BI Norwegian Business School - campus Oslo

GRA 19502

Master Thesis

Component of continuous assessment: Thesis Master of Science

Market reactions to telecom diversification in the smartphone era

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Start:	02.03.2017 09.00
Finish:	01.09.2017 12.00

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- Market reactions to telecom diversification in the smartphone era -

Hand-in date:

01.09.2017

Campus:

BI Oslo

Examination code and name:

GRA 1953 Master Thesis

Programme:

Master in Business, Major in Finance

Supervisor:
Danielle Zhang

ABSTRACT

In this research, we examine abnormal returns from diversifying acquisition announcements in the period 2000-2016 in the telecom industry. The goal of the research is to shed some light on what impact industry conditions might have on market reactions to diversification. We apply event study methodology on acquisition announcements on a sample of telecom operators and S&P Global 100 companies. The research find no evidence supporting higher cumulative abnormal return from diversifying acquisition announcement in the smartphone era compared to the prior period. In addition, we cannot conclude that investors react differently when acquirer is a telecom operator as opposed to the general market.

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1. INTRODUCTION

In this research, we examine abnormal returns from diversifying acquisition announcements during the period 2000-2016 in the telecom industry. The goal of the research is to shed some light on what impact industry conditions might have on market reactions to diversifying acquisition announcements.

In 2000, Grover and Vaswani categorized telecommunication firms into four groups: communications, distributors, content providers, and tool providers. The release of the iPhone in 2007 disrupted the previous value chain of telecommunications and created a complex value of networks delivered through smartphone terminals (Mace & West, 2010). This study focuses on telecom operators (distributors) and examines market reaction to "diversifying" and "related" acquisitions in a distressed industry, such as telecom.

Most literature on diversification originates from the corporate "diversification discount" presented by Lang and Stultz in 1994. The "diversification discount" is originally connected to the value of a firm and holds that diversified companies tend to trade at a discount compared to more industry-focused firms (Lang & Stultz (1994), Akbulut & Matsusaka (2010)). A previous study on "near" and "far" diversification through M&A in the telecommunications industry from 2000 concludes that "near-diversification" tends to experience greater valuation effects (Wilcox et al., 2000). There exist numerous studies concluding that focusing, rather than diversifying, creates more value for shareholders (*Lang & Stultz (1994), Berger & Ofek (1995), Servaes (1996), Akubulut & Matsusaka (2010)).*

Akbulut and Matsusaka (2010) argue that diversification could be a value-maximizing response to changing industry conditions and in this study, we seek to understand if markets react differently to diversification when it is highly necessary. We apply event study methodology on acquisition announcements from telecom operators and a comparative sample of S&P Global 100 for the period 2000-2016. The hypothesis of the paper is that abnormal returns from diversifying acquisition announcements are higher if the acquirer is diversifying as a response to industry changes (after the release of the iPhone). Hence, diversification might be viewed as positive under certain conditions. By looking at the abnormal return from acquisition announcements, we can get a fairly good estimate of the change in expected value of acquiring firms and test if market value expectations from diversification change with industry distress (Akubul & Matsusaka, 2010).

Previous relevant literature mainly focuses on the difference in related and diversifying acquisitions to test the agency cost theory and the internal capital market theory. By comparing two time periods and the telecom industry to the average market, we contribute to the literature by examining whether industry conditions have an impact on abnormal return from diversification announcements. Hence, we focus on other factors than previous similar studies of diversification and telecom to better understand market reactions during distress.

2. INDUSTRY BACKGROUND AND LITERATURE

In the 1980s, the rate of technological change was slow and allowed for predictable amortization of capital investments. Operators functioned as utilities delivering the standardized commodity service of voice calls for a set price (Mace & West, 2010). As technological and regulatory changes later eroded towards 1990, competition increased and several new entrants emerged. During the 1990s mobile phone adoption grew, benefiting market leaders such as Nokia, Motorola and Eriksson. Later, the level of radio expertise, economies of scale and global distribution channels made entry difficult. During the 2000s profitability declined dramatically as operators in developed markets faced saturated markets for a commoditized telecom service and fought a zero-sum battle for market share. Since then, innovation-driven differentiation in combination with low prices has been a major key to survival and continued relevance.

On June 29th, 2007, the first iPhone was released and smartphones further changed the industry as the device allowed for a new value chain design. In 2000, Grover and Vaswani categorized telecommunication firms into four groups: communications, distributors, content providers, and tool providers. The release of the iPhone disrupted the previous value chain of telecommunications and created a complex value network delivered through smartphone terminals (Mace & West, 2010). In this study, we define the period after the release of iPhone as the smartphone era and argue that the telecom industry is under distress due to this.

