Impact of Divestiture Activities on Corporate Performance: Evidence from Listed Firms in Taiwan

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ABSTRACT

This study examines how divesture affects the performance of listed companies in Taiwan. Divestiture describes firms selling their assets, production lines, subsidiaries or other segments for either cash or securities. This study focuses on two types of divestiture activities: sell-offs and equity carve-outs. Specifically, this work employs a control group design to examine 266 sell-off and equity carve-out announcements between 1995 and 2004, and measures the short-term abnormal stock returns and long-term (5 years) operating performance using financial ratios. The analytical results show significant positive stock abnormal returns associated with divestiture announcements for listed companies in Taiwan. Furthermore, firms generally experienced enhanced performance after undertaking divestiture activities.

JEL: G34, G14

KEYWORDS: Divestiture, Sell-offs, Equity carve-outs, Event study, Taiwan

INTRODUCTION

Firms can adopt numerous growth strategies, one of which is divestiture. One recent trend has seen diversified firms exhibit a diversification discount compared to stand-alone firms. Rajan, Servaes and Zingales (2000) think that with increased diversity in resources and opportunities, resources flow towards the least efficient division, resulting in less efficient investment and lower firm value. Studies show that firms that engage in divestitures and increase their focus achieve improved operating performance and stock returns (Comment & Jarrell, 1995; John & Ofek, 1995). Dittmar and Shivdasani (2003) indicate that the efficiency of segment investment increases considerably following divestitures.

Other empirical studies on divestitures focus on two areas, namely the impacts of divestiture activities on stockholder wealth and firm operating performance, respectively. Numerous studies have investigated the effect on shareholder wealth of firm announcements to voluntarily divest part of their operations, and all have shown that divestiture announcements positively affect parent firm stock returns (Mulherin & Boone, 2000; Dittmar & Shivdasani, 2003; Datta, Iskandar-Datta, & Raman, 2003; Veld & Veld-Merkoulova, 2004). Regarding the impact of divestiture activities on the operating performance, Haynes, Thompson and Wright (2002) indicate that divestment significantly, positively and substantially enhances firm profitability. Hanson and Song (2003) found that divestitures improve firm operating performance, apparently by removing negative synergies. Most scholars support the perspective that divestitures improve operating performance (Hulburt, Miles & Woolridge, 2002; Dittmar & Shivdasani, 2003).

Few empirical studies have examined firm divestitures in Taiwan or other emerging developing economies. Therefore, it is worth exploring whether or not Taiwanese firms engaging in divestitures improve their performance. Regarding shareholder wealth effects, most previous studies focused on the wealth effect of merger/investment announcements and payment for acquisitions. Previous studies of the wealth effect associated with firm divestiture announcements have been insufficient. This study

explores whether firm divestitures significantly affect stock returns.

This study examines a sample of 266 sell-offs and equity carve-outs between 1995 and 2004 and measures short-term performance based on stock returns and long-term (5 years) operating performance based on financial ratios. The evidence reveals significant positive cumulative abnormal returns associated with firm divesting announcements and that divestiture activities can improve their operating performance and enhance firm value. The rest part of this paper is organized as follows. Section 2 reviews the related studies. Section 3 depicts the sample. Section 4 reports the empirical results. Section 5 concludes.

LITERATURE REVIEW

John and Ofek (1995) documented a significant improvement in the performance of the seller firm's remaining assets in the two years following the divestment. Lang, Poulsen and Stulz (1995) suggested that firms benefit from announcing successful sales because a successful sale means that the firm received enough money to make the sale worthwhile.

Cho and Cohen (1997) found that firms experience improved operating performance following divesting. Haynes, Thompson and Wright (2002) indicated that divestment significantly, positively and substantially improves firm profitability. Dittmar and Shivdasani (2003) showed that changes in divisional investment are associated with decreased diversification discount. Furthermore, Hanson and Song (2003) documented that divestitures improve firm operating performance, and this improvement possibly results from the removal of negative synergies. This study infers that firms engaging in divestitures may decrease the resource misallocation and reallocate these resources to valuable segments. Besides, divestment can relax financial constraints for the remaining segments of firms. This can make them have more opportunities to invest on net present value projects and gain performance improvement.

Rosenfeld (1984) presented that sell-off announcements tend to have a positive influence on the stock prices of the divesting firms. Jain (1985) showed that both sellers and buyers earn significant positive excess returns form sell-off transactions. Hite, Owers and Rogers (1987) demonstrated that firms partially divesting their assets exhibit significant cumulative abnormal returns (CARs) during the announcement period. Moreover, Dittmar and Shivdasani (2003) found that divestiture announcements are associated with significant positively returns. Specifically they found all CARs to be statistically significant at the 1% level. Datta, Iskandar-Datta and Raman (2003) document that both stockholders and bondholders of divesting firms gain considerably from divestiture transactions.

