Value Creation from Increased Corporate Focus Spinoffs

By Soojin Han (soojinh12@gmail.com)

Erasmus University Rotterdam

Economic School of Erasmus

International Bachelor Economics and Business Economics

Student Number: 451848

Bachelor thesis

Supervisor: Dr. Ran Xing

Date: August 4, 2018

Abstract

Value creation of spinoff has been documented in previous researches. This paper tests the increased corporate focus hypothesis that the parent company from cross-industry spinoffs is related with higher value creation where the continuing entity has a different two-digit Standard Industry Classification codes than the spun off subsidiary. The stock market analysis results suggest strong evidence for value creation of cross-industry spinoffs around the announcement date. However, operating performance changes analysis does not provide strong evidence in the return-on-assets variable and less strong evidence in the capital-expenditure-to-assets variable.

Keywords: spinoff, corporate focus, cross-industry, value creation

Table of Contents

1. Introduction

When a firm decides to divest its portion of assets to a third party, one dominant method is a spin-off. Many previous studies about spinoffs proved that the parent company typically experiences positive market reaction around the announcement date (Hite and Owers, 1983; Daley, Krishnaswami and Subramaniam, 1999; Maxwell and Rao, 2003). Value creation is also captured in productivity improvement in plant-level data (Chemmanur, Krishnan, and Nandy, 2014) or increased operating performance of cross-industry spinoffs (Desai and Jain, 1999). However, the agreement on the sources of the parent company's value creation has not been reached yet.

Why some companies realize value creation regarding spinoffs and which conditions are related with higher value? This paper aims to answer this question by empirically testing whether spinoffs related with increased corporate focus create value. A conglomerate may improve its value by eliminating its subsidiary in a different business. Increased corporate focus is defined as cross-industry spinoffs where the parent company has a different 2-digit Standard Industrial Classification (SIC) code than the subsidiary. The hypothesis has been documented by previous researches (Daley, Mehrotra, and Sivakumar, 1997; Desai and Jain, 1999). The research question is meaningful in confirming whether the theory still holds true, and if so, investors could understand spinoffs better in which conditions company would realize higher stock return. Firms who are thinking of divestment can also benefit from this paper in deciding whether spinoff is appropriate for them.

The purpose of this paper is to empirically test the relationship between focus-increasing spinoffs and value measurements, namely abnormal stock returns and operating performance changes. Before analyzing the hypothesis, event study is performed to see if parent companies around the spinoff announcement date realize abnormal return in various event periods. The mean abnormal return of 113 spinoffs on the announcement date is 2.17% at the 1% significance level. Cumulative average abnormal return for the three-day interval around the event date is 2.99% at the 1% significance level. After performing event study, the regression of three-day cumulative abnormal return is analyzed. The main variable cross-industry increases 2.8% in abnormal return at the 10% significance level in 113 observations, and 3.33% at the 5% significance level in 95 observations. Capital Expenditure to Assets (CAP) is also reported to be

significant the 10% level with the coefficient of 0.322. Overall, the stock market experiences positive reaction undoubtedly and especially for cross-industry spinoffs.

In analyzing operating performance changes, two proxies are defined: Return on Assets (ROA) and Capital Expenditure to Assets (CAP). ROA measures efficiency in assets and CAP measures investment opportunities. For each cross-industry spinoffs and own-industry spinoffs, changes of ROA and CAP are analyzed respectively from year -1 to +2 with the year 0 as the spinoff effective year. For ROA changes, a raw median ROA change of 0.81% for [-1, +1] is significant at the 10% level for cross-industry spinoffs. Own-industry spinoffs in raw and industry-adjusted median changes return -0.44% and -0.35% at the 10% significance level, respectively. ROA analysis suggests no evidence in value creation of cross-industry spinoffs. On the other hand, CAP analysis suggests small evidence. For cross-industry spinoffs, positive median change of 0.36% is measured in the raw and 0.36% in the industry-adjusted measure at the 5% significance level for the period [0, +1]. Own-industry spinoffs, however, return positive change during the period [-1, 0] and [+1, +2] only at the 10% significance level. In conclusion, empirical results of this paper suggest strong evidence for increased corporate focus hypothesis in stock markets, but weak evidence in operating performance changes. The contribution of this article to the previous researches is that the stock return regression results strengthen evidence of value creation in stock markets. Moreover, from both stock return and operating performance analysis, capital expenditure as a proxy to investment opportunities turn out to be an important variable in explaining value creation.

The remaining part of this paper is organized as follows. Chapter 2 explains theoretical background to get insight into spinoffs and increased corporate focus hypothesis. In Chapter 3, the process of data selection and the methodologies of event study, regression, and operating performance changes are described in detail. Chapter 4 presents the basic summary statistics and empirical results of the event study, stock return analysis and operating performance analysis. The paper ends with conclusion in Chapter 5.

2. Theoretical Background

2.1 Spinoff

Spinoff is a distribution of a public company's stock ownership in a subsidiary to its shareholders on pro-rata basis. The spun-off subsidiary becomes public with a new ticker symbol

and an independent board of directors but with the same organization of shareholders as the *parent*, the remaining company. Spin-off can be distinguished from other restructuring methods, such as equity carve-out and asset sell-off in terms of subsequent ownership in a subsidiary ownership and transaction details. In a spin-off, the parent company delivers its majority of stock ownership in the subsidiary to the existing shareholders without any cash or external financing involved. In contrary, equity carve-out is aimed at reducing part of the ownership so the parent still retains practical control of the subsidiary, and external funds are raised through initial public offerings. An asset sell-off resembles both spin-off and equity carve-out partially in a sense that it eliminates the parent corporation's involvement by selling the subsidiary to a third party, thus receiving cash or securities but not through the public issue sale. A divesting firm may choose one among various restructuring methods including these three types according to its operational or financial purpose.

