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Master Degree Project in Accounting and Financial Management

Core Focusing Strategy and Share Price Reactions

- A study on northern European spin-off announcements

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Abstract

This study investigates the short-term shareholder reactions of announced spin-offs in northern Europe. Spin-offs conducted in order to increase core focus of the parent, and spin-offs not conducted for this reason, are distinguished and separately analyzed. Moreover, two research questions are developed with the aim of firstly investigating how announcements affect the short-term wealth of shareholders, and secondly, what potential effect increased industrial focus has on shareholder reactions from spin-offs. By analyzing spin-offs that are announced between 2004 and 2019, significant abnormal returns are found for announcements of spin-offs. When separating the full sample into sub-samples of core focusing spin-offs and non core focusing spin-offs, this study finds that the former results in larger and significant abnormal returns in contrast to the latter which results in insignificant abnormal returns. The difference between these two sub-samples is not significantly different from zero. Furthermore, the evidence of the conducted research shows that specialization does not play an evident role in the emergence of the abnormal returns. Practical implications include that companies which have decided to spin off an entity can expect a short-term positive value effect from shareholders, but not necessarily due to the impact of a potential rationale of focusing on the company's core business.

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Gothenburg, 2019-06-11

A handwritten signature in black ink, reading "Elin Ajax", written in a cursive style. The signature is positioned above a solid horizontal line.

Elin Ajax

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1. Introduction

1.1. Background

Restructuring organizations in form of spin-offs intends to create value for shareholders as well as to develop the companies, in accordance with several conducted studies (Veld & Veld-Merkoulova, 2004). The announcement of the decision to separate an entity is followed by a reaction of the owners, i.e. the shareholders, and it is of interest to investigate the underlying strategic plan behind the divestiture with the supposed effect on share price and abnormal returns. A commonly suggested reason behind conducting spin-offs is to increase the focus of the corporation, and hence strengthen the core business. Our paper investigates public companies in northern Europe which have announced to perform spin-offs, and the following reactions from shareholders of the parent companies. Moreover, spin-offs conducted in order to increase core focus of the parent, and spin-offs not conducted for this reason, are distinguished and separately analyzed. Core focusing strategies are studied as possible determinant factors of the potential shareholders reactions to the announcement of corporate spin-offs. The research is conducted on the basis of literature and empirical evidence concerning corporate strategy in terms of divestitures and diversification, in combination with previous studies and evidence regarding reactions to announced spin-offs.

The rationale behind, and the existence of, diversification in companies has varied over the years. According to Berger and Ofek (1995), there was a wave of diversification programs taken on by corporations during the 1950s and 1960s. The programs resulted in large conglomerates where the most attractive business model was well diversified. This impacted the size and reach of the companies. Large and global companies are not always efficiently run, however. Extensive previous research identifies a diversification discount, which states that diversified firms are lower valued than peers operating in only one industry (Berger & Ofek, 1995; Rajan, Servaes & Zingales, 2000).

There are several suggested underlying reasons which result in the diversification discount. For instance, the difficulties of focusing and allocating resources in large conglomerates, which are reflected in stock prices and investor valuations are widely discussed (Krishnamurti & Vishwanath, 2008). In order to achieve a higher level of efficiency and reduce any diversification discount, companies can engage in various types of restructuring and divestments, i.e. they sell or discard assets. Pidun et al. (2019) identify a wave of corporate breakups during the past years.

The trend started in the United States during the 1980s, approached Europe in the 1990s, and has increased since. During these decades, companies have tended to engage in focusing activities in order to develop and strengthen their core business (Pidun et al., 2019). This could be seen as the opposite from performing activities concerning mergers and acquisitions, as the company develops through divestments rather than investments. During more recent years, several studies have contradicted the diversification discount literature. For instance, Campa and Kedia (2002) argue that diversification instead could generate a premium, and Pidun et al. (2019) conclude that diversification clearly can create value if properly managed. In light of this, there are currently different perspectives on the potential value creation or destruction from diversification and hence divestments.

A common way to engage in divestments is to perform a spin-off, which means that a specific part of a company is separated from the rest of the organization. There are several structural changes for this type of transaction, but in contrast to acquisitions, no cash exchange occurs when conducting a spin-off. Since there is no explicit cash exchange, the company rationale is not related to wanting to generate immediate cash in relation to the transaction (Desai & Jain, 1999). The spin-off results in two entities, namely the parent firm and the spun-off firm. The parent is the initial company, and the spun-off is the newly introduced entity (Krishnamurti & Vishwanath, 2008). The parent company's current shareholders all receive shares in the newly spun off firm on a pro rata basis, i.e. a proportional amount in regard to their current ownership, as an addition to their initial holdings in the parent company. Consequently, pre-announcement shareholders are affected by any stock price change occurring in connection to the spin-off (Schipper & Smith, 1983). Firms engaging in spin-off activities share some common characteristics, according to Johnson, Klein and Thibodeaux (1996). These include that the firms tend to be larger and more leveraged than their industry rivals. They usually also have higher asset turnover than their peers, along with lower real asset growth.

Supposedly due to the changes in business models and strategies of companies regarding diversification, there has been an increase in performed corporate spin-offs over the years (Desai & Jain, 1999; Veld & Veld-Merkoulova, 2009). A spin-off could help reaching a company's intent to diminish any lack of strategic fit or lack of synergies between subsidiaries or divisions within the company, which is a frequently discussed reason behind the decision to conduct a spin-off (Cusatis, Miles & Woolridge, 1993; Krishnamurti & Vishwanath, 2008; Veld & Veld-Merkoulova, 2009; Krishnaswami & Subramaniam, 1999). Companies could have strategic intents to focus

more on their core activities and processes, and therefore decide to spin off sections that do not fulfill the requirements of operating in these focus areas (Desai & Jain, 1999). This rationale is highly linked to the discussion regarding whether diversification could create value for shareholders, which is central to this paper.

There are however several other possible reasons behind deciding to conduct a spin-off, which are not necessarily connected to increased specialization and are therefore here classified as non core focusing rationales. Firstly, the rationale can be information related, as practitioners commonly explain the motivation behind conducting spin-offs by the wish to increase understanding and decrease information asymmetry between investors and the company (Krishnaswami & Subramaniam, 1999). In the study performed by Krishnaswami and Subramaniam (1999), they find that firms engaging in spin-off activities measure higher levels of information asymmetry before the divestiture than their matching peers, and that the conducted spin-offs can help reduce the information related problems.

Secondly, another suggested reason behind performing spin-offs is the possibility of tax benefits and other regulatory advantages (Schipper & Smith, 1983; Cusatis et al., 1993; Veld & Veld-Merkoulova, 2009; Krishnaswami & Subramaniam, 1999). According to Veld and Veld-Merkoulova (2009), many spin-offs in both the US and Europe are tax neutral events with no tax consequences. This differs from other types of divestitures and restructuring alternatives that are taxable. In Europe, most countries now follow the European Union's Merger Directive (European Commission, 1990), which states that spin-offs help rearrange investors' already owned investments, leading to the capital gains taxation being deferred. Exceptions from this procedure include Germany, France and Switzerland, countries which instead consider spin-offs as distribution of income or capital and hence base the taxation on this classification. However, certain required criteria enable tax-free spin-offs in these countries as well (Veld & Veld-Merkoulova, 2009). In their study from 2004, Veld and Veld-Merkoulova touch upon tax differences but do not distinguish between countries with different taxation standards in their models.

Thirdly, a spin-off could also be related to geographical focus in terms of spinning off an entity which is operating in another location or area than other parts of the parent organization (Veld & Veld-Merkoulova, 2004). According to both Denis, Denis and Yost (2002) and Veld and Veld-Merkoulova (2004), there are however arguments in previous literature that increasing

geographical focus could both increase and decrease firm value. Motivations towards spinning off a foreign division presented by Veld and Veld-Merkoulova (2004) include lowering risk, as well as reducing complexity within the organization.

Fourthly, a perceived undervaluation could also be a rationale for conducting a spin-off. Cusatis et al. (1993) present this as a commonly stated reason by management, i.e. that they presume that the market undervalues their firm in its combined state. Krishnaswami and Subramaniam (1999) as well as Krishnamurti and Vishwanath (2008) also list willingness to cure a possible undervaluation as a rationale behind conducting a spin-off, highlighting investors' increased understanding. Other possible rationales presented in the literature include excessive operating volatility (Cusatis et al., 1993), risk reduction (Krishnamurti & Vishwanath, 2008), transfer of wealth from bondholders to shareholders, and recontracting benefits after the spin-offs (Krishnaswami & Subramaniam, 1999).

Although there are several different rationales behind a spin-off decision, spin-off initiatives tend to be successful in terms of share price reactions. Several event studies have found evidence for abnormal returns upon the announcement of a corporate spin-off. Veld and Veld-Merkoulova (2009) perform a meta-analysis where 26 studies are summarized with the result being positive average abnormal returns. The vast majority of previous studies are conducted in an US setting. Examples of these include Schipper and Smith (1983) and Desai and Jain (1999), where both studies find a significant, positive average shareholder reaction upon the announcement of spin-offs. The European setting is not as commonly explored, but there are some studies conducted in this region as well. These include Kirchmaier (2003) and Sudarsanam and Quian (2007), who find evidence of abnormal returns for European spin-offs that are announced from 1989-1999, and 1987-2005 respectively. In addition, the earlier conducted research by Veld and Veld-Merkoulova (2004) studies spin-offs from several different European countries between 1987 and 2000 and find significant short-term abnormal returns for the period.

1.2. Problem description

The development in terms of corporate diversification has taken different forms over the decades, starting with the creation of numerous large conglomerates in the 1950s and 1960s, evolving into an increased number of divestitures conducted in order to further focus on the core business, resulting in extensive literature regarding the diversification discount. During the recent decades, however, a contradictory discussion in literature concerning that diversification

creates value and hence could generate a premium has emerged. In addition, divestments in form of spin-offs have increased over the years and are highly associated with diversification in terms of the rationale of specialization. These varying trends within both previous literature and conducted spin-offs motivate a contemporary study of the subject, which will further enhance the knowledge of the value effect following the strategic decision to divest an entity. Moreover, the spin-off literature in the European context is seemingly limited, especially in terms of current studies of specifically determined regions with the same tax treatment, which would contribute to a higher level of comparability. The studied spin-offs in Europe are announced at least 14 years back in time, leaving the recent years unexplored. As a consequence of the discussion in this section, this study aims to provide answers to the following two research questions:

- *How do spin-off announcements affect the short-term wealth of shareholders?*
- *What potential effect does an increased industrial focus have on shareholder reactions from spin-offs?*

1.3. Purpose and contributions

The purpose of this study is to contribute to the existing literature regarding divestitures and strategy, by combining the strategic rationale behind the decision to restructure with the value creation of corporate restructuring through spin-offs. To our knowledge, there is limited contemporary research for Europe in general and specific European regions in particular. This research is conducted in the northern European setting in order to investigate a market context which has not been thoroughly explored. The choice of region originates from our primary interest of conducting research in a domestic context, and has expanded towards a geographical area of countries in the proximity of the domestic context with the same tax-treatment for spin-offs, which contributes to a higher degree of comparability. The study aims to add to the insights regarding shareholders' reactions to spin-offs, especially in terms of increased specialization and core focusing as a possible determinant factor of positive shareholder reactions at the time of the announcements - which is a subject of different opinions in previous research. In addition, we expect to contribute with practical implications for companies which have made the strategic decision to spin off an entity.

In order to study if there are abnormal returns as a result of reactions to corporate spin-off announcements, and whether the potential share price effects differ in the presence of an underlying strategic choice of focusing on the core business, this study conducts a standard event

study. Followingly, we investigate if the decision to conduct a core focusing spin-off is a determinant factor of the found abnormal returns by running cross-sectional regressions. The sample consists of northern European spin-offs announced between 2004 and 2019. With these, cross-sectional regressions are conducted where cumulative abnormal returns function as the dependent variable. The impact of the strategic rationale behind the spin-off on value creation is studied through a variable in the regression which is based on whether the strategy behind the spin-off is core focusing or non core focusing.