This study infers that firms can dispose of assets that have no operational efficiency after divesting and use cash from divestitures to undertake more investment that is efficient. In addition, it will be helpful for investors to classify and evaluate for firms after divesting. Therefore, divestiture announcements should result in a positive effect on the shareholder wealth.

DATA AND METHODOLOGY

This study focuses on the divestiture announcements of listed companies in Taiwan during 1995-2004. The dates of divesting events are obtained from the "Public Announcements" of the Taiwan Securities and Futures Institute. Financial data of listed companies, including the market value of stock, leverage ratio, the percentage of managerial ownership and so on, are all obtained from the Taiwan Economic Journal (TEJ). To increase the sample reliability, this study employed the following sample selection criteria: The sample comprises listed companies in Taiwan that reported divestitures to the "Taiwan Securities & Futures Institute" or in professional commercial newspapers. We examined the trading data for the 180 trading days before and 30 trading days after the announcement date. Firms with multiple divesting

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events during the event period were excluded from the sample. The divesting firms had to disclosure divestiture trading data. The control group sample comprised firms with similar size and in the same industry as the divesting firms. In addition, they did not engage in divestitures during the same year as the divesting firms.

Performance Variables

This study uses the average value of each performance variable from five years following divestment minus that from five years before divestment to perform difference analysis for exploring whether divestitures enhance firm performance. Additionally, this study employs the average value of each performance variable from the five years following divestment to examine the influence of the characteristics of divesting firms and divestiture activities on firm performance. The performance variables are Excess value (EV), Return on assets (ROA) and Cash flow to current debts (CFD).

Excess value compares firm value with its imputed value based on the assumption that each of its segments operates as a single-segment firm. Excess value is defined as the log of the ratio of firm value to imputed value. The method used to calculate excess value is as follows:

$$EV = \ln\left(\frac{V}{I(V)}\right) \tag{1}$$

$$I(V) = \sum_{i=1}^{n} AI_i \times \left[Ind_i \left(\frac{V}{AI}\right)_{mf} \right] \tag{2}$$

EV is firm excess value; V is firm total capital (market value of equity plus book value of debt); I(V) is imputed value of the sum of firm segments as stand-alone firms; AI_i : the value of the accounting item

(sales) used in the valuation multiple for segment i; $Ind_i \left(\frac{V}{AI}\right)_{mf}$ is the multiple of total capital in relation

to an accounting item (sales) for the median single-segment firm in the industry of segment i; n is total number of segments in the firm.

Shareholder Wealth Effect

Regarding event window selection, most scholars use the day before and after the announcement date to perform event study for the announcement effect (McNichols and Dravid, 1990; Banker and Datar, 1992; Denis and Sarin, 1994). This study adopts event study to examine the influence of firm divestiture announcement on abnormal stock returns, and uses the market model to calculate the average abnormal returns (AR), standardized average abnormal returns (SAR), cumulative average abnormal returns (CAR) and standardized cumulative average abnormal returns (CSAR) for sample firms during the event periods.

Owing to the price limitations affecting the domestic stock market in Taiwan, stock prices react inefficiently compared to foreign markets, and announcement news is sometimes leaked. The total observation period of firm divestiture announcements in this study was from t=-150 to t=+30. Table 1 lists the operating definitions of the variables related to shareholder wealth effect.

Table 1：The Operating Definitions of the Variables Related to Shareholder Wealth Effect

