

Legal Change to the Corporate Divestiture System and the Market Reaction to Listed Companies in Japan

TAMBA Yasuhiro¹, IKESHIMA Shinsaku², HIRAI Hirohisa³

¹ Credit Pricing Corporation, St. Luke's Tower 28F, 8-1 Akashi-cho Chuo-ku, Tokyo, 104-0044, Japan, nanaleoleo@yahoo.co.jp

² Professor of Commercial Law, Dean, Faculty of Business Administration, Osaka University of Economics, 2-2-8, Osumi, Higashiyodogawa-ku, Osaka, 533-8533, Japan, ikeshima@osaka-ue.ac.jp

³ Associate Professor of Accounting, Faculty of Economics Department of Business Management, Takasaki City University of Economics, 1300 Kaminamie, Takasaki, Gunma 370-0801, Japan, hirai@tcue.ac.jp

Abstract: Taking listed companies that separate a part of their business using a new corporate divestiture system in Japan and using the events study approach to compute abnormal returns (ARs), this paper studies the change of ARs before and after the disclosure of a spin-off announcement. We find that there is a significant market reaction after the disclosure: a significantly positive market reaction to bad companies with a high default probability and a significantly negative market reaction to good companies with a low default probability.

Key words: corporate divestiture system, Japan, the market reaction, abnormal returns, AR, spin-off system, event study

1. Introduction

In Japan, a commercial law took effect on April 1, 2001, for the founding of a new corporate divestiture system. In the new system, a company separates part of its business allowing it to become independent as a new company or for another company to succeed it according to the spin-off system. In Japan, the spin-off is often used after the introduction of the corporate divestiture system, due to a high level of transparency in execution and the plain procedure of the new system. A spin-off is one of the techniques that a company uses to reorganize its structure. Because it is necessary to strengthen the competitiveness, effectiveness, and corporate governance of the management of companies in the global economy, the Japanese government consolidated the legal system to enhance the ability of a company to reorganize.

In this paper, we study the evaluation that a company adopting the system receives from investors in the stock market. To analyze the influence of an announcement of a spin-off, we apply the event study method used in the study of finance and perform a quantitative analysis.

2. Market Evaluation Analysis of the Spin-off

2.1. Data

In this paper, we use spin-off data of Japanese companies in the Mergers & Acquisitions Research Report (MARR) of RECOF Data Corporation from April 2001 to December 2011. The number of data samples is 1,376, including non-listed companies. Table 1 shows the number of spin-offs in the listed companies. Although 128 companies executed spin-offs just after initiation of the law in April 2001, this number decreased to 21 companies in 2011. There are 591 sample companies in the First Section of the Tokyo Stock Exchange; excluding those with missing values required for the analysis (such as those without enough trading during the analysis period), we settled on 572 samples for the event analysis.

Table 1 Number of spin-off companies

	Tokyo 1st	Tokyo 2nd	Osaka 1st	Osaka 2nd	Others	Total
2001 ^(*)	104	9	1	2	12	128
2002	162	10		1	25	198
2003	93	4	1	2	18	118
2004	64	2	2	3	16	87
2005	48	5	1	2	26	82
2006	31	3			17	51
2007	24	3		1	16	44
2008	23	1			15	39
2009	18	2			9	29
2010	14	1		1	6	22
2011	10	3			8	21
Total	591	43	5	12	168	819

(*) After April 1st.

2.2. Statistical Analysis Methodology

We use the event study method to inspect the market reaction to spin-offs in this paper. An event study is a statistical method used to assess the impact of an event on the value of a firm. An announcement of a spin-off can be analyzed to see whether investors believe the spin-off will add to or drop the value of the company. The idea is to find the abnormal return (AR) attributable to the event by adjusting for the return that stems from the price change in the market. We calculate the excess return and AR based on a market model.

Setting $t = 0$ as the spin-off announcement date, we take 120 days from $t = -130$ to $t = -11$ for an estimation period. Performing a regression analysis on the daily return of the Nikkei Stock Average and the daily stock return⁴ of the company, during the estimation period, we calculate α_i and β_i for each company using Equation (1).