The event study results in evidence that announcements of spin-offs in general generate significant short-term abnormal returns. When dividing spin-offs into sub-samples of core focusing activities and non core focusing activities, the shareholder reactions are larger if the announced spin-offs are conducted in order to increase the company's level of industrial specialization. The found difference in short-term wealth effects between core focusing and non core focusing spin-offs found for the sample of this study is however not applicable for spin-offs in general. Furthermore, when analyzing the underlying reasons for evidenced abnormal returns through cross-sectional regressions, the findings do not support that the characteristic of increased core focus is a determinant factor. Notably, the regression model does not provide a high degree of explanation to the abnormal returns, and it is therefore suggested that other variables need to be included in order to improve the explanatory value of the model.

The findings contribute to previous research by providing contemporary evidence to the spin-off announcement reaction literature. The results help explain the spin-off effect in terms of shareholders' reactions, as well as the potential connection between the reactions and the strategic rationale of increased specialization from the companies. This study contributes to complementing, and to a high degree extending, a previous study by Veld and Veld-Merkoulova (2004) by investigating a contemporary sample in a more specific geographical area. The results from this study are not solely expected, and slightly differ from the findings of Veld and Veld-Merkoulova (2004), which indicates that the field of spin-offs and corporate diversification would benefit from further investigation. Practical implications from our study include that companies which have decided to spin off an entity can expect a short-term positive value effect from shareholders, but not necessarily due to the impact of a potential rationale of focusing on the company's core business.

1.4. Disposition

The remaining paper will be structured as follows. The next section, number two, provides insight in previous research and reviews the literature related to the subject. Section three describes the data set, as well as the conducted research method. Followingly, section four presents the empirical results and analysis, as well as a section for robustness tests. Section five concludes the paper with a final discussion.

2. Theoretical Framework and Empirical Evidence

2.1. Diversification

Conglomerates, i.e. large diversified firms operating in several separate industries, have been the scope of substantial research regarding efficiency and firm value (Pidun et al., 2019). During the 1950s and 1960s, many large conglomerates were created and grew larger through mergers (Berger & Ofek, 1995). The trend has however reversed during the recent years, with specialized firms instead becoming the more dominant alternative (Pidun et al., 2019). Even though diversification was popular, conglomerates suffered a diversification discount¹ during the 1960s according to Servaes (1996). The evidenced discount however decreased and diminished during the 1970s according to Servaes (1996), but no evidence is found that diversified firms were valued higher than specialized firms at any point during these two decades. Further, Servaes (1996) also discusses that the level of diversification in firms was lower during the time for his publication than earlier. Theoretical arguments by Berger and Ofek (1995), Rajan et al. (2000) and Lang and Stulz (1994) suggest that diversification destroys value as a result of diversified firms on average being traded at a discount in comparison to specialized firms. Berger and Ofek (1995) argue that by diversifying, companies destroy value due to inefficient investments and lack of transparency. Rajan et al. (2000) find evidence that diversified firms tend to trade at a discount, with implications of higher costs and lower benefits than specialized firms. However, they note that diversified firms can trade at a premium if their level of diversification is low. In other words, Rajan et al. (2000) find a correlation between level of specialization and firm value. Furthermore, Lang and Stulz (1994) show that diversification is not a success factor in regard to performance, however also highlighting that their findings might be affected by already poorly performing firms that seek to grow through diversification since their existing businesses are saturated.

Even though extensive research suggests otherwise, there are also positive aspects with diversification. Krishnamurti and Vishwanath (2008) present value creating aspects of diversification. For instance, different industries or sectors could gain knowledge from each other to become more competitive, and the systematic risk could be reduced through diversification (Krishnamurti & Vishwanath, 2008). Moreover, several recent studies contradict the findings that firms destroy value by diversifying. According to Campa and Kedia (2002), the diversification strategy can be value enhancing and generate a premium. Pidun et al. (2019) state

¹ The diversification discount states that diversified firms are traded at a discount in comparison to peers operating in only one, specific, industry (Berger & Ofek, 1995; Rajan, Servaes & Zingales, 2000).

that there still are some highly diversified companies that perform well, and that recent research has found that the ability to manage diversification deviates between companies to a larger extent than previously understood. Graham, Lemmon and Wolf (2002) argue that there is no evidence for causality between firm value destruction and diversification, since conglomerates tend to purchase firms that are already discounted. Moreover, Villalonga (2004) identifies problems with the data that has been used in previous corporate diversification literature. The flaw is explained by that 25% of the reported changes in segments are actually changes in reporting instead of changes in diversification. As a result, self-reported industrial segment data causes a bias that consequently drive the results towards a conclusion of diversification discount. Villalonga (2004) explains that previous evidence of a diversification discount is a consequence of self-selection and measurement inconsistency. The suggested bias is mainly due to that firms themselves have the opportunity to classify their own and their subsidiaries' industries through SIC-codes. Therefore, the general classification for whether a company is diversified is affected by the company's own perception. By amending for the biased data, Villalonga (2004) instead finds a diversification premium.

2.2. Spin-offs and shareholder reactions

The number of performed corporate spin-offs over the years has increased, which is possibly due to changes in business models and strategies in terms of diversification (Desai & Jain, 1999; Veld & Veld-Merkoulova, 2009). The decision to spin off an entity is usually a strategic decision for the company, where the spin-off can strengthen the strategic fit and synergies between divisions and operations within a company through divestments of entities which are not aligned with the core business (Cusatis et al., 1993; Desai & Jain, 1999).

Numerous studies have found evidence that spin-offs generate positive abnormal shareholder returns in connection to the corporate announcement, among others these include Hite and Owers (1983), Schipper and Smith (1983), Desai and Jain (1999) and Feng, Nandy and Tian (2015). According to the review of empirical evidence presented by Veld and Veld-Merkoulova (2009), spin-offs are usually applauded by shareholders and show a significant average abnormal return of 3.0% upon announcement. Some of the studies from Veld and Veld-Merkoulova (2009), along with a few additional studies, are summarized in Table 1. The selected relevant studies have in common that they investigate the effect on parent firms, and that they all include a short-term perspective on shareholders' reactions. Table 1 illustrates the found abnormal returns from the different event studies for various samples. The abnormal returns range from

2.2% in the study by Allen et al. (1995), to 4.8% in the study conducted by Sudarsanam and Quian (2007). Each study results in abnormal returns, significant at the 1% level. The majority is conducted in a US setting, but the most recent presented studies are performed in European contexts. The varying sample periods initiate in the 1960s, and finish with the most recent study by Feng et al. (2015), which has a sample period ending in 2006.

Regarding the rather unusually studied European context, Kirchmaier (2003) studies a sample of 48 spin-offs as presented in Table 1. The study shows significant abnormal returns amounting to 4.0% upon announcement. Evidence from the paper by Veld and Veld-Merkoulova (2004) shows that shareholders react to the spin-off announcements for their sample of 156 European observations as well. The discovered abnormal returns are significant and land at the slightly lower number of 2.6% (Veld & Veld-Merkoulova, 2004). Moreover, Sudarsanam and Quian (2007) find that their sample of 157 observations generate significant abnormal returns at 4.8% for the three-day event window. In summary, the performed studies in both US and Europe all find that corporate spin-offs generate significant abnormal returns.

Several of the mentioned studies in Table 1 also investigate whether core focusing spin-offs generate larger abnormal returns than the non core focusing spin-offs. Hite and Owers (1983) identify that the reason behind 29 of their 123 observed spin-offs is that the firms have a goal to become more specialized, i.e. focus on their core business. When separately analyzed, the core focusing spin-offs generate lower abnormal returns than the other identified logics behind the spin-offs during the short-term event window. This is in contrast to several later conducted studies, where most find that core focusing spin-off announcements create larger positive abnormal returns than non core focusing spin-off. For instance, Daley, Mehrotra and Sivakumar (1997) only find positive and significant evidence of abnormal returns for focus increasing spin-offs, and not for non focus increasing spin-offs. The explanation they provide involves that spin-offs create value by allowing the firms to concentrate on the core business and what they do best. The study conducted by Sudarsanam and Quian (2007) in the European context supports the argument that core focusing spin-off announcements are applauded by shareholders in terms of the positive significant market reactions.

Moreover, Desai and Jain (1999) find evidence of positive abnormal returns for both core and non core focusing spin-offs. However, the former type of spin-off generates larger abnormal returns of 4.5%, in comparison to 2.2% for the latter. Krishnaswami and Subramaniam (1999)

present that their observations generate higher abnormal returns for core focusing spin-offs, amounting to 3.6% in comparison to 1.9% for non core focusing spin-offs, with a significant difference in means at a 5% level. Similarly, Veld and Veld-Merkoulova (2004) find evidence that the European spin-offs in their sample that originate from core focusing strategies result in higher abnormal returns in comparison to spin-offs that are based on non core focusing strategies. The authors find a significant difference in means amounting to 2.8%, which is larger than for Krishnaswami and Subramaniam (1999). Contrary to the mentioned studies, the study by Feng et al. (2015) does not find any significant difference between abnormal returns generated by core and none core focusing spin-off announcements.

Table 1. Summary of previous literature

Table 1 shows a summary of 11 previously conducted studies presented in order based on the year of publication. Each study finds abnormal returns in the short-term announcement period following spin-offs. The table illustrates the literature by authors, sample regions, sample size, CAAR and whether they study core focus explicitly. *, ** and *** denotes significance of the CAAR at the 10%, 5% and 1% level, respectively.

Authors	Region	Sample size	Sample period	CAAR %	Studies core focus
Schipper & Smith (1983)	US	93	1963-1981	2.8***	No
Hite & Owers (1983)	US	123	1963-1981	3.3***	Yes
Miles & Rosenfeld (1983)	US	55	1963-1980	3.3***	No
Allen et al. (1995)	US	94	1962-1991	2.2***	No
Daley et al. (1997)	US	85	1975-1991	3.4***	Yes
Desai & Jain (1999)	US	144	1975-1991	3.8***	Yes
Krishnaswami & Subramaniam (1999)	US	118	1978-1993	3.3***	Yes
Kirchmaier (2003)	Europe	48	1987-2000	4.0***	No
Veld & Veld-Merkoulova (2004)	Europe	156	1987-2000	2.6***	Yes
Sudarsanam & Qian (2007)	Europe	157	1987-2005	4.8***	Yes
Feng et al. (2015)	US	113	1993-2006	3.1***	Yes

2.3. Determinants of the spin-off announcement effect

2.3.1. Core focusing spin-offs

Desai and Jain (1999) find a direct relationship between increased focus and stock performance, when examining whether industrial focus plays an important role in determining significant abnormal returns. Krishnaswami and Subramaniam (1999) also find that the coefficient for industrial focusing spin-offs heavily impact the economic wealth effect. They conduct several regressions and investigate what happens when excluding different variables, and find that the core focusing coefficient mainly remains significant and positive. Veld and Veld-Merkoulova (2004) find significant abnormal returns for core focus increasing spin-offs that are higher than for non core focus increasing spin-offs. However, in the performed regressions by Veld and Veld-Merkoulova (2004), there are mixed evidence on the variable industrial focus. For instance, the coefficient is significant when leaving out some of the control variables, but not when

including all selected variables. Due to the varying results for the focus increasing variable, Veld and Veld-Merkoulova (2004) conclude that the importance of increasing core focus in terms of generating positive shareholder reactions is limited.

2.3.2. Information asymmetry and diversification discount

According to Berk and DeMarzo (2017), diversification is a way to reduce risk in companies and can justify a merger between firms. However, the argument ignores that shareholders are able to diversify their portfolios on their own and that the combined firm could rather lead to increased agency costs, due to inefficiency and misallocated resources (Berk & DeMarzo, 2017). There are different suggestions presented in research regarding any connection between spin-offs as focus increasing activities and agency costs or information asymmetry. Laeven and Levine (2007) investigate whether diversification could increase agency problems and hence intensify the diversification discount, which is indicated in findings from Rotemberg and Saloner (1994) among others. According to Laeven and Levine (2007), the costs of diversification are larger than the potential benefits due to increased agency conflicts in large, financial conglomerates. They cannot conclude that increased agency costs alone drive the results as there are measurement difficulties, but find these to be possible explanations for the value destruction in firms engaging in multiple activities. Similarly, Cusatis et al. (1993) claim that divestitures in form of spin-offs can create value by lowering agency costs and hence improve performance for both the parent company and the spun-off. This is a result of more efficiently driven incentives and focus by managers. Rajan et al. (2000) instead argue that agency costs are insufficient for explaining internal misallocation of funds in diversified firms, and should rather be used to explain general overinvestment situations.

