ABNORMAL RETURNS THROUGH SPIN-OFFS

EMPIRICAL REVIEW OF SWEDISH SPIN-OFF CASES WITH ANNOUNCEMENT DATE BETWEEN 2004-2018

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Abstract:

Previous international studies conducted within the field of spin-offs have reported significant excess returns around spin-offs' date of announcement. This study examines (1) whether Swedish spin-offs with announcement dates between 2004 and 2018 generate additional shareholder value in terms of achieving excess returns. Additionally, (2) the excess return of the spun-off entity is compared to the one of the parent firm for periods following the first trading day of the spun-off entity. The sample consists of 28 spun-off entities and parent firms operating in a variety of industries, with the financial sector being excluded. Excess returns are measured in terms of cumulative abnormal returns. Our findings suggest strong statistical evidence at 1% significance that positive cumulative abnormal returns are obtained between the spin-off's date of announcement and its ex-date. Also, the result suggests that there is weak statistical evidence of c10% regarding that the excess return of the parent firm is equal with the spun-off entity's excess return following the first trading day of the spun-off entity. Finally, a speculation follows regarding potential explanatory factors behind the abnormal return realized.

Keywords:

Spin-offs, event study, abnormal returns, Swedish stock market, peer evaluation.

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1. Definitions

We will refer to the terms listed below throughout the paper. The terms must be viewed in accordance with our definitions.

Spin-off: Referred to as the corporate action of separating one entity (company) into two separate and independently traded entities.

Parent: Denotes the entity which was originally noted on the stock market before the spin-off.

Spun-off: Refers to the part of the business which was separated from the parent.

Date of announcement: The trading day when the business announced that it will perform a spin-off.

Ex-date: Defined as the first trading day on which new shareholders do not have the right to receive shares in the spun-off entity.

First trading day: Refers to when the spun-off entity starts to trade independently on the stock market.

Event window: The time period of interest in the study.

Abnormal return: The difference between actual return and expected return.

Cumulative abnormal return: The sum of the individual abnormal return over a specific time period.

Cumulative average abnormal return: The sum of the average abnormal return over a specific time period.

2. Introduction

According to Cusatis et al. (1993), a spin-off occurs when a company decides to separate a part of the business, i.e. forming an independent entity – a spun-off entity is formed. The shareholders of the parent firm receive a pro-rata share of the spun-off entity. The two companies, the parent and the spun-off, become independently traded on the stock exchange and the spun-off entity initially has the same shareholders as the parent firm. Therefore, a spin-off is a noncash transaction, implying that a corporate action does not occur in order generate cash for either the parent firm or the spun-off entity (Cusatis et al.,1993).

Cusatis et al. (1993) claim that entities which are spun off tend to achieve positive abnormal return. Their study – together with the majority of the studies presented in figure 1 – evaluates spin-offs on none Nordic companies and investigate the performance of the spun-off entity and its parent firm for periods up to three years. They find that excess return is realized both for the parent firm and the spun-off entity. Dorsey (2005) states that the abnormal return realized can be explained by various variables, including information asymmetry, analyst coverage, selling pressure and industry classification. These variables may also explain the long run positive cumulative abnormal return of the spun-off entity; however, Cusatis et al. (1993) suggest that the increased focus on the company's core operations is the main driver.

In order to establish a better understanding of spin-offs, one can compare spin-offs with other corporate actions – such as an initial public offering (IPO) and mergers and acquisitions (M&A) – and visualize similarities and differences. Spin-offs, like IPOs, represent newly traded shares on a marketplace. Contrary to spin-offs, the majority of IPOs provide a negative abnormal long-run return for periods up to three years. Furthermore, spin-offs are not done in order to generate cash, such as some IPOs. M&A tends to contribute to long-run positive abnormal returns, though. Still M&A aims to create value through generating synergies between at least two businesses or entities, hence contrary to a spin-off. However, positive abnormal returns are also generated through spin-offs. This suggests that for some companies, value creation can be established through increased core focus for each business entity, meanwhile for other businesses synergies between entities are demanded (Cusatis et al., 1993).

Spin-offs have grown more popular during the 21th century, although there is still more research being conducted on IPOs and M&As (Kotzen et al., 2016). However, as presented in figure 1, some well-regarded studies are conducted on spin-offs for the US and European market. Some of these studies, such as the one performed by Mulherin and Boone (2000), do not investigate the relative performance of the parent firm or the spun-off entity during a longer period of time, i.e. up to three years. By performing a spin off, a company aims to allow for managerial improvement, enhanced strategic focus and higher operational efficiency. These advantages may be reflected in the spun-off entity, as well as for the parent, first after a couple of years (Cusatis et al., 1993).

This paper (1) studies if parent firms traded on the Swedish stock market create shareholder value in terms of achieving positive cumulative abnormal return following the announcement date of a spin-off. Additionally, the study (2) investigates whether it is the parent firm or the spun-off entity that perform the best following the first trading day of the spun-off entity. This will be accomplished through an event study, investigating the cumulative abnormal return of spin-off cases. The historical return of each company will be compared with the

corresponding return of each company's respective industry index. The sample of spin-off cases in Sweden is limited to a total number of 28 cases – the parent firm and the spun-off entity are measured as one case. The number of cases used to measure each hypothesis and sub hypothesis, however, vary due to the different number of trading days the companies have been trading (see appendix 1 and 3).

2.1. Hypothesis

In order to evaluate if spin-offs achieve positive cumulative abnormal returns, two hypothesizes are used. The first one measures cumulative abnormal returns around the date of announcement, whereas the second hypothesis aims to evaluate if there is a significance regarding differences in the cumulative abnormal return of the parent firm and the spun-off entity.

First hypothesis
The first hypothesis examines cumulative abnormal returns over the event window starting 180 days preceding the date of announcement and ending on the ex-date.

$\boldsymbol{H_{1,0}}$**:** Cumulative abnormal returns are equal to zero over the periods.

a) 180 trading days preceding the date of announcement to 180 trading days after the date of announcement.
b) 30 trading days preceding the date of announcement to 30 trading days after the date of announcement.
c) 10 trading days preceding the date of announcement to 10 trading days after the date of announcement.
d) The date of announcement to ex-date.

$\boldsymbol{H_{1,1}}$**:** Cumulative abnormal returns are not equal to zero over the periods.

a) 180 trading days preceding the date of announcement to 180 trading days after the date of announcement.
b) 30 trading days preceding the date of announcement to 30 trading days after the date of announcement.
c) 10 trading days preceding the date of announcement to 10 trading days after the date of announcement.
d) The date of announcement to ex-date.