The new structure and competition have already started to change the way telecom companies make revenues. According to London-based analytics firm Ovum, telecom companies will experience a $386 billion combined lost revenue between 2012-2018 due to Skype, WhatsApp, and other over the top (OTT) content providers replacing previous revenue streams (Heinrich, 2014). For traditional telecom companies to make money from this new structure, they would have had to start preparing with relevant in-house development or acquisitions over the time period relevant in this study.

As OTT companies have grown to take a substantial share of the mobile experience, telecom companies are faced with the option of trying to defeat new entrants or seek to find ways of integrating content services in their systems.

2.1 Literature

There has been extensive research done on general diversifications and its implication on general firm performance or firm value. One of the more cited papers is Lang & Stultz paper from 1994. The paper provides a negative relationship between Tobin's Q and firm diversification throughout the 1980s. The study concludes that diversified firms, on average, have a lower Tobin's Q compared to comparable pure play firms. A study made by Servaes in 1996 also finds a negative relationship between firm value and diversification in the 1960s and early 1970s. Several studies find that diversified firms trade at a discount up to 15% compared to similar stand-alone portfolios (Montgomery (1994), Berger and Ofek (1995), Lins and Servaes (1999)).

If diversification reduces value, it is difficult to understand why firms chose to act in such a manner. Several theories seek to explain why firms chose to diversify. The focus is mainly on efficient internal capital markets and agency theory.

According to Dalton et.al (2007), agency cost theory is defined as "Mischief when the interest of owners and managers diverge. In those circumstances, and for a variety of reasons, managers may be able to exact higher rents than reasonable, or than the owners of the firm would otherwise accord them." Amihud & Lev(1981) also state managers' efforts to engage their firms in conglomerate mergers may be viewed as an agency problem as the parties engaged; managers and stockholders could be described as utility maximizers. Hence, there is a reason to believe that managers may at times seek to maximize their own utility at the cost of shareholders. Reducing capital market risk is irrelevant from an investor's perspective, as this can be diversified away in their personal portfolios. Thus, the term "managerialism" and agency cost is used as incentives to explain conglomerate mergers from a manager's perspective.

Jensen & Murphy (1990) have listed three reasons for manager incentives for diversifying. They state managers may seek to diversify as they either expect increased compensation or as an attempt to make their personal position within the firm more secure or to reduce risk of their personal portfolio (1990). The last argument supports Ammihud & Lev (1981), which states a manager will be able to reduce personal risk by diversifying as the manager's income correlates closely with the firm performance by profit-sharing schemes, bonuses, and the value of stock options. Personal risk is then closely related to company risk, again representing an agency problem. Risk adverse managers are therefore incentivized to

diversify such risk by engaging in conglomerate mergers to stabilize income streams and reduce the risk of total bankruptcy. Ammihud & Lev (1981) performed a study of manager characteristics and the level of diversification and detected relationships supporting the argument of agency problems, by personal dependency on performance represented by fixed effects, and their effect on the level of diversification.

However, not all research supports the agency theory aspect. While Amihud and Lev (1981) argue that conglomerate mergers can plausibly be viewed as a form of managerial perquisite, Lane et al (1998) suggest that agency theory may have limited applicability to diversification strategies because such decisions represent situations in which managerial interests do not directly conflict with those of shareholders (Denis et al, 1999).

With time, more studies were conducted seeking to further explain what really leads to the discount. Campa & Kedia (2002) seek to adjust the regression to include firm specific characteristics in a sample of 8,815 companies over the years from 1978 to 1996. Their main argument is embedded in the fact that firms still diversify and they would not do so if it was simply destroying value. They also argue firms may diversify as a means for strategic positioning by gaining a competitive advantage with a new skill set. By adjusting for endogeneity, they obtain results that significantly prove differences in firm characteristics in single segment firms and single segment years of conglomerate merger waves with different diversification profiles. They prove the error term correlates with the relative value of the firm, and hence claim results are based on firm characteristics and not simply the action to diversify.

A more recent explanation for why firms seek to diversify has since been presented by Gomes & Livdal (2004). They assume firms diversify for two reasons. They suggest an economic incentive as the acquisition can remove redundancies across different activities and lower fixed costs of production. In addition, they state firms may diversify as a method used to explore diversifying opportunities, as it allows a slowly growing firm to further explore new, attractive business opportunities. However, as our research focuses on how the market *reacts* to diversification, event study consensus and previous research into market reactions to acquisitions and diversifications is highly interesting. A brief summary of relevant literature is given in table 1.