Spin-off is taxable if a parent company recognizes a gain from this transaction or assets. Shareholders also pay a dividend tax on the distributed subsidiary stock. As this amount of taxes can be sizable at both the parent and shareholders level, which is not attractive and may result in loss of shareholder value, firms often want to structure a tax-free spin-off. Under section 355 of the U.S. Internal Revenue Code, spin-off can be tax-free if certain criteria are met. The most important criteria can be summarized as the followings: (i) the parent company must own at least 80 percent of voting power(control) of the subsidiary before the distribution, (ii) the parent must distribute most of its control (no less than 80 percent of the total number of shares) that it has no practical control in the subsidiary after the distribution, (iii) the purpose of spin-off should not be a device of tax-avoiding but proper business reasons, and (iv) both the parent and subsidiary must be engaged in an active business for at least 5 years ending on the distribution date (Eckbo and Thorburn, 2008). As many previous studies have already proven, whether spin-off can be tax-free is significantly related with an abnormal return around the announcement date. For example, Krishnaswami and Subramaniam (1999) report that a subsample of non-taxable spin-offs has significantly higher abnormal return than a subsample of taxable spin-offs at 1%. Copeland et al. (1987) and Schipper and Smith (1983) also explain tax consequences of spin-offs in the U.S.

The value creation in shareholders of a parent company is at the consensus. A group of studies on U.S. spin-offs report average cumulative abnormal returns around 3.3% for the event

window of [-1, 0] (Hite and Owers, 1983; Schipper and Smith, 1983; Daley, Mehrotra, and Sivakumar, 1997; Best, Best, and Agapos, 1998; Krishnaswami and Subramaniam, 1999; Wruck and Wruck, 2002; Maxwell and Rao, 2003). However, agreement on the sources of shareholder value creation has not been reached yet. The empirical evidence suggests that the value can be derived from increased corporate focus (Daley, Mehrotra, and Sivakumar, 1997; Desai and Jain, 1999), increased probability of takeover (Cusatis, Miles, and Woolridge, 1993), improvement in investment decisions (Gertner, Powers, and Scharstein, 2002; Ahn and Denis, 2004), wealth transfer from bondholders (Galai and Masulis, 1976; Parrino, 1997; Maxwell and Rao, 2003), decreased information asymmetries (Krishnaswami and Subramaniam, 1999), clientele effects (Vijh, 1994; Abarbanell, Bushee, and Ready, 2003), and corporate governance (Wruck and Wruck, 2002).

2.2 Increased corporate focus

The prominent source of value creation from spin-off is an increase in corporate focus where unrelated divisions are separated from the parent company. By increasing core business focus, a company can reduce the diversity of managing assets, thus increasing the efficiency of managers. Daley, Mehrotra, and Sivakumar (1997) suggest that positive abnormal returns around the announcement date are only applicable to cross-industry spin-offs rather than own-industry ones. They define the term cross-industry as the parent company has a different first two-digit SIC (Standard Industry Classification) code than the subsidiary. A subsample of cross-industry spin-offs has higher announcement date return for [-1,0] than a subsample of own-industry ones. They also observe the improvement in operating performance for the parent company but not the subsidiary, which is consistent with the increased corporate focus theory. Another study by Desai and Jain (1999) employs this measure of focus as well but adding two alternatives. The first one is an increase in the Herfindahl index, which is computed as the sum of squares of each segment's sales revenue as a proportion of total sales revenue. The other measure is a decrease in the number of segments reported by the parent company. As three measures come to return similar results, the authors mainly use the Herfindahl index as a proxy of focus. In conclusion, the study reveals that focus-increased firms outperform the non-focus-increased firms in the stock market during the three-year period following the spin-offs. The improvements of operation performance of focus-increased parents are also consistent with the theory. Overall, the

evidence suggests that value creation in shareholders is related with an increase in focus of a parent firm. The first hypothesis of increased corporate focus can be formulated as the following:

H_1= A parent company whose spin-off is related with increased corporate focus will be associated with higher abnormal returns than the company whose spin-off is not increasing corporate focus.

The measure of focus is presented as a dummy variable which equals to 1 if a parent firm has different 2-digit SIC code than its subsidiary, and otherwise 0. If the parent or subsidiary has more than one SIC code, the primary code picked up by Compustat is used since Thomson One tends to overstate the cross-industry spin-offs (Daley, Mehrotra, and Sivakumar, 1997).

Measuring the effect of cross-industry spinoff in terms of operating performance changes can be beneficial as it provides more details about value creation. According to Daley, Mehrotra, and Sivakumar (1997), the ratio of operating earnings-to-assets, which is labeled as Return on Assets (ROA), can be a good measure for several reasons. First, this ratio is able to exclude the effect of taxes and bonding benefits as they mainly appear in interest and tax expenses. Second, ROA is not affected by any one-off charges to net income. Third, ROA provides broader insight into performance improvements as other concepts such as profit margin or asset turnover are derived from certain sources. As ROA is the combined ratio of profit margin times asset turnover, it is able to report general improvement in performance of spinoff companies.

With ROA defined as Operating income before depreciation divided by Total assets from Compustat annual fundamentals, ROA change before and after the spinoff is documented for cross-industry and own-industry spinoffs. In details, the years -1 to year +2 are individually examined with the year of effective spinoff date as Year 0. By observing the change from year -1 to year +1, it is possible to capture the effect of increased corporate focus. From year +1 to +2 is an additional period to check if any reversal of ROA improvement. As a supplement to ROA, an additional ratio Capital expenditures-to-assets (CAP) is documented as well. This ratio is intended to capture an expansion of the scale of operations which may be less visible in ROA changes. The positive change in CAP implies more investment in operations, which works as a great potential for earnings in future. Therefore, the second hypothesis of increased corporate focus can be formulated as the following:

H_2= Changes in Return on Assets (ROA) and Capital Expenditures to Assets (CAP) will be positive and higher for cross-industry spinoffs than own-industry spinoffs.