Krishnaswami and Subramaniam (1999) find that the effect of information asymmetry on shareholder reactions is larger when there are fewer negative synergies between the parent and the spun-off. In contrast to Krishnaswami and Subramaniam (1999), Veld and Veld-Merkoulova (2004) find no evidence for any connection between information asymmetry and degree of shareholders' reactions in terms of abnormal returns. Veld and Veld-Merkoulova (2004) do however find that the effect of industrial focusing spin-offs decreases when information asymmetry is considered and introduced in their regression model.

2.4. Hypothesis development

Diversified companies can make different strategic decisions to increase shareholder value in accordance with mentioned studies. They can choose to increase their level of diversification, remain at their current state, or focus more on their core activities through divestitures. Previous literature suggests that shareholders react positively upon the announcements of corporate spin-offs, which is illustrated by abnormal returns within the event window. The previously evidenced abnormal returns lead to the expectation that our study's observations also will generate shareholder reactions in form of abnormal returns. Even though we conduct our study in another geographical area and another time period than our predecessors, the expectations remain similar due to that previous studies comprise varying samples with similar results. In addition, several conducted studies present evidence that the potential abnormal returns following core focusing spin-off announcements tend to deviate from the equivalent abnormal returns for non core focusing spin-off announcements. Therefore, we hypothesize the following:

Hypothesis 1a: *Announcements of northern European spin-offs generate short-term abnormal returns.*

Hypothesis 1b: *The potential wealth effect of northern European spin-offs differs between core focusing rationales and non core focusing rationales.*

While Veld and Veld-Merkoulova (2004) find mixed evidence of the core focusing characteristic on abnormal returns, other authors such as Desai and Jain (1999) and Krishnaswami and Subramaniam (1999) find evidence of core focusing spin-off announcements as a determinant factor of abnormal returns. Further, extensive literature has suggested that diversification destroys value, and that diversified firms trade at a discount. The latter, contradictory studies on diversification premiums, in addition to that the majority of the diversification discount studies are conducted before the 20th century, make it interesting to investigate whether the core focusing characteristic is an underlying factor of abnormal returns upon the announcement of a corporate spin-off. Hence, the second hypothesis of our research is the following:

Hypothesis 2: *The core focusing characteristic is a determinant factor for potential abnormal returns following northern European spin-off announcements.*

3. Data and Method

3.1. Data description

This study analyzes a sample of northern European spin-off announcements. A northern European spin-off is defined as a spin-off in which the parent is primary listed on a northern European stock exchange. The spun-off can be listed or not listed and either based in same or a different country. By a definition from the United Nations Statistics Division northern Europe includes the stock exchanges in Denmark, Estonia, Finland, Lithuania, Norway, Sweden and United Kingdom (UK)² (United Nations, 2019). The sample period ranges from January 2004 to April 2019 and is chosen in order to provide more contemporary research to the existing literature.

The announcement day is defined as the day the parent company first announces its intent to spin off an entity. Spin-off transactions and announcement days are obtained from the screening function in S&P CapitalIQ. For transactions which S&P Capital IQ does not provide announcement days, Merger Market is used as a complementary source. Moreover, financial data is obtained through Bloomberg, Wharton Research Data Services (WRDS), Yahoo Finance and S&P Capital IQ. When applicable, data has been obtained in the currency EUR.

As presented by Table 2, a number of observations are eliminated from the original sample of 122 announced spin-offs. Firstly, each observation is examined for M&A activities occurring during the observation event window through S&P Capital IQ, since it otherwise might contaminate the returns to not reflect the true stock price effect of the spin-off announcement. This results in 1 elimination. Secondly, to conduct the event study, announcements with unavailable stock price data have been eliminated. Data for at least 50 trading days is required to generate the company's normal return, which results in the elimination of 9 announcements. Hence, the sample utilized for the event study includes 112 observations in total. The full sample of 112 spin-offs can be found in Table A1 in *Appendix*. Thirdly, additional announcements have to be eliminated for the cross-sectional regressions due to unavailable regression variable data. Eliminations conducted for the reason of lack of regression variable data are due to unavailable bid-ask data, and result in the elimination of 12 observations. Consequently, the final sample for the cross-sectional regressions includes 100 observations conducted by 84 different companies³.

² Despite this definition, Iceland, Ireland and Latvia are excluded from the sample since no spin-off transaction activities based on the definition in this study have occurred during the chosen sample period.

³ The sample is also examined for potential outliers on the 1% and 99% level, which result in 0 eliminations.

Table 2. Sample construction

The initial sample of 112 observations includes all announced spin-offs during 2004-2019 and are obtained from Capital IQ. Spin-off announcements by parent companies listed on a stock exchange in northern Europe, including Denmark, Estonia, Finland, Lithuania, Norway, Sweden and UK. Observations are then excluded due to confounding events and missing stock price data, which results in the final sample for tests of Hypothesis 1a and 1b (H1). In addition, observations which are lacking bid-ask data are eliminated, which results in the sample for tests of Hypothesis 2 (H2).

Capital IQ observations of northern European spin-off announcements (2004-2019)	122
Less:	
Confounding events	-1
Missing stock returns data	-9
Final sample for tests of H1	112
Less:	
Missing bid-ask data	-12
Final sample for tests of H2	100

Table 3 displays the number of announcements of core focusing spin-off activities and non core focusing spin-off activities per year and country of the sample for the event study, as well as the sample for the cross-sectional regressions. Standard Industrial Classification (SIC) is used in order to determine whether the observations are considered core or non core focusing. A spin-off is considered to be core focus increasing when the two first digits in the spun-off firm's SIC-code differ from the two first digits in the SIC-code of the parent firm, in accordance with Desai and Jain (1999) and Veld and Veld-Merkoulova (2004). Primary SIC-codes are collected from Compustat and CapitalIQ, and are further affirmed through analysis of the announcements in terms of for instance examination of press releases.

For the main regression of the sample of this study, shown in Table 3, Panel B, there are a total of 69 core focusing activities and 31 non core focusing activities, adding up to 100 observations. The focus increasing spin-offs seem to show some, although not extreme, clustering in time. During a period of five years from 2004-2008, 40.6% (28 of 69) of the focus increasing spin-offs were announced. Interestingly, all recently announced spin-offs, i.e. from 2018 and 2019, are focus increasing. Moreover, there does not seem to be any spin-off activities in 2009, which could be an effect of the financial crisis spreading to Europe, which possibly aimed companies' focus elsewhere. Table 3, Panel B also describes the main regression sample by countries, where Panel B shows that with 52%, Sweden is heavily represented in the total sample (52 out of 100 observations) followed by UK, Norway and Finland with 19 (19%), 15 (15%) and 10 (10%) observations, respectively. The remaining three countries account for 4% of the sample (4

observations). In the studied sample, 80% (8 of 10) of the spin-offs conducted in Finland and 95% (18 of 19) of the spin-offs conducted in UK were core focusing. In comparison, the relative amount of core focusing activities is smaller for Sweden and Norway, amounting to 63% (33 of 52) and 47% (7 of 15), respectively.

For the event study sample shown in Table 3, Panel A there are a total of 112 observations, comprising of 78 core focusing activities and 34 non core focusing activities. The distribution by country and year in Table 3, Panel A gives the same overall picture of the sample to that analyzed for the cross-sectional regressions in Table 3, Panel B. Similarity is expected since the samples do not differ by an evident amount of observations. Common patterns include differences in relative portion core focusing activities by countries, time clustering, zero events during 2009 and a large percentage of the spin-offs being conducted in Sweden.

Table 3. Sample description

Panel A reports the distribution by year and country of the full sample of 112 spin-offs conducted by parent firms listed on a northern European stock exchange from January 2004 to April 2019 to test Hypothesis 1, as well as the core focus increasing (78) and non core focus increasing (34) sub-samples. Panel B reports the distribution by year and country of the full sample of 100 spin-offs conducted by parent firms listed on a northern European stock exchange from January 2004 to April 2019 to test Hypothesis 2, as well as the core focus increasing (69) and non core focus increasing (31) sub-samples. The core focus increasing sample comprises parents which spin off an entity with a different two-digit SIC-code from the parent. The remaining spin-offs are classified as non core focus increasing.

By year				By country			
Year	Number of transactions	Core focusing	Non core focusing	Country	Number of transactions	Core focusing	Non core focusing
<i>Panel A: Sample for event study for Hypothesis 1</i>							
2004	9	7	2	Denmark	2	1	1
2005	10	9	1	Estonia	1	1	0
2006	13	9	4	Finland	12	10	2
2007	10	7	3	Lithuania	4	3	1
2008	5	3	2	Norway	17	8	9
2009	0	0	0	Sweden	52	33	19
2010	10	6	4	UK	24	22	2
2011	6	3	3	Total	112	78	34
2012	5	3	2				
2013	9	7	2				
2014	7	4	3				
2015	6	4	2				
2016	5	2	3				
2017	6	3	3				
2018	8	8	0				
2019	3	3	0				
Total	112	78	34				
<i>Panel B: Sample for cross-sectional regression for Hypothesis 2</i>							
2004	6	4	2	Denmark	1	0	1
2005	8	7	1	Estonia	1	1	0
2006	11	7	4	Finland	10	8	2
2007	10	7	3	Lithuania	2	2	0
2008	5	3	2	Norway	15	7	8
2009	0	0	0	Sweden	52	33	19
2010	8	6	2	UK	19	18	1
2011	6	3	3	Total	100	69	31
2012	4	2	2				
2013	9	7	2				
2014	6	4	2				
2015	6	4	2				
2016	5	2	3				
2017	6	3	3				
2018	7	7	0				
2019	3	3	0				
Total	100	69	31				

3.2. Method

3.2.1. Event study

In order to provide evidence for Hypothesis 1, i.e. whether the northern European stock markets value spin-offs positively in terms of instant share price reactions upon announcements, we conduct an event study. Event studies are commonly used within finance and accounting and is a statistical method used to assess how firms' stock prices behave around corporate events (Kothari & Warner, 2006; MacKinlay, 1997). The methodology can be applied to measure the

announcement effect on the firm's shareholders by analyzing the abnormal performance at the time of a certain event.

Abnormal returns are computed in accordance with MacKinlay's (1997) market model with the announcement day denoted as day 0. An event window is specified, which sets the number of days surrounding the event day, during which possible price reactions that follow new information will be identified. Our analysis of abnormal returns ranges over a three-day event window surrounding the announcement day (-1;1) which is used in several spin-off studies such as Desai and Jain (1999), Krishnaswami and Subramaniam (1999) and Veld and Veld-Merkoulova (2004). In addition to the chosen three-day event window, a robustness test is later conducted in section 4.3. *Robustness tests* where we test different event intervals. The abnormal return defined according to the market model is expressed as

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt}, \quad (1)$$

where AR is the abnormal return for observation i at day t , R_{it} is the daily return for observation i at day t , and R_{mt} is the return for market m at day t . The market m used in our study is the MSCI Europe which is an index that represents mid and large cap companies across 15 developed countries in Europe (MSCI Inc, 2019). The rationale behind the choice of market is that the index is a wide European share index that corresponds to the sample. The parameters $\hat{\alpha}$ and $\hat{\beta}$ are estimated in accordance with Desai and Jain (1999) using an OLS regression which includes a period of 250 days, denoted as the estimation window. The estimation window ranges from 300 days before the announcement day to 50 days before the announcement day (-300;-50) in order to consider any possible anticipation effect. For each observation, price data for at least 50 trading days during the estimation window is required to compute $\hat{\beta}$, otherwise the observation is excluded. An overview of the timeline to conduct the event study is illustrated in Figure 1.