TABLE 1- RELEVANT LITTERATURE ON EVENT STUDIES

Summary of the litterature of relevant return from announcements of diversifying mergers

Publish year	Paper	Years of study	N	Mean return	p<0.1	Event window	Comment
1990	Morck et al	1975-1987	235	-1,89 (1,7)	No	(-2,+1)	Market sample acquirer response
1990	Morck et al	1975-1979	120	0,23 (2,13)	No	(-2,+1)	Market sample acquirer response
1990	Morck et al	1980-1987	115	-4,09 (2,65)	No	(-2,+1)	Market sample acquirer response
1993	Matsusaka	1668,19 71,1974	67	1,23 (0,67)	Yes	(-5,+5)	Market sample acquirer response
1993	Peffers	1981-1988	97	0,09 (NR)	No	(-1,+1)	Banking and manufacturing in IT
2000	Wilcox et al	1993 - 1999	56	0,0198 (NR)	Yes	(-1,0)	Banking and manufacturing in IT
2000	Wilcox et al	1993-1999	16	0,0912 (NR)	Yes	(-1,0)	Banking and manufacturing in IT
2001	Graham et al	1980-1995	226	-0,045 (NA)	Yes	(-1,+1)	Acquirer response
2001	Graham et al	1980-1996	226	0,22 (NR)	No	(-1,+1)	Target response
2002	Hyland & Diltz	1980-1987	82	0,03 (NR)	Yes	(-1,0)	Market sample acquirer response
2002	Hyland & Diltz	1988-1992	35	-0,01 (NR)	No	(-1,0)	Market sample acquirer response
2010	Akbulut & Matsusaka	1950 - 2006	1291	-0,6 (0,2)	Yes	(-1,+1)	All mergers
2010	Akbulut & Matsusaka	1950 - 2006	599	-1,7 (0,3)	Yes	(-1,+1)	Stock Only
2010	Akbulut & Matsusaka	1950 - 2006	406	0,7 (0,3)	Yes	(-1,+1)	Cash Only
2010	Akbulut & Matsusaka	1950 - 2006	535	-0,2 (0,3)	Yes	(-1,+1)	Only includingerger wave years
2010	Akbulut & Matsusaka	1950 - 2006	756	-0,9 (0,3)	Yes	(-1,+1)	Only including non wave marger years

As seen in table 1, there are differences in diversification response across different time periods. In addition, there are differences in results when adjustments are made in terms of segment sample and payment method of acquisitions. Akbulut & Mutsuka (2010) have studied the largest sample in the summary, with the years of study from 1950 to 2006. In general, their results prove that the mean return for this period is negative, with -0.6 per cent abnormal return from a diversifying merger. They also prove a more moderate negative response in the years sorted as merger wave years. The merger wave years represent periods when mergers are more common and results prove the market also responds more moderately to such an action in these periods.

Akbulut & Matsusaka (2010) also show how acquisitions made with stocks differ from the ones made in cash only – by -1.7 and 0.7 per cent respectively. Matsusaka (1993), and Mork et al. (1990) show that years prior to 1980 view positive abnormal return. As argued by Berger and Ofek (1999) the decrease in diversification popularity after the 1970s was a response to a decline in the dependence of capital markets. Berger and Ofek (1999) write that this effect declined over time as US stock markets have become broader and more liquid. Hence, the advantages of internal capital markets relative to external markets have gradually decreased, as capital became more available with time. Graham et al. (2002) sought to further explain what occurs for both the acquirer and the target and found evidence of positive combined reactions related to acquisition announcements. However, the target response alone is not significant. The diversification discount seems to be a more complex issue than proven by early research.

Even more complex is the response question when dealing with complex and dynamic market segments. Researchers have made attempts to study fields in disruption and Dos Santos et.al (1993) studied the effect on the abnormal return when banking and manufacturing moved into IT. They performed a study on a sample of 97 finance and manufacturing firms from 1981 to 1988. By an event study, they did not manage to prove a significant change in excess return over the announcement period.

