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Restructuring through Spinoffs: The Effect on Shareholder Wealth

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Abstract

This paper investigates the shareholder wealth created through spinoff restructuring at Oslo Stock Exchange, over the period 1991-2010. By using a proxy for the transaction announcement, I find no support for an abnormal return in this period except for small fraction spinoffs. However, significant positive abnormal returns over a period reaching from 231 trading days before the spinoff until the first day of separate trading for the divested firms, is documented for cross-industry transactions, small fraction transactions as well as my whole sample. The study also provides significant results of long-run post abnormal returns for the spun-off companies up until 756 trading days after the divestiture. Finally, I find the portfolios of respectively small fraction- as well as own-industry spinoffs, to perform significantly better than their counterparts of large fraction- and cross-industry spinoffs.

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Introduction

Varying with time, corporate transactions such as divestitures, mergers, acquisitions and joint ventures are common approaches in order to execute strategies and reallocate resources. The 1950s confidence to economies of scope and trend towards increased diversification, where reversed during the 1980s (Comment and Jarrell 1995). Focus on conglomerate discounts and core business through restructuring, received on the other hand extensive attention among corporations. Managers were urged to streamline and specialize the firms operations, whereas Comment and Jarrell (1995) later proved this to be consistent with maximization of shareholder wealth.

Additional evidences enhancing the theory of diversified firms trading at a discount, where documented by Berger and Ofek (1995). Through calculating standalone values for individual business segments within conglomerates, significant results revealed the existence of conglomerate discounts. Moreover, they found that although tax benefits and increased debt capacity was beneficial if successfully implemented, cross subsidization and overinvestment's contributed with a proved average loss between 13% and 15%.

Regarded as the mirror image of mergers, several researchers have proven that divestitures generate value (Comment and Jarrell 1995; Vijh 2002; Miles and Rosenfeld 1983; Burch and Nanda 2003). However, dependent upon the financial situation, the divestiture can either be done as a private or public transaction. A frequently used public transaction is spinoff: The parent company gives up control over the business unit by distributing subsidiary shares to the parent shareholders (Koller et al.), thereby creating a separate public company. Unlike initial public offerings (IPOs) and carveouts, pure spinoffs do not raise equity through sale of shares to new shareholders in the stock market. Thus a pure spinoff is not a direct action exercised in purpose of raising capital and covering liquidity needs for the parent company. Furthermore, the transaction forms two separate entities that can easily be analysed.

Restructuring through spinoffs are accompanied by severe redeployment of assets and corporate governance. Nevertheless, among the transaction motives are: Reduced potential for misallocation of capital, reduced information asymmetry, elimination of cross subsidies, prevent agency problems, and enable improved investment decisions (Krishnaswami and Subramaniam 1999). On the other hand, such as lower human capital and elimination of synergies might negatively affect the firm.

Another interesting characteristic of spinoffs is the subsidiaries similarity to IPOs, where both transactions involve newly traded shares in the market. But whereas comprehensive research, including Ritter (1991) and Loughran and Ritter (1995), reveals severe long-run underperformance of IPOs, less knowledge has been obtained for spinoffs. Nevertheless, Cusatis, Miles, and Woolridge (1993) found significantly positive long-run abnormal returns for these divesting firms.

In this thesis I examine the value created through spinoffs at the Oslo Stock Exchange, over the period 1991-2010. The study will start out by looking for abnormal returns around the announcement of transaction. However, due to limited access of exact announcement-date for several firms, a proxy representing this event will be generated. Thereafter the paper investigates the long-run performance for parent company, subsidiary company and an artificial reconstruction of the original firm. Finally, I will test the implications of the transaction size (measured as the fraction) and whether cross-industry spinoffs generate higher returns relative to own-industry spinoffs.

By determining whether spinoffs increases shareholder wealth, researchers contributes with valuable knowledge for the economic literature. Among other things, it enables firms, investors and strategists to commit better decisions. Although the spinoff-effect has already been widely proven, less research has been done in the Norwegian market. Furthermore, if my data yields significant long-run abnormal returns, as suggested by literature, it will not only support previous theories. This also contradicts the basic assumption of efficient markets stating that investors, on average, should not be able to earn a higher return than justified by the market risk of the investment (Fama 1991). Thus it could be a

valuable contribution for investors trying to predict future stock returns, and thereby earning excess returns on their investments.

Literature Review

Along with an increasing focus on core business through restructuring and conglomerate discounts, researchers have tried to investigate the value created through spinoffs. However, the literature is still characterized by lack of knowledge, especially when it comes to hypotheses explaining the origins of abnormal returns from equity carveouts and spinoffs. Nevertheless, in this section I will highlight some of the most relevant research, which constitutes the foundation for the empirical design of my thesis.

Spinoff announcements

Based on 55 securities listed in the US market over the period 1963-1980, Miles and Rosenfeld (1983) found that voluntary spinoff announcements had a positive effect on shareholder wealth. Including the full 181-day observation period, they also found that abnormal returns where significant for both preceding interval and announcement day. Furthermore, they discovered that these announcements where usually followed up by a period of positive abnormal returns. This was in striking contrast to previous research on voluntary selloffs, showing no significant influence on the stock prices of divesting firms. Finally, their work found that large spinoffs had a stronger positive effect on shareholder wealth relative to small spinoffs.

Hite and Owers (1983) also discovered evidence for positive abnormal returns, from 50 days prior to the announcement through completion of the spinoff. Nevertheless, by extending the sample to account for transaction rationales, positive gains existed for firms that facilitated mergers or that separated diverse operating units. Companies responding to legal and/or regulatory difficulties experienced on the other hand negative gains. By looking at a two-day interval surrounding the first press announcement, the researchers documented positive and significant results for all categories. However, they did not find support for

their hypothesis, that the stockholder gain represented wealth transfers from senior security holders such as bondholders and preferred stockholders.

Predictions explaining spinoff gains

In order to narrow down the reasons for the proved announcement effects, Davidson Iii and McDonald (1987) examined transactions which created royalty trusts. By doing so, they could observe the effect of having an explicit tax benefit lying behind the spinoff. This yielded presence of large and significant abnormal returns for the days surrounding the announcement of trust creation. The elimination of double taxation, on trust income, should in their point of view be sufficient to create this value.

Allen, Lummer et al. (1995) combined spinoff discoveries with previous research on acquisitions, by processing a hypothesis called "correction-of-a-mistake". They explored whether the excess stock returns around spinoff announcements, could be attributed to the reversal of prior takeover losses. This re-creation of value destroyed theory, contained three predictions: (1) "The acquirer's stock price reaction around the announcement of a takeover that later becomes a spinoff is negative"; (2) "the average stock price reaction around spinoffs of prior acquisitions is more positive than the average stock price reaction around spinoffs in general"; (3) "the stock price reaction around the announcement of spinoffs of prior acquisitions is positive, but is negatively correlated with the stock price reaction around the original acquisition" (Allen et al. 1995). Through analysing their sample, statistical significance where only found for the first and third predictions. Thereby, suggesting that unsuccessful acquisitions could potentially be corrected through a reversal of the earlier transactions.

Daley, Mehrotra et al (1997) tested a theoretical prediction claiming that cross-industry spinoff distributions created more value then own-industry spinoffs. This was simply done using the standard industrial classification (SIC) system, made by the United States Government. Not surprisingly, their results indicated significant value creation around the announcement of cross-industry spinoffs only. This was in line with the hypothesis for corporate focus, conglomerate discounts and consistent with previous discoveries from asset sale studies.

However, they also investigated whether the observed value increase could be related to cross-subsidizing of poorly performing units and/or improvements in operating performance. Although cross-subsidizing proved to be insignificant, improvements in operating-return-on-assets was statistically significant for cross-industry spinoffs. The research therefore supported the prediction that increased corporate focus has a positive effect on shareholder wealth.

Krishnaswami and Subramaniam (1999) emphasized the more unexplored explanations for conglomerate discounts, suggested by practitioners and press. Based on their theories they investigated the so called information hypothesis, proposing that spinoffs increase shareholder wealth by mitigating information asymmetry about the company. This involves increased clarity of both cash flows and operating efficiency, for the individual divisions within the firm. In inequality to separate entities, they claimed that underperformance in one unit of a conglomerate would spill over and affect other units. Empirical analysis's showed that firms engaging in spinoffs had higher levels of information asymmetry before the transaction, compared to industry matched counterparts. However, as predicted, significant reduction in information asymmetry was documented after completion of the spinoff. Controlled for negative synergies between divisions, further studies discovered a positive relationship between the degree of information asymmetry and gain in firm value. Moreover, they found increased probability for spinoff transactions if the company had liquidity needs or high growth opportunities. Nevertheless, in the two year post-period, significantly more capital was raised both in amount and frequency. This was consistent with Dierkens (1991) findings, that firms time their equity issue announcement when their information asymmetry is relatively low.

Through loss of collateral and reduced liquidation value, Parrino (1997) argued that spinoffs increased the riskiness of the bondholders claim. By studying the Marriott spinoff in 1993, he discovered both a decline in the overall enterprise value as well as a wealth transfer from senior security holders to shareholders. In order to find systematic evidence supporting this wealth expropriation hypothesis, Maxwell and Rao (2003), collected comprehensive data on spinoff announcements. Consistent with the "Mariott Case", significant results proved that bondholders on average received a negative abnormal return. This

emphasized a wealth transfer from bondholders to common stockholders, and was a breakthrough for the corporate focus literature. However, unlike Parrino's (1997) findings, the total firm value increased on a spinoff announcement. This advocated that the wealth expropriation hypothesis was only a partial explanation for the stockholder gain. Additionally, Maxwell and Rao (2003) where able to find several relationships: (1) "The loss of collateral, measured by the relative size of the spun-off firm, is positively related to stockholder returns and is negatively related to bondholder returns"; (2) "the risk of a firm's debt, measured by bond ratings and leverage ratios, negatively influences bondholder returns"; (3) "consistent with a loss to bondholders, firms are more likely to have their credit rating downgraded than upgraded after a spinoff"; (4) "consistent with the wealth transfer hypothesis, losses to bondholders tend to be more severe, the larger the gains to shareholders" (Maxwell and Rao 2003).

