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Survival Analysis of Overseas Food-related Investments: The Case of the Corporate Withdrawal of Japanese Companies from Taiwan

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The purpose of this paper is to analyze the factors that led to the withdrawal of Japanese food related industries from Taiwan. Under these circumstances, the survival analysis of Japanese investments in Taiwan is an interesting case study that serves to illustrate the factors affecting the stability of the overseas expansion of Japanese food related investment. In this paper, we develop a long-term (1972-2012) micro dataset about Japanese food related companies' entry into and withdrawal out of Taiwan. Using the Cox proportional hazards model for the survival analysis, we find that the probability of corporate withdrawal is significantly lower for firms with large capital and for relatively upstream industries. Further, when considering explanatory variables about Taiwanese parent corporations, we find that when the Taiwanese parent corporation is an individual entrepreneur, the probability of corporate withdrawal significantly reduced. We also introduce cluster analysis and some case studies to support the results.

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1. Introduction

This study aims to analyze the factors that led to the withdrawal of Japanese food-related businesses from Taiwan. The food industries in Japan have changed their target investment countries according to the prevailing economic and market conditions in Japanese and overseas markets. Taiwan was an important production base for Japanese overseas food-related businesses—which produced frozen vegetables, canned food, seafood, and other food products and then sent them to Japan—prior to the 1990s. However, Japanese companies moved their production to China or other emerging countries because of changes in market conditions, including a more competitive environment, an increase in the wage level, and a change in product demand (Saito 1992; Shimowatari and Natori 2010; Takahashi 2011). This case study on the survival analysis of Japanese investments in Taiwan serves to identify the factors affecting the stability of the overseas expansion of Japanese food-related investment.

This paper focus on withdrawal of overseas companies. In terms of evaluating the performance of overseas companies, indexes of corporate profitability in the long-term such as the acquisition of market share, the prospects for the expansion and withdrawal and learning of technology are more representative than temporary profitability (Vermeulen, F. and Barkema, H., 2001; Shaver J. M., Mitchell W. and Yeung B., 1997). Withdrawal and expansion of overseas companies is one of the actions that take into account such long-term point of view. On the other hand, there are many past studies on the overseas expansion of food-related industries in Japan, such as Akune (2009). However, analysis on the withdrawal of the overseas company with the micro-level data has not been sufficiently accumulated.

The structure of this paper is as follows. The next section explains the data. Then, survival analysis of Japanese food-related investments in Taiwan using the Cox proportional hazards model and a cluster analysis is presented. Next, the characteristic factors affecting the previous sector are introduced in a case study. The final section explains the characteristics and provides the conclusion and suggestions for future research.

2. Summary of Data

This study develops a long-term micro dataset (1972–2012) to analyze Japanese food-related companies' activities in Taiwan, which includes entry and withdrawal. The Kaigai Shinshutsu

Kigyo Soran ("List of Japanese Affiliates in Foreign Countries") is used to classify Japanese food-related businesses in Taiwan into "agriculture and fishery," "food manufacturing," "food wholesale," and "food retailing," according to the business description of their overseas affiliates. Parent companies were classified by Japanese holding company into "food-related company," "trading company," or "others"; and Taiwanese shareholding company into "food-related company," "others," or "individual."

The characteristics of the Japanese food businesses in Taiwan were determined by analyzing the number of existing business enterprises at five points in time from 1972 to 2012 (Fig. 1). The number of companies in 1972 and 1980 were 10 and 13, respectively, and most were in food manufacturing industries. The number of Japanese companies entering Taiwan increased rapidly, from 35 companies in 1990 to 46 companies in 2000. The ratio of food wholesale companies reached 30 percent in 1990, and represented half of all companies by 2000, which shows the industrial profile changing from manufacturing to wholesale businesses.

The number of Japanese food-related businesses in Taiwan in 2012, which is the final year in the analysis, was 43. Two of these 43 companies were in the agriculture and fishery industry, 17, in the food manufacturing industry, and 24, in the food wholesale industry (Fig. 1).

[Figure 1]

The establishment of Japanese food-related businesses in Taiwan from the 1960s to present peaked in the 1990s (Fig. 2). While Japanese investment in the food industry in Taiwan increased, companies withdrew from the market at the same time. The aggregate number of Japanese food-related businesses that launched in Taiwan over this period was 83. Only 43 companies, more than half, continued as of 2012 (Fig. 1).

[Figure 2]

About 40 percent of the manufacturing industry, 17 of the 42 companies, survived as of 2012, while in food wholesale, 24 of the 34 companies were still operating.

The representation of Japanese overseas food companies in Taiwan by stock capitalization from 1972 to 2012 shows the dominance of the food manufacturing (Table 2). The food manufacturing industries such as confectionery and drinks represent the entire market capitalization in the 1970s. Food manufacturing industries still represent most of the market value in the 1980s, while the wholesale and retail sectors began to increase their market value.