The pre-spinoff entity will be compared to the continuing company after the spinoff. The second hypothesis will be tested at the portfolio level by computing ROA and CAP changes. The main benefit of using changes of the ratios in the hypothesis rather than the level itself lies in that a firm's past performance can be incorporated in its earnings expectations model (Barber and Lyon, 1996). To lessen the outlier effect as much as possible, the median change is used instead of mean changes in analysis. First, the raw change in ROA is defined as:

$$\Delta\text{ROA}_{i,(t,k)} = ROA_{i,t} - ROA_{i,k} \quad (1)$$

for a firm *i* from year *k* to year *t* across all spinoffs. Then for a period of year *k* to year *t*, the median ROA change is defined as:

$$\overline{\Delta\text{ROA}_{i,(t,k)}} = \text{median}\left(\Delta\text{ROA}_{i,(t,k)}\right) \quad (2)$$

for each cross-industry and own-industry spinoffs.

In addition to the raw change, ΔROA, a strong benchmark is employed to provide more robust result. The industry-adjusted benchmark for ROA is obtained by subtracting the median industry ROA where the industry is classified by the two digit of a company's primary SIC code. The adjusted ROA is labeled as AROA where IROA is the median industry ROA in the following:

$$\text{AROA}_{i,t} = ROA_{i,t} - IROA_{i,k} \quad (3)$$

Similar to the raw change calculated in equation (1), the industry-adjusted ROA is defined as the following:

$$\Delta\text{AROA}_{i,(t,k)} = AROA_{i,t} - AROA_{i,k} \quad (4)$$

Finally, the median industry-adjusted ROA change at the portfolio level is defined similar to equation (2):

$$\overline{\Delta \mathrm{AROA}_{(t,k)}} = \mathrm{median}\left(\Delta \mathrm{AROA}_{(t,k)}\right) \quad (5)$$

The procedure in calculating the median raw and industry-adjusted CAP change is same by applying equations (1) – (5).

2.3 Other Variables

Other than the main variables defined in 2.1, it is important to incorporate control variables such as firm characteristics or deal information into the regression analysis. A list of variables is introduced here by partly benchmarking the controls used in Burch and Nanda (2003): Leverage, Asset Turnover, and Relative Size.

The first control variable is Leverage (LEV) which is computed as Total Debt divided by Total Assets. Leverage may contribute to explaining announcement return since highly levered firms is related higher financial distress. The second control variable is Asset Turnover (AST) which is calculated as Revenue-to-Total Assets. AST measures efficiency of a firm in using assets to generate sales or sales, so high AST may be related with high announcement return of a spinoff. The last control variable is Relative Size (RSZ). A number of studies suggest that the bigger size of a spin-off is related with higher positive abnormal returns around the announcement date (Hite and Owers, 1983; Miles and Rosenfeld, 1983; Krishnaswami and Subramaniam, 1999). To verify this effect, RSZ is defined as the market capitalization of the spun-off industry on the distribution date (the first trading day) divided by the sum of the market capitalization of the subsidiary and parent company. The market capitalization is calculated from the number of shares outstanding and the closing price reported by the CRSP tape on the completion date. In addition to these three variables, ROA and CAP already defined in 2.1 are also included as controls in regression analysis.

3. Data and Methodology

3.1 Data

3.1.1 Sample Selection

The initial sample starts with 515 from Thomson One M&A database with the following search criteria: (i) the nation of both target and target ultimate parent is the U.S., (ii) deal type is Spin-off (code 5), (iii) both announcement and effective date is between January 2000 and

December 2015, and (iv) the deal status is completed. However, as CRSP provides a better stock price for the individual company and spin-off details, some of 515 observations are removed as they do not match the CRSP tape or the estimation window of an event study. Out of removed 265 spin-offs, 221 observations do not have identifiable CUSIP code, 40 do not match the period available, and 4 have too few estimation period days. The remaining sample of 250 now can be used for the event study using Thomson One firm characteristics and CRSP stock prices as CUSIP and PERMNO are all provided. Yet according to Desai and Jain (1999), it is advisable to trim the sample data further in terms of tax status and industry. Therefore, 114 observations are deleted again from 250, consisting of 17 due to multiple spin-offs (One parent company announced spin-off of multiple subsidiaries or divisions on a day), 10 due to certain industries have spin-off motivation in tax reasons (Royalty Trusts, Real Estate Investment Trusts and any other company that includes Trust in its name), and 77 due to not recognized as tax-free (the CRSP distribution code is not 3763). Finally, the remaining 136 observations is again removed to 113 as 23 spinoffs are not appropriate in conducting operating performance analysis. 16 companies were acquired or merged in two years following the effective date, and operating performance data were not available for 7 spinoffs from year -1 to year +2 where year 0 is the year of the spinoff effective date. Therefore, the final sample used for this paper is 113. The sample selection process is summarized in the following table 1.

Table 1: Sample selection process.

Process	**Number of spin-off**
Initial sample from Thomson One M&A Database	515
CUSIP not found in CRSP	*221*
Date outside of period available	*40*
Too few estimation period days	*4*
Total number of spin-off removed	(265)
Intermediate sample after CRSP matching	250
Multiple spin-off	*17*
Royalty Trusts, Real Estate Investment Trusts	*10*
Taxable or not recognized spin-off in CRSP tape (other than code 3763)	*77*

Process	**Number of spin-off**
Total number of spin-off removed	(104)
Intermediate sample after trimming	136
Acquired or merged in two-years after the effective date	16
Operating performance data unavailable	7
Total number of spin-off removed	(23)
Final Sample	**113**

3.1.2. Final Sample by year and industry

Table 2. Distribution of 113 spinoffs by announcement year. Spinoffs are classified as Cross-industry when the parent company has different two-digit SIC code than the spun off entity. Own-industry spinoffs involve the creation of two companies sharing the same two-digit SIC codes. SIC codes of companies are obtained from Compustat. Years refer to the spinoff announcement dates.