Veld and Veld-Merkoulova (2008) re-examined the stockholder-bondholder conflict, proposed by earlier research on corporate spinoffs. Through contradicting both Maxwell and Rao (2003) and Parrino (1997), they claimed that the wealth transfer theory was inconsistent with more modern markets. Based on data covering the period from 1995 to 2002, evidence showed that both stocks and straight bonds experienced significant abnormal returns surrounding the announcement. Moreover, by dividing the bond sample in two sub-periods, they observed insignificant negative abnormal returns between 1995 and 1997, whereas positive and significant results where proven in the period 1998-2002. The discovery thereby suggested that previous experiences had resulted in an immunization and adaption against the stockholder-bondholder conflict.

By using a spinoff sample, Burch and Nanda (2003) explored the field of conglomerate discounts and diversity costs. They were able to address improvements in overall value, through reconstructing the original firm after the transaction and use market-to-book values for diversity. This approach raised critique against previous research, claiming that methods relying on standard industrial classification (SIC) system could yield noisy and biased results. Nevertheless, improvement in excess value where proved by Burch and Nanda to be an implication of both reductions in diversity and changes in investment

policy. Thereby valuable support was given to the theory of conglomerate discounts and the diversity cost hypothesis.

Consistent with previous research, Ahn and Denis (2004) observed an increase in firm value and an elimination of the conglomerate discount following spinoffs. Evidence where provided supporting the inefficient investment hypothesis, arguing that changes in investment policy contributed to these well investigated discoveries. Through studying changes in the allocation of financial resources within conglomerates, they found a significant increase in efficiency after the divestiture. In line with this, reliable relationship where provided between change in firm value around the spinoff and change in investment efficiency. Finally, they concluded that improved allocation of financial resources could not solely account for the change in excess value.

Long-run stock market performance following spinoff transactions

Cusatis, Miles et al. (1993) extended the previous research made on abnormal returns around spinoff announcements, to include for long-run performance. Since both IPOs and spinoff subsidiaries represents newly traded securities in the market, equal characteristics would be reasonable. However, unlike IPOs who appears to underperform the market (Ritter 1991), they found that spinoff subsidiaries, parent companies and a reconstruction of the original firms yielded significant long-run abnormal returns. By working on the prediction that these findings were an implication of restructuring activity, they discovered an unusually high frequency of takeovers for both the spinoffs and parents. As previous empirical results show that target shareholders on average receives a 30% premium over their stock's announcement price (Koller et al.), the abnormal return was positive but insignificant when removing the firms involved in takeover. Along with these striking results, critics were raised stating that earlier research had underestimated the effect on shareholder wealth created by spinoffs. Cusatis, Miles et al. (1993) therefore interfered with the merging and acquisition (M&A) literature, suggesting that spinoffs increased synergies for potential bidders and established low-cost methods to transfer company assets.

Desai and Jain (1999) supported the research performed by Daley, Mehrotra et al (1997), claiming that cross-industry spinoff distributions created more value than own-industry spinoffs. However, these studies did not include the post-spinoff long-run stock market performance. Based on this, further investigation was dedicated directly to the corporate focus literature. In line with their expectations, significant results viewed that focus increasing (cross-industry) spinoffs provided a larger abnormal return than non-focus increasing (own-industry) spinoffs, for both the announcement period as well as in the long-run. By running cross-sectional regressions, stock market performance and operating performance proved to be significantly related to change in focus. Finally, they discovered that companies implementing non-focus increasing spinoffs were often motivated by separating poorly performing subsidiaries. Debt reduction, transferring of debt and financial distress, were on the other hand insignificant triggers for these transactions.

Hypotheses

Previous research on different stock exchanges over the world, presents significant results concluding that spinoff announcements has a positive effect on shareholder wealth. As addressed in the literature review, several hypotheses seek to explain this anomaly. So far, no paper has managed to find an exact factor solely accounting for the proved abnormal returns. However, based on all this empirical research, I formulate the first hypothesis which is expected to yield significant results at Oslo Stock Exchange as well:

Hypothesis 1;
"Companies experiences positive abnormal returns around the announcement of spinoffs"

Additionally, with inspiration from more modern discoveries, I also wish to investigate the long-run stock performance from spinoff transactions. Associated with severe restructuring activity, post-spinoff findings indicate that market participants underestimate the shareholder wealth created through spinoffs. I

thereby form further expectations of positive long-run abnormal returns following spinoffs, up until 756 trading days after the transactions:

Hypothesis 2;
"Parent companies experiences positive abnormal returns over an extended period following the spinoff transactions"

Hypothesis 3;
"Subsidiary companies experiences positive abnormal returns over an extended period following the spinoff transactions"

Hypothesis 4;
"The parent-subsidiary reconstructions experiences positive abnormal returns over an extended period following the spinoff transactions"

In order to investigate the implications of the transaction size (measured as the fraction) as well as the effect of cross-industry (focus increasing) spinoffs relative to own-industry (non-focus increasing) spinoffs, I simply reallocate the portfolios. Nevertheless, equivalent with previous research combined with theories of conglomerate discounts, the following sub-hypotheses are likely to yield interesting results: The large spinoffs should generate higher abnormal returns relative to small spinoffs as the value creation should be proportional with the fraction size. Secondly, cross-industry spinoffs are expected to generate higher abnormal returns then own-industry spinoffs, as they should have a greater impact on the reduction of a firms' diversity (diversity cost hypothesis). By constituting the foundation for my remaining research at Oslo Stock Exchange, I further formulate two hypotheses:

Hypothesis 5;
"Large spinoff fractions generates higher abnormal returns relative to small spinoff fractions"

Hypothesis 6;
"Cross-industry spinoffs generates higher abnormal returns then own-industry spinoffs"

Data

In this thesis I define a spinoff as a transaction where the parent company gives up control over a business unit by distributing subsidiary shares to the parent shareholders, and thereby creating a separate public company. This is normally done through a per-rata stock distribution to the parent stockholders. A stricter definition of my events was not preferable, as it required unavailable information and induced a comprehensive sample reduction.

With assistance from the Oslo Stock Exchange administration, I where able to obtain a complete list over reported spinoffs at the OSE in the period between 1985 and 2010. However, by only containing security id of parent company and date of event (completion of the spinoff takes place), a comprehensive data search where required. In order to obtain the spinoff subsidiary, I went through both the Oslo Stock Information (OBI) database and news archives. This identified a total of 71 transactions, whereas several of them were excluded due to statistical interactions with the methodology in this thesis.

Table 1 shows both the distribution of spinoffs over time, as well as the mean market value (closing equity market value at the first day of separate trading) of the spun-off firms each year. First of all the statistics reveals that the average transaction size varies severely, whereas year 1993, year 1995, year 1996 and year 2006 represents outliers. Secondly, the number of spinoffs per period only reaches from 0 to 8, even though the transaction frequency is highly volatile.

Table 1

Descriptive statistics for the spinoff transactions over the period 1991-2010

Based on my original sample consisting of 71 announcements, I excluded stocks that did not fulfill my spinoff definition, companies performing more than one spinoff within a year as well as other transactions that inferred with the methodology of this thesis. The final data used in the calculation of abnormal returns consists of 66 spinoffs over the period 1991-2010.

Panel A: Descriptive statistics

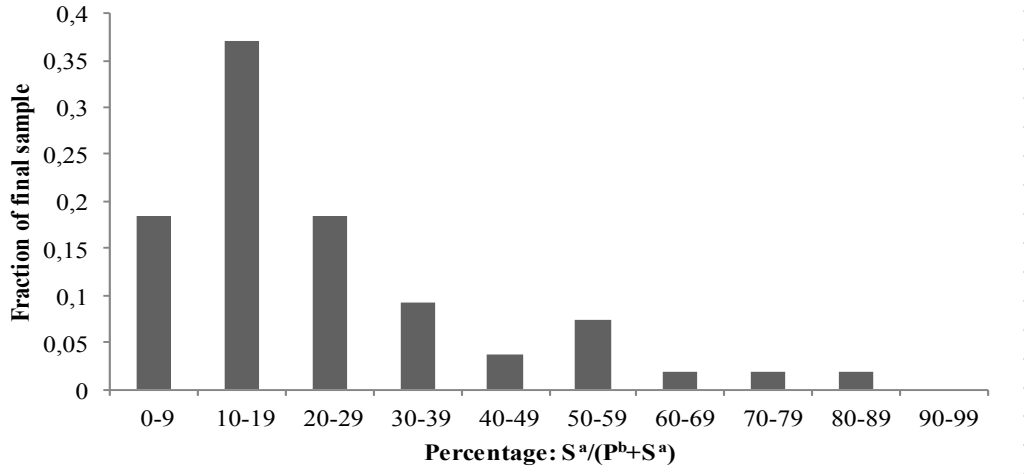
Year	Number of spinoffs	Mean market value[a] (NOK millions)	Year	Number of spinoffs	Mean market value[a] (NOK millions)
1991	2	372,8	2001	8	608,5
1992	1	385,2	2002	2	145,2
1993	2	39,0	2003	1	117,8
1994	0	0,0	2004	2	145,2
1995	6	60,4	2005	4	414,4
1996	2	4 561,2	2006	3	1 126,6
1997	4	649,1	2007	7	370,6
1998	7	86,5	2008	2	98,7
1999	5	213,5	2009	0	0,0
2000	6	122,5	2010	2	763,2

[a]Closing equity market value (share price spinoff × number of shares outstanding) is calculated at the first day of separate trading

Moreover, I calculate the market value of the subsidiary company relative to the original parent company at the first day of separate trading. This information indicates a positive skewed distribution displayed in figure 1, whereas approximately 83% of the transactions lie in the interval between 0% and 39%. Nevertheless, the data enables me to create exclusive portfolios with either large- or small spinoff fractions. By doing so, I am able to test the hypothesis that large spinoffs have a stronger positive effect on shareholder wealth relative to small spinoffs (based on fractions). The group of large transactions includes those firms whose subsidiary company have an equity market value of 20% or more of the equity market value of the original reconstructed firm, at the first day of separate trading $(S^a/[P^b + S^a] \geq 0{,}20\,;\ See\ figure\ 1\ for\ further\ information)$. I argue that this will yield relevant results, even though the portfolios containing large transactions has higher spread internally relative to the portfolios containing small transactions.