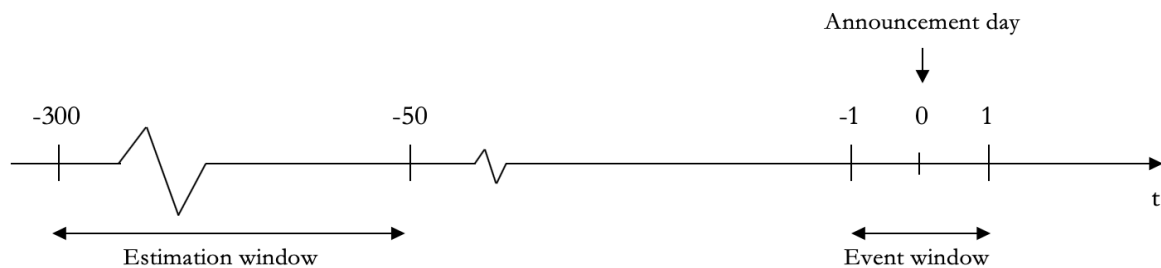


Figure 1. Timeline for event study

The sum of AR in the event window adds up to the cumulative abnormal return (CAR), which is synonymous to the change in shareholder wealth given a certain event. $CAR_{i,t}$ is defined as the sum of abnormal returns for observation i , from t days before the announcement day to T days after the announcement day:

$$CAR_i(t, T) = \sum_{t=1}^T AR_{i,t}. \quad (2)$$

The average CAR (i.e. cumulative average abnormal returns, CAAR) is tested on its significance, to test the significance of the overall sample, using an average t-statistic. The t-statistic is obtained using

$$t_{CAAR} = \frac{1}{N} \sum_{i=1}^N t_{CAR_i(t,T)}, \quad (3)$$

where t_{CAAR} is the test statistic for CAAR, N is the number of observations in the sample, $t_{CAR_i(t,T)}$ is the t-statistic for CAR for observation i from day t to day T . The statistical testing of the CAAR defines whether Hypothesis 1a and Hypothesis 1b can be rejected. If CAAR is significantly different from zero, the null hypothesis related to Hypothesis 1a that spin-offs do not have an effect on share price can be rejected:

$$H_0: CAAR(-1;1) = 0$$

$$H_A: CAAR(-1;1) \neq 0.$$

If the difference between CAAR for core focusing spin-offs and CAAR for non core focusing spin-offs is significantly different from zero, the null hypothesis related to Hypothesis 1b that the difference between the means is zero can be rejected:

$$H_0: CAAR_{\text{Core focusing}}(-1;1) - CAAR_{\text{Non core focusing}}(-1;1) = 0$$

$$H_A: CAAR_{\text{Core focusing}}(-1;1) - CAAR_{\text{Non core focusing}}(-1;1) \neq 0.$$

3.2.2. Cross-sectional regression

In order to provide evidence of Hypothesis 2, i.e. whether the core focusing rationale is an underlying factor for potential abnormal returns, a cross-sectional regression is used which is consistent with the methodology of Desai and Jain (1999) and Veld and Veld-Merkoulova

(2004). A cross-sectional regression is a statistical method which examines the relation between the magnitude of the abnormal returns and the characteristics of a specific event (MacKinlay, 1997; Kothari & Warner, 2006). The approach includes running cross-sectional regressions of the abnormal returns conducted through the event study on chosen characteristics. Accordingly, the regression model in this study is expressed as

$$CAR_i(-1;1) = \beta_0 + \beta_1 core_focus_i + \beta X_i + \varepsilon_i, \quad (4)$$

where $CAR_i(-1;1)$ is the change in shareholder wealth for observation i from one day prior to the announcement date to one day after the announcement date of a spin-off, $core_focus$ is the main variable of interest, β is the parameter estimates for the control variables and X is the matrix of the control variables for each observation i . Consequently, in order to test whether $core_focus$ is a determinant factor of $CAR(-1;1)$, the associated statistical null hypothesis tested for rejection and alternative hypothesis are stated as

$$H_0: \beta_1 = 0$$

$$H_A: \beta_1 \neq 0.$$

A correlation matrix as well as a VIF-test is generated to control for multicollinearity, and a Durbin Watson test is conducted to test for autocorrelation. In addition, we run the cross-sectional regression in different event windows in order to test the robustness of the regression model. Lastly, additional robustness tests are conducted if needed, depending on the outcome of the cross-sectional regressions.

Dependent variable

As suggested by MacKinlay (1997), this study runs an OLS regression with CAR as the dependent variable. $CAR_i(t,T)$ is obtained from the conducted event study for Hypothesis 1 and is defined as the sum of abnormal returns for observation i , t days before the announcement day to T days after the announcement day. Equally to the event study for Hypothesis 1, the abnormal return is generated using the market model, a three-day event window $(-1;1)$ and an estimation window of 250 days $(-350;-50)$.

Main variable of interest

The main variable of interest, *core focusing* is chosen to analyze the correlation between CAR and core focusing activities. The variable is measured using a dummy variable which equals 1 if the two-digit SIC-code of the spun-off is different from the two-digit SIC-code of the parent and 0 if the two-digit SIC-code of the spun-off matches the parent's two-digit SIC-code.

Control variables

Due to the similarities of the studies, although conducted in an earlier time period and a different geographical area, control variables related to the control variables included in the study of Veld and Veld-Merkoulova (2004) are replicated to the extent possible. For instance, the variable geographical focus is directly related to their study. However, Veld and Veld-Merkoulova (2004) include three factors which are not used in this study. Firstly, a variable for shareholder rights is excluded due to that the used index is not applicable for the countries included in this study. Secondly, Veld and Veld-Merkoulova (2004) include relative size as a variable, which is defined as the size of the spun-off in relation to the parent on the day of completion of the spin-off. Since information about the size of the spun-off is rarely announced when announcing spin-offs, this variable is obsolete for this short-term study. Due to that the size aspect is found in numerous studies of determinants of spin-offs (Hite & Owers, 1983; Miles & Rosenfeld, 1983; Krishnaswami & Subramaniam, 1999), this study controls for the effect that company size has on abnormal returns by including market capitalization as a variable. Thirdly, this study substitutes Veld and Veld-Merkoulova's (2004) measure of information asymmetry⁴. Although previous finance literature provides numerous ways to measure information asymmetry, there is little agreement to which measure is the best (Karpoff, Lee & Maselius, 2013). We choose to measure information asymmetry using proxies suggested by Leuz and Verrechia (2000), namely bid-ask spread and price volatility which are further described below. In addition, country and year dummies are included in contrast to Veld and Veld-Merkoulova (2004).

Geographical focus is a dummy variable which considers the abnormal returns that are associated with the parent increasing their geographical focus by spinning off a foreign division, i.e. based in another country than the parent. The variable takes a value of 1 if the parent spins off a foreign division and a value of 0 if the parent spins off a domestic division.

⁴ Veld and Veld-Merkoulova (2004) use normalized standard deviation of forecasts derived from the Institute of Brokerage for Investment Services (IBES) as a proxy to measure information asymmetry. However, since we do not have access to IBES, alternative proxies need to be chosen as a measure for information asymmetry.

Bid-ask spread is defined as the difference between the price quoted by the seller and the buyer for a given security. The bid-ask spread is commonly known in research for measuring information asymmetry explicitly since the measure addresses the adverse selection problem occurring when investors transact in firm shares in the presence of asymmetric information (Leuz & Verrechia, 2000). Specifically, Acker, Stalker and Tonks (2002) explain the connection between bid-ask spreads and asymmetric information by highlighting the compensation of perceived adverse selection risk that occurs when market makers increase their spreads as a result of unusually large volumes of trade. Less information asymmetry causes lower adverse selection which in turn decreases bid-ask spread (Leuz & Verrechia, 2000).

Price volatility can be defined as the variation in stock price for a given security, over a specific period of time. The period used to estimate the price volatility in this study is the stock price ranging from 302 days prior to the announcement day to 50 days prior to the announcement day (-302;-50), adding up to 252 trading days, which in turn, on average, equals one trading year. Wang (1993) suggests that an increase in price volatility implies an increase in information asymmetry due to the increase in severity of adverse selection problems, which is aligned with the view of Leuz and Verrechia (2000). Although price volatility has been used in several previous finance studies to measure asymmetric information, it does not capture information asymmetry exclusively since volatility also is influenced by other factors that are unrelated to information asymmetry (Leuz & Verrechia, 2000). A positive association is expected between bid-ask spread and price volatility.

Market capitalization is defined as the total value of the company's shares and is measured as the total market value of equity of the parent. The variable is included to control for the effect that size might have on the abnormal returns.

In order to control for the temporal effects of time year effects, year dummies are included for the period 2004-2019. *Dummy 2004* equals a value of 1 if the spin-off announcement is communicated 2004 and 0 otherwise, *dummy 2005* equals a value of 1 if the spin-off announcement is communicated 2005 and 0 otherwise. This pattern continues for the continuing years 2006-2019.

In order to control for the temporal aspects of country effects, country dummies are included for the definition of northern Europe in *3.1 Data* i.e. Denmark, Estonia, Finland, Lithuania,

Norway, Sweden, and UK. *Dummy Sweden* takes the value of 1 if the parent is on a Swedish stock exchange and 0 otherwise, *dummy Norway* takes the value of 1 if the parent is on a Norwegian stock exchange and 0 otherwise. This pattern continues for the remaining countries. For Denmark, Lithuania and Estonia there are 1, 2 and 1 observations, respectively. This could suggestively give biased results due to a scarce number of observations. Since the country variables are not the main interest of this study but rather variables to control for temporal aspects and will not be furthered analyzed, the potential bias is not considered to be a large issue. However, we control for this by conducting a robustness test where larger regions are identified and included as dummies. Three major regions are identified: Nordic countries, Baltic states and UK. *Dummy Nordic* takes the value of 1 if the parent is on a Swedish, Danish, Finnish or Norwegian stock exchange and 0 otherwise. *Dummy Baltic* takes the value of 1 if the parent is on an Estonian or Lithuanian stock exchange and 0 otherwise, and *dummy UK* takes the value of 1 if the parent is on a British stock exchange and 0 otherwise.

4. Result and Analysis

4.1. Results

4.1.1. Hypothesis 1

Table 4 presents the descriptive statistics for the 112 observations included in the event study. The table shows that the average and median CAR for the total sample amounts to 2.7% and 1.1%, respectively. A lower median than the mean indicates that the majority of observations have a CAR lower than the 2.7%. The standard deviation amounts to 0.067.

Table 4. Descriptive statistics

The table reports descriptive statistics of CAR for a three-day event window from one day prior to the announcement day to one day after the announcement day (-1;1).

	CAR (-1;1)
Mean	0.027
Median	0.011
Standard deviation	0.067

Table 5 illustrates the results of the event study, which is conducted in order to derive the abnormal returns of the parent firms in the sample. CAAR is presented for the chosen three-day event window consisting of the announcement day, the day prior to the announcement day as well as the day after (-1;1) in Panel A. The table also presents the amount of positive price reactions for the interval. The results for CAAR on day (-1;1), i.e. the chosen event window for the study, is 2.7% and is significant at a 5% level. As shown in the table, there are 57% positive reactions out of the entire sample for the event window, meaning that there is a larger amount of positive returns than negative. The empirical results presented in Table 5, Panel A give confidence in rejecting the null hypothesis that northern European spin-offs do not generate short-term abnormal returns.

In order to distinguish whether core focusing spin-offs generate wealth effects, Table 5 illustrates CAAR for core focusing activities in Panel B. Further, in order to distinguish if non core focusing spin-offs generate wealth effects, Table 5 illustrates CAAR for non core focusing activities in Panel C. The CAAR for the event window (-1;1) are 2.9% for core focusing activities, and is significant at a 5% level. The non core focusing activities on the other hand, is not statistically significant. The proportion of percent positive abnormal returns in the observations are higher for the core focusing activities than the non core focusing activities,

which indicates that the abnormal returns are more and larger for the core focusing activities. Moreover, in order to study whether there is a significant difference between the CAAR of the two sub-samples, core focusing spin-offs and non core focusing spin-offs, a test of the difference between the two is illustrated in Table 5, Panel D. The result shows that the difference in means is not significant and therefore does not give confidence in rejecting the null hypothesis that the difference between the means of core focusing activities and non core focusing activities is zero.

Table 5. Announcement period abnormal returns

Table 5 reports the three-day announcement period (day -1 to day 1) cumulative average abnormal returns (CAAR) along with t-statistics, sample size and percentage of positive abnormal returns for the full sample, the core focusing activities sub-sample, the non core focusing activities sub-sample, and the difference between the means of the two sub-samples. The core focus increasing sample comprises parents which spin off an entity which has a different two-digit SIC-code from the parent. The remaining spin-offs are classified as non core focus increasing. The difference between CAAR of core focusing and non core focusing spin-offs is defined as core focusing CAAR subtracted by non core focusing CAAR, and the difference in means is conducted through a two sample t-test. The significance of the means is tested using a t-statistic, presented in parentheses. *, ** and *** denotes significance at the 10%, 5% and 1%, respectively.