Variables	Definition
Individual stock daily returns	Not ex-dividend (ex-right) day: [(closing price for reference day]/closing price for the previous day])-1] ×100% Ex-dividend (ex-right) day: [(closing price for reference day× (1+N+S) +C)/ (closing price for the previous day] +F×S)-1] ×100%, N: stock dividend ratios (entitlement ratios); S: seasoned equity offering dividend ratios; C: cash dividends; F: individual share underwriting price for seasoned equity offering.
Market portfolio daily returns	[(issuing volume weighed stock price index for the reference day]/ issuing volume weighed stock price index for the previous day])-1] ×100%
Abnormal returns for the individual sample stock $\hat{R}_{j,t} = \hat{\alpha}_j + \hat{\beta}_j R_{mt}$ $AR_{j,t} = R_{j,t} - \hat{R}_{jt}$ t=-30~+30	$\hat{R}_{j,t}$ =expected returns of stock j of the sample firm on day t during the event period; $R_{j,t}$: abnormal returns of sample firm j on day t during the event period; $R_{j,t}$: actual returns of sample firm j on day t during the event period; R_{mt}: actual returns of market portfolios on day t during the event period; $\hat{\alpha}_j$: the regression analysis intercept term of sample firm stock j and the daily returns for the market portfolio; $\hat{\beta}_j$: the regression analysis coefficient of stock j of the sample firm and daily returns of the market portfolio.
Average abnormal returns for the whole sample	$AR_t = \dfrac{\sum\limits_{j=1}^{n} AR_{j,t}}{n}$ t=-30~+30. Where, AR_t: average abnormal returns for the whole sample on day t during the event period; n: number for firm divestiture announcement
Cumulative abnormal returns for the individual sample	$CAR_j = \sum\limits_{t=b}^{e} AR_{j,t}$ CAR_j: cumulative abnormal returns of sample firm stock j during the event window; b: the beginning date of the event window; e: the end date of the event window.
Cumulative average abnormal returns for the whole sample	$CAR = \sum\limits_{t=b}^{e} AR_t$
Standardized stock abnormal returns for the individual sample	$SAR_{jt} = \dfrac{AR_{jt}}{S_j\sqrt{1+\dfrac{1}{120}+\dfrac{(R_{mt}-\bar{R}_m)^2}{\sum\limits_{r=-31}^{150}(R_{mr}-\bar{R}_m)^2}}}$ t=-30~+30 SAR_{jt}: The standardized abnormal returns of sample firm j on day t during the event period; $\bar{R}_m$: average market portfolio returns during the estimation period r=-31~ -150; S_j: standard deviation of the abnormal returns of sample firm j during the estimation period r=-31~ -150. The calculation method is: $S_j^2 = \dfrac{1}{119}\sum\limits_{r=-31}^{-150}(AR_{jr}-\overline{AR}_j)^2$ $\overline{AR}_j = \dfrac{1}{120}\sum\limits_{t=-31}^{-150} AR_{jr}$
Standardized average abnormal returns of the whole sample	$SAR_t = \dfrac{\sum\limits_{j=1}^{n} SAR_{jt}}{n}$ t=-30~+30 SAR_t : The standardized average abnormal returns for all of the sample firms on day t during the event period.
Cumulative standardized abnormal returns for individual samples	$CSAR_j = \sum\limits_{t=b}^{e} SAR_{jt}$ $CSAR_j$ the cumulative standardized abnormal returns of sample firm j during the event window.
Cumulative standardized abnormal returns for the whole sample	$CSAR = \sum\limits_{t=b}^{e} SAR_t$ CSAR: the cumulative standardized average abnormal returns for the whole sample during the event window.

RESULTS

Descriptive Statistics

The sample consists of 266 cases, which are 157 for sell-offs and 109 for equity carve-outs. The largest numbers of firms undertaking sell-offs was shown in 1998 with 32 cases, representing 20.38% of the sample. The years with the second largest numbers of sell-offs were 1999 and 2000, which each saw sell offs involving 14.65% of the total sample. Clearly, sell-off activities involving listed firms have recently become increasingly frequent. Most of these cases have involved the textile industry with 25 cases, or 15.92% of the sample. This may be because the textile industry is a sunset industry. Textile industry firms thus must dispose of their unprofitable assets for the same of survival. Construction and electronics are the next most common industries for sell-off activity, representing 12.10% and 10.83% of all sample firms respectively.

On the other hand, for equity carve-outs the year of most intense activity was 2000, with 19 cases, representing 17.43% of the sample. The next busiest years for equity carve-outs were 2002, 2001, and 1998, with 17, 17 and 14 cases, representing 15.60%, 12.84% and 12.84% of the sample, respectively. Clearly, there has recently been frequent equity care-out activity involving listed firms, mirroring the situation for sell-off activity. Most cases of equity carve-out involved the electronics industry, with 43 cases, representing 39.45% of the sample. This phenomenon may occur because the electronics industry is more diversified than other industries, possibly resulting in a larger diversification discount. Electronics industry firms may sell shares in unprofitable subsidiaries more frequently than firms in other industries to reduce the diversification discount. The remaining firms involved in equity carve-outs are spread across other industries.

Difference Tests for Firm Performance before and after Divestiture

This study uses Kolmogorov-Smirnov One-sample Test to determine whether the sample exhibits a normal distribution. According to the K-S-Z value test results shown in Table 2, if the values achieve significance, the variables are not normally distributed. Therefore, this study uses the Wilcoxon symbol test, a nonparametric method, for performance difference testing. If the values do not achieve significance, the variables are normally distributed. This study thus uses the Paired-Sample T Test to conduct performance difference testing.