Figure 1

Distribution of the spinoff fractions over the period 1991-2010



[a]Equity market value of subsidiary
[b]Equity market value of parent

Figure 1 displays the distribution of $S^a/[P^b + S^a]$ in my final sample of 66 transactions. This implies the equity market value of the subsidiary company as a percentage of the equity market value of the original reconstructed parent company (parent company and subsidiary company) at the first day of separate trading.

Based on Mitchell and Stafford (2000) asserting that daily returns might yield noise in the test statistics, I generate returns through intervals of 21 trading days[1]. In order to include for dividend payments, adjusted stock returns and market values were retrieved from the OBI database by Oslo Stock Exchange (Ødegaard 2011). My sample reaches from 231 trading days (day -231) prior to completion of the spinoff, through 756 trading days (day 756) after the transaction. Due to several varying sequences of price-sensitive announcements and press-releases in the pre-spinoff interval, the individual announcement events have different lengths of time. Unfortunately, all this relevant information is not available for my sample of securities, forcing me to use a proxy representing the announcement period.

In order to measure the companies' performance, I employ several benchmarks described more comprehensive in the methodology. However, both the Oslo Børs Market Index and the different industry indexes were generated as well as extracted from Datastream by Thomson Reuters. Moreover, by continuing the OBI database and news archives search, I gathered information concerning

[1] 21 trading days represents a regular calendar month

industry classification codes (GICS-codes), delisting's[2], acquisitions[3] and other corporate transactions during the observation period.

Panel A in table 2 lists the sector breakdown for the spinoff transactions, using the GICS system introduced by Morgan Stanley Capital International (MSCI). The parent companies span all 10 sectors in the GICS system, whereas the subsidiary companies only span 8 sectors. However, the largest concentrations for both groups are within energy, industrials and information technology, accounting for respectively 69.7% of the parent companies and 76.9% of the subsidiary companies. This pattern corresponds well with the structure of Oslo Stock Exchange, which is severely clustered into these few sectors (including the financial sector) over the testing period (Ødegaard 2011).

Table 2

Sector classification of the spinoffs at event date

Information about sector classifications are based on the GICS system, retrieved from the OBI database. Parent- or subsidiary companies denied listing or by other reasons not registered on Oslo Stock Exchange at the event date, are excluded from this table. The final sample consists of 64 parent companies and 52 subsidiary companies from the period 1991-2010.

GICS[a]	Industry	Parents	Subsidiaries
	Panel A: Sector classification full sample		
10	Energy	13	8
15	Materials	2	3
20	Industrials	12	15
25	Consumer Discretionary	7	1
30	Consumer Staples	2	1
35	Health Care	2	2
40	Financials	5	5
45	Information Technology	21	17
50	Telecomunication Services	1	0
55	Utilities	1	0
	Panel B: Sector classification cross-industry sample		
10	Energy	5	3
15	Materials	0	2
20	Industrials	2	8
25	Consumer Discretionary	3	0
30	Consumer Staples	1	0
35	Health Care	1	1
40	Financials	3	4
45	Information Technology	2	1
50	Telecomunication Services	1	0
55	Utilities	1	0

[a]Global Industry Classification Standard

[2] If a company was delisted, the longest available return was used to represent the whole period.
[3] If a company was acquired, the longest available return was used to represent the whole period.

Moreover, I narrow down the sample by characterize all companies spinning off a subsidiary within the same GICS sector code as an own-industry transaction. Based on this definition, panel B shows the remaining firms performing a cross-industry spinoff. However, even though the sample only counts a total of 19 transactions, it still weights towards the same sectors as in panel A. This filtering enables me to examine my last hypothesis; whether the cross-industry (focus increasing) transactions yield higher returns and lower significance level then the own-industry (non-focus increasing) transactions.

Methodology

Several approaches are available in order to measure abnormal stock returns, whereas comprehensive research addresses the empirical power and test statistics in these methodologies. With pros and cons for each technique, the literature contains inconsistent results for preferred methodology. Nevertheless, statistical inference can either be drawn from a calendar-time framework (factor/market models) or an event-time framework (buy-and-hold abnormal returns and cumulative abnormal returns). Although a substantial difference in anomalies, they all struggle with a common problem pointed out by defenders of market efficiency: The sample and their actual returns must be compared to some kind of benchmark containing "normal returns". Choice of benchmark and framework is difficult to justify, and may easily lead to biased test statistics. Based on this, I will start out by shortly review some of the most recognized methodology contributions, constituting the foundation for my statistics.

By criticizing the matched firm technique for not adequately adjust for risk, Espen Eckbo, Masulis et al. (2000) accused this method of generating seriously biased estimates. On the other hand, they highlighted the factor model as a more reliable tool for measuring long-run abnormal stock returns. This was in striking contrast to previous research by Barber and Lyon (1997), claiming that the method of matching sample firms to control firms yielded well-specified test statistics in random samples. Moreover, Barber and Lyon (1997) argued that the use of reference portfolios could generate test statistics that are misspecified. However, in this paper I will calculate the equally weighted (EW) Cumulative Abnormal

Return (CAR) as well as the EW Buy-and-Hold Abnormal Return (BHAR), both of them with reference portfolios as benchmarks. By doing so the misspecification of test statistics can largely be traced to: New listing bias, overlapping returns, rebalancing bias and skewness bias (Barber and Lyon 1997).

The benchmark-adjusted return (AR) and CAR for firm i in interval t is expressed in the following way:

$$AR_{i,t} = R_{i,t} - R_{Benchmark,t}$$

$$CAR_i = \sum_{t=1}^{T} AR_{i,t}$$

Furthermore, in order to calculate the mean CAR[4] I take the EW average of the individual CARs:

$$\overline{CAR} = \left(\frac{1}{N}\right)\sum_{i=1}^{N} CAR_i$$

Although Lyon, Barber et al. (1999) favors the methodology of BHAR, they highlights that the CAR approach yields less skewed abnormal returns. Suffering mostly from new listing- and rebalancing bias, less statistical problems arises when processing the data. On the other hand, the CAR also struggles with sampling biases (size, book-to-market, pre-event returns, calendar clustering, industry clustering and overlapping returns) and can be biased predictors of BHARs (Barber and Lyon 1997). This might lead to incorrect inferences. Barber and Lyon (1997) also claims that the indicated magnitude of wealth created, does not correspond to the returns generated by the benchmark.

The BHAR is expressed in the following way:

$$BHAR_{i,T-t} = \prod_{t=1}^{T}\left(1 + R_{i,t}\right) - \prod_{t=1}^{T}\left(1 + R_{Benchmark,t}\right)$$

Whereas the mean BHAR[5] contains the EW average of the individual BHARs:

$$\overline{BHAR} = \left(\frac{1}{N}\right)\sum_{i=1}^{N} BHAR_i$$

[4] The t-statistics for the mean CAR is calculated as: $\frac{\overline{CAR_t}}{\sigma(CAR_t)/\sqrt{n}}$

[5] The t-statistics for the mean BHAR is calculated as: $\frac{\overline{BHAR_t}}{\sigma(BHAR_t)/\sqrt{n}}$

By conducting estimates for abnormal returns that easily reflects investors' experiences, researchers seem to prefer BHAR. Moreover, as previously mentioned, Barber and Lyon (1997) argues that CAR is a biased predictor of BHAR. However, the measure does suffer from new listing biases and skewness biases, generally yielding negative bias in the test-statistics.

Preferably, I would like to measure abnormal returns using both market models and benchmarks such as: The CAPM model, Fama & French 3-Factor model, a six-factor model with pre-specified macroeconomic factors suggested by Espen Eckbo, Masulis et al. (2000), different reference portfolios and matched-firms. However, due to limitations of my dataset (such as lack of book-to-market ratios) and the scope of this paper, I will compare the transaction returns with the following benchmarks:

- The announcement period returns will be compared against a value-weighted (VW) Norwegian market index, constructed by Thomson Reuters Datastream. This benchmark includes dividend payments, and represents the theoretical aggregate growth in the value of its constituents. The intuition behind this benchmark is that pre-spinoff companies are on average more diversified than the post-spinoff companies.

- As previously mentioned, companies increases focus on core business through spinoffs in general. However, this varies severely, especially with respect to own-industry spinoffs versus cross-industry spinoffs. Nevertheless, I compare the long-run performance of parent- and subsidiary companies against their respective industry indexes. These benchmarks, constructed by Thomson Reuters Datastream, include dividend payments and represent the theoretical aggregate growth in the value of their constituents.

- Post-spinoff returns for the reconstructed artificial firms are compared against the same benchmark as for abnormal returns around announcement. In order to reconstruct the original firm, I weight each parent- and subsidiary company by its respective relative market values at the transaction date. This enables me to calculate the raw returns, and

thereby the long-run performance for the reconstructed parent-subsidiary companies.

Oslo Stock Exchange reported 258 listed companies in 2010, developed from 172 listed companies in 1991 (Ødegaard 2011). Attention should be dedicated to the possibility that some of the benchmarks used, might be influenced by the spinoff-events themselves. Through enabling such overlapping returns, my approach yields bias in the test statistics. This limitation is likely to be most severe in the industry indexes, as these benchmarks have the highest probability of containing large fractions of spinoff companies.

In order to compare the transaction performances in hypothesis 5 and hypothesis 6, I use a test for inference between dependent samples (Triola 2010). The difference (D) in return (R) between portfolio i1 and i2, in interval t is expressed in the following way:

$$D_t = R_{i1,t} - R_{i2,t}$$

By relying on this method the t-statistics[6] will be sensitive against small samples, which might affect the robustness of some calculated t-statistics.

Empirical results

Pre-spinoff performance

After evaluating the information gathered from press releases, board decisions and rumors, I include day -231 through day -21 in the proxy representing the spinoff announcements. As reported in table 3, neither the CAR calculations nor the BHAR calculations for the sample as a whole support my first hypothesis with significant t-statistics over this period. However, both of them yield positive abnormal returns of respectively 7.0% (mean CAR) and 18.5% (mean BHAR).