Year	Cross-industry	Own-industry	Total
2000	9	5	14
2001	4	3	7
2002	6	1	7
2003	5	4	9
2004	5	3	8
2005	3	4	7
2006	1	3	4
2007	5	2	7
2008	4	2	6
2009	2	0	2
2010	0	3	3
2011	6	2	8
2012	4	4	8
2013	4	2	6
2014	8	8	16
2015	0	1	1
Total	66	47	113

Table 2 presents the distribution of spinoffs classified as either cross-industry or own-industry for the final sample selected in 3.1.1. As the popularity of spinoff as a divestment method fluctuates, spinoffs take place the most in year 2000 and 2014, and the least in year 2009 and 2015. The sample involves more cross-industry spinoffs than own-industry ones.

In the next table 3, spinoffs are classified along a parent company's SIC code. If the parent company has more than one SIC code, the primary code presented by Compustat is used to classify the companies. Among the sample of 113 observations, manufacturing industry takes account the most which is 51. Services and financial industry are the next popular ones, numbering 18 and 16 respectively.

Table 3. Distribution of 113 spinoffs by Parent SIC Code.

SIC Codes	Observations
Mining (1000-1499)	7
Construction (1500-1799)	1
Manufacturing (2000-3999)	51
Transportation & Public Utilities (4000-4999)	13
Wholesale Trade (5000-5199)	1
Retail Trade (5200-5999)	5
Finance, Insurance, Real Estate (6000-6799)	16
Services (7000-8999)	18
Public Administration (9000-9729)	0
Nonclassifiable (9900-9999)	1
Total number of Spin-offs	113

3.1.3 Other data sources

The stock price for each company and the value-weighted market index are obtained from CRSP. The number of shares outstanding, the closing price of a parent company in calculating RSZ, and relevant corporate financials mentioned in chapter 2.2 are exported from Compustat.

3.2 Methodology

3.2.1 Event Study

The empirical research of this paper starts with an event study. By means of the event study, the abnormal return is calculated from the stock analysis around the announcement date compared to the return of normal days. This abnormal return can be used to determine whether the information released by corporate events creates shareholder value. The second stage is

regression analysis of each driver-related variable on the abnormal return. By looking at the significance of coefficients, the first hypothesis formulated in Chapter 2 will be tested.

The following figure 1 shows the windows set around the spin-off announcement date which is set as day 0. The methodology described for event study is based on Brown and Warner (1985) and Van der Sar (2015).

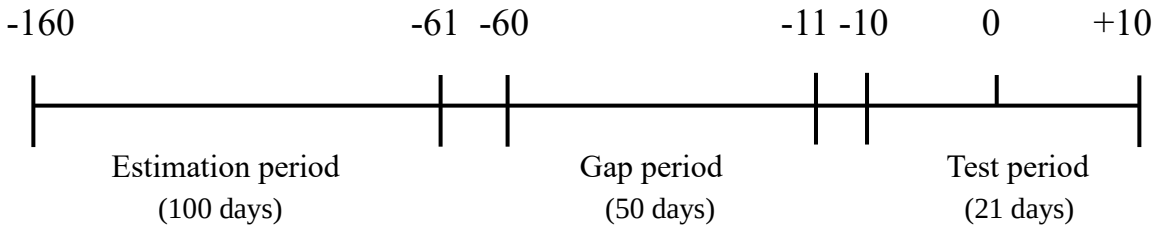

Figure 1: Period classification (measured in trading days)

During the estimation period, the observed return is assumed to be consisted of firm-specific part and market-related part. One such assumption is the market model, which explains the raw return of the parent company i for the trading day t as the following:

$$R_{it} = \alpha_i + \beta_i * Rm_t + u_{it} \quad (6)$$

where Rm_t stands for the return on the value-weighted CRSP market index, u_{it} denotes the error term, and the parameters α_{it} and β_{it} are estimated by the Ordinary Least Squares (*OLS*). The normal return is now determined for the test period, which refers to the expected outcome in absence of the event:

$$R_{it}^{*} = \hat{\alpha}_i + \hat{\beta}_i * Rm_t \quad (7)$$

The abnormal return (*AR)* during the test period is now determined as the difference between the raw return from the equation (6) and the normal return from (7):

$$AR_{it} = R_{it} - R_{it}^{*} \quad (8)$$

The abnormal return is unique to each company on the day in [-10, +10], so the average abnormal return (*AAR*) can be calculated where N denotes the number of parent companies of a

desired sample:

$$AAR_t = 1/N * \sum ar_{it} \quad (9)$$

The Gap period ensures that the test period is enough far from the estimation period, as the normal return is determined from the estimation period and the abnormal return is calculated accordingly. Inside the test period, an event period is defined which is [k,l] around the announcement date due to the event date uncertainty, according to a number of prior researches regarding spin-off (Hite and Owers, 1983; Schipper and Smith, 1983; Rosenfeld, 1984; Daley, Mehrotra, and Sivakumar, 1997; Wruck and Wruck, 2002). The cumulative abnormal return (*CAR*) for each parent firm is defined as the sum of abnormal returns during the event period:

$$CAR_{i,kl} = \sum_{t=k}^{l} ar_{i,t} \quad (10)$$

By aggregating CAR for each parent company, the average of cumulative abnormal return (*CAAR*) can be calculated as well with the following:

$$CAAR_{KL} = \sum CAR_{i,kl} \quad (11)$$

3.2.2 Stock Return Analysis

The regression technique is OLS as in the market model but robust standard errors will be applied for heteroskedasticity issue. The univariate regression analysis is performed where CAR defined in the event study is a dependent variable and the variables set up in chapter 2 as independent variables. The Increased Corporate Focus hypothesis can be formulated into the equation as the following:

$$H_1: CAR_{-1,+1} = a + b_1 Cross\ industry + b_2 LEV + b_3 ROA + b_4 AST + b_5 CAP + b_6 RSZ$$

where the expected sign of b_1 is positive and the other coefficients b_2, …, b_6 are for controls.