⁴ The daily stock returns of company i is calculated using the next expression.

$$R_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} \quad P_{i,t} : \text{Stock price of company } i \text{ at time } t$$

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \quad (1)$$

$R_{i,t}$: Daily stock return of company i at time t
 $R_{m,t}$: Daily stock return of the Nikkei Stock Average at time t

Next, we set an event window of ten days from $t = -10$ to $t = +10$. We calculate the AR in the event window by subtracting the daily rate of return estimated from the market model (1) from the daily rate of return on firm i .

$$AR_{i,t} = R_{i,t} - (\alpha_i + \beta_i R_{m,t}) \quad (2)$$

$AR_{i,t}$: Daily excess return of company i at time t

2.3. Statistical Analysis

We use the probability of default (PD) to put sample companies in order of credit risk. Credit Pricing Corporation estimates the probability that a company falls into default within one year using a default probability estimation model based on account data of a company. The logistic regression model is used for the estimation.

$$p = \frac{1}{1 + \exp(\alpha + \beta_1 x_1 + \dots + \beta_n x_n)} \quad (4)$$

p:	One-year	default	probability
α :	Intercept		
$X_1 - X_n$:	Explanatory	variables	(accounting data of a company)
$\beta_1 - \beta_n$:	Parameters according to each explanatory variable		

In descending order according to the PD, we evenly divide the sample companies into 20 ranks corresponding to the company's financial situation when they are divided into 20 equal-sized groups. A company with a lower rank represents a bad evaluation, while a higher ranked company has a good evaluation. We calculate the AR and t-value of the companies in each rank. Excel 2010 and STATA are used for the calculations.

Table 2 shows the ARs and Table 3 shows the t-values. In Table 3, we observe a statistically negative significant difference when $t = -3$ in ranks 1 and 2, companies with a high PD. This means that investors consider the companies executing a split are decreasing the value of their stock and are damaging their corporate value through the spin-off. By performing a split of its business, the company is not given a good evaluation by investors. On the other hand, there is a possibility that companies with a bad evaluation in the market execute spin-offs. This means that a split is performed when corporate performance is sluggish.

In ranks 1, 2, 3, and 5, we also observe a statistically positive significant difference when $t = -8$ and $t = 7$. The market evaluated the company's spin-off and the company obtained a positive reaction by investors, which is one of the reasons for splitting a company. In ranks 1 and 2, we can also conclude that the market evaluation is very volatile because we observe a negative and a positive significant difference.

We also observe a statistically negative significant difference when $t = -5, 4, 6,$ and 8 in ranks 17 to 20, companies with a low PD. This means that by performing a split, the company does not receive a good evaluation from investors even if the company is performing well. This might be because the company is splitting a profitable division or the company is giving a signal that the management is in a less than satisfactory condition. The corporate divestiture system may be used to escape the company's predicament.

3. Conclusion

Mergers and acquisitions have increased in Japan since the late 1990s, and to survive the competition in the international community, appropriate group structure and business management are required. In that sense, a reorganization system in corporate law has become an important tool. A straightforward system design with adaptable revisions is necessary for the management of a company. Utilizing this system, a company can become more valuable by, for example, separating a growth division and allowing it to become independent, or separating an unprofitable division and centralizing financial resources.

Biography

Yasuhiro TAMBA completed a M.A. in economics and social development degree at University of Pittsburgh and a Ph.D. degree at Graduate School of Economics, Osaka University. His main research theme is an interest rate model in finance.

Shinsaku IKESHIMA completed a LL.M. degree at Graduate School of Laws, Keio University. His main research theme is corporate value, company legal system and company reorganization.

Hirohisa HIRAI completed a Ph.D. degree at Graduate School of Engineering, Osaka University. His main research theme is corporate valuation and the empirical research in accounting.

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Table 2 AR (%) to announcement day of company spin-off

day(t)	PD rank									
	1	2	3	4	5	6	7	8	9	10
-10	-0.002	-0.002	-0.002	0.000	0.001	-0.001	-0.001	-0.001	-0.002	-0.001
-9	0.008	0.008	0.006	0.004	0.003	0.002	0.001	0.002	0.002	0.002
-8	0.013	0.011	0.006	0.004	0.002	0.002	0.001	0.001	0.002	0.001
-7	0.009	0.001	0.001	0.000	0.003	0.002	0.002	0.002	0.002	0.002
-6	0.008	0.008	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002
-5	0.001	-0.005	-0.003	-0.001	-0.002	-0.002	-0.002	-0.002	-0.001	-0.002
-4	-0.004	0.000	0.001	-0.001	-0.002	-0.002	-0.001	-0.001	-0.000	-0.000
-3	-0.009	-0.011	-0.006	-0.003	-0.003	-0.001	-0.000	-0.000	0.001	0.002
-2	-0.011	-0.000	-0.002	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
-1	0.003	-0.003	-0.002	-0.002	-0.002	-0.001	-0.000	0.001	0.000	0.000
0	0.022	0.011	0.007	0.008	0.006	0.006	0.003	0.003	0.003	0.003
1	-0.008	-0.003	-0.004	-0.010	-0.012	-0.010	-0.009	-0.008	-0.006	-0.005
2	0.005	0.002	-0.001	0.013	0.008	0.008	0.006	0.006	0.006	0.005
3	0.002	0.006	-0.001	-0.002	-0.001	-0.002	-0.001	-0.002	-0.002	-0.002
4	-0.008	0.000	-0.002	-0.003	-0.002	-0.001	-0.001	-0.001	-0.001	-0.000
5	0.005	0.003	0.002	0.003	0.002	0.002	0.003	0.002	0.002	0.002
6	-0.004	-0.000	-0.001	0.000	-0.000	-0.001	-0.001	-0.001	-0.001	-0.001
7	0.006	0.006	0.007	0.005	0.005	0.004	0.003	0.002	0.003	0.002
8	-0.008	-0.005	-0.003	-0.003	-0.004	-0.003	-0.001	-0.002	-0.001	-0.001
9	0.008	0.004	0.002	0.001	-0.001	-0.003	-0.002	-0.001	-0.001	-0.001
10	-0.007	0.001	-0.001	-0.001	0.001	-0.000	0.000	0.000	-0.000	0.000