Table 2: The Mean, Standard Deviation and Normal Distribution Test of Performance Variables of Divesting Sample Group and Control Group

A: Sell-off Sample			N=157
Measure Variables	**Mean**	**Std.**	**K-S Z value**
Average EV of sample group (5 years after-5 years before)	1.7362	1.162	1.141
Average EV of control group(5 years after-5 years before)	0.4450	0.5642	1.152
Average ROA of sample group (5 years after-5 years before) (%)	3.4223	18.7618	4.135***
Average ROA of control group (5 years after-5 years before) (%)	3.178	17.0463	3.996***
Average CFD of sample group (5 years after-5 years before) (%)	11.7421	27.3208	0.789
Average CFD of control group (5 years after-5 years before) (%)	11.5847	27.246	0.788
B: Equity Carve-out Sample			**N=109**
Measure Variables	**Mean**	**Std.**	**K-S Z value**
Average EV of sample group (5 years after-5 years before)	0.2838	0.4008	2.554***
Average EV of control group (5 years after-5 years before)	0.1564	0.3091	3.202***
Average ROA of sample group (5 years after-5 years before) (%)	1.7252	4.6643	1.446**
Average ROA of control group (5 years after-5 years before) (%)	1.4899	4.5962	1.529**
Average CFD of sample group (5 years after-5 years before) (%)	12.804	23.824	1.607**
Average CFD of control group (5 years after-5 years before) (%)	12.5246	23.7613	1.637***

Panel A shows the results for the Sell-off Sample. Panel B shows the results for the Equity Carve-out Sample. *EV is Excess value; ROA is Return on assets; CFD is Cash flow to current debts.* ***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively.

<u>Performance Difference Test of Divesting Firms before and after Divesting</u>

The results reveal that the performance measure variables, including average excess value, return on assets, and cash flow to current debts (5 years after-5 years before), differ significantly between before and after firm divestitures, as listed in Table 3.   For both the sell-off and equity-carve firms, the three performance variables all increase significantly following divesting.   However, whether firms involved in divestitures exhibit enhanced performance remains uncertain, since these firms may be influenced by market trends, industry developments or environmental changes.   Therefore, this study further compares the performance differences between the sample and control firms.

Table 3: The Performance Mean Difference Test of Divesting Sample Group 5 Years after and 5 Years before Divesting

A: Sell-off Sample			
Measure Variables	**N**	**Z value**	**P value**
Excess value	157	+10.868	0.000***
Return on assets	157	+6.477	0.000***
Cash flow to current debts	157	+5.197	0.000***
B: Equity Carve-out Sample			
Measure Variables	**N**	**Z value**	**P value**
Excess value	109	+9.062	0.000***
Return on assets	109	+4.627	0.000***
Cash flow to current debts	109	+6.704	0.000***

*Panel A shows the results for the Sell-off Sample.   Panel B shows the results for the Equity Carve-out Sample.   ***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively.*

<u>Performance Difference Test of the Divesting and Control Groups Before and After Divesting</u>

Table 4 indicates that the sample firms exhibit a significant increase in excess value (EV) after divesting compared to the control group.   Divesting sample firms also exhibit significantly increased return on assets compared to the control group, a phenomenon measured by the profitability of the total assets of the sample firm increasing after divesting.   Furthermore, divesting sample firms also display significantly increased cash flow to current debts compared to the control group.   Consequently, the ability of the cash flow of sample firms to repay current debts is stronger after divesting.   Generally, divestitures can enhance firm performance.   These results mirror those of Cho and Cohen (1997), Hulburt, Miles, and Woolridge (2002), Hanson and Song (2003), and Dittmar and Shivdasani (2003).

Table 4: The Performance Difference Test of Divesting Sample Group and Control Group before and after Divesting

A: Sell-off Sample			
Measure Variables	**N**	**Z value or T Value**	**P value**
Excess value (Sample Group - Control Group)	157	T=+14.935	0.000***
Return on assets (Sample Group - Control Group)	157	Z=+9.704	0.000***
Cash flow to current debts (Sample Group - Control Group)	157	T=+9.479	0.000***
B: Equity Carve-out Sample			
Measure Variables	**N**	**Z value or T Value**	**P value**
Excess value (Sample Group - Control Group)	109	Z=+9.062	0.000***
Return on assets (Sample Group - Control Group)	109	Z=+8.387	0.000***
Cash flow to current debts (Sample Group - Control Group)	109	Z=+8.926	0.000***