Second hypothesis
The second hypothesis examines whether or not the parent firm and the spun-off entity achieve the same cumulative abnormal returns following the first trading date of the spun-off entity.

$\boldsymbol{H_{2,0}}$**:** Cumulative abnormal returns following the first trading date of the spun-off entity are equal for the spun-off entity and the parent firm over the periods.

a) 10 trading days following the first trading date of the spun-off entity.
b) 30 trading days following the first trading date of the spun-off entity.
c) 180 trading days following the first trading date of the spun-off entity.
d) 252 trading days following the first trading date of the spun-off entity.
e) 504 trading days following the first trading date of the spun-off entity.
f) 756 trading days following the first trading date of the spun-off entity.

$\boldsymbol{H_{2,1}}$**:** Cumulative abnormal returns after the first trading date of the spun-off entity are not equal for the spun-off entity and the parent firm over the periods.

a) 10 trading days following the first trading date of the spun-off entity.
b) 30 trading days following the first trading date of the spun-off entity.
c) 180 trading days following the first trading date of the spun-off entity.
d) 252 trading days following the first trading date of the spun-off entity.
e) 504 trading days following the first trading date of the spun-off entity.
f) 756 trading days following the first trading date of the spun-off entity.

3. Literature review

The following section is a summary of existing theories and studies that apply to the topic of spin-offs and which are relevant for this study. The section explains what a spin-off is and why spin-offs, in theory, can generate abnormal return. Furthermore, the concept of abnormal return is explained, as well as the reasons behind why a company's management chooses to perform a spin-off and the theory of the efficient market hypothesis.

3.1. Formal definition of a spin-off

In order for management to separate an integrated division of a company or an owned subsidiary to an independent entity, the management can implement either organizational- or ownership restructuring. A spin-off together with a split-off, carve-out, and tracking stock are examples of ownership restructuring executed as public transactions involving the stock market. A split-off is when the existing shareholders are offered to choose to either retain shares in the parent firm or receive shares in the new independent entity, alternatively a mixture of the two alternatives. A carve-out is when the parent firm sells all or parts of the subsidiary through an IPO. This implies that the parent firm receives cash in exchange for shares in the subsidiary. In a tracking stock, shareholders track the performance of a division. Finally, *a spin-off is when the divested asset is distributed to existing shareholders of the parent firm in the form of shares in a new independent traded entity*. The distribution of new shares is on a pro rata basis (Cusatis et al., 1993). Initially shareholders of the parent firm will hold shares in both the parent and the spun-off entity, hence shareholders can choose to either keep both shares or reconstruct their portfolio. Further, the spin-off implies that the spun-off entity is able to act independently in decision making (Johnson et al., 1996).

The distinct difference between a spin-off and the two options, split-out and carve-out, is that in a spin-off the distribution of shares takes place on a pro rata basis and none liquid is received by the parent company (Desai et al., 1999).

3.2. Abnormal return

Abnormal return is the portion of the return of an asset that cannot be explained by the general movements of the market. The market's return is given by the expected return of the market portfolio. The abnormal return, however, measures how well an asset performs relative the general market. The abnormal return can be either positive, negative or zero and is given by the following formula.

$$R_{Abnormal} = R_{Actual} - R_{Market}$$

Where R_{Actual} is the actual return of the asset and where R_{Market} is the return of the corresponding market. Depending on a company's geographical limitations, various indices are used as a proxy to approximate the market portfolio. In the US, the S&P 500 is commonly used, while in Sweden the OMXSPI index is used (Berk et al., 2016).

3.3. The efficient market hypothesis

The theory of an efficient market was first published in 1970 by Eugene F. Fama, claiming that financial assets are priced based on the outstanding information available on the market. This implies that given a perfect market, abnormal return realized in conjunction with a spin-off is non-existent (Fama, 1970). The hypothesis assumes that all market participants have the same information, investors act rational and that the transaction costs are zero (Berk et al, 2016).

There are three levels of market efficiency, i.e. weak, semi-strong and strong. First, the weak level claims that prices of financial assets follow an unpredictable random walk. The price is based on historical data. Second, the semi-strong level states that prices of financial assets not only reflect historical data without also all available public information. Given the second level, it is only possible to obtain abnormal returns by using classified information which is not available on the public market. Finally, the strong form suggests that financial assets are priced based on historical data as well as both public available information and confidential information, hence it is not possible to achieve superior returns (Fama, 1970).

3.4. Reasons for performing a spin-off

This section illustrates both causes behind performing a spin-off as well as reasons to why superior returns may be obtained by spin-offs, which has been presented in previous studies.

3.4.1. Industrial focus

Industrial focus refers to the corporate focus hypothesis, claiming that increased core focus for a business is united with value creation for shareholders. Diversified firms trade at a discount estimated to c14% relative concentrated firms, according to Berger and Ofek (1995). The two authors suggest that one firm with several divisions causes managers to divert their attention – contributes to value destruction. Comment and Jarell (1995) agree with the diversification discount that Berger and Ofek (1995) demonstrate. Further, they demonstrate that increased industrial focus is united with efficiency and value creation for shareholders; which can be achieved through a spin-off.

Deley et al. (1997) studied cross-industry spin-offs[1] in relation to own industry spin-offs. Their findings suggest that cross-industry spin-offs generate both higher operating performance and higher abnormal returns relative own industry spin-offs. The results are confirmed by Krishnaswami and Subramaniam (1999), who suggest that spin-offs allow for managers to focus on their core operations. Further, Desai and Jain (1999) examine the abnormal returns of industrial focus spin-offs and non-industrial focus spin-offs. They refer to industrial focus as the business's core focus which is measured in three different ways. Either as (1) the number of divisions of a business, as (2) cross-industry spin-offs, or through (3) the Herfindahl index[2]. Desai and Jain (1999) alongside with Krishnaswami and Subramaniam (1999) found that core focus spin-offs achieve higher abnormal returns relative non-core focus spin-offs. Krishnaswami and Subramaniam (1999) also claim that the highest abnormal returns are found close to date of announcement.

[1] Referred to when the spun-off entity and the parent firm do not operate within the same industry.

[2] Calculated as the sum of squares of each segment's revenue divided by the total revenue of the firm.

