074 (0.2098)
Obs.	92	92	92	92	92
Positiv obs.	41	41	41	41	41
Log likelihood	-81.826	-80.804	-81.653		-80.726

Note: Standard errors are in parentheses.

Table 9 Effect of Professional Executives on Profitability

A.Results by OLS

Dependent variable: ROE	(a)	(b)	(c)
Constant	-0.172 (0.0651) ***	-0.031 (0.0274)	-0.042 (0.0228)
PROFESSIONAL	0.022 (0.0100) **	0.015 (0.0106)	0.031 (0.0090) ***
CAPITAL	0.009 (0.0043) **		
PLANT		0.002 (0.0007) ***	
INTEGRATE			-0.001 (0.0124)
ER	0.120 (0.0271) ***	0.113 (0.0272) ***	0.133 (0.0271) ***
adR2	0.282	0.290	0.272
Obs	361	361	361

B.Results by IV

Dependent variable: ROE	(d)	(e)	(f)
Constant	-0.012 (0.1398)	-0.148 (0.2014)	-0.075 (0.0338) **
PROFESSIONAL	0.106 (0.0638) *	0.205 (0.3230)	0.090 (0.0300) ***
CAPITAL	-0.005 (0.1192)		
PLANT		-0.004 (0.0112)	
INTEGRATE			-0.002 (0.0131)
ER	0.165 (0.0119) ***	0.225 (0.1936)	0.155 (0.0305) ***
adR2	0.200	0.095	0.222
Obs	361	361	361

Note: Independent variables include year dummies, although not reported.
Standard errors are in parentheses.