The food manufacturing industry disappears from the top five in the 1990s. Only one food manufacturing company is in the rank after 2000, which is a corporation from China. Food wholesale industries take the lead among Japanese overseas food industries in Taiwan.

[Table 1]

3. Methods

An analysis is conducted of the factors that affected the withdrawal of Japanese food-related businesses using the aforementioned data. The main descriptive statistics are shown in Table 2.

[Table 2]

Two kinds of analyses on the withdrawal of Japanese food industries from Taiwan were conducted. The Cox proportional hazards model was used for the survival analysis to determine the influence of explanatory variables on the withdrawal. The survival analysis avoids the survivorship bias and allows censoring to be considered at the close of data.

The hazard function of the covariate of individual i is defined as follows in the Cox proportional hazard model.

$$h(x_i, t) = h_0(t)exp(\beta_1 x_{i1} + \beta_2 x_{i2} + \cdots + \beta_m x_{im}) \quad \ldots(1)$$

Here, the covariate vector of individual i is $x = x_{i1}$、x_{i2}、…、x_{im}. The parameters estimated are β_1, β_2, ……, β_m. $h_0(t)$ is a hazard function when all the covariates are 0, and is called a baseline hazard. This model treats a hazard ratio as constant irrespective of time. The parameter of an explanatory variable can be estimated by the logarithm of the hazard ratio with the maximum-likelihood method as follows.

$$\ln\left\{\frac{h(x_i,t)}{h_0(t)}\right\} = \beta_1(x_{i1} - \overline{x_1}) + \beta_2(x_{i2} - \overline{x_2}) + \cdots + \beta_m(x_{im} - \overline{x_m}) \quad \ldots(2)$$

A hazard ratio is calculated from the estimated parameters. When the estimated hazard ratio is smaller than 1, the variable contributes to an increase in the probability of survival of a company.

However, since the data in this paper has deficiency values, it would have become difficult to perform effective estimations if all of the data used represented explanatory variables. Furthermore, since Cox proportional hazards model is based on the assumption of constant effect of explanatory variables over time, it is difficult to consider the time-varying effect of the variables. Therefore, cluster analysis was introduced to capture the characteristics of long-term survival industries by comparing the life span of each cluster. The clustering also uses the investment objective of the companies with many deficiency values, besides the explanatory variables used in the Cox proportional hazards model. The results of both analyses are explained below. Finally, we present a comparison of the quantitative results of the analysis and case study.

4. Results and discussion

4.1. Estimation results of the survival analysis by the Cox proportional hazard model

The empirical analysis introduces five categories of explanatory variables in the survival analysis: (1) log of capital, (2) classification by industry, (3) Japanese equity capital ratio, (4) category of Japanese parent corporation, and (5) category of Taiwanese parent corporation, if there is one. However, since some data on Taiwan is missing, the number of samples is different if the Taiwanese parent corporation category is included. Therefore, we conducted the analyses with and without the Taiwanese parent corporation category. Based on Horiguchi(2002), the sign of hazard ratio of explanatory variables is considered as following. The more capital the company is large, the less likely the company will withdraw. Effect of classification by industries depends on whether industry depends on how much the industry is related to production and market conditions. If the food manufacturing industry is included in the parent company, the probability of withdrawal is reduced because the overseas companies can utilize the technique of the parent companies. Effect of the trade company in Japanese parent company and the individual entrepreneur in the Taiwanese equity companies cannot be predicted from the knowledge of previous studies. Table 3 shows the result of the estimation. The $\chi 2$ test shows the estimation of (a), (e), (f) performs $p<0.15$, not $p<0.1$. However, since the sample size is not large, it is still meaningful in some manner for the 15% significance.

[Table 3]

From the analysis excluding the Taiwanese parent corporation category, when the stock capitalization is larger, the hazard ratio is lower. Moreover, Table 3 shows that when the industry classification is agriculture and fishery, food manufacturing, or foodstuff wholesale, the hazard ratio of the industry decreases. Further, the Japanese equity capital ratio is not significant. Since capital is a basic form of financing and investing of a business, a corporation with a large capitalization has the capacity to endure severe conditions. Therefore, the probability of withdrawing becomes lower. Moreover, food retailing is easily influenced by variation in the environment of a marketplace since it participates only in the tail end of a food system. Therefore, the probability of withdrawal is lower for the agriculture and fishery, food manufacturing, and food wholesale industries than the food retailing industry.

The Taiwanese parent corporation results show that when the Taiwanese parent corporation was an individual entrepreneur, the probability of withdrawal was statistically significant. Further, although the effect of the ownership percentage of the Japanese parent company was not significant, a dummy variable of 100% ownership for the Japanese parent company significantly decreased the probability of withdrawal. Since the adjustment between an overseas partner and a domestic company is unnecessary in independent investments, this status is considered favorable to the survival of a company. Moreover, an independent investment also means that a company has the confidence to independently manage the business, and hence, it decreases the probability of withdrawal.