day(t)	PD rank									
	11	12	13	14	15	16	17	18	19	20
-10	-0.001	-0.002	-0.001	-0.001	-0.001	-0.002	-0.002	-0.001	-0.001	-0.005
-9	0.002	0.002	0.002	0.001	0.002	0.002	0.002	0.002	0.002	-0.000
-8	0.001	0.001	0.001	0.000	-0.000	0.000	0.000	-0.000	-0.000	-0.002
-7	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	-0.003
-6	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.002	-0.001
-5	-0.001	-0.001	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.003
-4	0.001	0.001	0.000	0.000	0.000	0.000	0.000	-0.000	-0.000	-0.004
-3	0.001	0.000	0.000	0.001	0.000	0.000	0.000	0.001	0.001	-0.002
-2	-0.001	-0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000	-0.000	-0.001
-1	0.000	0.000	-0.000	-0.000	-0.000	0.000	0.000	0.000	0.000	-0.002
0	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001
1	-0.004	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002	-0.002	-0.004
2	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.004	0.003	0.002
3	-0.001	-0.001	-0.001	-0.001	-0.000	-0.001	-0.001	-0.001	-0.001	-0.003
4	-0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002	-0.002	-0.003
5	0.002	0.002	0.001	0.001	0.000	0.000	0.000	0.000	0.000	-0.001
6	-0.002	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002	-0.002	-0.005
7	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	-0.002
8	-0.001	-0.002	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
9	-0.001	0.008	0.007	0.007	0.006	0.006	0.006	0.005	0.005	0.002
10	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	-0.003

Table 3 t-value to announcement day of company spin-off

day(t)	PD High		PD rank							
	1	2	3	4	5	6	7	8	9	10
-10	-0.4175	-0.4174	-0.4770	0.1139	0.5267	-0.4148	-0.4399	-0.7625	-1.0199	-0.8689
-9	1.4204	1.1406	1.1442	1.0514	0.8183	0.5869	0.5253	0.9319	0.9289	1.2351
-8	1.8179	2.0163	1.5292	1.1632	0.6956	0.6663	0.5965	0.6173	0.7846	0.4533
-7	0.9624	0.0959	0.1909	0.1218	0.7268	0.5424	0.5716	0.8245	0.9432	0.8472
-6	0.9835	1.2582	0.6610	0.7332	0.8788	0.9509	0.9196	0.9944	0.8185	0.9818
-5	0.0966	-0.9184	-0.6311	-0.2506	-0.6389	-0.7425	-0.9334	-0.9050	-0.7575	-0.9182
-4	-0.5877	0.0416	0.1455	-0.1320	-0.4537	-0.5723	-0.3271	-0.3506	-0.0874	-0.0679
-3	-1.7585	-1.8446	-1.4605	-0.9882	-0.9783	-0.3914	-0.2001	-0.1450	0.4182	0.8808
-2	-1.7177	-0.0615	-0.4148	-0.3534	-0.2387	-0.4334	-0.5075	-0.6595	-0.6374	-0.6559
-1	0.2996	-0.4218	-0.4890	-0.6193	-0.6710	-0.5161	-0.1329	0.3193	0.0466	0.1408
0	0.9974	0.8936	0.8880	1.1976	1.1573	1.2890	0.8532	0.9436	0.8128	0.9076
1	-0.5283	-0.3855	-0.6278	-1.0574	-1.3907	-1.3910	-1.3991	-1.5136	-1.2925	-1.1712
2	0.5883	0.4527	-0.1434	0.9215	0.6802	0.8210	0.7657	0.8431	0.8991	0.8347
3	0.1741	0.7839	-0.1494	-0.4564	-0.2268	-0.4985	-0.3098	-0.7303	-0.8941	-0.8671
4	-1.4759	0.0827	-0.6674	-1.1331	-0.7071	-0.5824	-0.7336	-0.4509	-0.4601	-0.2411
5	0.7590	0.7700	0.5940	1.0270	1.0140	1.0179	1.4216	1.2642	1.0682	1.5352
6	-0.6447	-0.1326	-0.2493	0.0152	-0.0689	-0.5113	-0.6354	-0.3037	-0.3419	-0.7731
7	1.0302	1.4077	2.0866	1.5992	2.0044	1.5727	1.6399	1.3227	1.4882	1.5397
8	-1.4345	-1.4070	-0.8662	-1.3131	-1.7813	-1.3582	-0.7410	-0.9384	-0.9108	-0.4945
9	0.8405	0.6932	0.5162	0.2903	-0.4728	-1.0757	-0.7790	-0.4880	-0.6454	-0.7454
10	-1.1692	0.2466	-0.3799	-0.2117	0.3645	-0.0624	0.1011	0.1471	-0.2502	0.1997