[6] The t-statistics for the dependent samples is calculated as: $\frac{(1/T)\sum_{t=1}^{T}(D_t-\mu)}{\sigma(D)/\sqrt{n}}$

Table 3

Abnormal returns for spinoff announcements

The reaction to spinoff announcements are measured using cumulative abnormal returns as well as buy-and-hold abnormal returns, both of them with a value weighted (VW) Norwegian market index as benchmark. Monthly benchmark-adjusted returns are calculated as the monthly raw return on a stock minus the monthly benchmark return for the corresponding 21 trading day period. The portfolios are rebalanced every 21 trading day, and are based on the final sample of 66 transactions over the period 1991-2010. The first day of separate trading for parent companies and subsidiary companies are represented by 0 in the table below. Over the trading period day -231 through day 0, I find that respectively 67% (CAR) and 61% (BHAR) of the firms contributes with positive return to their portfolios.

Trading period	Mean AR_t	t-stat[a]	Mean $CAR_{-231,t}$	t-stat[b]	Mean $BHAR_{-231,t}$	t-stat[c]
-210	-1,0 %	-0,53	-1,0 %	-0,53	-1,0 %	-0,53
-189	3,3 %	1,13	2,3 %	0,81	1,4 %	0,54
-168	3,7 %	1,79*	6,0 %	1,71*	6,1 %	1,59
-147	0,5 %	0,20	6,5 %	1,62	5,5 %	1,33
-126	0,3 %	0,17	6,7 %	1,41	7,2 %	1,35
-105	0,3 %	0,12	7,0 %	1,31	8,6 %	1,34
-84	2,1 %	1,00	9,0 %	1,58	11,9 %	1,44
-63	1,5 %	0,93	10,5 %	1,69*	15,4 %	1,49
-42	-3,2 %	-2,02**	7,3 %	1,09	13,6 %	1,26
-21	-0,3 %	-0,17	7,0 %	0,98	18,5 %	1,20
0	7,6 %	1,88*	14,6 %	1,86*	24,4 %	1,70*

[a]The t-statistics test the hypothesis that the mean AR equal zero
[b]The t-statistics test the hypothesis that the mean CAR equal zero
[c]The t-statistics test the hypothesis that the mean BHAR equal zero
* Denotes significance at the 10% level
** Denotes significance at the 5% level
*** Denotes significance at the 2% level

By looking at the calculations surrounding the different trading intervals, I find significant mean positive ARs on a 10% level for; day -189 through day -168 and day -21 through day 0. On the other hand, day -63 through day -42 shows a negative AR significant on a 5% level. These divergent results becomes less apparent when looking at the mean CARs, where the regressions yields significant positive results on a 10% level for the trading periods; day -231 through day -168 (mean CAR equal to 6.0%), day -231 through day -63 (mean CAR equal to 10.5%) and day -231 through day 0 (mean CAR equal to 14.6%). Moreover, with a t-statistic of 1.70 significant on a 10% level and a mean BHAR of 24.4% over the corresponding last period (day -231 through day 0), I find further support for the theory of conglomerate discounts.

Based on the results in table 3, it seems like the last trading interval (day -21 through day 0) is important for the value creation through spinoffs. Experience reveals that the execution of corporate transactions on stock exchanges is severely dependent on the macroeconomic environment, as well as other externalities. It

thereby seems like the confirmation of a successful transaction is vital for a full release of a potential conglomerate discount, as the last trading interval normally possesses this information.

Post-spinoff performance

In order to investigate the post-spinoff performance for the total sample of transactions, I continue to measure abnormal returns with CAR and BHAR. However, in this section the benchmarks will differ from the announcement period, as described more comprehensive in the methodology.

Table 4

Long-run cumulative abnormal returns for spinoff transactions

The post-spinoff performance below is measured using cumulative abnormal returns, where each of the three portfolios uses different benchmarks. Panel A and panel B, contain firms that are paired against individual VW Norwegian industry indexes, whereas the firms in panel C are compared against a VW Norwegian market index. Monthly benchmark-adjusted returns are calculated as the monthly raw return on a stock minus the monthly benchmark return for the corresponding 21 trading day period. The portfolios are rebalanced every 21 trading day, and are based on the final sample of 66 transactions over the period 1991-2010. The first day of separate trading for parent companies and subsidiary companies are represented by 0 in the table below.

	Holding period (CAR)		
	(0-252)	(0-504)	(0-756)
	Panel A: Parent Companies		
Mean CAR	-3,2 %	-8,5 %	-7,5 %
t-statistic[a]	-0,31	-0,63	-0,52
Percentage positive	43,8 %	46,9 %	50,0 %
Firms delisted or acquired	6,3 %	16,7 %	10,0 %
	Panel B: Subsidiary Companies		
Mean CAR	27,8 %	45,0 %	52,5 %
t-statistic[a]	2,21**	2,20**	2,61***
Percentage positive	58,8 %	63,5 %	59,6 %
Firms delisted or acquired	13,7 %	30,8 %	38,5 %
	Panel C: Reconstructed Companies		
Mean CAR	5,7 %	4,0 %	8,5 %
t-statistic[a]	0,56	0,31	0,70
Percentage positive	58,0 %	56,9 %	58,8 %

[a]The t-statistics test the hypothesis that the mean CAR equal zero
* Denotes significance at the 10% level
** Denotes significance at the 5% level
*** Denotes significance at the 2% level

Panel B in table 4 presents support for my third hypothesis, with significant t-statistics on a 5% level over the two trading periods day 0 through day 252 (mean CAR equal to 27.8%) and day 0 through day 504 (mean CAR equal to 45.0%), for

the subsidiary companies. Furthermore, the trading period day 0 through day 756 yields a mean CAR of 52.5% and are significantly different from zero on a 2% level. These results corresponds well with the BHAR measurements presented in table 5, where the subsidiary companies generates significant t-statistics on a 5% level over the trading periods day 0 through day 504 (mean BHAR equal to 48.6%) and day 0 through day 756 (mean BHAR equal to 49.6%). On the other hand, the portfolios of parent companies and reconstructed companies do not generate significant results in any of my regressions.

Table 5

Long-run buy-and-hold abnormal returns for spinoff transactions

The post-spinoff performance below is measured using buy-and-hold abnormal returns, where each of the three portfolios uses different benchmarks. Panel A and panel B, contain firms that are paired against individual VW Norwegian industry indexes, whereas the firms in panel C are compared against a VW Norwegian market index. Monthly benchmark-adjusted returns are calculated as the monthly raw return on a stock minus the monthly benchmark return for the corresponding 21 trading day period. The portfolios are rebalanced every 21 trading day, and are based on the final sample of 66 transactions over the period 1991-2010. The first day of separate trading for parent companies and subsidiary companies are represented by 0 in the table below.

	Holding period (BHAR)		
	(0-252)	(0-504)	(0-756)
	Panel A: Parent Companies		
Mean BHAR	1,5 %	5,8 %	-6,3 %
t-statistic[a]	0,16	0,24	-0,35
Percentage positive	39,7 %	34,4 %	37,5 %
Firms delisted or acquired	6,3 %	16,7 %	10,0 %
	Panel B: Subsidiary Companies		
Mean BHAR	20,9 %	48,6 %	49,6 %
t-statistic[a]	1,67	2,14**	2,05**
Percentage positive	51,0 %	51,9 %	50,0 %
Firms delisted or acquired	13,7 %	30,8 %	38,5 %
	Panel C: Reconstructed Companies		
Mean BHAR	8,6 %	17,5 %	6,9 %
t-statistic[a]	0,85	0,83	0,44
Percentage positive	50,0 %	49,0 %	45,1 %

[a]The t-statistics test the hypothesis that the mean BHAR equal zero
* Denotes significance at the 10% level
** Denotes significance at the 5% level
*** Denotes significance at the 2% level

The largest fraction of firms generating positive abnormal returns is discovered within the portfolios of subsidiary companies. This holds for both measurement methods. Secondly, the descriptive statistics also reveal that these firms experienced the highest frequency of delisting's and acquisitions in the post-

spinoff period. As previous empirical research find that target shareholders on average receives an estimated 30% premium over their stock's announcement price (Koller et al.), the abnormal return might be traced to M&A activity. This suggests that the spinoff transactions could increase the synergies for potential bidders, and establish low cost methods to transfer company assets. Conversely, the firms that are dropped by Oslo Stock Exchange for failure to meet listing criteria are not likely to be good performers, and contradict such a hypothesis. Moreover, the subsidiary companies also share equal characteristics with IPOs by representing newly traded securities in the market. However, the results differ severely from findings on IPOs (who tend to underperform the market and peers), as my sample provides significant positive long-term abnormal returns over the corresponding periods.

Large versus small spinoff fractions

The performance of the two subsamples based on the size of the spun-off units are measured using the same methodology as in previous calculations, and could reveal a proportional value creation in my data. As presented in table 6, none of the portfolios containing large spinoff fractions provide statistical support for the presence of abnormal returns within the testing period. This differs severely from the results for small spinoff fractions, which yields both comprehensive abnormal returns as well as significant t-statistics. Panel B1 reports a significance level between 2% and 10% for all calculated CAR periods, except for the interval day -231 through day -210 and the trading period day -231 through day -189. These findings suggest that companies experiences positive abnormal returns around the announcement of small spinoff fractions. Less supportive data towards this hypothesis is on the other hand presented in Panel B2, as it contains insignificant t-statistic for the defined announcement period.

Table 6

Abnormal returns for large/small fraction spinoff announcements

The reaction to respectively large- and small fraction spinoff announcements are measured using cumulative abnormal returns as well as buy-and-hold abnormal returns. Both methods with a VW Norwegian market index as benchmark. Monthly benchmark-adjusted returns are calculated as the monthly raw return on a stock minus the monthly benchmark return for the corresponding 21 trading day period. The portfolios are rebalanced every 21 trading day, and contain 56% large fraction transactions and 44% small fraction transactions over the period 1991-2010. The first day of separate trading for parent companies and subsidiary companies are represented by 0 in the table below.