3.2.3 Operating Performance Changes Analysis

In the operating performance changes analysis, the median ROA and CAP changes will be tested using Wilcoxon matched-pairs signed-rank test (Daley, Mehrotra, and Sivakumar, 1997). The null hypothesis of Wilcoxon test in this research is that the distribution of operating performance measure in year t is same as in year k. The sample will be divided into either cross-industry or own-industry to examine the significant changes in ROA and CAP. The main hypothesis for the raw median change of ROA at the portfolio level can be formulated as follows:

$$H_2: \overline{\Delta \mathrm{ROA}_{(t,k)}}\ for\ cross\_industry = \overline{\Delta \mathrm{ROA}_{(t,k)}}\ for\ own\_industry$$

where the similar hypothesis is formulated for the median industry-adjusted ROA change, the median raw CAP change, and the median industry-adjusted CAP change for both cross-industry and own-industry spinoffs.

4. Empirical results

4.1 Summary Statistics

Table 4. Descriptive Statistics. All variables are derived from Compustat, and stock prices in Relative Size are partly from CRSP. Operating Income is measure before depreciation. Leverage (LEV), ROA (Return on Assets), AST (Asset Turnover), CAP (Capital Expenditure to Assets), and RSZ (Relative Size) is computed as Debt/Assets, Operating Income/Assets, Revenue/Assets, Capital Expenditure/Assets and Deal Value/Market Capitalization, respectively. Relative Size is based on the spinoff announcement date and other variables are reported values at the end of the effective year.

Variable	Mean	Median	Min	Max
Assets ($ml)	70265	3116	9	2175052
Debt ($ml)	58851	2087	2.8	2008168
Operating Income ($ml)	3485	317	-1134	50830
Revenue ($ml)	15290	2885	9	222580
Capital Expenditure ($ml)	1221	136	0	30938
Leverage (LEV)	0.60	0.58	0.04	1.39
Return On Assets (ROA)	0.09	0.10	-1.59	0.34
Asset Turnover (AST)	0.86	0.71	0.03	4.86
Capital Expenditure to Assets (CAP)	0.05	0.03	0.00	0.25
Relative Size (RSZ)	0.26	0.21	0.01	0.98

The above table shows summary statistics of parent firms in all 113 spinoffs. The minimum value 0 of Capital Expenditure belongs to financial companies as they do not make

physical investment like industrial firms. It is noticeable that only Operating Income/Assets (ROA) has a higher value of median than the mean. The mean value of Relative Size (RSZ), 26%, implies that an average firm spun off its quarter-sized subsidiary.

4.2 Event study result

Table 5. Market model Abnormal Returns with CRSP Value-weight index. The variable Positive: Negative shows the number of abnormal returns that are positive /negative on the specific day. The first statistic Stdcsect specifies that the standardized cross-sectional test (Boehmer, Musumeci and Poulsen, 1991) be substituted for the Patell-Z test in the standardized method. Times-Series (CDA) t-statistic is calculated upon Crude Dependence Adjustment (Brown and Warner, 1980). The symbols $,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 and 0.001levels, respectively, using a generic one-tail test. The symbols (,< or),> etc. correspond to $,* and show the direction and significance of a generic one-tail generalized sign test.

Day	Mean Abnormal Return (%)	Positive: Negative	Stdcsect	Time-series (CDA) t	Generalized Sign Z	N
-10	0.04	51:62	0.397	0.189	-0.734	113
-9	-0.05	50:63	-0.153	-0.204	-0.920	113
-8	-0.09	45:68	-0.485	-0.398	-1.480	113
-7	-0.16	49:64	-0.476	-0.682	-1.107	113
-6	0.14	59:54	0.961	0.589	0.760	113
-5	0.42	51:62	1.243	1.761*	-0.734	113
-4	-0.02	48:65	-0.114	-0.082	-1.294	113
-3	0.18	61:52	2.050**	0.746	1.507	113
-2	-0.20	51:62	-0.220	-0.847	-0.734	113
-1	0.24	61:52	1.354	1.005	1.133	113
0	2.17	72:41>>>	4.615***	9.156***	3.560***	113
1	0.72	55:58	1.614	3.051***	0.013	113
2	-0.10	46:67(	-1.408	-0.416	-1.667*	113
3	0.06	51:62	0.592	0.240	-0.734	113
4	0.00	53:60	-0.585	-0.005	-0.360	113
5	0.20	65:48>	-0.108	0.827	2.253**	113
6	-0.12	53:60	-1.473	-0.523	-0.360	113
7	-0.55	52:61	-1.273	-2.320**	-0.547	113
8	0.05	55:58	0.094	0.209	0.386	113
9	0.20	53:60	0.066	0.853	-0.360	113
10	0.18	51:62	1.296	0.776	-0.734	113

The above table 5 shows the individual mean abnormal return with various significance measures from day -10 to 10. As expected, the abnormal return on the announcement date (day 0) is 2.17% and significant at the 1% level in all statistics. Although the day 1 reported a significant statistic in Time-series t, other statistics are not significant and the mean abnormal

return is rather small. Other significant returns on the day far from the announcement date are not explained due to their coincidence.

Table 6. Cumulative Average Abnormal Returns. The symbols $, *, **, and *** denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a generic one-tail test. The symbols (,< or),> etc. correspond to $,* and show the direction and significance of a generic one-tail generalized sign test.

Event Window	CAAR	PWCAR	Positive:Negative	Stdcsect	Time-series (CDA) t	Generalized Sign Z
(-10,+10)	2.97%	3.30%	70:43>>	2.738***	3.039***	2.813***
(0,+1)	2.24%	2.41%	77:36>>>	4.810***	7.185***	4.120***
(-1,0)	2.80%	2.89%	78:35>>>	4.589***	8.632***	4.307***
(-1,+1)	2.99%	3.13%	76:37>>>	4.816***	7.628***	3.934***

The above table 6 shows CAAR for the three event windows. All windows show positive abnormal returns significant at 1% level across all statistics. The biggest CAAR is 2.99% during [-1, +1], whereas the smallest is 2.24% for [0, +1]. 2.99% around [-1, +1] is a bit smaller than the reported CAAR from previous researches where they are 3.8% (Desai and Jain, 1997), 4.5% (Mulherin and Boone, 2000), 3.5% (McNeil and Moore, 2005) for the three-day event period [-1, 1]. The difference may come from the different sample period and nation. In the column PWCAR, Precision-Weighted CAR (PWCAR) is constructed using the relative weight of each stock (Cowan, 2007). This measure weights each stock in inverse proportion to its standard deviation, which is more accurate than CAAR by incorporating the standardization of abnormal returns. When using PWCAR, the size of abnormal return gets relatively bigger than CAAR in the sample.