Next, why the only significant item under the category of parent industries was “An individual entrepreneur is part of a Taiwanese parent company” was analyzed. First, since the nature of an activity of an overseas branch has much more impact than the activity of the parent company when overseas expansion is carried out, as expected, the category variables of the parent industries were not significant. However, if a company could obtain the cooperation of a leading individual or an individual entrepreneur in Taiwan whom it can trust, it was shown to be easier to continue the business. This result reflects the fact that many individual entrepreneurs in Taiwan, which has had a cultural and economic exchange relationship with the Japanese since colonial days, were successful in collaborations with Japanese people even after the colonial days. Such individual relations are considered a kind of social capital for Japanese overseas investment companies.

4.2. Estimation results of the cluster analysis

The cluster analysis included variables for the investment objective of an overseas company; in addition to the capital, classification by industry, and Japanese and Taiwanese parent corporation categories used for the survival time analysis. The investment objectives are also expected to be one of the factors that affect the lifespan of companies. For example, the diversified management have a positive impact on the lifespan of a company (Siegfried J. J. and Evans L. B., 1994). The overseas investment objectives were "A local cultivating a new market for goods," "reimport to Japan," "exportation to a third country," "reservation and utilization of a workforce," "a production advantage in Taiwan," "overseas distribution network construction," "data-gathering," "the supplier of material from Japan," and "the supplier of material from Taiwan." The food retailing companies did not state their investment objective, and hence, data for the retailing industry is not provided. After clustering the observed value of 213 samples of reported investment objectives, the mean life span of each cluster was compared.

Ward's method was used for sorting. Both the continuous variables and the dummy variable are intermingled, and therefore, the general similarity coefficient of Gower as a measure of proximity is used. The data was classified into six clusters according to the Duda-Hart index. The results of the cluster analysis are summarized as follows (Table 4).

[Table 4]

The first cluster consists of a mixture of companies from the agriculture-and-fishery, food manufacturing, and food wholesale industries, which were invested in by not only individual entrepreneurs of Taiwan but also parent companies of food-related businesses of Taiwan. The second cluster consists of a company in the food manufacturing industry, which was invested in by Japanese food manufacturing industries and Japanese trading corporations, and Taiwanese non-food parent companies. The third cluster consists of a company in the food manufacturing industry, which was invested in by Japanese non-food parent companies and Taiwanese non-food parent companies. The fourth cluster consists of a company in the food manufacturing industry. The stock capitalization in the fourth cluster is greater than that of companies in other clusters, and its Taiwanese parent company is in the food-related business. The fifth cluster—whose stock capitalization is small in comparison with that of the other clusters—consists of a company in the food manufacturing industry and an individual entrepreneur who has invested in

a Taiwanese parent company. The sixth cluster consists of a food wholesale company, a trading corporation that has invested in Japan, and an individual who has invested in a Taiwanese parent company.

Next, the life span of companies for every cluster is compared to examine the factors that influence the survival of a company. The life span of the clusters is 24.6, 11.0, 26.1, 35.4, 43.3, and 14.1 from the first to the sixth cluster, respectively. The three clusters with the longest and shortest life spans were identified.

The fifth cluster has the longest life span. The business category of the fifth cluster is the food manufacturing industry, and most of the investors are Taiwanese individual entrepreneurs, consistent with the results of the survival analysis above. The average entry year is 1964, which is the same as the medium value, and the median and the average value of the withdrawal year is 2007 and 2012 (the end of the survey). This clearly shows that the fifth cluster is a group of companies that have survived over the entire period even from when there is little foreign investment in Taiwan. Other characteristics of the fifth cluster are a Japanese parent company in a food-related company; and cultivating a new market for goods is an important investment objective since they reimport to Japan.

The fourth cluster also has a long life span. There are many existing companies in 2012 in the fourth cluster, which is the same as the fifth cluster fourth. However, the average entry year of the fourth cluster is 8 years later than the fifth cluster; the life span of the fourth cluster is shorter than the fifth cluster. High stock capitalization and the category of food manufacturing industry in the fourth cluster are consistent with the results of the survival analysis above. The joint contribution of a food related company and a trading corporation in the Japanese parent companies is another characteristic of the fourth cluster, although there is only a food-related company under Taiwanese parent companies. The features of the companies in the fourth cluster are generally similar to the features of the fifth cluster except that there is no personal entrepreneur investment from Taiwan. Regarding the investment objectives, the percentage of "the supplier of material from Japan" is as high as 87%, while the percentage of "reimport to Japan" is only 40% and the percentage of "Some production advantage in Taiwan" is 73%. These companies use only country-specific factors in Taiwan, such as labor or land, and sell their goods to overseas markets beyond Japan.