	Panel A1		*Panel B1*		*Panel C1*	
Trading period	Large mean $CAR_{-231,t}$	t-stat[a]	Small mean $CAR_{-231,t}$	t-stat[a]	Large minus small	t-stat[b]
-210	-3,3 %	-1,08	0,2 %	0,07	-3,5 %	
-189	3,6 %	0,81	2,0 %	0,43	1,6 %	0,188
-168	5,0 %	1,10	10,5 %	1,86*	-5,5 %	-0,501
-147	4,6 %	0,86	12,4 %	2,02*	-7,8 %	-0,756
-126	5,7 %	0,91	16,0 %	2,11**	-10,3 %	-1,032
-105	5,6 %	0,72	17,9 %	2,11**	-12,4 %	-1,263
-84	6,3 %	0,76	21,5 %	2,36**	-15,2 %	-1,564
-63	5,5 %	0,64	24,2 %	2,49***	-18,7 %	-1,93*
-42	5,2 %	0,57	20,9 %	2,12**	-15,7 %	-1,426
-21	-0,4 %	-0,04	21,7 %	1,95*	-22,1 %	-1,86**
0	15,9 %	1,17	26,2 %	2,39**	-10,2 %	-0,558

[a]The t-statistics test the hypothesis that the mean CAR equal zero
[b]The t-statistics test if the CAR of the large/small spinoffs are significantly different
* Denotes significance at the 10% level
** Denotes significance at the 5% level
*** Denotes significance at the 2% level

	Panel A2		*Panel B2*		*Panel C2*	
Trading period	Large mean $BHAR_{-231,t}$	t-stat[a]	Small mean $BHAR_{-231,t}$	t-stat[a]	Large minus small	t-stat[b]
-210	-3,3 %	-1,08	0,2 %	0,07	-3,5 %	
-189	0,7 %	0,19	2,6 %	0,58	-1,9 %	-0,36
-168	2,4 %	0,49	12,3 %	1,88*	-9,9 %	-1,17
-147	2,0 %	0,32	12,1 %	1,92*	-10,1 %	-1,18
-126	2,8 %	0,40	18,7 %	2,04*	-15,9 %	-1,79
-105	4,7 %	0,54	21,9 %	1,94*	-17,2 %	-1,93
-84	6,2 %	0,63	27,6 %	1,77*	-21,4 %	-2,40*
-63	4,5 %	0,45	34,8 %	1,70*	-30,3 %	-2,86**
-42	5,9 %	0,54	31,8 %	1,49	-26,0 %	-1,95*
-21	2,5 %	0,19	43,5 %	1,38	-41,1 %	-2,28**
0	16,2 %	1,00	46,7 %	1,67	-30,5 %	-1,32

[a]The t-statistics test the hypothesis that the mean BHAR equal zero
[b]The t-statistics test if the BHAR of the large/small spinoffs are significantly different
* Denotes significance at the 10% level
** Denotes significance at the 5% level
*** Denotes significance at the 2% level

By comparing the returns between the two portfolios of respectively large- and small fraction spinoffs, I find contradictions to my fifth hypothesis. Providing a totally opposite relationship then projected, the small spinoff fractions tend to outperform the large spinoff fractions over the announcement period (panel C1 -22.1% and panel C2 -41.1%). This relationship is found to be significant at the

5% level in both methodologies (CAR and BHAR). Also shorter trading periods provides similar results that support this interesting finding. However, by including the last trading interval, I no longer find a significant difference in return between the two portfolios.

Moreover, the long-run post-spinoff performance and the implicit difference in return of the two groups of transactions are presented in table 7. Although not statistically significant, my sample of large fraction parent companies outperforms the market in all three periods. Whereas the portfolio of small fraction parent companies underperforms over the same periods, providing significant t-statistic at the 10% level (CAR) as well as the 5% level (BHAR) for day 0 through day 756. A comparison of these two groups documents no additional consistent results, other than a comprehensive positive difference in return for the sample.

By generating significant t-statistics between 2% and 10% for all periods except day 0 through day 252 (the BHAR calculation), the sample of small fraction subsidiary companies seem to offer a long-run abnormal value creation. Furthermore, I find these portfolios to yield the most severe returns in my study, with BHAR's ranging from 18.6% to 88.1% and CAR's ranging from 34.9% to 76.5%. The large fraction subsidiary companies on the other hand, provide insignificant t-statistics and inconsistent abnormal returns. Nevertheless, over the trading period day 0 through day 504, I actually find that the small subsidiary spinoff fractions generate significantly higher mean CAR relative to the large subsidiary spinoff fractions at the 10% level. Apart from this, panel B1 and B2 only documents a severely volatile difference in value creation between the two portfolios for the remaining periods.

Table 7

Long-run abnormal returns for large/small fraction spinoff transactions

The post-spinoff performance of respectively large- and small fraction transactions is measured using cumulative abnormal returns as well as buy-and-hold abnormal returns. Whereas each of the three groups of companies uses different benchmarks. Panel A1/A2 and panel B1/B2 contain firms that are paired against individual VW Norwegian industry indexes, whereas the firms in panel C1/C2 are compared against a VW Norwegian market index. Monthly benchmark-adjusted returns are calculated as the monthly raw return on a stock minus the monthly benchmark return for the corresponding 21 trading day period. The portfolios are rebalanced every 21 trading day, and are based on the final sample of 66 transactions over the period 1991-2010. The first day of separate trading for parent companies and subsidiary companies are represented by 0 in the table below. Finally, the significance levels denoted on the abnormal returns for each portfolio tests the hypothesis that the mean CAR or mean BHAR equal zero.

	Large versus small spinoffs		
	(0-252)	(0-504)	(0-756)
Panel A1: Parent Companies, large minus small (CAR)			
Mean CAR large	19,6 %	18,0 %	19,7 %
Mean CAR small	-9,0 %	-23,4 %	-32,3%*
Large minus small	28,7 %	41,4 %	51,9 %
t-statistic[a]	0,95	1,27	1,53
Panel A2: Parent Companies, large minus small (BHAR)			
Mean BHAR large	23,1 %	33,1 %	18,9 %
Mean BHAR small	-6,5 %	-5,7 %	-26,7%**
Large minus small	29,5 %	38,8 %	45,6 %
t-statistic[b]	1,19	1,38	1,16
Panel B1: Subsidiary Companies, large minus small (CAR)			
Mean CAR large	12,3 %	-2,4 %	8,3 %
Mean CAR small	34,9%*	71,4%***	76,5%***
Large minus small	-22,6 %	-73,7 %	-68,3 %
t-statistic[a]	-0,96	-2,02*	-1,65
Panel B2: Subsidiary Companies, large minus small (BHAR)			
Mean BHAR large	20,6 %	-5,2 %	-12,1 %
Mean BHAR small	18,6 %	80,6%**	88,1%**
Large minus small	2,0 %	-85,8 %	-100,1 %
t-statistic[b]	0,06	-1,57	-1,53
Panel C1: Reconstructed Companies, large minus small (CAR)			
Mean CAR large	26,6 %	30,6 %	36,6%*
Mean CAR small	-11,9 %	-18,5 %	-15,2 %
Large minus small	38,5 %	49,1 %	51,8 %
t-statistic[a]	1,39	1,63	1,64
Panel C2: Reconstructed Companies, large minus small (BHAR)			
Mean BHAR large	31,2 %	45,9 %	32,1 %
Mean BHAR small	-10,0 %	-5,8 %	-13,7 %
Large minus small	41,3 %	51,7 %	45,8 %
t-statistic[b]	1,80*	1,53	1,10
Panel D: Companies delisted or acquired			
Large parent	13 %	29 %	33 %
Small parent	0 %	13 %	23 %
Large subsidiary	22 %	35 %	43 %
Small subsidiary	7 %	22 %	30 %

[a]The t-statistics test if the CAR of the large/small spinoffs are significantly different
[b]The t-statistics test if the BHAR of the large/small spinoffs are significantly different
* Denotes significance at the 10% level
** Denotes significance at the 5% level
*** Denotes significance at the 2% level

Also the artificial reconstruction of the parent companies has been divided into either a large fraction portfolio or a small fraction portfolio in table 7. This separation forms a pattern where the large fraction reconstructed companies obtains positive abnormal returns, and the small fraction reconstructed companies generates negative abnormal returns. However, none of these results yields significant t-statistics, except for the mean CAR for the large fraction reconstructed companies over the trading period day 0 through day 756 (significant at the 10% level). These findings are further reflected in the difference between the portfolios, which are positive in all periods for both the CAR- and the BHAR calculations. Significant t-statistic for the comparison of the two types of transactions, is on the other hand only generated in panel C2 over the trading period day 0 through day 252 (significant at the 10% level). Finally, based on the descriptive statistics in panel D, I find no consistent indication of a linkage between companies being delisted or acquired and abnormal returns for the post-spinoff period.

Cross-industry versus own-industry spinoff transactions

Defining the companies performing a cross-industry spinoff as a focus increasing transaction and the companies performing an own-industry spinoff as a non-focus increasing transaction, enables me to provide further knowledge to the diversity cost hypothesis. Based on the same methodologies as in previous calculations, neither the cross-industry nor the own-industry spinoffs generate significant t-statistics over the announcement period. Nevertheless, the own-industry transactions tend to perform well in my sample with positive abnormal returns in all measured periods. This is further supported by panel B1 presenting significant abnormal returns on a 10% level for the trading periods day -231 through day -63 and day -231 through day 0, whereas panel B2 shows a significant abnormal return (at the 10% level) for the trading period day -231 through day 0. The cross-industry transactions in panel A1 and A2 are on the other hand less consistent, by generating both positive and negative abnormal returns.

Table 8

Abnormal returns for cross-/own-industry spinoff announcements

The reaction to respectively cross- and own-industry spinoff announcements are measured using cumulative abnormal returns as well as buy-and-hold abnormal returns. Both methods with a VW Norwegian market index as benchmark. Monthly benchmark-adjusted returns are calculated as the monthly raw return on a stock minus the monthly benchmark return for the corresponding 21 trading day period. The portfolios are rebalanced every 21 trading day, and contain 29% cross-industry transactions and 71% own-industry transactions over the period 1991-2010. The first day of separate trading for parent companies and subsidiary companies are represented by 0 in the table below.