4.3 Stock Return Regression Result

Table 7. T-tests of cross-industry and own-industry spin-offs. in the first column, cross-industry is identified when SIC code of a subsidiary differs from all SIC codes of its parent company. Otherwise the spin-off is classified as own-industry. The number in parentheses is t-statistic. *, ** and *** denotes 10%, 5% and 1% significance level.

Classification	**Observations**	**Announcement Date Return**	**Cumulative Abnormal Return (-1,+1)**
Cross-industry	66	2.79%***	4.48%***
		(4.03)	(4.31)
Own-industry	47	1.61%**	1.63%
		(2.03)	(1.55)
Overall	113	2.29%***	3.29%***
		(4.40)	(4.35)

Classification	Observations	Announcement Date Return	Cumulative Abnormal Return (-1,+1)
Difference	113	1.18%**	2.85%*
		(2.12)	(1.92)

Out of the total sample of 113, 66 spinoffs are considered as cross-industry where the first two-digit of all SIC codes is different from that of a subsidiary. The announcement period excess return is computed during the three-day interval [-1, +1] where the day 0 is the spin-off announcement date in Thomson One database. Using the CRSP value-weighted index return as a market return, the significance of the announcement return of spin-offs is analyzed. As shown in the third column of the table 7, the abnormal return on the announcement date for cross-industry is 2.79%, significant at the 1% level. Own-industry spin-offs also report the significant return of 1.61% at the 5% level. Overall announcement date return is 2.29%, significant at the 1% level. Cumulative abnormal returns around three-day interval are higher than the single announcement date return for all classified spinoffs. Interestingly, cross-industry and overall spinoffs report higher return of 4.48% and 3.29% both significant at the 1% level, whereas the return of 1.63% for own-industry spinoff is not significant at the 10% level. The differences between the announcement date returns and cumulative abnormal returns are also significant at the 5% and 10% level, respectively. The results of t-tests thus support the prediction of increased corporate focus hypothesis where higher and significant CAR is correlated with cross-industry spinoffs. After examining t-tests, the regression is performed where dependent variable is CAR [-1, +1] to test H_1 .

Table 8. Increased Corporate Focus Regression. The dependent variable is CAR around [-1, +1] and t-statistic is shown in parentheses. Cross-industry equals one if the parent company has a different two- digit primary SIC code than the two-digit of the subsidiary's SIC code. *, ** and *** denotes 10%, 5% and 1% significance level.

Variable	(1)	(2)	(3) Non-financial	(4) Non-financial
Intercept	0.016	-0.008	0.017	-0.012
	(1.41)	(-0.24)	(1.42)	(-0.35)
Cross-industry	0.028*	0.033**	0.023	0.034*
	(1.87)	(1.97)	(1.46)	(1.72)
Relative Size (RSZ)		-0.003		0.000
		(-0.08)		(0.00)
Debt/Asset (LEV)		0.011		0.005

Variable	(1)	(2)	(3) Non-financial	(4) Non-financial
		(0.31)		(0.13)
Operating		-0.075		-0.058
Income/Assets (ROA)		(-0.68)		(-0.47)
Revenue/Assets (AST)		0.017		0.019
		(1.39)		(1.42)
CAPEX/Assets (CAP)		0.322*		0.338*
		(1.73)		(1.69)
Number of obs.	113	95	99	85
R^2	0.031	0.096	0.021	0.091

The above table 8 is the regression result on CAR [-1, +1] with cross-industry as the main independent variable. The first two columns (1) and (2) are based on all industries, whereas (3) and (4) exclude financial services identified as the first digit of SIC code being 6. Across all spinoffs, the coefficient 2.8% is significant at the 10% level in the column (1). When variables in summary characteristics are included as controls in the column (2), the coefficient increases to 3.3% with more significant t-statistic at the 5% level. Although cross-industry is not significant in only industrial companies (3), the coefficient is significant again when controls are included again. From these results, it can be concluded that cross-industry spinoffs are related with higher announcement returns. In other words, terminating subsidiaries of less relevance to the parent company is recognized as positive by shareholders and thus given higher abnormal return. Higher return also implies that the continuing firm would perform better by focusing on a narrower domain.

For control variables, only capital expenditure-to-assets is significant at the 10% level in both samples. As capital expenditure is a proxy to investment in physical assets, higher ratio means the firm has higher potential in its new projects. Thus, shareholders expect this investment opportunity to be exclusively used by the parent company with higher corporate focus after a spinoff. Unlike previous studies about spinoffs, the relative size turns out to be insignificant in all regressions.

4.4 Operating Performance Changes Result

Table 9. Median change in operating earnings-to-assets ratio (ROA) for a parent portfolio of 113 spinoffs. Cross- industry when the parent company has different two-digit SIC code than the spun off

entity. Own-industry spinoffs involve the creation of two companies sharing the same two-digit SIC codes. SIC codes of companies are obtained from Compustat. Industry-adjusted median change is computed by subtracting the median industry ROA that shares the two-digit SIC code of a parent company. Median changes are tested against zero using Wilcoxon matched-pair Signed rank statistics. Test statistics are presented in parentheses. Asterisks indicate significance at the 10% (*), 5%(**), and 1% (***) level.