The third longest lifespan next to the fifth and fourth cluster is the third cluster and the first cluster, which have roughly the same lifespan as 26.1 and 24.6 years. The features of the third cluster are that these companies have low capital and food companies are not included in the parent corporation in both Japan and Taiwan. The average entry year of the third cluster is 1983, which is the latest in all cluster. This lag might be related to parent investment companies in the non-food industry. It is difficult to identify the features of the first cluster because there are agriculture and fishery, food manufacturing industry, food wholesale industries mixed in this cluster, but some of the characteristics are different from other clusters. The percentage of "some production advantage in Taiwan" is the second-highest, 53%, next to the fourth cluster. In addition, the average withdrawal year is 1998, which overlaps with the timing of when many Japanese companies in food manufacturing, agriculture and fishery industry move to China. Those companies who changed their investment country from Taiwan to China are included in the first cluster.

The sixth cluster is composed by the food wholesale industries, which have investment by Japanese trading company. The average entry year is 1977 and the average withdrawal year is 1997; the average lifespan is 14.1 years. The entry year corresponds to the time when Japanese food manufacturing industries most heavily invest to Taiwan.

The second cluster has the shortest life span. The stock capitalization of the second cluster is low and the category of business of the Taiwanese parent company is other non-food companies, which coordinates with the results of the survival analysis above. A notable characteristic is that the ratio of the companies of the second cluster that answered "the supplier of a material from Taiwan" as an investment objective is the highest. Moreover, the company that answered for the purpose of "reservation and utilization of the workforce" is in the second cluster. Since both of these investment objectives could mean temporary cost cuts, it could shorten their survival time if the environment changed rapidly.

4.3. Case study

This section presents a comparison of the quantitative results of the analysis and case study. The case studies might explain why the probability of survival is clearly higher if the joint venture partnership in Taiwan is an individual entrepreneur.

Four Taiwanese entrepreneurs that cooperated with Japanese companies are cited as examples (Table 5). Because the data does not typically express individual entrepreneurs' name or information, well-known entrepreneurs are used as illustrative examples. The four entrepreneurs all had commercial relations with Japan in the Japanese colonial era, and had or received Japanese education then. They still maintained some relationship with the Japanese after the Japanese colonial period, before they cooperated with Japanese new food-related firms in Taiwan. For example, Pan, Shui-Sheng sold tea to the Japanese company Morinaga and had a good relationship with the Japanese. When Morinaga Confection wanted to launch in Taiwan, the company invited Pan to invest with it. Li, Tuan Jyu managed a tea processing corporation in Tainan. Li is an active entrepreneur who always absorbed new information from Japan; for example, he asked Momofuku Ando, who is known as the father of instant noodles, to invest in Taiwan but Ando refused. Finally, Li's wife was authorized to introduce the brand, Yakult, which is known as the most famous lactic acid bacteria beverage. Lin, Si Chih managed the purchases and sales of salt in Tainan. After Lin bought the Tainan plant from the Taiwan Pineapple Corp. in 1965, Kagome, the famous Ketchup Company, asked Lin to join their tomato plant investment in Taiwan through a trade company that has business relationships with Lin. Ciou, Yong Han graduated from the economics department at the University of Tokyo and was successful in stock investments in Japan. He went back to Taiwan at the request of the Taiwan government after 1972, and became interested in business in Taiwan. One of his interests was the frozen pork business, so he asked Meiji Group to invest with him in Taiwan.

[Table5]

These investments clearly show that these individual entrepreneurs in Taiwan, which have had a cultural exchange and economic exchange relationship with the Japanese since the colonial days, were successful in collaborations with the Japanese even after the colonial days. Such individual relations are considered a kind of social capital for Japanese overseas investment companies, as noted in Section 3. In addition, the individual's business skills heavily influences the success of the collaboration. These Taiwanese are active and experienced business owners with strong family ties.

Information is also listed for the second generation of investors(Table 5). Most Japanese food-related companies maintained their cooperation with Taiwanese entrepreneurs even when the

first generation retired. This reflects how the Taiwanese attach great importance to family relationships in the business community. However, although cooperation with the first generation was successful, because the personal qualities of a son are not the same as those of his father, not all of the second generation managers maintained good relationships with Japanese companies. Nevertheless, these Japanese food companies that cooperated with individual entrepreneurs in Taiwan operated for a relatively long time. Further, the spillover of production technology occurred, so even after they left the partnership, both continued to operate successfully.

5. Conclusion

This research elucidated the characteristics of Japanese food-related business investment in Taiwan and analyzed the factors that affect survival by conducting a micro data analysis. The main withdrawal factor of Japanese food-related businesses from Taiwan was concluded to be an increase in production costs; however, the analysis results reveal that their survival in Taiwan was greatly influenced by the investment mode or investment objective. We find that when the Taiwanese parent corporation is an individual entrepreneur, the probability of corporate withdrawal significantly reduced. Such individual relations are considered a kind of social capital for Japanese overseas investment companies.

Future research should consider the many Japanese-funded firms utilizing the experience of investing in Taiwan companies to build alliances to facilitate investments in China (Chang 2011). The direct local activities of the foreign direct investment analyzed in this paper should be considered, as well as further research conducted on the spillover effects of such overseas expansion.