	Panel A1		*Panel B1*		*Panel C1*	
Trading period	Cross-industry mean $CAR_{-231,t}$	t-stat[a]	Own-industry mean $CAR_{-231,t}$	t-stat[a]	Cross-industry minus own-industry	t-stat[b]
-210	-4,3 %	-1,04	0,4 %	0,24	-4,8 %	
-189	-0,5 %	-0,08	3,5 %	1,10	-4,0 %	-0,71
-168	4,1 %	0,89	6,8 %	1,47	-2,6 %	-0,45
-147	2,4 %	0,45	8,2 %	1,57	-5,9 %	-0,97
-126	2,3 %	0,36	8,5 %	1,37	-6,2 %	-1,05
-105	-1,7 %	-0,22	10,5 %	1,54	-12,1 %	-1,63
-84	2,3 %	0,33	11,8 %	1,56	-9,4 %	-1,08
-63	1,3 %	0,18	14,2 %	1,73*	-12,9 %	-1,45
-42	0,2 %	0,03	10,2 %	1,15	-9,9 %	-1,00
-21	-3,0 %	-0,30	11,1 %	1,19	-14,0 %	-1,36
0	3,7 %	0,33	19,0 %	1,89*	-15,4 %	-1,50

[a]The t-statistics test the hypothesis that the mean CAR equal zero
[b]The t-statistics test if the CAR of the cross-/own-industry spinoffs are significantly different
* Denotes significance at the 10% level
** Denotes significance at the 5% level
*** Denotes significance at the 2% level

	Panel A2		*Panel B2*		*Panel C2*	
Trading period	Cross-industry mean $BHAR_{-231,t}$	t-stat[a]	Own-industry mean $BHAR_{-231,t}$	t-stat[a]	Cross-industry minus own-industry	t-stat[b]
-210	-4,3 %	-1,04	0,4 %	0,24	-4,8 %	
-189	-2,8 %	-0,61	3,2 %	0,98	-5,9 %	-1,61
-168	1,3 %	0,23	8,1 %	1,64	-6,8 %	-1,78
-147	-0,6 %	-0,10	8,0 %	1,56	-8,6 %	-2,39*
-126	-0,7 %	-0,10	10,3 %	1,51	-11,1 %	-3,15**
-105	-2,9 %	-0,32	13,2 %	1,61	-16,1 %	-3,61***
-84	-1,0 %	-0,10	17,1 %	1,57	-18,0 %	-4,04***
-63	-3,1 %	-0,32	22,9 %	1,65	-25,9 %	-3,75***
-42	-2,6 %	-0,23	20,2 %	1,39	-22,7 %	-2,40**
-21	-2,7 %	-0,20	27,0 %	1,30	-29,8 %	-2,86***
0	3,1 %	0,21	33,1 %	1,71*	-29,9 %	-2,79***

[a]The t-statistics test the hypothesis that the mean BHAR equal zero
[b]The t-statistics test if the BHAR of the cross-/own-industry spinoffs are significantly different
* Denotes significance at the 10% level
** Denotes significance at the 5% level
*** Denotes significance at the 2% level

Both panel C1 and C2 (table 8) are reflected by the divergent results between the cross- and own-industry transactions. By providing negative returns in the comparison of the two portfolios, I find an indication of the opposite of hypothesis 6 as well. This contradiction is further supported in panel C2, where the test for dependent samples generates significant results on a 2% level for the

announcement period. Also other trading periods yields severely significant t-statistics, as presented in the table. However, attention should be dedicated to the robustness of these findings due to the relatively small sample size, and the inconsistent results compared to the documentation in panel C1.

Other than a t-statistic of 2.11 for the trading period day 0 through day 504 in panel A2 table 9, I find the long-run comparison of the cross- and own-industry portfolios to contribute with little further statistical support for hypothesis 6. Even though this value represents a significance level of 5%, it is not very consistent with the remaining results. On the contrary, dependent upon measurement method and trading period, my data yields an abnormal post-transaction performance for the own-industry subsidiary spinoffs ranging from 36.5% to 71.8%. Both of the respective portfolios (panel B1 and B2, table 9) contain statistically significant results between 5% and 10% over these periods. Moreover, the cross-industry subsidiary spinoffs do not show the same consistency, as they only generate one corresponding significant t-statistic (the trading period day 0 through day 756 in panel B1). The regressions performed on the portfolios of parent- and reconstructed companies in table 9, documents on the other hand no statistically relevant findings with respect my sixth hypothesis.

Table 9

Long-run abnormal returns for cross-/own-industry spinoff transactions

The post-spinoff performance of respectively cross- and own-industry transactions is measured using cumulative abnormal returns as well as buy-and-hold abnormal returns. Whereas each of the three groups of companies uses different benchmarks. Panel A1/A2 and panel B1/B2 contain firms that are paired against individual VW Norwegian industry indexes, whereas the firms in panel C1/C2 are compared against a VW Norwegian market index. Monthly benchmark-adjusted returns are calculated as the monthly raw return on a stock minus the monthly benchmark return for the corresponding 21 trading day period. The portfolios are rebalanced every 21 trading day, and are based on the final sample of 66 transactions over the period 1991-2010. The first day of separate trading for parent companies and subsidiary companies are represented by 0 in the table below. Finally, the significance levels denoted on the abnormal returns for each portfolio tests the hypothesis that the mean CAR or mean BHAR equal zero.

	Cross-industry versus own-industry spinoffs		
	(0-252)	(0-504)	(0-756)
Panel A1: Parent Companies, cross-industry minus own-industry (CAR)			
Mean CAR cross-industry	-4,6 %	-1,1 %	-7,0 %
Mean CAR own-industry	-2,6 %	-11,7 %	-7,7 %
Cross- minus own-industry	-2,0 %	10,5 %	0,7 %
t-statistic[a]	-0,14	0,50	0,03
Panel A2: Parent Companies, cross-industry minus own-industry (BHAR)			
Mean BHAR cross-industry	4,5 %	48,9 %	18,6 %
Mean BHAR own-industry	0,2 %	-12,4 %	-16,8 %
Cross- minus own-industry	4,3 %	61,4 %	35,4 %
t-statistic[b]	0,40	2,11**	0,65
Panel B1: Subsidiary Companies, cross-industry minus own-industry (CAR)			
Mean CAR cross-industry	5,8 %	50,4 %	71,3%*
Mean CAR own-industry	36,9%**	43,7%*	44,7%*
Cross- minus own-industry	-33,8 %	6,6 %	26,6 %
t-statistic[a]	-1,35	0,17	0,55
Panel B2: Subsidiary Companies, cross-industry minus own-industry (BHAR)			
Mean BHAR cross-industry	-8,9 %	5,2 %	60,4 %
Mean BHAR own-industry	36,5%**	71,8%**	45,7%*
Cross- minus own-industry	-45,4 %	-66,6 %	14,6 %
t-statistic[b]	-1,41	-1,54	0,19
Panel C1: Reconstructed Companies, cross-industry minus own-industry (CAR)			
Mean CAR cross-industry	-5,6 %	4,7 %	13,3 %
Mean CAR own-industry	8,9 %	2,7 %	4,4 %
Cross- minus own-industry	-14,5 %	2,0 %	9,0 %
t-statistic[a]	-1,12	0,12	0,45
Panel C2: Reconstructed Companies, cross-industry minus own-industry (BHAR)			
Mean BHAR cross-industry	-0,2 %	38,7 %	25,8 %
Mean BHAR own-industry	13,4 %	6,0 %	-3,3 %
Cross- minus own-industry	-13,6 %	32,7 %	29,1 %
t-statistic[b]	-0,86	1,04	0,63
Panel D: Companies delisted or acquired			
Cross-industry parent	5 %	16 %	21 %
Own-industry parent	7 %	22 %	31 %
Cross-industry subsidiary	12 %	18 %	24 %
Own-industry subsidiary	15 %	38 %	47 %

[a]The t-statistics test if the CAR of the cross-/own-industry spinoffs are significantly different
[b]The t-statistics test if the BHAR of the cross-/own-industry spinoffs are significantly different
* Denotes significance at the 10% level
** Denotes significance at the 5% level
*** Denotes significance at the 2% level

Lastly, the descriptive statistics in panel D reveals that the sample of own-industry subsidiary companies contain the largest frequency of delisting's and acquisitions. As these firms also generate the highest and most significant t-statistics in table 9, it might point towards a possible inference with the M&A literature. Nevertheless, as previously mentioned, such a theory requires further research in order to draw any conclusions.

Conclusion

As predicted by business theory, I find that the restructuring through spinoffs has a positive effect on shareholder wealth at the Oslo Stock Exchange. Several relationships are documented in this thesis, although some of my hypotheses provided insignificant results. First of all there is little statistical indication of abnormal returns around the spinoff announcements, except from a weakly significant result for small fraction transactions. On the contrary, support for outperformance is generated by including the finalization of the transactions in my regressions. This yields significant results for the whole sample, small fraction spinoffs and own-industry spinoffs.

Also the post-spinoff period presents valuable contributions to the conglomerate discount theory, through generating significant abnormal returns down at a 2% level for the whole sample of subsidiary companies. However, due to the transaction similarity, these findings also interact with the literature for IPOs. But whereas research on IPOs ((Ritter 1991) and (Loughran and Ritter 1995)) documents long-run underperformance, my transactions generates the complete opposite effect on shareholder wealth. By separating the spun-off firms based on industry and fraction, I only find the own-industry and the small fraction transactions to provide long-run significant abnormal returns.

Moreover, the comparison of portfolios suggests that both small fraction spinoffs and own-industry spinoffs, outperforms their respective counterparties (large fraction and cross-industry) under the announcement period. These results are supported by significant t-statistics at the 5% level for the portfolios based on fractions, as well as one significant t-statistic at the 2% level for portfolios based

on industries. None of the post-spinoff regressions provides on the other hand any consistent results, even though I find a couple of weakly significant t-statistics. Therefore, my data provides some contradictions to the diversity cost hypothesis as well as the proportional value creation hypothesis. Two possible explanations for this pattern could however be noise in my sample due to the papers weak definition of a spinoff transaction, or the robustness of GICS sector codes as a valid measure for diversity.

The anomalies experienced in this thesis, can contribute with valuable knowledge to the economic literature. From a corporate management perspective, it enables among other things firms and strategists to potentially commit better decisions. On the investor side, the restructuring might offer interesting opportunities to achieve abnormal returns not justified by the market adjusted risk. Hence, the regressions argue against the efficient market hypothesis.

From my thesis, I also identify several possible avenues for future studies. In general the research on spinoffs struggles with an explanation for the documented effects from this restructuring, whereas many articles have tried to come up with a solution. I especially find the relatively high frequency of delisting's and acquisitions in my sample, as an interesting characteristic. Therefore, further examinations on whether the spinoff transactions can increase the synergies for potential bidders and establish low cost methods to transfer company assets, could generate valuable contributions to the economic theory.