	Interval (-1;1)
<i>Panel A: Full sample</i>	
CAAR	0.027 (2.51**)
Sample size, n	112
Percent positive	57%
<i>Panel B: Core focusing activities</i>	
CAAR	0.029 (2.10**)
Sample size, n	78
Percent positive	60%
<i>Panel C: Non core focusing activities</i>	
CAAR	0.024 (1.37)
Sample size, n	34
Percent positive	50%
<i>Panel D: Difference</i>	
CAAR	0.005 (0.61)
Sample size, n	112
Percent positive	-

4.1.2. Hypothesis 2

Table 6 illustrates descriptive statistics of the variables included in the cross-sectional regressions excluding the year dummies and country dummies. The table includes the dependent variable CAR, the main variable of interest core focus as well as the control variables. As previously stated in the event study, the mean CAR, i.e. CAAR, is 2.7% for the event window. The variables core focus and geographical focus are dummies, whereas bid-ask spread and price volatility have means of 1.24 and 26.55 respectively. The mean market capitalization is EUR 4 658 million. The standard deviations for the variables bid-ask spread, price volatility, and market capitalization are all rather high, indicating that the companies in the sample possess varying characteristics, for instance in terms of size and industry.

Table 6. Descriptive statistics

Table 6 reports average, median and standard deviation values for the variables included in the main regression model. Descriptive statistics for year and country dummies are not tabulated. CAR(-1;1) is the cumulative abnormal return starting one day prior to the announcement day to one day after the announcement day. Core focus measures whether the spin-off has the characteristic of core focusing. Geographical focus measures whether the spin-off has the characteristic of focusing the operations to a specific geographical area. Bid-ask spread is the difference between the bid price and the ask price. Price volatility is the variation in stock price from 302 days prior to the announcement day to 50 days prior to the announcement day (-302;-50). Market capitalization is the market value of the company's equity in EUR.

Variable	Mean	Median	Standard deviation
CAR (-1;1)	0.027	0.013	0.068
Core focus	0.690	1.000	0.463
Geographical focus	0.120	0.000	0.325
Bid-ask spread	1.242	0.200	4.220
Price volatility	26.553	4.595	55.708
Market capitalization	4 657.98	900.64	10 964.40

Table A2 in *Appendix* shows correlation between the dependent variable CAR, the main variable of interest core focus, and the control variables for the main regression model. The table indicates that the relation between CAR and core focusing activities is not significant which indicates surprising results to Hypothesis 2 of this study. The significant, rather high (0.6353), positive relationship between bid-ask spread and price volatility is expected and consistent with prior literature of Leuz and Verrechia (2000) regarding bid-ask spread and Wang (1993) regarding price volatility, stating that the variables should increase (decrease) when information asymmetry increases (decreases), and hence should be positively correlated. In addition, Table A2 in *Appendix* shows that spin-off activities in which the parent spins off a foreign division tend to be conducted by firms with higher levels of information asymmetry, in terms of increased bid-ask spread, and where the spin-off is not a core focusing spin-off. Interestingly, there is no

significant correlation between the variables for information asymmetry and core focusing activities. Market capitalization does however positively correlate with the coefficient for core focus, meaning that larger firms in terms of market capitalization have a higher tendency to spin off divisions in order to focus their businesses. Moreover, the market capitalization variable has a negative relationship with information asymmetry in form of price volatility, and the correlation is significant. It is however rather surprising that the second proxy for information asymmetry, bid-ask spread, is not correlated with market capitalization.

The variables are tested for multicollinearity using a VIF test and for autocorrelation using a Durbin Watson test. The VIF test indicates that multicollinearity is not an issue for the main variable of interest as well as the control variables. Moreover, the Durbin Watson test indicates that there is no serial correlation in the sample.

Table 7 shows regression results for CAR of spin-offs over the chosen three-day event window (-1;1). The first regression (1) in Table 7 excludes the proxies for information asymmetry, i.e. bid-ask spread and price volatility and is conducted in accordance with the study of Veld and Veld-Merkoulova (2004) which states that the inclusion of a proxy for information asymmetry in the regression model has an effect on the core focus variable. Regression (1) presents an adjusted R-squared of -3.1% and shows that core focusing activities, geographical focus as well as market capitalization have insignificant coefficients. Regression (2) includes all variables of the main regression model, presented in 3.2. *Method* and presents an adjusted R-squared of 0.1%. As in regression (1), the coefficient on core focus activities is still insignificant and the coefficient of geographical focus is not significant either. By including proxies for information asymmetry in the regression, the effect core focusing activities have on abnormal return slightly increases, going from a p-value of 0.29 to 0.22. In addition, the introduction of information asymmetry also has an effect on the adjusted R-squared, which is marginally improved. The enhanced adjusted R-squared states that the regression model used in this study has a higher level of explanation when introducing information asymmetry proxies. Moreover, the variable of price volatility shows a coefficient of 0 which is significantly different from zero on a 5% level. As expected, bid-ask spread has the same sign as price volatility, although not significant. As a result, the empirical results presented in Table 7 does not give confidence in rejecting the null hypothesis that the core focusing characteristic of a northern European spin-off announcement has no effect on CAR in the announcement period.

Table 7. Estimation results from cross-sectional OLS regression

Table 7 shows the parameter estimates for the main variable of interest (β_1) as well as for the control variables for two different model specifications. In both regression model 1 and 2, the dependent variable is $CAR(-1;1)$. Control variables for year and countries are not tabulated. Core focus is a dummy variable for core focusing activities which takes the value of 1 when the two-digit SIC-code of the spun-off is different from the two-digit SIC-code of the parent and 0 if the two-digit SIC-code of the spun-off matches the parent's two-digit SIC-code. Geographical focus is a dummy variable which measures whether the spin-off has a geographical focus characteristic which takes the value 1 if the parent spins off a foreign division and a value of 0 if the parent spins off a domestic division. Bid-ask spread is the bid price subtracted by the ask price and is a proxy for information asymmetry. Price volatility is the variation in stock price from 302 days prior to the announcement day to 50 days prior to the announcement day (-302;-50) and is a proxy for information asymmetry. Market capitalization is the market value of the company's equity. The significance of the coefficients is tested using p-values, presented in parentheses. *, ** and *** denotes significance at the 10%, 5% and 1% level (two-sided), respectively.

Variable	(1)	(2)
Core focus	0.019 (0.286)	0.020 (0.220)
Geographical focus	-0.009 (0.721)	-0.016 (0.496)
Bid-ask spread		0.002 (0.178)
Price volatility		0.000 (0.027**)
Market capitalization	0.000 (0.483)	0.000 (0.353)
Country dummies included	Yes	Yes
Year dumies included	Yes	Yes
Intercept	-0.033 (0.690)	-0.039 (0.629)
Sample size, n	100	100
R-squared	0.209	0.253
Adj. R-squared	-0.031	0.001

4.2. Analysis

4.2.1. Hypothesis 1

The results of the conducted event study show that there are significant abnormal returns for announcements of northern European spin-off activities announced 2004-2019. This is in line with the findings of Hite and Owers (1983), Schipper and Smith (1983), Desai and Jain (1999), and Feng et al. (2015) among others, and shows that although this study is conducted in a more contemporary setting than previous literature, the short-term wealth effect of spin-offs continues to exist and remains positive. However, our result of abnormal returns of 2.7% for an event window of (-1;1) is significant at a 5% level, while earlier studies show a higher significance at a 1% level. This could be an effect of the choice of sample period as well as geographical region. The abnormal returns of 2.7% are not surprising, since they are close to the results of Veld and

Veld-Merkoulova (2009) who find a 3.0% average abnormal return for 26 different studies conducted in the US and Europe. However, in comparison to a combined average CAAR of 4.3% of previous European studies by Kirchmaier (2003), Sudarsanam and Quian (2007) and Veld and Veld-Merkoulova (2004), this study shows a lower CAAR.

When separately examining the wealth effect of core focusing spin-offs and non core focusing spin-offs, we find that core focusing spin-off activities generate significant abnormal returns of 2.9% on a 5% significance level. This amount is slightly higher than for the entire sample. On the other hand, the abnormal returns for non core focusing spin-off activities are not significant. The results are consistent with Daley et al. (1997), who also identify this division. Desai and Jain (1999), Krishnaswami and Subramaniam (1999), and Veld and Veld-Merkoulova (2004) instead find that the non core focusing announcements generate lower abnormal returns than the core focusing announcements, but find significance for both types of spin-offs when separately analyzed, which is not the case in this study. According to Berger and Ofek (1995), Rajan et al. (2000), and Lang and Stultz (1994), diversified firms tend to trade at a discount, which paves the way for positive reactions to announcements of specialization activities. Our study cannot confirm the diversification discount itself, but the evidence from Hypothesis 1b suggests that there is a positive reaction by shareholders when firms increase their business focus, which in turn could indicate the existence of a diversification discount. Importantly, it is however notable that when we test the difference between the means, i.e. the reactions of spin-offs that generate a larger industrial focus to those which do not, our study does not find significant results. This is in accordance with the findings of Feng et al. (2015) who find no significant difference in means between the core and non core focusing spin-off announcements in terms of abnormal returns and is in contrast to the significant difference in means found by Veld and Veld-Merkoulova (2004) and Krishnaswami and Subramaniam (1999). Hence, on a stand-alone basis, spin-offs that are core focusing generate significant abnormal returns and non core focusing do not, but when comparing the two samples there is not a significant difference between the means. This indicates that the found difference when analyzing the two sub-samples separately, might have occurred by coincidence.

4.2.2. Hypothesis 2

The main regression of this study in Table 7, regression (2), does not show significant evidence that announcements of core focusing spin-off activities are determinant factors of abnormal returns. The result from the cross-sectional regressions illustrates a significant price volatility

coefficient at a 5% level and insignificant coefficients for the variables core focusing activities, geographical focusing activities, bid-ask spread, and market capitalization. The insignificant coefficient for the geographical focus variable could be a consequence of the contradicting effects cancelling out each other, suggested by Veld and Veld-Merkoulova (2004) as well as Denis et al. (2002).

Berger and Ofek (1995), Rajan et al. (2000), and Lang and Stulz (1994) argue that diversified companies trade at discount compared to specialized companies. In light of the diversification discount literature, a significant core focusing coefficient in this study would indicate that part of the 2.7% abnormal returns in the three-day event window found in Hypothesis 1 is due to shareholders incorporating the characteristic of the undertaken spin-off being core focusing. In other words, in a state where the core focusing coefficient is significant, shareholders value specialization activities and the core focusing rationale is an underlying factor for value creation in terms of abnormal returns, which in turn supports the diversification discount reasoning. The results of Hypothesis 2 do not confirm the diversification discount since the core focusing coefficient is not significantly different from zero. Likewise, the conducted correlation matrix in *A2 Appendix* does not show any significant correlation between core focusing and CAR. Our findings contradict the findings of Desai and Jain (1999) as well as Daley et al. (1997) who both find a positive correlation between focusing increasing spin-offs and abnormal returns. Moreover, Veld and Veld-Merkoulova (2004) present mixed evidence of the impact of core focusing spin-offs, which suggests that the importance is limited but yet present. This is also in contrast to the consistent insignificant results from this study.

By not being able to explain shareholders' reactions to spin-offs from a core focusing perspective, our findings open up for other suggestions, such as evidence from Krishnamurti and Vishwanath (2008) and Campa and Kedia (2002), who both argue that diversification could create value. One explanation, stated by Villalonga (2004), suggests that previous confirmations of the diversification discount is a consequence of measurement bias. The suggested bias is mainly due to that firms themselves classify their own and their spun-offs' industries through SIC-codes. Since the industry classification in our study is based on the companies' SIC-codes, it is of importance to acknowledge that the sample might be affected by self-selection bias as well. With this in mind, it should also be considered that the core focusing classifications for the parent and spun-off firms in this study have been affirmed through analysis of the spin-off announcements in addition to the SIC-code classifications.

It is further notable that it cannot be stated that diversified firms trade at a premium on the basis of our study alone, but the results do not indicate that there is a positive reaction towards decreasing the level of diversification in the companies, which opens up for the possibility of diversification not being perceived as negative. As stated by Pidun et al. (2019), there are still well performing companies which are highly diversified, and the sample in this study could include companies where shareholders do not recognize diversification as problematic, or even perceive it as positive.