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Table 1. The Top 10 Japanese Overseas Food Companies by Market Capitalization in Taiwan (1972–2012)

Year	The top 10 Japanese overseas food companies in Taiwan by capital	Lead shareholding company of Japan	Shareholding company of Taiwan	Classification	Entry year	Withdrawal year
1970s	Yakult	Kanto Yakult Manufacturing		Food Manufacturing	1964	1977
	Taiwan Kagome	Kagome Co., Ltd.	Tainan Food	Food Manufacturing	1967	--
	Taiwan Health Food	Meiji Kenko Ham	Kuo Fong Frozen Foods	Food Manufacturing	1972	1993
	Taiwan Seika	Morinaga & Co., Ltd.	Some Individual entrepreneurs	Food Manufacturing	1962	--
	Meiji Dairies Corporation	Meiji Dairies Corporation		Food Manufacturing	1970	1975
	Taiwan Agricultural Livestock Industry	International Agricultural And Livestock		Food Manufacturing	1967	1997
	FWUSOW	Sino-Japanese Confectionery		Food Manufacturing	1971	1995
	East Asia Frozen Food Co., Ltd.	Daibo Shokuhin Co, Ltd.	Chen Kunyi	Food Manufacturing	1972	1984
	Tai Gou Food	Nakamuraya Co., Ltd.	Tai Gou Industry	Food Manufacturing	1974	1982
	Taiwan Calpis	Calpis Food Industry	International Trade	Food Manufacturing	1967	1985
1980s	Taiwan Kagome	Kagome Co., Ltd.	Bao Gou Industry And Several Individual entrepreneurs	Food Manufacturing	1967	--
	Taiwan Yuobi	Kewpie	Chen Kunyi	Food Manufacturing	1988	2003
	Taiwan Summit	Summit	International Trade	Food Retailing	1988	2000
	Yakult	Matsusho		Food Manufacturing	1964	--
	Taiwan Morinaga	Morinaga & Co., Ltd.	Some Individual entrepreneurs	Food Manufacturing	1962	--
	Best Foods Ltd.	Ajinomoto	Chiu And Others	Food Manufacturing	1987	2002
	Taiwan Yaohan	Yaohan Department Store	Civism Enterprises Corp.	Food Wholesale	1973	1998
	Inageya Co., Ltd.	Inageya Co., Ltd.		Food Retailing	1987	2001
	Taiwan Distribution Center Co., Ltd.	Itochu Corporation	Tainan Food	Food Wholesale	1989	--
	Chen Tai Fong Co. Ltd	Toyota Tsusho Corporation	Taiwan Cooperative Bank	Food Wholesale	1983	--
1990s	Taiwan Mitsubishi Corporation	Mitsubishi Corporation		Food Wholesale	1997	--
	Taiwan Distribution Center Co.	Itochu Corporation	Chinese Automobile Company	Food Wholesale	1989	--
	Sumitomo Corporation	Sumitomo Corporation		Food Wholesale	1991	--
	Mitsui Taiwan	Mitsui & Co., Ltd.		Food Wholesale	1990	--
	Taiwan's Summit	Summit	Eternal Investment	Food Retailing	1988	2000
	Taiwan Morinaga	Morinaga & Co., Ltd.	Some Individual entrepreneurs	Food Manufacturing	1962	--
	Inageya Co., Ltd.	Inageya Co., Ltd.	Yuyuan Companies	Food Retailing	1987	2001
	Yi-Lan Food Industry	Iwatsuka Confectionery	Some Individual entrepreneurs	Food Manufacturing	1991	1995
	Itochu Taiwan Corp.	Itochu Corporation		Food Wholesale	1997	--
	Taiwan Kagome	Kagome Co., Ltd.	Lin Families	Food Manufacturing	1967	--
After 2000	Ting Hsin Holding	C. F. I.		Food Manufacturing	2011	--
	Taiwan Lotte Confectionery	Lotte		Food Wholesale	2005	--
	Taiwan Mitsubishi Corporation	Mitsubishi Corporation		Food Wholesale	1997	--
	Taiwan Hokuto Corporation	Hokuto		Agriculture And Fishery	2011	--
	Sumitomo Taiwan	Sumitomo Corporation		Food Wholesale	1991	--
	Mitsui Taiwan	Mitsui & Co., Ltd.		Food Wholesale	1990	--
	Marubeni Taiwan	Marubeni Corporation		Food Wholesale	1992	--
	Taiwan Morinaga	Morinaga & Co., Ltd.	Some Individual entrepreneurs	Food Manufacturing	1962	--
	Itochu International Clubs	Itochu Corporation		Food Wholesale	1997	--
	Inageya Co., Ltd	Inageya Co., Ltd.	Inageya Co., Ltd.	Food Retailing	1987	2001