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Introduction

Varying with time, corporate transactions such as divestitures, mergers, acquisitions and joint ventures are common approaches in order to execute strategies and reallocate resources. The 1950s confidence to economies of scope and trend towards increased diversification, where reversed during the 1980s (Comment and Jarrell 1995). Focus on conglomerate discounts and core business through restructuring, received on the other hand extensive attention among corporations. Managers where urged to streamline and specialize the firms operations, whereas Comment and Jarrell (1995) later proved this to be consistent with maximization of shareholder wealth.

Additional evidences enhancing the theory of diversified firms trading at a discount where documented by Berger and Ofek (1995). Through calculating stand alone values for individual business segments within conglomerates, significant results revealed the existence of conglomerate discounts. Moreover, they found that although tax benefits and increased debt capacity was beneficial if successfully implemented, cross subsidization and overinvestment's contributed to a proved average loss between 13% and 15%.

Regarded as the mirror image of mergers, several researchers have proven that divestitures generate value (Comment and Jarrell 1995; Vijh 2002; Miles and Rosenfeld 1983; Burch and Nanda 2003). However, dependent upon the financial situation, the divestiture can either be done as a private or public transaction. A frequently used public transaction is spinoff, where a company distributes all of the common shares it owns in a controlled subsidiary to its existing shareholders, and thereby creating a separate public company. Unlike initial public offerings (IPOs) and carveouts, spinoffs do not raise equity through sale of shares to new shareholders in the stock market. Thus a spinoff is not a direct action exercised in purpose of raising capital and covering liquidity needs for the parent company. Furthermore, the transaction forms two separate entities that can easily be analysed.

Restructuring through spinoffs are accompanied by severe redeployment of assets and corporate governance. Nevertheless, among the transaction motives are:

Reduced potential for misallocation of capital, reduced information asymmetry, elimination of cross subsidies, prevent agency problems, and enable improved investment decisions (Krishnaswami and Subramaniam 1999). On the other hand, such as reduced human capital and elimination of synergies might negatively affect the firm.

Another interesting characteristic of spinoffs is the subsidiaries similarity to IPOs, where both transactions involve newly traded shares in the market. But whereas comprehensive research, including (Ritter 1991) and (Loughran and Ritter 1995), reveals severe long-run underperformance of IPOs, less knowledge has been obtained for spinoffs. Nevertheless (Cusatis, Miles, and Woolridge 1993) found significantly positive long-run abnormal returns for these firms.

In this thesis I examine the value created through spinoffs at the Oslo Stock Exchange (OSE) over the period 1988-2009. The study will start out by looking for abnormal return around announcement of transaction. However, due to limited access of exact announcement-date for several firms, a proxy representing this period will be generated. Thereafter the paper investigates the long-run performance for the parent company, subsidiary company and an artificial reconstruction of the original firm.

By determining whether spinoffs increases shareholder wealth, researchers contributes with valuable knowledge for the economic literature. Among other things, it enables firms, investors and strategists to commit better decisions. Although the spinoff-effect has already been widely proved, less research has been done in the Norwegian market. Furthermore, if the data yields significant long-run abnormal returns, as suggested by literature, it will not only support previous theories. This contradicts the basic assumption of efficient markets stating that investors, on average, should not be able to earn a return higher than justified by the market risk of the investment (Fama 1991). Moreover it could be a valuable contribution for investors trying to predict future stock returns, and thereby earning excess returns on their investments.

Literature Review

Along with an increasing focus on core business through restructuring and conglomerate discounts, researchers have tried to investigate the value created through spinoffs. However, the literature is still characterized by lack of knowledge, especially when it comes to hypotheses explaining the origins of abnormal returns from equity carveouts and spinoffs. Nevertheless, in this section I will highlight some of the most relevant research, which constitutes the foundation for the empirical design of my thesis.

Spinoff Announcements

Based on 55 securities listed in the US market over the period 1963-1980, Miles and Rosenfeld (1983) found that voluntary spinoff announcements had a positive effect on shareholder wealth. Including the full 181-day observation period, they also found that abnormal returns where significant for both preceding interval and announcement day. Furthermore they discovered that these announcements where usually followed up by a period of positive abnormal returns. This was in striking contrast to previous research on voluntary selloffs, showing no significant influence on the stock prices of divesting firms. Finally their work found that large spinoffs had a stronger positive effect on shareholder wealth relative to small spinoffs.

Hite and Owers (1983) also discovered evidence for positive abnormal returns, from 50 days prior to the announcement through completion of the spinoff. Nevertheless, by extending the sample to account for transaction rationales, positive gains existed for firms that facilitated mergers or that separated diverse operating units. Companies responding to legal and/or regulatory difficulties experienced on the other hand negative gains. By looking at a two-day interval surrounding the first press announcement the researchers found positive and significant results for all categories. However, they did not find support for their theory that the stockholder gain represented wealth transfers from senior security holders such as bondholders and preferred stockholders.

Predictions explaining spinoff gains

In order to narrow down the reasons for proved announcement effects, Davidson Iii and McDonald (1987) examined transactions which created royalty trusts. By doing so, they could observe the effect of having an explicit tax benefit lying behind the spinoff. This yielded presence of large and significant abnormal returns for the days surrounding the announcement of trust creation. The elimination of double taxation on trust income should in their point of view be sufficient to create this value.

Allen, Lummer et al. (1995) combined spinoff discoveries with previous research on acquisitions, by processing a hypothesis called ~~–c~~orrection-of-a-mistake". They explored whether the excess stock returns around spinoff announcements could be attributed to the reversal of prior takeover losses. This re-creation of value destroyed theory, contained three predictions: (1) ~~–T~~he acquirer's stock price reaction around the announcement of a takeover that later becomes a spinoff is negative"; (2) ~~–th~~e average stock price reaction around spinoffs of prior acquisitions is more positive than the average stock price reaction around spinoffs generally"; (3) ~~–th~~e stock price reaction around the announcement of spinoffs of prior acquisitions is positive, but is negatively correlated with the stock price reaction around the original acquisition" (Allen et al. 1995). Through analyzing their sample, statistical significance where only found for the first and third predictions. Thereby, suggesting that unsuccessful acquisitions could potentially be corrected through a reversal of the earlier transaction.

Daley, Mehrotra et al (1997) tested a theoretical prediction claiming that cross-industry spinoff distributions created more value than own-industry spinoffs. This was simply done using the standard industrial classification (SIC) system made by the United States Government. Not surprisingly, their results indicated significant value creation around the announcement of cross industry spinoffs only. This was in line with the hypothesis for corporate focus, conglomerate discounts and consistent with previous results from asset sale studies. However, they also investigated whether the observed value increase could be related to cross-subsidizing of poorly performing units and/or improvements in operating performance. Although cross-subsidizing proved to be insignificant, improvements in operating-return-on-assets was statistical significant for cross-

industry spinoffs. The research therefore supported the prediction that increased corporate focus has a positive effect on shareholder wealth.

Krishnaswami and Subramaniam (1999) emphasized the more unexplored explanations for conglomerate discounts suggested by practitioners and press. Based on their theories they investigated the so called information hypothesis, proposing that spinoffs increase shareholder wealth by mitigating information asymmetry about the company. This involves increased clarity for both cash flows and operating efficiency, for the individual divisions within the firm. In inequality to separate entities, they claimed that underperformance in one unit of a conglomerate would spill over and affect other units. Empirical analysis's showed that firms engaging in spinoffs had higher levels of information asymmetry before the transaction compared to industry matched counterparts. However, as predicted, significant reduction in information asymmetry was documented after completion of the spinoff. Controlled for negative synergies between divisions, further studies discovered a positive relationship between the degree of information asymmetry and gain in firm value. Moreover they found increased probability for spinoff transactions if the company had liquidity needs or high growth opportunities. Nevertheless, in the two year post-period, significantly more capital was raised both in amount and frequency. This is consistent with Dierkens (1991) findings that firms time their equity issue announcement when their information asymmetry is relatively low.

Through loss of collateral and reduced liquidation value, Parrino (1997) argued that spinoffs increased the riskiness of the bondholders claim. By studying the Marriott spinoff in 1993, he discovered both a decline in the overall firm value as well as a wealth transfer from senior security holders to shareholders. In order to find systematic evidence supporting this wealth expropriation hypothesis, Maxwell and Rao (2003), collected comprehensive data on spinoff announcements. Consistent with the "Mariott Case", significant results proved that bondholders on average received a negative abnormal return. This emphasized a wealth transfer from bondholders to common stockholders and was a breakthrough for the corporate focus literature. However, unlike Parrino's (1997) findings, the total firm value increased on a spinoff announcement. This advocated that the wealth expropriation hypothesis was only a partial explanation

for the stockholder gain. Additionally Maxwell and Rao (2003) where able to find several relationships: (1) –The loss of collateral, measured by the relative size of the spunoff firm, is positively related to stockholder returns and is negatively related to bondholder returns"; (2) –the risk of a firm's debt, measured by bond rating and leverage ratios, negatively influences bondholder returns"; (3) –consistent with a loss to bondholders, firms are more likely to have their credit rating downgraded than upgraded after a spinoff"; (4) –consistent with the wealth transfer hypothesis, losses to bondholders tend to be more severe, the larger the gains to shareholders" (Maxwell and Rao 2003).

Veld and Veld-Merkoulova (2008) re-examined the stockholder-bondholder conflict proposed by earlier research on corporate spinoffs. Through contradicting both Maxwell and Rao (2003) and Parrino (1997), they claimed that the wealth transfer theory was inconsistent with more modern markets. Based on data covering the period from 1995 to 2002, evidence showed that both stocks and straight bonds experienced significant abnormal returns surrounding the announcement. Moreover, by dividing the bond sample in two sub-periods, they observed insignificant negative abnormal returns between 1995 and 1997, whereas positive and significant results where proven in the period 1998-2002. The discovery thereby suggested that previous experiences had resulted in an immunization and adaption against the stockholder-bondholder conflict.