3.4.2. Information asymmetry

Contrary to the studies related to the hypothesis of industrial focus, studies concerning the information asymmetry of spin-off cases are contradicting. Gilson et al. (2001) argue that analysts' coverage tends to improve following a spin-off, hence analysts are able to perform more accurate forecasts. The authors suggest that the improved forecasts are due to decreased information asymmetry and better disclosure of information in both the spun-off entity and the parent firm. Krishnaswami and Subramaniam (1999) examined whether spin-offs decrease the information asymmetry between a company's management and the external capital markets. Their study suggests that a high level of information asymmetry results in a valuation discount of the company. Firms that have a high level of information asymmetry prior the spin-off announcement in relation to their operating industry tend to spin off entities more frequent. The two authors argue that spin-offs tend to lower the information asymmetry and improve fair market valuation, thus in conjunction with Gilson et al. (2001) and the efficient market hypothesis. Also, Krishnaswami and Subramaniam (1999) claims that firms with a high level of information asymmetry prior the spin-off announcement tend to experience higher abnormal returns relative firms with a low level of information asymmetry prior the date of announcement.

On the other hand, Veld and Veld (2004) do not find any relationship between the information asymmetry and abnormal returns of spin-offs. In a study by Huson and Mackinnon (2003) the authors state that spin-offs can cause information asymmetry to increase. Their study investigates how informed traders – who have an information advantage regarding the segment of the firm which will be spun-off – can benefit from the spin-off relative to uninformed traders. The theory states that the informed traders can make a more accurate fundamental valuation of the two entities after the spin-off, thus benefiting from the increased volatility which frequently occurs close after the date of announcement.

3.4.3. Regulation and taxes

According to the tax regulation, Lex Asea, found in the Swedish tax legislation (inkomstskattelagen) chapter 42:16, dividends from the parent firm in the form of shares in a subsidiary, shall not be subject to taxation. Some criteria must be fulfilled, though. First, the distribution of the subsidiary's shares shall be distributed on a pro rata basis. Second, the shares are subject for trading at a regulated market or can be easily exchanged. The law came into force in 1991, thus enabling tax easing for spin-offs (1999:1229).

3.4.4. Geographical focus

Geographical focus can either increase or decrease the value of a company. Veld and Veld (2004) state three arguments regarding why a company decreases in value in conjunction with a spin-off and its entrained shift in geographical focus. Geographical focus could result in reduced synergies and diminishing economies of scale. The company could also reduce its international competitiveness due to its low geographical presence. Increased geographical diversification may be a sign that management is trying to reduce their own risk of failure at the expense of shareholder value. Furthermore, a decision to higher geographical focus could indicate that previous efforts abroad have been unsuccessful. On the other hand, Veld and Veld (2004) state that the reduced complexity due to the spin-off can result in more cost-effective structures and hence reduce costs. This is because the complexity is generally lower in a domestic company compared to a multinational company. Further, the company's tendency to compensate for poor performance in one region against performance in another region, would be eliminated if the business has a high level of geographical focus.

3.4.5. Size focus

The size focus refers to the relative size (proportion) of assets divested by the parent firm through a spin-off. Studies concerning the relative size hypothesis are contradicting. On the one hand, Chemmanur and Yan (2004) state that a parent firm which spins off a relatively large proportion of its total assets is a likely target for a takeover, enabling raised shareholder value. Their findings have been proved in other studies, including Krishnaswami and Subramaniam (1999), Miles and Rosenfeld (1983) and Veld and Veld (2004). Still, these studies only investigate how abnormal returns of the parent firm can be explained by the relative size hypothesis. On the other hand, Kirchmaier (2003) does not agree with the above studies. He argues that in the long-run the relative size effect tends to be reversed, and that relatively smaller spin-offs tend to perform better in the long-run compared to large spin-offs.

3.4.6. Timing

The management has influence regarding when a spin-off or carve out is taking place. Powers (2003) finds that carve outs often occur during bull markets. Due to that spin-offs do not involve any cash transactions, the timing and the prevailing market conditions of the transaction is less important. Still, management has an interest regarding that the spun-off entity performs well during its first trading days. Chemmanur and Paeglis (2000) found that the spun-off entities underperformed during the first year of trading, though.

Figure 1: Previous performed studies of relevance

Region	Publication date	Author(s)	Period	Sample size	Interval (days from ann)	CAR	Significance
Sweden	1988	Scheutz	1983-1984	23	0/+540	9.00%	n/a
Europe	2003	Kirchmaier*	1989-1999	48	-1/+1	5.40%	1%
Europe	2003	Kirchmaier*	1989-1999	41	0/+180	-4.20%	10%
Europe	2004	Veld & Veld	1987-2000	156	-10/+10	4.10%	n/a
Europe	2004	Veld & Veld	1987-2000	156	-1/+1	2.60%	1%
Europe	2004	Veld & Veld	1987-2000	53	0/+180	12.00%	n/a
Europe	2007	Sudarsanam & Qian	1985-2005	170	-10/+10	6.50%	n/a
Europe	2007	Sudarsanam & Qian	1987-2005	157	-1/+1	4.80%	1%
Europe	2007	Sudarsanam & Qian	1980-2005	142	0/+180	7.20%	n/a
Europe	2008	Lehtonen	1994-2006	164	-1/+1	1.80%	1%
Europe	2008	Lehtonen	1994-2006	164	0/+180	-18.80%	1%

*Working paper

4. Data

4.1. Selection of spin-off cases

Delimitation of spin-off cases included in this study has been made based on time period of investigation, geography, marketplace and leverage. In terms of time, the sample has been limited to include companies that have been involved in a spin-off after the introduction of Lex Asesa in 1991. Lex Asea caused significant differences in taxation. Furthermore, due to the limited access to historical data, the study has been limited to include companies that have performed a spin-off during the 21th century. The study only covers Swedish cases, and only companies listed on the main market and/or First North. Companies listed on unregulated markets and Spotlight are excluded, due to the limited daily turnover and high level of information asymmetry. Companies within the financial sector[3] have also been excluded. This is because such companies usually are highly leveraged, and according to Maxwell and Rao (2003) leverage is inversely related to the return of a company's bonds, implying that it may be misleading to compare companies with high differences in terms of leverage. Additionally, companies that have experienced other firm-specific events during the event window have been excluded. This process involved to manually check for firm specific events that caused extreme negative or positive price reactions, such as M&A announcements, major changes in management, press releases and/or earning warnings. If a company has dual class shares, the shares with the highest daily turnover have been used. Finally, companies with insufficient historical data have also been excluded.

[3] Including banks, investment companies, insurance companies and real estate firms.