Regression (1) in Table 7 is conducted in order to investigate the importance of information asymmetry further, as a consequence of the discussion by Veld and Veld-Merkoulova (2004) regarding that the effect of core focusing spin-offs decreases when introducing information asymmetry in the model. The findings of our study support this, which is illustrated by the decreased effect of the significance of the core focus coefficient when running the regression without bid-ask spread and price volatility. In addition, adjusted R-squared is also marginally negatively affected, meaning that our regression model has a lower level of explanation when excluding information asymmetry proxies. Regression (2) in Table 7 results in significance for the price volatility coefficient but not for the bid-ask spread coefficient, which provides contradicting implications regarding whether information asymmetry plays a role in determining abnormal returns. Although price volatility is significant, we recognize that the coefficient shows a value of close to zero⁵, which means that even though it has a correlation to abnormal returns, the significant effect basically has no impact. In addition, we previously stated that the price volatility measure could be affected by many aspects, and therefore risks to not only capture information asymmetry. Therefore, we suggest that information asymmetry has no impact on the degree of shareholder reactions in terms of abnormal returns. The results contradict the findings of Krishnaswami and Subramaniam (1999), who discover a relationship between information asymmetry and the size of abnormal returns. Instead, the suggestion that information asymmetry has no impact is aligned with Veld and Veld-Merkoulova (2004).

On the theme of a potential relationship between information asymmetry and diversification discount, Laeven and Levine (2007) find that agency costs could explain the value destruction from diversification in general. More particularly, an earlier study by Cusatis et al. (1993) state that spin-offs could lower agency costs, for instance due to increased managerial focus. Contradictorily, we find an insignificant correlation between information asymmetry and core

⁵ The coefficient is equal to -0.000401.

focus activities in the conducted correlation matrix. The insignificant relationship leaves no indication that an increased level of diversification through spin-offs has an effect on the level of information asymmetry. Rajan et al. (2000) argue that agency costs are insufficient in explaining diversification discount in terms of misallocation of funds, which could be a possible explanation of the results in our study.

Despite our analysis of regression (2), we acknowledge that the degree of explanation of the constructed regression model is evidently low, showing an adjusted R-squared of 0.1%. The outcome is surprising, as the selected explanatory factors are previously used for numerous studies on spin-off announcements and their impact. Nonetheless, the impact of the chosen variables is negligible, and indicates that CAR is explained by other factors not introduced in this study. The decision to use the same variables as Veld and Veld-Merkoulova (2004) as a basis, but being limited by availability of data could have an impact on the adjusted R-squared. For example, shareholder rights were excluded, whereas relative size and normalized standard error of forecast were replaced with other proxies. In addition, an inclusion of other variables not mentioned, or a substitution of the included variables, could result in a higher degree of explanation.

4.3. Robustness tests

In order to control for the sensitivity of the results, several robustness tests are conducted. Initially, the low degree of explanatory value of our regression model cannot be neglected, which makes a discussion regarding endogeneity issues crucial. We acknowledge that the model might be biased, caused by endogeneity. For example, market capitalization has been used as a variable in order to control for the effect that size has on CAR. However, as stated in 3.2. *Method*, Veld and Veld-Merkoulova (2004) do not include market capitalization in their regression model but instead introduce relative size. Market capitalization is a measurement which affect, and is affected by, several company characteristics not included in the model. Hence, it is reasonable to assume that there might be a correlation between market capitalization and the error term, causing an omitted variable bias. In addition, this study excludes the shareholder rights variable which is included by Veld and Veld-Merkoulova (2004). It could be assumed that the shareholder rights variable would be negatively correlated with information asymmetry if introduced in the model. In countries where the protection of shareholder rights tends to be low, some companies might have incentives to not disclose or not be transparent, which in turn would lead to higher information asymmetry. By not taking shareholder rights into consideration,

the variable is absorbed by the error term and hence, if the assumption that information asymmetry and shareholder rights are negatively correlated holds, an endogeneity problem is present. Taking into consideration that the adjusted R-squared remains evidently low in this study, it is reasonable to expect that the examples above are not exclusive. Instead, other not included variables such as firm leverage, asset turnover, and real asset growth could similarly cause bias in the regression model.

In order to examine whether the selected event window of three days surrounding the identified announcement day is a relevant basis of this study, a test of CAAR for different event intervals is conducted and presented in Table 8. Table 8, Panel A shows the event study conducted on the full sample for different event windows. The results for interval $(-1;0)$ as well as (0) are slightly lower than the main event window $(-1;1)$. Both are significant at the 1% level. The pattern of CAAR suggests an effect for both days surrounding the announcement, meaning that the reactions to the spin-off announcements are extended further than the announcement day solely. On day -1, there could be an anticipation or leakage effect before the actual announcement day, and the additional effect on day +1 demonstrates that the reactions could be delayed or increased further. Extending the event window results in no significance, meaning that the CAAR ten days before or after the announcement day are not significantly affected by the announcement of the spin-offs. This also occurs for the largest interval, $(-10;10)$, during which the returns are not statistically significant either. There are 64% positive reactions out of the entire sample on the announcement day (0) as shown in Table 8. Intuitively, this number reaches its highest level on the announcement day, and slightly decreases when including more days in the event window.

In Table 8, Panel B and Panel C show the event study conducted on the two sub-samples core focusing spin-offs and non core focusing spin-offs for different announcement periods. The results for event windows (0) , $(-1;0)$ show similar patterns to the main event window $(-1;1)$ where CAAR is significant for spin-offs with specialization characteristics and insignificant for spin-offs without specialization characteristics. However, when extending the event window, both prior to the announcement day as well as to after the announcement day, both core focusing spin-offs as well as non core focusing spin-offs are insignificant. This is true for event windows $(-10;-1)$, $(1;10)$ and $(-10;10)$. The core focusing spin-offs tend to result in a larger proportion positive CAAR than the non core focusing spin-offs, with the percent positive being higher in most event windows. The exceptions include the intervals $(-10;-1)$ and $(-10;10)$. The difference in

means for core focusing spin-offs and non core focusing spin-offs in other event windows than the main event window (-1;1) is tabulated in Table 8, Panel D. When narrowing the event window to (0) and (-1;0), the results show that the difference in means remains insignificant. However, for wider event windows of (-10;-1), (1;10) and (-10;10), the difference becomes significant at a 1% level, 10% level and 1% level, respectively.

Table 8. Abnormal returns

Table 8 reports CAAR, t-statistics, sample size and percentage positive in different event windows for the full sample, the core focusing activities sub-sample, the non core focusing activities sub-sample, and the difference between the means of the two sub-samples. Abnormal returns are based on the market model, estimated over a 250-day period from 49 days prior to the first day in the event window. CAAR is presented for the main event window (-1;1), as well as five other intervals. To clarify, the day before the announcement day is denoted (-1), and the day after is denoted (1). The longest interval, (-10;10), is CAAR ranging from ten days before the announcement to ten days after. The significance of the means is tested using a t-statistic, presented in parentheses. *, ** and *** denotes significance at the 10%, 5% and 1%, respectively.

	Interval					
	(0)	(-1;0)	(-1;1)	(-10;-1)	(1;10)	(-10;10)
<i>Panel A: Full sample</i>						
CAAR	0.019 (4.04***)	0.023 (3.30***)	0.027 (2.51**)	0.013 (0.45)	0.013 (0.55)	0.044 (0.80)
Sample size, n	112	112	112	112	112	112
Percent positive	64%	63%	57%	51%	54%	61%
<i>Panel B: Core focusing activities</i>						
CAAR	0.021 (3.89***)	0.026 (3.06***)	0.029 (2.10**)	0.018 (0.63)	0.016 (0.57)	0.055 (0.83)
Sample size, n	78	78	78	78	78	78
Percent positive	65%	67%	60%	50%	54%	60%
<i>Panel C: Non core focusing activities</i>						
CAAR	0.01 (1.50)	0.02 (1.34)	0.024 (1.37)	-0.001 (-0.02)	0.007 (0.16)	0.020 (0.19)
Sample size, n	34	34	34	34	34	34
Percent positive	62%	56%	50%	53%	53%	62%
<i>Panel D: Difference</i>						
CAAR	0.008 (0.77)	0.009 (1.15)	0.005 (0.61)	0.020 (3.29***)	0.009 (1.67*)	0.035 (6.20***)
Sample size, n	112	112	112	112	112	112
Percent positive	-	-	-	-	-	-

In order to investigate the robustness of the main regression model of this study, a sensitivity analysis is performed by running regressions in different event windows presented in Table 9. Table 9 shows that the significance of the main variable of interest, core focusing activities, is not significant for event windows (0), (-1;0), (-1;1), (-10;-1) and (1;10). Hence, the previously not rejected null hypothesis stating that core focusing activities are not determinant factors for abnormal returns persists. However, when extending the event window to (-10;10) the coefficient for core focusing activities becomes significant at a 10% level. Since the variable is not significant for the period (-10;1) and (1;10), the significance indicates that when including a

longer period surrounding the announcement day, core focusing activities become a determinant factor of CAR. As previously stated in the conducted event study in Table 8, CAAR for the announcement period (-10;10) is not significant in the conducted event study. However, this does not necessarily conclude that CAR becomes obsolete for running the regression to establish the determinants of CAR. Instead, it could be argued that although there is not significance on CAR of the sample on average (i.e. CAAR), there might be a cross-sectional significance where each CAR is tested individually. In addition, Table 9 illustrates that the adjusted R-squared reaches its highest level for the event window (-10;1), amounting to 8.7%. The degree of explanation is seemingly positively affected by introducing more days prior to the announcement day in the event window. Therefore, the included variables in this study seem to explain CAR to a higher degree ten days before the announcement day, in comparison to the other tested intervals.

Table 9. Estimation results from cross-sectional OLS regression

Table 9 shows estimation results from cross-sectional OLS regression for different event windows. The table shows the parameter estimates for the main variable of interest (β_1) as well as for the control variables for different announcement periods. The dependent variable is CAR ($t;T$) in all regressions, and is defined as the sum of abnormal returns for observation from t days before the announcement day to T . Control variables for year and countries are not tabulated. Core focus is a dummy variable for core focusing activities which takes the value of 1 when the two-digit SIC-code of the spun-off is different from the two-digit SIC-code of the parent and 0 if the two-digit SIC-code of the spun-off matches the parent's two-digit SIC-code. Geographical focus is a dummy variable which measures whether the spin-off has a geographical focus characteristic which takes the value of 1 if the parent spins off a foreign division and a value of 0 if the parent spins off a domestic division. Bid-ask spread is the bid price subtracted by the ask price and is a proxy for information asymmetry. Price volatility is the variation in stock price from 302 days prior to the announcement day to 50 days prior to the announcement day (-302;-50) and is a proxy for information asymmetry. Market capitalization is the market value of the company's equity. The significance of the coefficients is tested using p-values, presented in parentheses. *, ** and *** denotes significance at the 10%, 5% and 1% level (two-sided), respectively.

	Interval					
	(0)	(-1;0)	(-1;1)	(-10;-1)	(1;10)	(-10;10)
Core focus	0.123 (0.372)	0.014 (0.339)	0.020 (0.220)	0.017 (0.456)	0.023 (0.295)	0.051 (0.088*)
Geographical focus	0.003 (0.891)	-0.007 (0.724)	-0.016 (0.496)	0.006 (0.870)	-0.017 (0.564)	-0.168 (0.959)
Bid-ask spread	-0.001 (0.570)	-0.002 (0.365)	0.002 (0.178)	0.009 (0.054*)	-0.002 (0.428)	0.000 (0.454)
Price volatility	0.000 (0.940)	0.000 (0.891)	0.000 (0.027**)	0.000 (0.174)	0.000 (0.415)	-0.001 (0.080*)
Market capitalization	0.000 (0.937)	0.000 (0.389)	0.000 (0.353)	0.000 (0.470)	0.000 (0.958)	0.000 (0.654)
Country dummies included	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies included	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	-0.004 (0.955)	-0.009 (0.890)	-0.039 (0.629)	0.015 (0.892)	0.110 (0.272)	0.111 (0.474)
Sample size, n	100	100	100	100	100	100
R-squared	0.171	0.205	0.253	0.308	0.222	0.252
Adj. R-squared	-0.109	-0.063	0.001	0.087	-0.041	0.013

Regarding the proxies for information asymmetry used in this study, the correlation matrix in Table A2 shows that bid-ask spread and price volatility are highly correlated, amounting to 0.635 and is significant at a 5% level. For this reason, it is of interest to examine how the model is affected by the exclusion of each proxy, which is performed in Table 10. The adjusted R-squared for the main regression model shown in Table 7 amounts to 0.1%. When firstly excluding the variable for bid-ask spread, Table 10 shows that the adjusted R-squared decreases to -0.7%. Secondly, when excluding the variable for price volatility, the adjusted R-squared decreases to -4.5%. This means that price volatility seems to explain the dependent variable to a higher degree than bid-ask spread. However, the conclusion can be drawn that including both proxies provides a better regression model than the exclusion of either bid-ask spread or price volatility.