By using a spinoff sample, Burch and Nanda (2003) explored the field of conglomerate discounts and diversity costs. They where able to address improvements in overall value, through reconstructing the original firm after the transaction and use market-to-book values for diversity. This approach raised critique against previous research, claiming that methods relying on standard industrial classification (SIC) system could yield noisy and biased results. Nevertheless, improvement in excess value, where proved by Burch and Nanda to be an implication of both reductions in diversity and changes in investment policy. Thereby valuable support was given to the theory of conglomerate discounts and the diversity cost hypothesis.

Consistent with previous research, Ahn and Denis (2004) observed an increase in firm value and an elimination of the conglomerate discount following spinoffs.

Evidence where provided supporting the inefficient investment hypothesis, arguing that changes in investment policy contributed to these well investigated discoveries. Through studying changes in investment allocations within conglomerates, they found a significant increase in investment efficiency after the divestiture. In line with this, reliable relationship where provided between change in firm value around the spinoff and change in investment efficiency. Finally they concluded that improved investment efficiency could not solely account for the change in excess value.

Long-run stock market performance following spinoffs

Cusatis, Miles et al. (1993) extended the previous research made on abnormal returns around spinoff announcements, to include long-run performance. Since both initial public offerings (IPOs) and spinoff subsidiaries represents newly traded securities in the market, equal characteristics would be reasonable. However, unlike IPOs who appears to underperform the market (Ritter 1991), they found that spinoff subsidiaries, parent companies and a reconstruction of the original firms yielded significant long-run abnormal returns. By working on the prediction that these findings were an implication of restructuring activity, they discovered an unusually high frequency of takeovers for both the spinoffs and parents. As previous empirical results shows that target shareholders on average receives 30 percent premiums over their stock's announcement price (Koller et al.), the abnormal return was positive but insignificant when removing the firms involved in takeover. Along with these striking results, critics were raised stating that earlier research had underestimated the effect on shareholder wealth created by spinoffs. Cusatis, Miles et al. (1993) therefore interfered with the merging and acquisition literature, suggesting that spinoffs increased synergies for potential bidders and established low-cost methods to transfer company assets.

Desai and Jain (1999) supported the research performed by Daley, Mehrotra et al (1997), claiming that cross-industry spinoff distributions created more value than own-industry spinoffs. However, these studies did not include the post-spinoff long-run stock market performance. Based on this, further investigation was dedicated directly to the corporate focus literature. In line with their expectations, significant results viewed that focus-increasing spinoffs provided larger abnormal

return than non-focus-increasing spinoffs for both the announcement period as well as in the long-run. By running cross-sectional regressions, stock market performance and operating performance proved to be significantly related to change in focus. Finally they discovered that companies implementing non-focus-increasing spinoffs were often motivated by separating poorly performing subsidiaries. Debt reduction, transferring of debt and financial distress, were on the other hand insignificant fields for these transactions.

Hypotheses

Previous research on different stock exchanges over the world, presents significant results concluding that spinoff announcements has a positive effect on shareholder wealth. As addressed in the literature review, several hypotheses seek to explain this anomaly. Nevertheless, no paper has managed to find an exact factor solely accounting for the proved abnormal returns. However, based on all this empirical research, I formulate the first hypothesis which I expect to yield significant results at Oslo Stock Exchange as well:

Hypothesis 1;
"Companies experience positive abnormal returns around the announcement of spinoffs"

Additionally, with inspiration from more modern discoveries, I also wish to investigate the long-run stock market performance following spinoffs. Associated with severe restructuring activity, post-spinoff findings indicate that market participants underestimate the shareholder wealth created through spinoffs. I thereby form further expectations of long-run abnormal returns following spinoffs for up to three years. By constituting the foundation for my remaining research at the Oslo Stock Exchange, I formulate the following hypotheses:

Hypothesis 2;
"Parent companies experience positive abnormal return over an extended period following the spinoffs"

Hypothesis 3;

"Subsidiary companies experience positive abnormal return over an extended period following the spinoffs"

Hypothesis 4;

"The parent-subsidiary combinations experience positive abnormal return over an extended period following the spinoffs"

Data

With assistance from the Oslo Stock Exchange (OSE) administration, I where able to obtain a complete list over reported spinoffs at the OSE in the period between 1985 and 2010. However, by only containing security id of parent company and date of event (completion of the spinoff takes place), a comprehensive data search where required. In order to obtain the spinoff subsidiary, I went through both the Oslo Stock Information (OBI) database and news archives. This yielded a total of 94 transactions, whereas many of them probably will be excluded due to statistical interactions with the methodology in this thesis.

Based on Mitchell and Stafford (2000) asserting that daily returns might generate noise in the test statistics, I retrieve monthly stock returns and market values using Datastream, by Thomson Reuters. My sample reaches from 11 months prior to completion of the spinoff, through 36 months after the transaction. Due to several varying sequences of price-sensitive announcements and press-releases in the pre-spinoff interval, the individual announcement periods have different lengths of time. Unfortunately, all this relevant information is not available for my sample of securities, forcing me to use a proxy representing the announcement period.

In order to measure the companies' performance, I employ several benchmarks described more comprehensive in the methodology. However, Oslo Børs All-Share Index (OSEAX) and the different industry indexes, along with each company's industry classification code were also extracted from Datastream. Moreover, by continuing the OBI database and news archives search, information

concerning acquisitions, delisting and other corporate transactions during my observation period was gathered.

Methodology

Several approaches are available in order to measure abnormal stock returns, whereas comprehensive research addresses the empirical power and test statistics in these methodologies. With pros and cons for each technique, the literature contains inconsistent results for preferred methodology. Nevertheless, statistical inference can either be drawn from a calendar-time framework (factor/market models) or an event-time framework (buy-and-hold abnormal returns and cumulative abnormal returns). Although a substantial difference in anomalies, they all struggle with a common problem pointed out by defenders of market efficiency: The sample and their actual returns must be compared to some kind of benchmark containing ~~"n~~ormal returns". Choice of benchmark and framework is difficult to justify and may easily lead to biased test statistics. Based on this I will start out by shortly review some of the most recognized methodology contributions constituting the foundation for my statistics.

By criticizing the matched firm technique for not adequately adjust for risk, Espen Eckbo, Masulis et al. (2000) accused this method of generating seriously biased estimates. On the other hand, they highlighted the factor model as a more reliable tool for measuring long-run abnormal stock returns. This was in striking contrast to previous research by Barber and Lyon (1997), claiming that the method of matching sample firms to control firms yielded well-specified test statistics in random samples. Moreover Barber and Lyon (1997), argued that the use of reference portfolios could generate test statistics that are misspecified. However, in this paper I will calculate the Cumulative Abnormal Return (CAR) as well as the equally weighted (EW) Buy-and-Hold Abnormal Return (BHAR) both of them with a reference portfolio as a benchmark. By doing so the misspecification of test statistics can largely be traced to: New listing bias, rebalancing bias and skewness bias (Barber and Lyon 1997).

The benchmark-adjusted return (AR) and Cumulative Abnormal Return (CAR) for firm i in period t are expressed in the following way:

$$AR_{i,t} = R_{i,t} - R_{Benchmark,t}$$

$$CAR_i = \sum_{t=1}^{T} AR_{i,t}$$

Furthermore, in order to calculate the Mean Cumulative Abnormal Return I take the equally weighted (EW) average of the individual CARs:

$$\overline{CAR} = \left(\frac{1}{N}\right)\sum_{i=1}^{N} CAR_i$$

Although Lyon, Barber et al. (1999) favors the methodology of BHAR, they highlights that the CAR approach yields less skewed abnormal returns. Suffering mostly from new listing bias, less statistical problems arises when processing the data. On the other hand, the CAR struggles with sampling biases (size, book-to-market, pre-event returns, calendar clustering, industry clustering and overlapping returns) and can be biased predictors of BHARs (Barber and Lyon 1997). This might lead to incorrect inferences. Furthermore, Barber and Lyon (1997) claims that the indicated magnitude of wealth created does not correspond to returns generated by the benchmark.

The Buy-and-Hold Abnormal Return (BHAR) is expressed in the following way:

$$BHAR_{i,T-t} = \prod_{t=1}^{T}\left(1 + R_{i,t}\right) - \prod_{t=1}^{T}\left(1 + R_{Benchmark,t}\right)$$

Whereas the Mean Buy-and-Hold abnormal return contains the equally weighted (EW) average of the individual BHARs:

$$\overline{BHAR} = \left(\frac{1}{N}\right)\sum_{i=1}^{N} BHAR_i$$

By conducting estimates for abnormal returns that easily reflects investors' experiences, researchers seem to prefer BHAR. Moreover, as previously mentioned, Barber and Lyon (1997) argues that CAR is a biased predictor of BHAR. The measure suffers mostly from rebalancing biases and skewness biases, generally yielding negative bias in the test statistics.

Preferably I would like to measure abnormal returns using both market models and benchmarks such as: The CAPM model, Fama & French 3-Factor model, a six-factor model with prespecified macroeconomic factors suggested by Espen Eckbo, Masulis et al. (2000), different reference portfolios and matched-firms. However, due to limitations of my dataset (such as lack of book-to-market ratios) and the paper, I will compare the spinoff returns with two different benchmarks:

- Announcement period returns will be compared against a value-weighted (VW) index including the most liquid stocks on the OSE. Based on Oslo Børs All-share Index (OSEAX), containing all firms trading at OSE, I will exclude the 10% smallest firms inhibiting the liquidity. Moreover, by contributing with unique risk that reduces diversity, companies with considerably large market capitalization will be removed as well (Loughran and Ritter 2000). The intuition behind this benchmark is that pre-spinoff companies are on average more diversified than the post-spinoff companies.
- As mentioned previously, firms generally increases focus on core business through spinoffs. This implies that individual industry indexes yields a good benchmark for measuring parent and subsidiary long-run performance. On the other hand, post-spinoff returns for the reconstructed firms will be compared with the same benchmark as for abnormal returns around announcement.

Moreover, attention should be dedicated to the possibility that some of the benchmarks could be influenced by the spinoff-events themselves. Oslo Stock Exchange reported 206 listed companies in 2010, developed from 93 listed companies in 1980. This combined with irregularities in number of transactions each year, implies that the fraction of spinoffs will vary with time. Finally, further studies including empirical results and conclusions will be addressed in the master thesis.

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