Figure 2: Companies included in the study

Parent	Spin-off	Weight of parent	Weight of spin-off	Date of announcement
Addtech	Addlife	77%	23%	2015-06-04
Atlas Copco	Epiroc	75%	25%	2017-01-16
Autoliv	Veoneer	70%	30%	2017-12-12
Bergman Beving	Momentum	66%	34%	2016-05-11
Betsson	Cherry	98%	2%	2005-12-19
Betsson	Net Entertainment	67%	33%	2005-12-19
Electrolux	Husqvarna	55%	45%	2005-02-15
Getinge	Arjo	84%	16%	2016-10-18
Gunnebo	Gunnebo industrier	83%	17%	2004-12-20
Haldex	Concentric	63%	37%	2010-07-16
Hexagon	Hexpol	94%	6%	2007-06-11
ITAB (XANO)	ITAB Shop Concept	34%	66%	2004-03-11
Kindred	Kambi	90%	10%	2014-04-11
Lundin Petroleum	IPC	96%	4%	2017-02-13
Lundin Petroleum	Etrion	96%	4%	2010-10-05
Lundin Petroleum	Enquest	66%	34%	2010-03-04
MTG	NENT	35%	65%	2018-03-23
MTG	Qliro (CDON)	93%	7%	2009-04-20
NCC	Bonava	65%	35%	2016-01-28
NGEX	Filo Mining	79%	21%	2016-06-14
Peab	Peab Industri	81%	19%	2006-10-19
Poolia	Dedicare	78%	22%	2011-02-07
Poolia	Uniflex	83%	17%	2004-09-08
SCA	Essity	21%	79%	2016-08-24
Securitas	Niscayah	81%	19%	2006-02-09
Securitas	Loomis	85%	15%	2006-02-09
Vitrolife	Xvivo Perfusion	69%	31%	2012-03-19
Xano Industri	Ages Industri	48%	52%	2013-11-25

The final sample consist of 28 spin-off cases with announcement date between the years 2004 and 2018 as illustrated above in figure 2. Each company's industry is specified in figure 3 below.

4.1.1. Limitations

There is a certain probability that we have misinterpreted or missed a firm specific event when manually checking for firm-specific factors affecting the companies' share prices during the event window. There is also a risk that we have misinterpreted the actual date of announcement. This would imply that the actual event is not measured, since an incorrect date is used in the event study. The same applies regarding whether it is correct or not to choose the share classes with the highest daily turnover. Further, there is a risk associated with the relatively small sample size of 28 spin-off cases. Still, Scheutz (1988) performed a professional study with a final sample of only 23 spin-off cases.

4.2. Benchmark indices

In order to track whether a spin-off case has generated abnormal return, an industry index has been used as a benchmark. Different businesses and industries face different risks and returns. Therefore, by using a relevant industry index as benchmark it is possible to make a more fair comparison in terms of return. The classification has been made based on the Global Industry Classification Standard (GICS) first tier provided by Bloomberg. All industry indices represent an equally weighted portfolio of Swedish stocks within the specific industry. Industry indices are provided by Nasdaq Stockholm for all industries except for the industry energy, which is provided by Morgan Stanley Capital International (MSCI). This is due to that Nasdaq's energy index has only existed during a limited period of time.

Figure 3: Industry indices by company included in the study

Parent	Spin-off	Industry parent	Industry spin-off	Index parent	Index spin-off
Addtech	Addlife	Industrials	Health Care	SX2000PI	SX4000PI
Atlas Copco	Epiroc	Industrials	Industrials	SX2000PI	SX2000PI
Autoliv	Veoneer	Consumer Discretionary	Consumer Discretionary	SX3000PI	SX3000PI
Bergman Beving	Momentum	Industrials	Industrials	SX2000PI	SX2000PI
Betsson	Cherry	Consumer Discretionary	Consumer Discretionary	SX3000PI	SX3000PI
Betsson	Net Entertainment	Consumer Discretionary	Consumer Discretionary	SX3000PI	SX3000PI
Electrolux	Husqvarna	Consumer Discretionary	Consumer Discretionary	SX3000PI	SX3000PI
Getinge	Arjo	Health Care	Health Care	SX4000PI	SX4000PI
Gunnebo	Gunnebo industrier	Industrials	Industrials	SX2000PI	SX2000PI
Haldex	Concentric	Industrials	Industrials	SX2000PI	SX2000PI
Hexagon	Hexpol	Information Technology	Materials	SX9500PI	SX1000PI
ITAB (XANO)	ITAB Shop Concept	Industrials	Industrials	SX2000PI	SX2000PI
Kindred	Kambi	Consumer Discretionary	Consumer Discretionary	SX3000PI	SX3000PI
Lundin Petroleum	Enquest	Energy	Energy	MXND0EN	MXND0EN
Lundin Petroleum	Etrion	Energy	Energy	MXND0EN	MXND0EN
Lundin Petroleum	IPC	Energy	Energy	MXND0EN	MXND0EN
MTG	Qliro (CDON)	Communication Services	Consumer Discretionary	SX5500PI	SX3000PI
MTG	NENT	Communication Services	Communication Services	SX5500PI	SX5500PI
NCC	Bonava	Industrials	Consumer Discretionary	SX2000PI	SX3000PI
NGEX	Filo Mining	Materials	Materials	SX1000PI	SX1000PI
Peab	Peab Industri	Industrials	Industrials	SX2000PI	SX2000PI
Poolia	Uniflex	Industrials	Industrials	SX2000PI	SX2000PI
Poolia	Dedicare	Industrials	Health Care	SX2000PI	SX4000PI
SCA	Essity	Materials	Consumer Staples	SX1000PI	SX3700PI
Securitas	Niscayah	Industrials	Industrials	SX2000PI	SX2000PI
Securitas	Loomis	Industrials	Industrials	SX2000PI	SX2000PI
Vitrolife	Xvivo Perfusion	Health Care	Health Care	SX4000PI	SX4000PI
Xano Industri	Ages Industri	Industrials	Industrials	SX2000PI	SX2000PI

4.2.1. Limitations

The industry indices used for each company are based on the GICS first tier classification, which is a general classification. Sub industries are not considered, which implies that a stock with a certain sub industry classification may experience a different abnormal return in relation to the return of the general industry index.

4.3. Financial data

The financial data such as historical prices of stocks and indices are obtained through the Bloomberg Terminal. Due to the limited access to historical corporate actions of companies,

dividends are excluded and not measured in either the indices or the spin-off cases. This implies that return is only measured based on changes in historical prices.