Source: The Kaigai Shinshutsu Kigyo Soran (“List of Japanese Affiliates in Foreign Countries”)

Table 2. Main Descriptive Statistics

Category-of-business	Descriptive-statistics of different category-of-business	Mean	Standard-deviation	Observations
agriculture and fishery	Life span (before 2012)	9	8	33
	Stock capitalization (10,000 Taiwan dollars)	7540	16100	33
	Ownership percentage of Japanese parent companies	0.34	0.24	33
food manufacturing industry	Life span (before 2012)	13	11	635
	Stock capitalization (10,000 Taiwan dollars)	9460	23100	601
	Ownership percentage of Japanese parent companies	0.58	0.27	635
food wholesale	Life span (before 2012)	11	8	490
	Stock capitalization (10,000 Taiwan dollars)	16900	28200	476
	Ownership percentage of Japanese parent companies	0.76	0.31	490
food retailing	Life span (before 2012)	6	4	37
	Stock capitalization (10,000 Taiwan dollars)	29300	22600	33
	Ownership percentage of Japanese parent companies	0.62	0.22	37

Table 3. Estimation Results of the Hazard Ratio by the Cox Proportional Hazard Model

Explanatory-variable		Hazard ratio (standard error)					
		(a)	(b)	(c)	(d)	(e)	(f)
(1)	log of capital	**0.830** ^{*d}	**0.825**^{*d}	0.857	0.896	0.899	
		(0.097)	(0.107)	(0.124)	(0.119)	(0.119)	
(2)	Classification (agriculture and fishery): *a dummy variable*	**0.165**^{*d}	**0.133**^{*d}	0.320			
		(0.205)	(0.186)	(0.519)			
	Classification (food manufacturing): *a dummy variable*	**0.235**^{*b}	**0.190** ^{*b}	0.593			
		(0.163)	(0.179)	(0.688)			
	Classification (food wholesale): *a dummy variable*	**0.147**^{*a}	**0.138** ^{*a}	0.433			
		(0.108)	(0.109)	(0.438)			
(3)	The investment ratio of the Japanese parent company is more than 50% : *a dummy variable*	0.897	0.901	1.017	1.182		
		(0.418)	(0.435)	(0.567)	(0.626)		
	Ownership percentage of the Japanese parent company	0.673	0.668	0.543	0.488		
		(0.745)	(0.775)	(0.850)	(0.705)		
	Ownership percentage of the Japanese parent company is 100%: *a dummy variable*	0.763	0.744	0.431	0.342	**0.265**^{*b}	**0.353**^{*b}
		(0.531)	(0.531)	(0.380)	(0.276)	(0.153)	(0.185)
(4)	A food manufacturing industry is part of a Japanese parent company: *a dummy variable*		1.252	0.850	0.995	0.983	0.844
			(0.837)	(0.637)	(0.514)	(0.498)	(0.415)
	A trading company is part of a Japanese parent company: *a dummy variable*		1.055	0.861	0.819	0.758	0.585
			(0.516)	(0.448)	(0.420)	(0.362)	(0.262)
(5)	A food manufacturing industry is part of a Taiwanese parent company: *a dummy variable*			0.880	0.706	0.749	0.812
				(0.543)	(0.400)	(0.414)	(0.446)
	An individual entrepreneur is part of a Taiwanese parent company: *a dummy variable*			**0.409**^{*d}	**0.363** ^{*c}	**0.363**^{*c}	**0.404**^{*c}
				(0.233)	(0.197)	(0.195)	(0.215)
observations		1,095	1,095	944	944	944	975
undertakings in an analysis		79	79	70	70	70	72
The aggregate number of withdrawals		38	38	33	30	33	35
p value of χ^2test		0.12	0.25	0.43	0.26	0.13	0.15

Note: The significance levels are as follows: ^{*a} p<0.01, ^{*b} p<0.05, ^{*c} p<0.1, ^{*d} p<0.15

H_0 of the χ^2*test* :all the estimates are zero which means the null model equals to the fitted model. (a)(e)(f) show p<0.15.