day(t)	PD rank									
	11	12	13	14	15	16	17	18	19	20
-10	-0.9451	-1.0664	-0.7541	-1.0902	-1.1060	-1.2840	-1.4779	-1.1111	-1.0210	-1.1746
-9	1.0500	1.0082	0.9884	0.9484	1.3384	1.2942	1.3111	1.2864	1.4437	-0.1963
-8	0.5320	0.4629	0.3396	0.3031	-0.1531	0.0058	0.0292	-0.1458	-0.3336	-0.9820
-7	0.9707	1.0234	1.0067	1.0088	1.1378	1.2332	1.1970	1.0767	0.9850	-0.6631
-6	0.9157	1.0648	0.9076	0.7704	1.0041	0.8994	1.1441	1.2147	1.3313	-0.2702
-5	-0.4099	-0.4770	-0.6537	-0.6412	-0.9569	-1.0561	-1.3444	-1.6847	-1.6516	-1.9378
-4	0.4197	0.3672	0.1260	0.0582	0.0036	0.0888	0.2063	-0.2520	-0.3059	-1.0583
-3	0.3195	0.1116	0.2435	0.3880	0.2825	0.2286	0.1633	0.4379	0.5041	-0.6690
-2	-0.7645	-0.3027	-0.2934	-0.3961	0.1693	0.0275	0.0422	-0.1039	-0.0923	-0.7574
-1	0.2105	0.0908	-0.2055	-0.2997	-0.2483	0.0880	0.1303	0.0659	0.2875	-0.7246
0	0.7382	0.9171	1.0648	1.1093	0.9579	0.8542	0.9481	0.9408	1.1559	0.8781
1	-0.9024	-0.9045	-0.9684	-0.8872	-0.9528	-0.9108	-0.7446	-0.7906	-0.8047	-1.2211
2	0.7715	0.7797	0.7093	0.7088	0.8474	0.8933	0.9772	1.0713	1.0659	0.7516
3	-0.8230	-0.3860	-0.3230	-0.5793	-0.3462	-0.5575	-0.8055	-0.6524	-0.6898	-1.1984
4	-0.2976	-0.5841	-0.5803	-0.7440	-1.0269	-1.2098	-1.2305	-1.4975	-1.6780	-1.7538
5	1.1260	1.2714	0.8773	0.4625	0.1010	0.3127	0.4721	0.4285	0.0851	-0.2321
6	-1.1698	-1.0268	-1.1654	-1.0686	-1.0595	-1.0246	-1.1568	-1.7071	-1.5350	-1.3983
7	1.5870	1.2471	0.9707	0.9500	1.0907	1.1162	0.9438	0.8165	0.7697	-0.6391
8	-0.9179	-1.5850	-0.9405	-1.0148	-1.3731	-1.6092	-1.7440	-2.1047	-1.8906	-1.8331
9	-0.6285	0.9025	0.8666	0.8817	0.8646	0.8778	0.9406	0.9232	0.9621	0.3138
10	0.3144	0.4265	0.6870	0.7554	0.9284	1.0852	0.9711	0.9452	0.8777	-0.7664

※ Unshaded cells represent an area with a statistically significant difference.

※ A rank represents the order in which companies are arranged in descending order according to the PD, corresponding to the position when they are divided into 20 equal-sized groups.