5. Method

Our method is based on the one used by Cusatis et al. (1993). The authors performed an event study, however, since their study was conducted on the US market some modifications have been done. By conducting an event study, one can examine whether a specific event tends to affect the return of a company. According to MacKinley (1997) the actual return following the event is compared with the expected return of a company, hence determining if the event affected the return or not. However, in this study the actual return of the firm will be compared with actual return of its corresponding industry index. MacKinley (1997) claims that seven steps are involved in order to conduct an event study. The first step (1) involves determining the event window, which refers to the time period of investigation. In this study the event window varies depending on hypothesizes. The second step (2) refers to the selection criteria regarding which data to include, which is specified under section *4. Data*. The third task (3) is to determine a model to calculate the abnormal returns, which is explained in section *5.1. Abnormal returns* below. The forth step (4) involves determining the estimation window. Since the actual return of each company's benchmark index is used instead of an estimated benchmark index, this step is skipped in the study. The fifth step (5) refers to defining the null hypothesis and calculating the abnormal returns. The sixth step (6) includes testing the statistical significance, which will be performed by conducting a two-tailed paired t-test for the period of investigation. Finally, the seventh step (7) involves the presentation of the empirical results which follows under the section *6. Results*.

5.1. Abnormal returns

The Market Adjusted Model (MacKinley, 1997) has been used to derive abnormal return. Abnormal return (AR) for a company's shares (i) at a given time (*t*) is given by the following formula:

$$AR_{it} = R_{it} - R_{imt}$$

where R_{it} is the return of the spin-off,
R_{imt} is the return of the corresponding index.

In comparison to other types of models, the Market Adjusted Model can be viewed as a more restrained model since certain coefficients are pre specified. There are some risks associated with using the model, such as that a spin-off may affect the return of the index on the particular day of the announcement and thus present deflated abnormal returns as a result. Also, the model does not take systematic risk into account or the CAPM and real and nominal price differences are not considered. The model, however, is modified additionally since actual return of each company's index is used.

With the Market Adjusted Return Model we can derive the expected return by the following steps:

$$E(R_{it}) = \alpha_i + \beta_i * R_{imt} + \varepsilon_{it}$$

where β_i is the company's systematic risk which is prespecified to 1,
R_{imt} is the return of the corresponding industry index at day t,

α_i is the intercept which equals 0,
ε_{it} is the standard error which equals 0.

Given the pre specified conditions above it is possible to derive the equation for abnormal returns as the following:

$$AR_{it} = R_{it} - R_{imt}$$

The average abnormal return (AAR) is given by the mean of the abnormal returns for all companies included at the specific date of investigation. In the following equation, *n* represents the number of companies in the sample.

$$AAR = \frac{1}{n}\sum_{i=1}^{n} AR_{it}$$

The AR is also used to calculate the cumulative abnormal returns (CAR) over the event window. In the following equation t_n denotes the end date of the event window and t_0 denotes the start date.

$$CAR_{t_n,t_0} = \sum_{t=0}^{t_n} AR_{it}$$

Finally, the CAR_{t_n,t_0} is used to measure the cumulative average abnormal return (CAAR) between the interval t_n and t_0. The CAAR is given by the following equation where *n* denotes the number of companies in the sample.

$$CAAR_{t_n,t_0} = \frac{1}{n}\sum_{i=1}^{n} CAR_{t_n,t_0}$$

5.2. Empirical significance

5.2.1. The first hypothesis

The event window for the first hypothesis starts 180 trading days preceding the date of announcement and ends on the ex-date for each respective company. The first hypothesis measures if the cumulative abnormal return is equal to zero over the event window.

$$H_{1,0}: \text{CAAR} = 0$$

Our alternative hypothesis H_1 claims that the cumulative abnormal return is not equal to zero over the event window.

$$H_{1,1}: \text{CAAR} \neq 0$$

5.2.2. The second hypothesis

The event window for the second hypothesis starts on the first trading day of the spun-off entity and ends 756 trading days later. The second hypothesis examines if the cumulative abnormal return of the parent firm is equal with the one of spun-off entity. In the formula below *p* denotes the parent firm and *s* denotes the spun-off entity.

$$H_{2,0} : CAAR_P - CAAR_S = 0$$

Our alternative hypothesis H_1 claims that the difference is not equal, thus that the difference is not equal to zero.

$$H_{2,1} : CAAR_P - CAAR_S \neq 0$$

5.2.3. Test of significance

The study will test the significance of the results with $\alpha = x$ within a $1 - \alpha$ confidence interval using a two-sided paired t-test. The variable x determines the significance of our results and assumes values of either 0.01 (1% significance); 0.05 (5% significance) or 0.1 (10% significance).

Since there are several hypothesizes and underlying sub hypothesizes with different number of trading days over the event window, the number of observations deviates between the hypothesizes. Since all tested hypothesizes have more than 100 data observations, we assume that the degrees of freedom are equal to infinite for all tests.

$$Reject\ H_0\ if\ |t| > critical\ value\ (t - stat)$$
$$Reject\ H_0\ if\ P < \alpha$$

6. Results

The following section presents the empirical findings divided into two parts based on the first and the second hypothesis. Some results are not displayed due to confidentiality reasons.

6.1. First hypothesis

The figures below illustrate the findings for the first hypothesis and its sub hypothesizes. T-statistics and critical values are generated depending on the chosen α-value.