Table 10. Estimation results from cross-sectional OLS regression

Table 10 shows estimation results from robustness test of cross-sectional OLS regression by excluding one of the proxies for information asymmetry at a time. The table shows the parameter estimates for the main variable of interest (β_1) as well as for the control variables for two different model specifications. In both regression model 1 and 2, the dependent variable is CAR (-1;1). Control variables for year and countries are not tabulated. Core focus is a dummy variable for core focusing activities which takes the value of 1 when the two-digit SIC-code of the spun-off is different from the two-digit SIC-code of the parent and 0 if the two-digit SIC-code of the spun-off matches the parent's two-digit SIC-code. Geographical focus is a dummy variable which measures whether the spin-off has a geographical focus characteristic which takes the value of 1 if the parent spins off a foreign division and a value of 0 if the parent spins off a domestic division. Bid-ask spread is the bid price subtracted by the ask price and is a proxy for information asymmetry. Price volatility is the variation in stock price from 302 days prior to the announcement day to 50 days prior to the announcement day (-302;-50) and is a proxy for information asymmetry. Market capitalization is the market value of the company's equity. The significance of the coefficients is tested using p-values, presented in parentheses. *, ** and *** denotes significance at the 10%, 5% and 1% level (two-sided), respectively.

Variable	(1)	(2)
Core focus	0.018 (0.298)	0.019 (0.289)
Geographical focus	-0.012 (0.624)	-0.009 (0.722)
Bid-ask spread		0.000 (0.973)
Price volatility	0.000 (0.098*)	
Market capitalization	0.000 (0.557)	0.000 (0.494)
Country dummies included	Yes	Yes
Year dummies included	Yes	Yes
Intercept	-0.037 (0.650)	-0.033 (0.692)
Sample size, n	100	100
R-squared	0.237	0.209
Adj. R-squared	-0.007	-0.045

As previously mentioned in 3.2. *Method*, a scarce number of observations for the country dummies for Denmark, Lithuania and Estonia might give biased results. This was identified as not being a major problem since the country dummies are not the main interest of this study but rather variables to control for temporal aspects. However, considering the low degree of explanation of the main regression model in this study, a robustness test where larger regions are identified and included as dummies is further motivated and shown in Table 11. Regression (1) in Table 11 shows the main regression model with country dummies and regression (2) shows with region dummies. Table 11 shows that by expanding the geographical dummy from a country perspective to a region perspective, the adjusted R-squared decreases from 0.1% to -

8.2%. R-squared decreases as well, which is expected since less variables are included in the regression model when classifying companies by regions.

Table 11. Estimation results from cross-sectional OLS regression

Table 11 shows estimation results from the robustness test of cross-sectional OLS regression by including identified region dummies instead of country dummies. Three different Region dummies are identified based on the countries included in the sample. The identified regions are the Nordic region (consisting of Denmark, Finland, Norway, and Sweden), the Baltic region (consisting of Estonia and Lithuania) and the UK region (consisting of the UK). The table shows the parameter estimates for the main variable of interest (β_1) as well as for the control variables. The dependent variable is CAR (-1;1) for both regression model 1 and 2. Control variables for year, countries and regions are not tabulated. Core focus is a dummy variable for core focusing activities which takes the value of 1 when the two-digit SIC-code of the spun-off is different from the two-digit SIC-code of the parent and 0 if the two-digit SIC-code of the spun-off matches the parent's two-digit SIC-code. Geographical focus is a dummy variable which measures whether the spin-off has a geographical focus characteristic which takes the value of 1 if the parent spins off a foreign division and a value of 0 if the parent spins off a domestic division. Bid-ask spread is the bid price subtracted by the ask price and is a proxy for information asymmetry. Price volatility is the variation in stock price from 302 days prior to the announcement day to 50 days prior to the announcement day (-302;-50) and is a proxy for information asymmetry. Market capitalization is the market value of the company's equity. The significance of the coefficients is tested using p-values, presented in parentheses. *, ** and *** denotes significance at the 10%, 5% and 1% level (two-sided), respectively.

Variable	(1)	(2)
Core focus	0.020 (0.220)	0.017 (0.323)
Geographical focus	-0.016 (0.496)	-0.017 (0.507)
Bid-ask spread	0.002 (0.178)	0.002 (0.255)
Price volatility	0.000 (0.027**)	0.000 (0.054)
Market capitalization	0.000 (0.353)	0.000 (0.708)
Country dummies included	Yes	No
Region dummies included	No	Yes
Year dummies included	Yes	Yes
Intercept	0.000 (0.629)	0.000 (0.078)
Sample size, n	100	100
R-squared	0.253	0.147
Adj. R-squared	0.001	-0.082

We suggest two additional possible explanations to the low degree of explanation of the main regression in this study, namely that the sample contains too few observations, or that too many variables are included in the model. In order to test if the latter is true, five regression models are conducted by excluding one variable at a time depending on the significance level of the coefficient. The results of this robustness test are illustrated in Table 12. In regression (1), all variables are included in accordance with the main regression model. For regression (2), the

variable with the lowest significance level from regression (1) is excluded, which is market capitalization. Continuing in a similar manner, regression (3) excludes, in addition to market capitalization, geographical focus, which has the lowest level of significance in the previous regression (2). This pattern proceeds for regression (4) and (5) as well.

Table 12 illustrates that the adjusted R-squared increases from 0.1% to 1.9% for the first two steps of exclusions where market capitalization and geographical focus are eliminated due to showing the least significant coefficients. At the same time, R-squared decreases which is not surprising since less variables are included in the regression. When running regression (4), Table 12 shows that adjusted R-squared decreases again. Therefore, the evidence of this robustness test indicates that the main regression model suffers from too many variables and that the positive effect on adjusted R-squared from excluding variables are optimal when excluding two variables. As previously mentioned, the evidently low degree of explanation could also be due to the sample including too few observations. However, this study does not test for this.

Table 12. Estimation results from cross-sectional OLS regression

Table 12 shows estimation results from robustness test of cross-sectional OLS regression by excluding variables depending on the significance level of the coefficient. The table shows the parameter estimates for the main variable of interest (β_1) as well as for the control variables. The dependent variable is CAR (-1;1) for all regressions. Control variables for year and countries are not tabulated. Core focus is a dummy variable for core focusing activities which takes the value of 1 when the two-digit SIC-code of the spun-off is different from the two-digit SIC-code of the parent and 0 if the two-digit SIC-code of the spun-off matches the parent's two-digit SIC-code. Geographical focus is a dummy variable which measures whether the spin-off has a geographical focus characteristic which takes the value of 1 if the parent spins off a foreign division and a value of 0 if the parent spins off a domestic division. Bid-ask spread is the bid price subtracted by the ask price and is a proxy for information asymmetry. Price volatility is the variation in stock price from 302 days prior to the announcement day to 50 days prior to the announcement day (-302;-50) and is a proxy for information asymmetry. Market capitalization is the market value of the company's equity. The significance of the coefficients is tested using p-values, presented in parentheses. *, ** and *** denotes significance at the 10%, 5% and 1% level (two-sided), respectively.

Variable	(1)	(2)	(3)	(4)	(5)
Core focus	0.020 (0.220)	0.020 (0.256)	0.020 (0.235)	0.018 (0.292)	0.018 (0.287)
Geographical focus	-0.016 (0.496)	-0.017 (0.479)			
Bid-ask spread	0.002 (0.178)	0.002 (0.177)	0.002 (0.194)		
Price volatility	0.000 (0.027**)	0.000 (0.031**)	0.000 (0.035**)	0.000 (0.093*)	
Market capitalization	0.000 (0.353)				
Country dummies included	Yes	Yes	Yes	Yes	Yes
Year dummies included	Yes	Yes	Yes	Yes	Yes
Intercept	-0.039 (0.629)	-0.037 (0.642)	-0.034 (0.671)	-0.030 (0.706)	-0.026 (0.749)
Sample size, n	100	100	100	100	100
R-squared	0.253	0.252	0.247	0.230	0.201
Adj. R-squared	0.001	0.013	0.019	0.010	-0.014

5. Conclusion and Future Research

5.1. Conclusion

The purpose of our study is to investigate public companies in northern Europe which have announced to perform spin-offs, and the following reactions from shareholders of the parent companies. Spin-offs conducted in order to increase core focus of the parent, and spin-offs not conducted for this reason, are distinguished and separately analyzed. Moreover, core focusing strategies are studied as possible underlying factors of shareholders' reactions to the announcement of corporate spin-offs.

Our study confirms that announcements of spin-offs in general generate short-term abnormal returns. The result of the study shows that shareholders react positively with a significant CAAR amounting to 2.7% at a 5% significance level during a three-day announcement period. When separating the sample into sub-samples of core focusing and non core focusing spin-offs, our study finds that core focusing spin-off activities generate abnormal returns amounting to 2.9% at a 5% significance level, while the result of non core focusing spin-off announcements is insignificant. Despite the varied results, the difference between the means of the sub-samples is not significant. Thus, on average for our sample, shareholders seem to positively react to spin-off announcements which are based on a specialization strategy in contrast to spin-off announcements which are not. The difference is however not applicable for spin-offs in general, as its occurrence could be a coincidence.

Further, we do not find evidence supporting that the core focusing characteristic is a determinant factor for the abnormal returns following spin-off announcements. The conducted cross-sectional regressions result in an insignificant coefficient for the core focusing variable. Hence, the abnormal returns following spin-offs found in our study cannot be directly derived from the strategic decision to specialize. It is however notable that the degree of explanation of the regression model in this study is evidently low, which indicates that other variables than those chosen for this study explain CAR following spin-off announcements. Therefore, including or substituting the control variables could change the effect of the main variable core focusing.

The conclusion of our findings is that spin-offs generate abnormal returns, and that the studied core focusing spin-offs create a wealth effect, although the result cannot be applicable for core focusing spin-offs in general. Furthermore, the characteristic of specialization does not play an evident role in the emergence of the abnormal returns. The practical implications of our findings

suggest that companies which have decided to spin off an entity can expect a short-term positive value effect in addition to the strategic benefits from the divestment. However, our study cannot confirm that the rationale of focusing on the core business specifically has an impact on the value creation in terms of share price reactions.

5.2. Future research

Spin-offs and their characteristics have been the topic in numerous previous studies. In particular, previous literature has studied the effect that core focusing activities have on firm value. The method of this study is to a high degree a replication of a previous study, however, the adjusted R-squared and hence the regression model's degree of explanation is evidently low. Therefore, further research including additional relevant variables or substituting the included variables, is needed in order to distinguish the true effect of core focusing activities on abnormal returns.

Previous literature which studies the effect of core focusing activities on abnormal returns following spin-off announcements has, to our knowledge, rarely been conducted in the last decade, which also has been the rationale to conduct this study. However, we recognize that the business environment has changed during this period which could have an effect on spin-off reactions and be explained by motives beyond those suggested in this study. Hence, rationales and characteristics of spin-offs might need to be rethought and extended in order to increase the understanding of the spin-off phenomenon. For instance, it could be of interest to further investigate other rationales that are mentioned but not developed in this study, including undervaluation, excessive operating volatility, risk reduction and transfer of wealth.

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Appendix

Table A1. Sample description

Spin-off announcements are gathered from the screening function of S&P Capital IQ. Core focusing is a dummy variable that takes the value of 1 when the two-digit SIC-code of the spun-off is different from the two-digit SIC-code of the parent and 0 if the two-digit SIC-code of the spun-off matches the parent's two-digit SIC-code.