*Panel A shows the results for the Sell-off Sample.   Panel B shows the results for the Equity Carve-out Sample.   ***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively.*

Abnormal Returns Analysis for Firm Divestiture Announcements

For both the sell-off and equity carve-out samples, the highest standardized average abnormal returns are the 0.2328% and 0.2576% of divesting announcement dates respectively.   Generally, for standardized average abnormal returns, a positive reaction to firm divestment announcement date occurs on and before and announcement day.   However, negative standardized average abnormal returns occur following the announcement date.   These negative returns gradually increase to become positive standardized average abnormal returns.   These analytical results demonstrate that news of divestment announcements may be leaked, causing the market to react in advance of the event.   Additionally, the announcement day exhibits an excessive reaction, while negative abnormal returns follow the announcement day.   These results resemble those of Klein, Rosenfeld, and Beranek (1991), Kaiser and Stouraitis (1995), Mulherin and Boone (2000), and Dittmar and Shivdasani (2003).

To analyze the impact of firm divestiture announcements on the firm shareholder wealth, we can understand the sight and short-term announcement effect of firm divestiture announcement before and after the announcement day by the cumulative average abnormal returns (CARs) and the standardized cumulative average abnormal returns (CSARs) of event windows before and after firm divestiture announcement.   Table 5 presents the results.

Regarding sell-off sample, the standardized cumulative average abnormal return (CSAR) of event window (-1, +1) is 0.2430%, achieving 0.05 significant level in Table 5.   This can further prove the announcement event of divestitures have positive CSARs during the announcement day.   The CSAR of event window (-10, -2) is 0.3532% with 0.1 significant level.   It implies that the news has the revealing condition in advance and leads to market reaction in advance.   However, the CSAR of event window (+2, +10) after announcement day is –0.5409% with 0.01 significant level, which means the market has over-reacted and then justified.   Following the CSARs return to positive value on event window (-30, +30).

Table 5: The Average Cumulative Abnormal Returns of the Event Windows of the Divesting Firms

Event windows	Panel A: Sell-off Sample (N=157)				Panel B: Equity Carve-out Sample (N=109)			
	CAR	t (CARt)	CSAR	t (CSARt)	CAR	t (CARt)	CSAR	t (CSARt)
(-1 ,+ 1)	0.2418	0.0579	0.2430	1.9677**	0.7359	0.1953	0.2897	1.9280**
(-5 , +5)	0.4367	0.0546	0.2326	0.8980	0.8449	0.1171	0.3525	1.4981*
(-10 ,- 2)	1.2319	0.1714	0.3532	1.6951*	0.1951	0.0390	0.0304	0.0119
(+2 , +10)	-1.2079	-0.1740	-0.5409	-2.3437**	-0.5156	-0.0790	-0.2606	-0.9396
(-30 , +30)	0.1034	0.0033	0.0927	0.1349	0.7471	0.0254	0.1981	0.0886

*Panel A shows the results for the Sell-off Sample.   Panel B shows the results for the Equity Carve-out Sample.   CAR is the cumulative average abnormal return . CSAR is the standardized cumulative average abnormal return.   ***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively.*

Regarding equity carve-out sample, the standardized cumulative average abnormal returns (CSAR) of event window (-1, +1) and (-5, +5) are 0.2897% and 0.3525%, achieving 0.05 and 0.1 significant levels in Table 5.   Because the announcement event news of divestitures revealed in advance excessively, the CSAR presents positive value on event window (-10, -2).   However, the CSARs is positive value on event window (-30, +30) insignificantly.   These empirical results are similar to the results of Klein, Rosenfeld, and Beranek (1991), Kaiser and Stouraitis (1995), Mulherin and Boone (2000), Dittmar and Shivdasani (2003).

CONCLUSIONS

This study employs a control group design to examine 266 sell-off and equity carve-out announcements between 1995 and 2004, and measures the short-term abnormal stock returns and long-term (5 years) operating performance using financial ratios. Evidence shows significant positive cumulative abnormal returns on the divestiture announcement date. Firm involvement in divestitures thus represents good news for investors. Consequently, positive cumulative abnormal returns are associated with firm divestiture announcements, together with significant positive market reactions on the announcement day. The news frequently leaked, resulting in an advance market reaction. The evidence shows that divestiture activities can often improve firm operating performance and enhance firm value. Due to the difficulties of data collection and empirical process in this study, further researches direct the larger samples, focus extent change of firms after divesting and adopting multiple measurement of variables.

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