Figure 4: CAAR over period of investigation

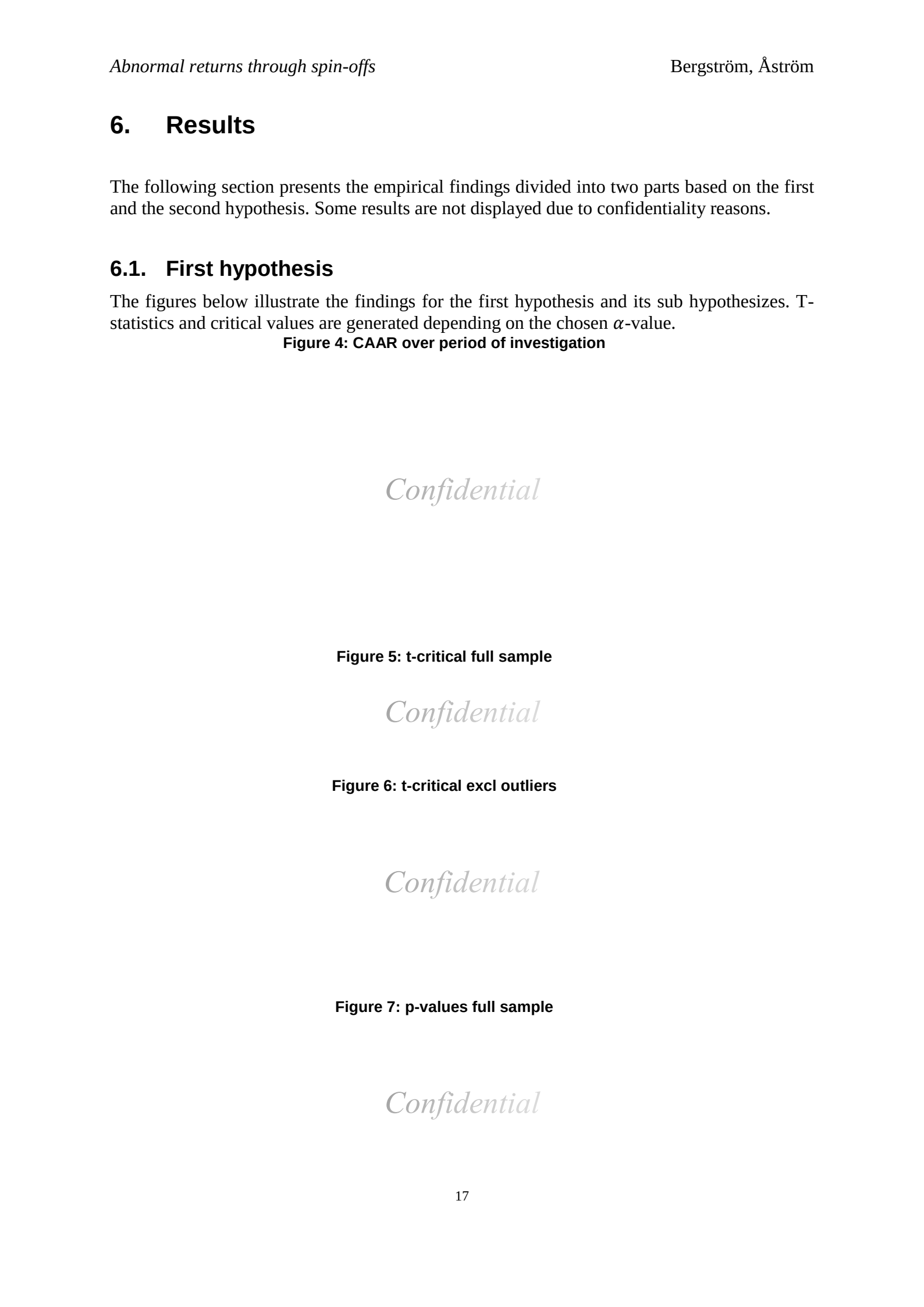


Figure 5: t-critical full sample

Figure 6: t-critical excl outliers

Figure 7: p-values full sample

Figure 8: p-values excl outliers

Figure 9: CAAR (sub hypothesis A)

As illustrated in figure 4, positive cumulative average abnormal returns are obtained for all periods of investigation. The figures 5-8 illustrate the statistical evidence of our results. In order to conclude if it is possible to reject H_0, one need to compare the t-stat with t-critical in the figures 5 and 6 and the p-value with the level of significance in the figures 7 and 8 respectively. Starting at the first sub hypothesis (a), the results suggest that it is not possible to reject $H_{1,0}$ for sub hypothesis (a) at 1% significance, although it is possible to reject $H_{1,0}$ at greater than or equal to 5% significance. Further it is possible to reject $H_{1,0}$ for all other sub hypothesis at greater than or equal to 1% significance. This implies that there is strong evidence to reject $H_{1,0}$, claiming that cumulative average abnormal returns are obtained for all periods of investigation and one can interpret that the cumulative average abnormal return is positive. The statistical evidence remains the same when adjusting for outliers as illustrated in above figures. Outliers are referred to as companies that have achieved extreme positive or negative cumulative abnormal returns, i.e. adjusting for these the sample represents the real market under normal conditions better. Since the p-value is relatively low for the sub hypothesis (b) and (c) statistics suggest strong evidence that the announcement of the spin-off contributes to abnormal returns.

Figure 10: CAAR by industry, full sample

It is possible to group the parent firms by industry as illustrated in above chart. Since there is only one company representing information technology, meanwhile as industrials represent c46% of the total sample, it is hard to find statistical findings by industry. Still, however, the data suggests that companies operating within the industry industrials has performed relatively more spin-offs historically and are likely to obtain positive cumulative abnormal returns over the periods of investigation.

6.2. Second hypothesis

The second hypothesis examines if the parent firm and the spun-off entity obtain the same abnormal returns following the first trading date of the spun-off entity. The figures below illustrate the findings for the second hypothesis and its sub hypothesizes. T-statistics and critical values are generated depending on the chosen α-value.

Figure 11: CAAR full sample

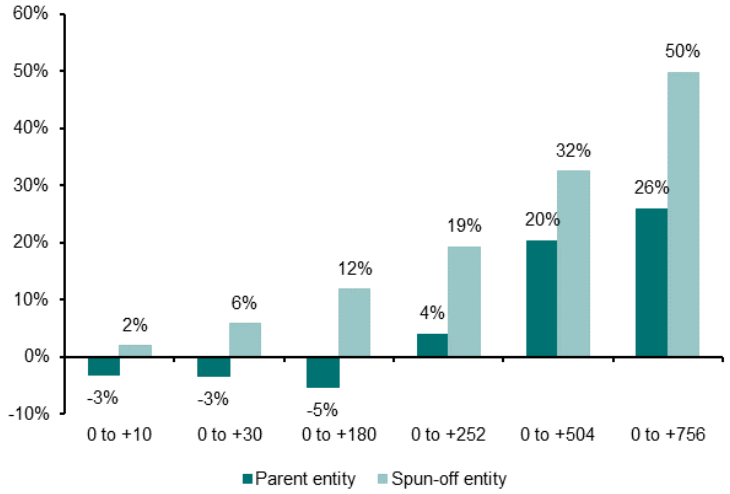


Figure 12: CAAR excl outliers

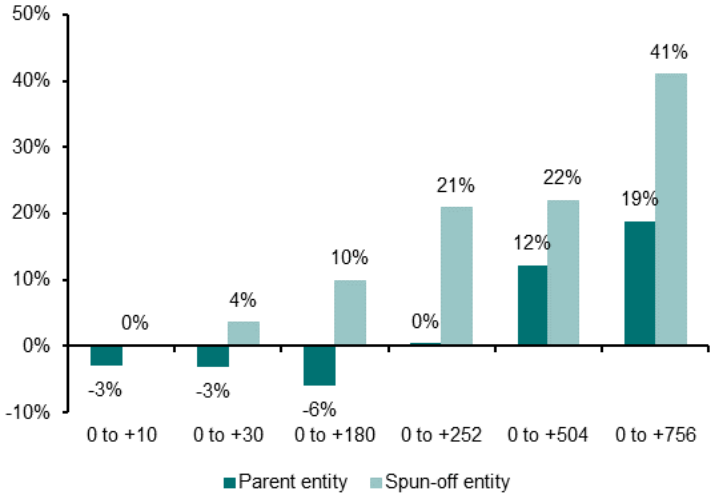


Figure 13: t-critical full sample

T-stat	2,578	1,961	1,646
Sub hyp. (a-d)	2,771	2,052	1,703
Sub hyp. (e)	2,787	2,060	1,708
Sub hyp. (f)	2,878	2,101	1,734