	Relative year (from, to)	Median Change Raw (in %_	Median Change Industry-adjusted (in %)
Cross-industry Spinoffs(N=66)			
ΔROA	(-1,+1)	0.81*	0.50
		(1.842)	(1.486)
	(-1,0)	0.21	0.05
		(0.722)	(0.578)
	(0,+1)	0.21	0.12
		(1.242)	(1.457)
	(+1,+2)	-0.42	-0.39
		(-1.172)	(-1.013)
Own-industry Spinoffs(N=47)			
ΔROA	(-1,+1)	-0.05	0.29
		(-0.667)	(-0.116)
	(-1,0)	0.38	0.42
		(0.413)	(1.471)
	(0,+1)	0.07	0.04
		(-0.593)	(-0.127)
	(+1,+2)	-0.44*	-0.35*
		(-1.925)	(-1.770)

The above table 9 presents portfolio level results of ROA changes in parent companies from year -1 to year +1, with the effective year defined as year 0. More specifically, [-1, +1] is divided into [-1, 0] and [0, +1] to see if any significance comes from either period. The period [+1, +2] is also considered to check whether the reversal takes place in later years after the spinoff. ROA is measured as Operating Income before Depreciation divided by Total Assets in Compustat database. Median changes are only considered as mean changes are sensitive to outliers. Industry-adjusted change is obtained from the raw ROA by subtracting the median ROA of the same industry sharing the first two digit of SIC code with a spinoff firm.

For cross-industry spinoffs of 66, only the median raw change of 0.81% is significant at the 10% level. The coefficient is positive which captures the value creation from increased focus spinoffs. The reversal of increased ROA is not found during the period [+1, +2]. For own-industry spinoffs of 47, significant changes in ROA are not found around the effective year. However, during the period [+1, +2] the negative coefficient of -0.44% and -0.35% is significant at the 10% level for unadjusted and industry-adjusted measure, respectively. The negative change can be explained as reduced synergy effect from eliminating relevant subsidiary from the parent

firm. In other words, improvement in operating performance is related with those spinoffs only terminating unnecessary, irrelevant business.

Table 10. Median change in capital expenditure-to-assets ratio (CAP) for a parent portfolio of 113 spinoffs. Cross- industry when the parent company has different two-digit SIC code than the spun off entity. Own-industry spinoffs involve the creation of two companies sharing the same two-digit SIC codes. SIC codes of companies are obtained from Compustat. Industry-adjusted median change is computed by subtracting the median industry CAP that shares the two-digit SIC code of a parent company. Median changes are tested against zero using Wilcoxon matched-pair Signed rank statistics. Test statistics are presented in parentheses. Asterisks indicate significance at the 10% (*), 5%(**), and 1% (***) level.

	Relative year (from, to)	Median Change Raw (in %)	Median Change Industry-adjusted (in %)
Cross-industry Spinoffs(N=66)			
ΔCAP	(-1,+1)	0.14	0.33*
		(1.435)	(1.778)
	(-1,0)	0.01	0.00
		(0.250)	(0.079)
	(0,+1)	0.36**	0.32**
		(1.980)	(1.706)
	(+1,+2)	-0.20**	-0.10
		(-2.294)	(-0.902)
Own-industry Spinoffs(N=47)			
ΔCAP	(-1,+1)	-0.16	-0.02
		(-0.796)	(-0.310)
	(-1,0)	0.26*	0.17
		(1.875)	(1.012)
	(0,+1)	0.04	-0.01
		(0.152)	(-0.707)
	(+1,+2)	-0.08	0.21*
		(-0.879)	(1.661)

The above table 10 is Wilcoxon signed-rank test of CAP changes in parent firms from year -1 to year +2, similar as the previous table 9. For cross-industry spinoffs, the industry-adjusted median change of 0.33% is significant at the 10% level from year -1 to year +1. This positive improvement is mainly coming from the period [0, +1], where the median raw and industry-adjusted change is 0.36% and 0.32% significant at the 5% level, respectively. It can be explained from that the investment opportunity is better realized after the spinoff in a narrowly focused company. Yet the reversal from year +1 to year +2 is found in unadjusted measure, where the coefficient -0.20% is significant at the 5% level. For own-industry spinoffs, the median change unadjusted during the period [-1,0] is 0.26%, significant at the 10% level. However, the positive change is not found in the following year after the spinoff. Industry-adjusted measure reports the improvement in CAP during the post spinoff years [+1, +2], which

is 0.21% significant at the 10% level. Overall, capital expenditure is more related with cross-industry spinoffs where investment opportunity can be better aligned with the ongoing company.

Wilcoxon signed-rank test was also performed to test operating performance changes in only industrial companies sample, but the result is not presented here as it was similar with the full sample.

5. Conclusion

Throughout the paper, the purpose of this paper is to test a prediction that cross-industry spinoffs are related with value creation in terms of higher stock returns and operating performance improvements. Cross-industry is defined when the parent company and taken apart subsidiary belong to different two-digit Standard Industry Classification codes. With this concept, the whole sample of 113 is divided into cross-industry of 66 and own-industry of 47. The first finding of this hypothesis is that only cross-industry spinoffs are related with higher abnormal returns around the announcement date. During the three-day period [-1, +1], where the day 0 is the spinoff announcement date, cross-industry spinoffs report 4.48% significant at the 1% level. In the regression analysis, the coefficient of 3.3% is reported to be significant at the 5% level. Additionally, the control variable Capital expenditure-to-assets (CAP) returns the coefficient of 0.332 at the 10% significance level. The interpretation about the role of capital expenditure is that investment opportunities are better aligned with the core business of a continuing entity after the spinoff.

After examining the effect of increased corporate focus in regression analysis, operating performances are studied if they are significantly improved after the spinoff. Two measures, Return-to-assets (ROA) and Capital expenditure-to-assets (CAP), are calculated in terms of median changes. To provide the robustness, industry-adjusted benchmark is employed in addition to the raw change of operating performance ratios. The main finding of this analysis is far weaker than the first finding to support the increased corporate focus hypothesis. For cross-industry spinoffs of 66, the raw ROA does not provide significant changes during any relative years but [-1, +1], which is only significant at the 10% level. The median industry-adjusted change does not provide different results, either. However, median CAP changes for cross-industry spinoffs report more significant results in both raw and industry-adjusted measures than ROA. During the period [0, +1], the median raw and industry-adjusted change report 0.36% and 0.32% at the 5% significance level, respectively. In correspondence with the interpretation in the

regression analysis about CAP, improvements arises from the possibility of investment opportunities being focused on the core business after the spinoff. In contrary, own-industry spinoffs report less significant results during the period [-1, 0] and [+1, +2]. As the size and significance of the raw and industry-adjusted changes do not closely match each other, no explanations are given to these observations.