Table 4. Results of Cluster Analysis

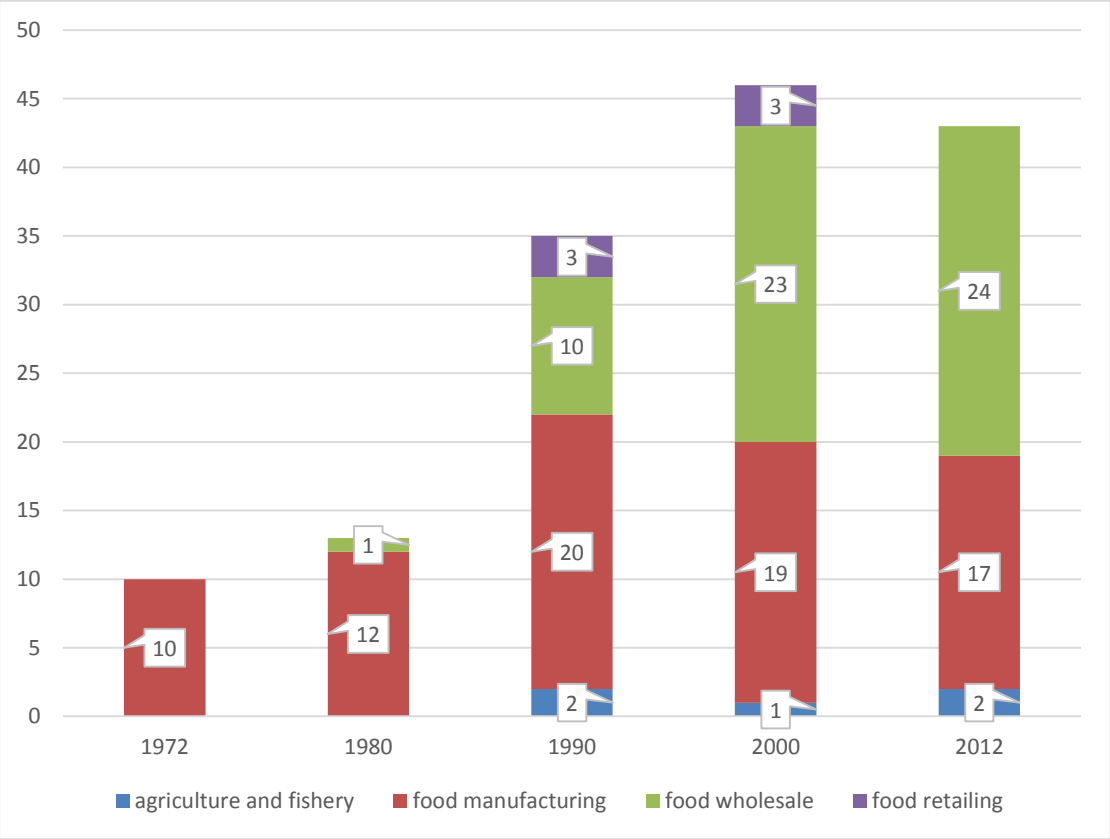
Cluster		1	2	3	4	5	6
Classification by industry		agriculture and fishery (7%) food manufacturing (85%) food wholesale (8%)	food manufacturing (100%)	food manufacturing (100%)	food manufacturing (100%)	food manufacturing (100%)	food wholesale (100%)
Mean capital (10000 NTD)		3620	1760	500	6230	4290	4240
Category of Japanese parent company		food related company（97%）	food related company（100%） trading company（13%）	others（100%）	food related company（100%） trading company (100%)	food related company (100%) trading company (14%)	trading company (100%)
Category of Taiwanese parent company		an individual entrepreneur (90%) food related company (10%)	others (100%)	others (100%)	food related company(100%)	an individual entrepreneur (100%) others (9%)	an individual entrepreneur (100%)
Life span		24.6	11	26.1	35.4	43.3	14.1
Target market		re-import to Japan (37%) local new market (31%) third country market (10%)	reimport to Japan (27%) local new market (63%) third country market (33%)	reimport to Japan (100%) local new market (100%) third country market (100%)	reimport to Japan (40%) local new market (100%) third country market (100%)	reimport to Japan (100%) local new market (100%) third country market (86%)	reimport to Japan (19%) local new market (63%) third country market (88%)
Supplier of material		Taiwan (25%) Japan (58%)	Taiwan (40%) Japan (60%)	nonresponse	Japan (87%)	Japan (57%) third country (9%)	Japan (38%)
Some production advantage in Taiwan		53%	nonresponse	nonresponse	73%	34%	31%
Other objectives		overseas network construction (3%) data-gathering (7%)	overseas network construction (10%) data-gathering (3%) reservation and utilization of work force (7%)	nonresponse	nonresponse	nonresponse	overseas network construction (31%) data-gathering (31%)
Life span		24.6	11	26.1	35.4	43.3	14.1
Entry year	mean	1973	1978	1983	1972	1964	1977
	medium	1972	1978	1983	1967	1964	1974
Withdrawal year	mean	1998	1989	2009	2007	2007	1991
	medium	1997	1989	2012(existence)	2012(existence)	2012(existence)	1985

Note: The ratio in parentheses is the share of the corresponding item in the cluster

Table 5. Taiwanese Individual Entrepreneurs With Tie-ups With a Japanese Firm: Some cases