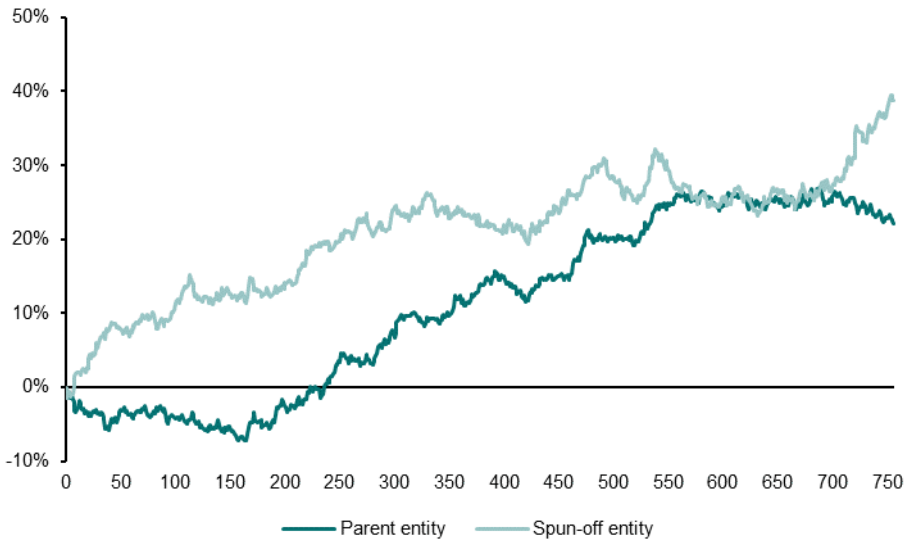
Figure 14: t-critical excl outliers

T-stat	2,578	1,961	1,646
Sub hyp. (a-b)	2,779	2,056	1,706
Sub hyp. (c-e)	2,807	2,069	1,714
Sub hyp. (f)	2,898	2,110	1,740

Figure 15: p-values

Sub hypothesis	Full sample	Excl outliers
A	0,217	0,412
B	0,064	0,124
C	0,043	0,044
D	0,140	0,014
E	0,319	0,447
F	0,113	0,157

Figure 16: CAAR (sub hypothesis F)



As illustrated in figure 16, the average spun-off entity generates positive cumulative average abnormal returns throughout all measured periods. The average parent firm experiences negative cumulative average abnormal return during the first 252 trading days. After 252 trading days, however, the average parent firm achieves positive cumulative abnormal returns. The figures 13-15 illustrate the statistical evidence of our results. In order to conclude if it is possible to reject H_0, one need to compare t-stat with t-critical in the figures 13 and 14 and the p-values with the level of significance in figure 15 respectively. Starting from the first sub hypothesis (a), the results suggest that it is possible to reject H_0 at 10% significance. The same applies for the rest of the periods of investigation (sub hypothesizes b-f). This implies that there is weak statistical evidence to reject $H_{2,0}$. The statistical evidence remains the same when adjusting for outliers as illustrated in above figures. Outliers are referred to as companies that have experienced extreme positive or negative cumulative abnormal returns, i.e. adjusting for these the sample represents the real market under normal conditions better. Since the p-values are relatively low for the sub hypothesis (b) and (c), statistics suggest that the relative difference in cumulative abnormal returns between the spun-off entity and the parent firm is higher for these two periods. Also, the data indicates that positive abnormal returns do not occur for either the spun-off entity or the parent entity during the first five trading days.

Figure 17: CAAR by industry, parent firm (full sample)

Sub hypothesis	Industrials	Information Technology	Materials	Consumer Discretionary	Communication Services	Energy	Health Care
A	-6.75%	1.55%	0.97%	4.54%	-1.62%	-4.18%	-4.33%
B	-7.88%	4.45%	2.52%	9.59%	-2.42%	-5.45%	14.50%
C	-21.56%	-85.51%	-12.68%	41.75%	-9.06%	20.52%	-3.77%
D	-19.36%	-21.85%	4.14%	43.90%	0.83%	51.63%	-0.50%
E	N.a	7.36%	-1.37%	55.33%	1.36%	72.25%	53.30%
F	N.a	55.52%	-20.82%	69.50%	-10.11%	N.a	N.a
Companies	13	1	2	5	2	3	2

Figure 18: CAAR by industry, spun-off entity (full sample)

Sub hypothesis	Industrials	Consumer Discretionary	Materials	Consumer Staples	Health Care	Energy
A	2.53%	-4.65%	23.57%	2.82%	-12.37%	18.89%
B	1.91%	-0.06%	33.37%	-7.40%	-4.92%	17.09%
C	10.41%	17.12%	18.43%	6.00%	25.63%	9.25%
D	17.27%	27.39%	33.18%	25.14%	38.08%	12.25%
E	N.a	42.97%	12.33%	7.96%	32.09%	58.30%
F	N.a	45.46%	-7.89%	12.14%	23.01%	N.a
Companies	11	7	2	1	4	3

Due to the limited sample per industry it is hard to draw any specific conclusions by industry. However, the data indicates the difference in cumulative abnormal returns between the parent entity and the spun-off entity is highest for the industries industrials and materials, while it is lower for consumer discretionary.

6.3. Summary of results

Figure 19: Summary of statistical significance by hypothesis

Hypothesis	Significance
H_{1A}	Supported at 5% significance
$H_{1B} - H_{1D}$	Supported at 1% significance
$H_{2A} - H_{2F}$	Supported at 10% significance

7. Conclusion

Our results demonstrate that spin-off cases raise shareholder value by achieving positive cumulative abnormal return. The parent firms demonstrate positive cumulative abnormal returns for all periods of investigation around the date of the announcement, and the spun-off entity outperforms the parent firm for all periods of investigation following it first trading day. The results are in line with several of the previous performed studies including, for instance, Scheutz (1988), Veld and Veld (2004) and Cusatis et al. (1993). Many previous studies, however, such Cusatis et al. (1993), have investigated the actual performance of spin-off cases following the first trading day, thus the announcement effect is not measured. This implies that it is hard to verify our results from the first hypothesis, given the limited previous research conducted. Still, on the other hand, Lehtonen (2008) presents a positive abnormal return on the day of the announcement, but in contradiction to our results, the author finds negative cumulative abnormal returns over a 180 trading days interval. The differences with our study and the above presented, mainly consist of differences in time, geography and method and sample size used. Since the overall results are similar and the methods are applicable in Sweden, it supports that studies of international character, such as Cusatis et al. (1993) and Johnson et al. (1994), can be conducted on Swedish spin-off cases too.