Year	Parent	Spun off	Core Focusing
2004	Group 4 Securitor PLC	Falek Holding A/S	1
2004	ITAB Industrier AB	ITAB Shop Concept AB	1
2004	South Staffordshire Group Plc	South Staffordshire Plc	1
2004	Kemira Oyj	Kemira Growhow Oyj	1
2004	Kvaerner ASA	Aker ASA	1
2004	Hays Plc	DX Services Limited	1
2004	Poolia AB	Uniflex AB	0
2004	DNO ASA	Independent Oil Tools ASA	0
2004	KONE Oyj	Cargotech Corporation	1
2005	Kinnevik Investment AB	Invik & Co. AB	0
2005	Fortum Oyj	Neste Oyj	1
2005	Gunnebo AB	Gunnebo Industrier AB	1
2005	Fabege AB	Willbros Fastigheter AB	1
2005	Bunzl Plc	Filterna Plc	1
2005	Open Joint Stock Company Mining and Metallurgical Company Norilsk Nickel	OJSC Polyus Gold	1
2005	Bilia AB	Catena AB	1
2005	PSI Group ASA	Captura ASA	1
2005	GUS Plc	Burberry Group Plc	1
2005	Orion Corp.	Otiola Oyj	1
2006	Securitas AB	Securitas Direct AB	0
2006	Securitas AB	Securitas Systems AB	0
2006	Securitas AB	Loomis AB	0
2006	Petroleum Geo-Services ASA	Petrojarl ASA	0
2006	GUS Plc	Angos Retail Group	1
2006	Severn Trent Plc	Hackremo (No. 2537) Limited	1
2006	Electrolux AB	Husqvarna AB	1
2006	New WH Smith Plc	Smiths News Plc	1
2006	Scribona AB	Carl Lamm AB	1
2006	Betsson AB	Cherryföretagen AB	1
2006	Peab AB	Peab Industri AB	1
2006	Westergillen AB	Forsheim Group AB	1
2006	BBA Group Plc	Fiberweb Plc	1
2007	Anglo American Plc	Mondi Plc	1
2007	Vostok Nafta Investment Ltd	Vostok New Ventures Ltd	0
2007	Provident Financial Plc	International Personal Finance Plc	0
2007	Betsson AB	Net Entertainment AB	1
2007	Consilium AB	Precomp Solutions AB	1
2007	Open Joint Stock Company Mining and Metallurgical Company Norilsk Nickel	Norilsk Nickel Mining and Metallurgical Co., Non Core Energy Assets	1
2007	As Viisnurk	As Viisnurk, Building Materials and Furniture Division	1
2007	RNB Retail and Brands AB	Polarn o. Pyret AB	1
2007	Marine Harvest ASA	Lighthouse Caledonia ASA	0
2007	Prosafe SE	Prosafe Production Public Limited	1
2008	Photocure ASA	PCI Biotech AS	0
2008	Hexagon AB	Hexpol AB	1
2008	Cloetta Faer AB	Cloetta AB	0
2008	Kemira Oyj	Tikkunla Oyj	1
2008	Bure Equity AB	AcadMedia AB	1
2010	New Carphone Warehouse Plc	TalkTalk Telecom Group	0
2010	Liberty International Plc	Capital Counties Properties Plc	1
2010	Lundin Petroleum AB	EnQuest Plc	0
2010	Modem Times Group AB	CDON Group AB	1
2010	Norse Energy Corp ASA	New Brazil Holding ASA	0
2010	Guinness Peat Group Plc	Guinness Peat Group (Australia) Pty Limited	1
2010	Lietuvos Energija AB	Lietuvos Energija Transmission System Operator, Electricity Market Operator and Information	0
2010	Haldex AB	Concentric AB	1
2010	Lundin Petroleum AB	Etrion Corporation	1
2010	Intoi AB	Deltaco AB	1
2011	Green Dragon Gas Limited	Greka Drilling Limited	1
2011	Rederi AB TransAtlantic	Trans Viking Offshore A/S	0
2011	Aker Solutions ASA	Kvaerner ASA	1
2011	Poolia AB	Dedicare AB	0
2011	Sievi Capital Oyj	Sievi Capital plc, Contract Manufacturing and Other Industry Operations	0
2011	Investment AB Öresund	Creades AB	1
2012	Vinnlife AB	Xvivo Perfusion AB	0
2012	Betsson AB	Angler Gaming plc	0
2012	Lietuvos Dujos AB	Lietuvos Dujos AB, Natural Gas Transmission Assets	1
2012	Neo Industrial Plc	Avilon Oy	1
2012	Cookson Group Plc	Alent Plc	1
2013	Creades AB	Sedatec AB	0
2013	YIT Oyj	Caverion Oyj	1
2013	Green Dragon Gas Limited	Greka Engineering & Technology Limited	1
2013	Vostok Nafta Investment Ltd	Black Earth Farming Ltd	1
2013	Vostok Nafta Investment Ltd	RusForest AB	1
2013	Metso Corporation	Valmet Oyj	1
2013	Renewable Energy Corporation ASA	REC Solar ASA	0

2013	IGE Resources AB	IGE Diamond AB	1
2013	IGE Resources AB	African Diamond AB	1
2014	Invalda LT, AB	Public Joint - Stock Company INVL Baltic Real Estate	1
2014	Invalda LT, AB	INVL Baltic Farmland AB	1
2014	XANO Industri AB	AGES Industri AB	1
2014	Unibet Group Plc	Kambi Group Plc	0
2014	Aker Solutions ASA	Aker Solutions ASA, Subsea, Umbilicals, Engineering and Maintenance, Modifications and Operations	0
2014	Aqualis ASA	Aqualis Offshore Holding ASA	0
2014	Reckitt Benckiser Group Plc	Indivior Plc	1
2015	Glencore Plc	Lonmin Plc	1
2015	Elektrobit Oyj	Bitium Technologies Oy	1
2015	Vostok Nafta investment Ltd	Vostok Emerging Finance Ltd	1
2015	NCC AB	Bonava AB	1
2015	Diga Oyj	Diga Oyj, QT Segment	0
2015	DistIT AB	Aleadon Group AB	0
2016	Wil. Wilhemsen ASA	Den Norske Amenkalinse A/S	0
2016	BioGata AB	Infant Bacterial Therapeutics AB	0
2016	Addtech AB	AddLife AB	1
2016	Svenska Cellulosa AB	Essity AB	1
2016	Getinge AB	Arjo AB	0
2017	Atlas Copco AB	Epiroc AB	1
2017	Lundin Petroleum AB	International Petroleum Corporation	0
2017	Bergman & Beving AB	Momentum Group AB	1
2017	BGEO Group Plc	JSC BGEO Investments	1
2017	NKT A/S	Nilfisk A/S	0
2017	Autoliv AB	Vconcer AB	0
2018	Prudential Plc	M&G Group Limited	1
2018	Xintela AB	Oncology Business of Xintela AB	1
2018	Modem Times Group AB	Nordic Entertainment Group AB	1
2018	Hunter Group ASA	Dwellop AS	1
2018	Hemfosa Fastigheter AB	Nyfosa AB	1
2018	A.P. Moller - Maersk A/S	Drilling part of Maersk	1
2018	Schibsted ASA	Marketplaces International ASA	1
2018	Smiths Group Plc	Smiths Medical Inc.	1
2019	Indentive AB	Indentive Värdepapper AB	1
2019	Electrolux AB	Professional Products Business Area of AB Electrolux	1
2019	Cramo Oyj	Modular Space Business of Cramo Oyj	1

Table A2. Correlation matrix

The table shows the pairwise correlation between all variables used for the main regression model, including the dependent variable, the main variable of interest, and the control variables. The significance of the correlation is tested, where bold figures denote significance at the 5% level.

Parameters	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	.15	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.		
1. CAR	1.000																													
2. Core focusing	0.051	1.000																												
3. Geographical focus	-0.071	-0.019	1.000																											
4. Bid-ask spread	-0.018	-0.030	0.160	1.000																										
5. Price volatility	-0.145	0.031	0.085	0.635	1.000																									
6. Marketcap	-0.063	0.020	-0.006	-0.079	-0.001	1.000																								
7. DK	-0.054	-0.150	-0.037	-0.020	0.013	-0.011	1.000																							
8. EST	-0.272	0.067	-0.037	-0.026	-0.047	-0.044	-0.010	1.000																						
9. FI	0.108	0.079	-0.123	-0.093	-0.152	-0.127	-0.034	-0.034	1.000																					
10. LTH	0.014	0.096	-0.053	-0.040	-0.068	-0.062	-0.014	-0.014	-0.048	1.000																				
11. NO	0.173	-0.203	-0.069	-0.066	-0.075	-0.044	-0.042	-0.042	-0.140	-0.060	1.000																			
12. SWE	-0.074	-0.125	-0.015	0.002	-0.079	0.187	-0.105	-0.105	-0.347	-0.149	-0.437	1.000																		
13. UK	-0.068	0.270	0.213	0.154	0.317	-0.065	-0.049	-0.049	-0.161	-0.069	-0.204	-0.504	1.000																	
14. year04	-0.079	0.015	-0.031	-0.044	-0.101	-0.104	-0.030	-0.030	0.041	-0.043	-0.016	-0.021	0.041	1.000																
15. year05	-0.021	-0.056	-0.084	-0.071	-0.112	-0.066	-0.033	-0.033	-0.103	-0.047	0.012	0.080	-0.001	-0.097	1.000															
16. year06	0.035	0.052	0.050	-0.077	-0.096	0.051	-0.035	0.209	-0.115	-0.049	-0.074	0.003	0.125	-0.102	-0.112	1.000														
17. year07	0.001	-0.035	-0.072	0.281	0.435	-0.049	-0.026	0.080	0.013	-0.037	0.153	-0.036	-0.104	-0.077	-0.084	-0.089	1.000													
18. year08	-0.013	0.038	-0.044	-0.028	-0.077	-0.055	-0.012	-0.012	0.038	-0.017	-0.048	0.051	-0.039	-0.036	-0.039	-0.041	-0.031	1.000												
19. year10	0.032	-0.050	0.236	-0.041	-0.071	-0.063	-0.027	-0.027	-0.014	-0.039	0.010	0.031	-0.011	-0.081	-0.088	-0.093	-0.070	-0.070	1.000											
20. year11	-0.101	-0.116	0.068	0.235	0.069	-0.067	-0.022	-0.022	0.114	-0.031	-0.080	0.052	-0.059	-0.064	-0.070	-0.074	-0.056	-0.026	-0.058	1.000										
21. year12	0.143	0.083	0.046	-0.046	-0.049	-0.076	-0.031	-0.031	0.145	0.122	0.038	-0.130	-0.008	-0.090	-0.099	-0.104	-0.079	-0.036	-0.082	-0.065	1.000									
22. year13	-0.012	-0.002	-0.020	-0.021	-0.051	-0.118	-0.027	-0.027	-0.051	0.339	0.133	-0.111	-0.048	-0.081	-0.088	-0.093	-0.070	-0.033	-0.074	-0.058	-0.082	1.000								
23. year14	-0.015	0.053	-0.080	-0.006	0.029	-0.033	-0.022	-0.022	0.115	-0.023	-0.060	-0.055	0.056	-0.064	-0.070	-0.074	-0.056	-0.026	-0.058	-0.046	-0.065	-0.059	1.000							
24. year15	0.008	-0.167	-0.087	-0.060	-0.087	-0.038	-0.026	-0.026	0.021	-0.037	-0.005	0.110	-0.124	-0.077	-0.084	-0.089	-0.067	-0.031	-0.070	-0.056	-0.079	-0.070	-0.056	-0.079	-0.070	-0.056	-0.079	-0.070	-0.056	1.000
25. year16	0.029	-0.071	0.043	-0.048	-0.056	0.172	0.206	-0.023	-0.077	-0.033	-0.096	0.113	-0.032	-0.069	-0.076	-0.080	-0.060	-0.028	-0.063	-0.050	-0.070	-0.063	-0.050	-0.060	-0.060	-0.070	-0.063	-0.050	-0.060	1.000
26. year17	-0.065	0.081	-0.102	-0.027	0.110	0.420	0.165	-0.028	-0.085	-0.040	0.036	-0.007	0.022	-0.084	-0.091	-0.096	-0.073	-0.034	-0.076	-0.060	-0.085	-0.076	-0.060	-0.073	-0.065	-0.073	-0.065	-0.061	-0.065	1.000
27. year18	-0.008	0.145	-0.080	-0.066	0.020	0.043	-0.022	-0.022	0.076	-0.031	-0.013	-0.005	-0.018	-0.065	-0.071	-0.075	-0.056	-0.026	-0.059	-0.047	-0.066	-0.059	-0.047	-0.056	-0.050	-0.047	-0.056	-0.050	-0.061	1.000
28. year19	0.113	0.013	-0.007	-0.025	-0.042	0.022	-0.002	-0.002	0.015	-0.003	-0.008	0.006	-0.009	-0.006	-0.006	-0.007	-0.005	-0.002	-0.005	-0.004	-0.006	-0.005	-0.004	-0.005	-0.004	-0.005	-0.004	-0.005	-0.004	1.000