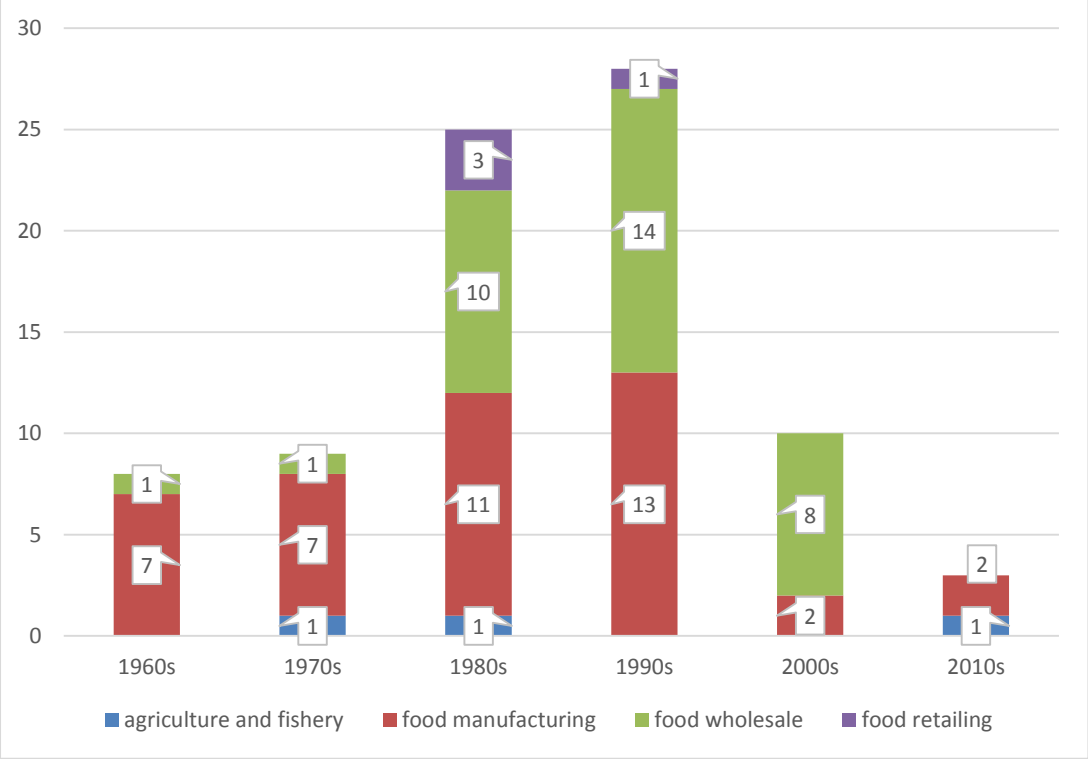
Entrepreneur	Japanese tie-up firm	Japan colonial period	Relationship with Japanese before tie-up	An early confidential relation	Second generation: His Son	Recent relationship with his Son, remarks
Pan, Shuei Sheng	Morinaga & Co., Ltd.	He was working in the trading corporation of Japan.	He sold the tea of Taiwan to Japan Morinaga as the material.	The shareholding of Morinaga has 55%, but a tacit rule is Pan must be the president.	Pan Ming Jhe	A practice that is still approved. The son will retire soon His son will transfer to the president's post in the Japanese side.
Li, Tuan Jyu	Yakult	He was managing the tea processing corporation in Tainan.	Although he asked Momofuku Ando about Taiwan launching Nissin instant noodles, he refused.	At the time of starting in 1962 -- the shareholding of Kanto Yakult, Inc. -- 46.5% and the he and his family possessed 26.5% of shares. The other two households also possessed 20% of the shares.	Li Dao Guang	His son makes a lactic acid bacteria beverage called Yakudo arbitrarily to Hong Kong. Lost lawsuit. Japan Yakult entered Taiwan in 2003, and purchased 13% of the shares from the Taiwan side, and came to have decisive power.
Lin, Si Chih	Kagome	He was managing the purchases and sales of salt in Tainan.	He bought the Tainan plant of Taiwan pineapple Corp. in 1965. Kagome learned of the collaboration with him through Mitsui	The Lin household and Kagome discussed possessing 50% of the shares, respectively. Also, they had a Taiwanese serve as president and a Japanese as a director.	Lin Jhan Chuan	The business performance of the second generation is also good, but Kagome purchased the shares of some family members estranged on one-side, and possesses 50.3%. The son developed another relish and his new company also performs well in Taiwan.
Ciou, Yong Han	Meiji Kenko Ham	He was born in Tainan. He won the Naoki Prize after he graduated from the economics department at the University of Tokyo, in 1945.	He was successful with stock investments in Japan. He went back because of the request of the Taiwan government after 1972, and became interested in business in Taiwan.	He invested 50% of the collaboration with Meiji Kenko Ham in Tainan, and began the business that exports frozen pork.		Withdrew in 1993

Sources: Chen 2011; Chen 2012; Yang 2003; Zhang 2000



Source: The Kaigai Shinshutsu Kigyo Soran ("List of Japanese Affiliates in Foreign Countries")

Figure 1. Number of Japanese Companies by Food-related Business in Taiwan



Source: The Kaigai Shinshutsu Kigyo Soran ("List of Japanese Affiliates in Foreign Countries")

Figure 2. The Entry of Japanese Food-related Businesses in Taiwan