This study provides support for a profit maximizing investor to invest in spin-off cases. Even though we had none sub hypothesis that tested the intraday abnormal return on the first trading day of the spun-off entity, one can graphically interpret an initial decrease in figure 17 followed by a positive momentum in abnormal returns. Johnson et al. (1994) also found this initial decline, which could be explained by how the shares of the spun-off entity are being distributed. Shareholders who only want to remain invested in the parent firm, sell the shares received in the spun-off entity on the first trading day – thus short-term selling pressure occurs. Asset managers and institutional investors can also be limited to only hold assets with a certain market capital and in some specific industries, and are therefore forced to sell the received shares in the spun-off entity.

Further our findings suggest that the spun-off entity outperforms the parent firm in the long run, especially the first year following the first trading day of the spun-off entity – suggesting a long-short strategy in the spun-off entity and parent firm respectively. However, these conclusions are verified at 10% significance which make them relatively weak. Both Berger and Ofek (1995) and Comment and Jarell (1995) present that spun-off entities exhibit long-run excess returns several years following the first trading day.

This paper does not cover why spin-offs generate positive cumulative abnormal return. Krishnaswambi and Subrnamiam (1999) conclude that spin-offs reduce the information asymmetry associated with the entities. All else being equal, reduced information asymmetry raises transparency which makes it possible for the investor to visualize the underlying value of the assets more accurate. Therefore the information asymmetry can be one possible factor explaining the cumulative abnormal return. Krishnaswambi and Subrnamiam (1999) study was, however, conducted in the US in 1999. Since the level of transparency has increased during the 21th century and Sweden is a relatively transparent country the explanatory power of the factor is doubtful, though. An interesting future study would be to investigate if and how the abnormal returns of spin-offs have changed over time and if it is possible to explain the change by the level of information asymmetry. Long-run underperformance can also be an explanatory factor to the abnormal return associated with spin-offs. A restructuring sends

positive signals to investors, visualizing that management aims to deliver better results and are aware of the previous disappointing performance. However, there is more or less none previous research validating this factor's explanatory. In our study the data indicates that the average abnormal return is positive preceding the date of announcement which suggests weak evidence for the explanatory factor, though. Therefore also this factor would be interesting to investigate in further studies. Further, it is also possible to discuss the level of core business focus as an explanatory factor. This is also supported by Berger and Ofek (1995) and Comment and Jarell (1995) who suggest that industrial focus increases shareholder value. Since the spun-off entity usually is the smaller one, the increased core focus per entity could be an explanatory factor behind why the spun-off entity performs better relative the parent firm.

The level of abnormal return obtained by each spin-off case may also be explained by its industry and whether or not the spin-off was cross-industry. Daley, Mehrotra, and Sivakumar (1997) claim that intra-industry spin-offs generate lower abnormal returns relative cross-industry spin-offs. Since our sample only consisted of six cross-industry spin-offs, we find it too small to conduct a regression analysis on this variable. Also, the majority of spin-off cases operate within the industrial industry, implying that the sample would be deceptive.

The underlying consensus regarding that spin-off cases achieve excess return is in contradiction with the efficient market hypothesis. If investors were aware of the previous studies performed within the field and their conclusions, the positive abnormal returns would most likely be lower. On the other hand, a possible explanation to the short-term high abnormal return realized around the date of announcement could be due to that investors who are aware of the performance of spin-offs want to invest in spin-off cases. This would further imply that the daily abnormal return would diminish following the date of announcement, due to that investors are informed and willing to invest at a fair share price. Although the share prices' movements are not statistically investigated in this manner in the study, it is possible to view the effect in figure 10 above. As investors become more aware of this effect, the abnormal return would diminish according to the efficient market hypothesis, though.

Finally, one can claim that there is an underlying consensus that spin-offs generate additional shareholder value in the long-run. It is unclear which explanatory factors that contribute to the increased shareholder value. Companies and management seem be aware of this underlying consensus since the number of performed spin-offs is steadily increasing; suggesting that management believe that spin-offs yield additional value. As investors become more aware of the underlying momentum in spin-off cases it is likely that the abnormal return will decrease, however, the research is still limited regarding the underlying fundamental drivers in terms of geography, industry and financial structure.

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9. Appendix

Appendix 1: Number of companies included in the first hypothesis

Sub hypothesis	Full sample	Excl. outliers
A	28	24
B	28	26
C	28	28
D	28	27

Appendix 2: CAAR for the first hypothesis

Sub hypothesis	Full sample	Excl. outliers
A	12,73%	10,85%
B	8,97%	5,34%
C	4,95%	4,95%
D	12,27%	9,85%

Appendix 3: Number of companies included in the second hypothesis

Sub hypothesis	A	B	C	D	E	F
Full sample	28	28	28	28	26	19
Excl. Outliers	27	27	24	24	24	18

Appendix 4: CAAR for the second hypothesis, full sample

Sub hypothesis	Parent entity	Spun-off entity
A	-3,11%	1,97%
B	-3,36%	5,84%
C	-5,30%	11,88%
D	4,05%	19,28%
E	20,30%	32,48%
F	25,92%	49,85%

Appendix 4: CAAR for the second hypothesis, excl outliers

Sub hypothesis	Parent entity	Spun-off entity
A	-2,80%	0,15%
B	-3,02%	3,56%
C	-5,84%	9,91%
D	0,29%	20,82%

E	12,05%	21,96%
F	18,68%	40,99%

Appendix 5: Cross-industry spin-offs

Parent	Spin-off	Industry parent	Industry spin-off
Addtech	Addlife	Industrials	Health Care
Hexagon	Hexpol	Information Technology	Materials
MTG	Qliro (CDON)	Communication Services	Consumer Discretionary
NCC	Bonava	Industrials	Consumer Discretionary
Poolia	Dedicare	Industrials	Health Care
SCA	Essity	Materials	Consumer Staples
Count	6		