Several limits of this paper exist in terms of a research design. First, the control variables are rather firm characteristics that are not closed related with the announcement returns. Book-to-market ratio, analysts forecasting errors or market volatility would have been nicer controls to be employed in the regression analysis. Second, the finding of operating performances is not strong compared to previous researches. The method adopted in this paper is similar to John and Ofek (1995), where the pre-spinoff entity is compared to the parent company alone after the spinoff. According to Daley, Mehrotra, and Sivakumar (1997), this method has a shortcoming that it cannot properly incorporate operating performance improvements. They suggest comparing the pre-spinoff company with the combined entity of the parent and subsidiary is better in providing insights.

In summary, the empirical results found in this paper supports the increased corporate focus theory that cross-industry spinoffs are related with higher abnormal returns around the announcement date. With regard to operating performance, only Capital expenditures seem to be improved after the spinoff. The general interpretation of this article is that a company can improve its value by eliminating less relevant or even unnecessary subsidiaries which is recognized by shareholders outside and managers inside.

References

Abarbanell, J. S., Bushee, B. J., & Smith Raedy, J. (2003). Institutional investor preferences and price pressure: The case of corporate spin-offs. *The Journal of Business*, *76*(2), 233-261.

Ahn, S., & Denis, D. J. (2004). Internal capital markets and investment policy: evidence from corporate spinoffs. *Journal of Financial economics*, *71*(3), 489-516.

Best, R. W., Best, R. J., & Agapos, A. M. (1998). Earnings forecasts and the information contained in spinoff announcements. *Financial Review*, *33*(3), 53-68.

Boone, A. L., & Mulherin, J. H. (2001). Valuing the process of corporate restructuring.

Brown, S. J., & Warner, J. B. (1985). Using daily stock returns: The case of event studies. *Journal of financial economics*, *14*(1), 3-31.

Burch, T. R., & Nanda, V. (2003). Divisional diversity and the conglomerate discount: evidence from spinoffs. *Journal of Financial Economics*, *70*(1), 69-98.

Chemmanur, T. J., Krishnan, K., & Nandy, D. K. (2014). The effects of corporate spin-offs on productivity. *Journal of Corporate Finance*, *27*, 72-98.

Copeland, T. E., Lemgruber, E. F., & Mayers, D. (1987). Corporate spinoffs: multiple announcement and ex-date abnormal performance. *Modern Finance and Industrial Economics: Essays in the Honor of Fred Weston*, *8*, 114-137.

Cusatis, P. J., Miles, J. A., & Woolridge, J. R. (1993). Restructuring through spinoffs: The stock market evidence. *Journal of Financial Economics*, *33*(3), 293-311.

Daley, L., Mehrotra, V., & Sivakumar, R. (1997). Corporate focus and value creation evidence from spinoffs. *Journal of financial economics*, *45*(2), 257-281.

Desai, H., & Jain, P. C. (1999). Firm performance and focus: long-run stock market performance following spinoffs. *Journal of financial economics*, *54*(1), 75-101.

Eckbo, B. E., & Thorburn, K. S. (2008). Corporate restructuring: breakups and LBOs. *Handbook of empirical corporate finance: Empirical corporate Finance*.

Galai, D., & Masulis, R. W. (1976). The option pricing model and the risk factor of stock. *Journal of Financial economics*, *3*(1-2), 53-81.

Gertner, R., Powers, E., & Scharfstein, D. (2002). Learning about internal capital markets from corporate spin-offs. *The Journal of Finance*, *57*(6), 2479-2506.

Hite, G. L., & Owers, J. E. (1983). Security price reactions around corporate spin-off announcements. *Journal of Financial Economics*, *12*(4), 409-436.

John, K., & Ofek, E. (1995). Asset sales and increase in focus. *Journal of financial Economics*, *37*(1), 105-126.

Krishnaswami, S., & Subramaniam, V. (1999). Information asymmetry, valuation, and the corporate spin-off decision. *Journal of Financial economics*, *53*(1), 73-112.

Schipper, K., & Smith, A. (1983). Effects of recontracting on shareholder wealth: The case of voluntary spin-offs. *Journal of financial Economics*, *12*(4), 437-467.

Maxwell, W. F., & Rao, R. P. (2003). Do spin-offs expropriate wealth from bondholders?. *The Journal of Finance*, *58*(5), 2087-2108.

McNeil, C. R., & Moore, W. T. (2005). Dismantling internal capital markets via spinoff: effects on capital allocation efficiency and firm valuation. *Journal of Corporate Finance*, *11*(1-2), 253-275.

Miles, J. A., & Rosenfeld, J. D. (1983). The effect of voluntary spin-off announcements on shareholder wealth. *The Journal of Finance*, *38*(5), 1597-1606.

Parrino, R. (1997). Spinoffs and wealth transfers: The Marriott case. *Journal of Financial Economics*, *43*(2), 241-274.

Rosenfeld, J. D. (1984). Additional evidence on the relation between divestiture announcements and shareholder wealth. *The Journal of Finance*, *39*(5), 1437-1448.

Van der Sar, N. V. (2018). *Stock Pricing and Corporate Events*. Erasmus University Rotterdam.

Vijh, A. M. (1994). The spinoff and merger ex-date effects. *The Journal of Finance*, *49*(2), 581-609.

Wruck, E. G., & Wruck, K. H. (2002). Restructuring top management: Evidence from corporate spinoffs. *Journal of Labor Economics*, *20*(S2), S176-S218.