Wilcox et al (2000) performed a study even more relevant to our specific research field and did an event study of response in the telecom industry M&A for the period of 1993 to 1999. They studied if value created upon synergy (near alliance) or value diversity (far alliance) created the most cumulative average return. In terms of understanding the telecommunications distributor, content alliances will typically include unrelated firms and thus represent far alliance. Near alliance, diversification occurs when firms diversify into different two digits SIC areas, where far alliance diversification occurs when firms diversify into a new four digit SIC area. The results from Wilcox et al. (2000) prove firms that persuade M&A in near alliances will experience a greater market value increase. The average cumulative abnormal return (CAR) is 9.12% for the sample of 16 near diversification M&A, while the result is 1.98% for the 56 predominant far alliance deals. The study enlightens different reactions to different levels of diversification depth, and as well, it indicates that the telecom sector behaves differently than average market consensus found by Akbulut and Matsusaka (2010). The majority of the studies provide a negative market response, while the telecom sector reacts positively for the given sample of Wilcox et al (2000). Hence, previous

literature may suggest the telecommunication sector behaves in a different manner compared to typical event studies performed on diversification. However, the study performed by Wilcox et al (2000) only tests quite a few firms and we seek to further understand the behavior, as well as if this behavior has changed in recent times with the disruption of smartphones.

3. HYPOTHESIS AND METHOD

3.1 Hypothesis

The main hypothesis of the research is that abnormal returns from diversifying acquisition announcements are affected by industry conditions and time. As the goal is to see whether investors react differently to diversifying acquisition announcements if an industry is under pressure from outside competition, we include a hypothesis relating to market timing and industry. We apply a sample of S&P Global 100 firms as a market average and perform the same studies on both samples.

Firstly, we wish to establish if there are indeed abnormal returns following acquisition announcements, meaning, we can observe abnormal returns different from zero during the days around the event.

$$H_{A1}: CAR_{acquisition\ announcement} >< 0$$

We apply this alternative hypothesis on the telecom sample and the S&P Global 100 sample for both related and diversifying acquisitions in both time periods.

Following, we are interested in examining if the various CARs are the same for the two time periods. The alternative hypothesis is that abnormal returns from acquisition announcements are significantly different from each other when comparing the period from 2000 to mid-2007 and from mid-2007 to 2016. By comparing the two periods we come closer to establishing whether we can expect different abnormal returns when an industry is under distress. As we have defined the telecom industry as being distressed during the smartphone era, we can answer parts of our research question by testing the following hypothesis.

$$H_{A2}: CAR_{2000-2007} >< CAR_{2007-2016}$$

This hypothesis applies to both related and unrelated acquisitions separately.

For comparative reasons, the third hypothesis is formulated to test the difference between returns from diversifying and related acquisitions.

$$H_{A3}: CAR_{related} >< CAR_{diversifying}$$

Lastly, we need to know not only if the abnormal returns from acquisition announcements are different from one time period to the other but we must also compare our findings to the industry average.

As previously mentioned we use a sample of S&P Global 100 firms as a market average. The goal is to eliminate some doubt about potential findings with time-difference being an overall change in investor behavior, unrelated to the industry.

$$H_{A4}: CAR_{Telecom} >< CAR_{S\&P\ Global\ 100}$$

We ran tests following alternative hypothesis 4 on both related and unrelated acquisition announcements in addition to both time periods.

3.2 Methodology

To investigate our hypotheses, we deploy event study methodology. The method was developed in the 1970s and is broadly accepted in the discipline of assessing M&A effects (Duso et al., 2010). Event studies are used to examine security price behavior around firm-specific events (e.g. mergers and acquisitions). It is based on the fundamental idea that security prices represent the discounted value of a firm's future profits. Hence, market reactions to acquisition announcements could help predict the profitability of the acquisition.

The time of the event is defined as the day of the acquisition announcement, which is when a deal becomes public information. The estimation window is used to estimate the parameters of the benchmark expected return, which allows us to calculate the abnormal returns within the event window. This study uses an estimation period of *[-250, -10],* and includes only pre-event data, as this is the most common practice (Ahern, 2009). We use event windows of *[-1, +1], [0, +1],* and *[+2, -2]* for the first analysis and later follow the study of Akbulut and Matsusaka (2010) and rely on an event window of *[-1, +1]* for the comparative analysis. Bodie et al. (2011) argue that leakage of information can affect stock prices prior to the event date and we, therefore, include a control event window of *[-10, 10]* to investigate if our sample can be significantly affected by this.

3.2.1 Estimating abnormal returns

In order to see the market reaction to announcements of related and diversifying acquisitions, we compare expected returns to actual market returns for each company. Hence, by using equation 1, we seek to find abnormal returns around each event.

(Equitation 1)

$$AR_{it} = R_{it} - E(R_{it})$$

We primarily estimated the expected return ($E(R_{it})$) for company *i* at time *t* using the market model (MM). The simple methodology based on the MM has shown to be well specified and relatively powerful under a wide variety of conditions. It is also the model that has proved to be valid in more cases than other models used to estimate expected return, like the market adjustment model and the capital asset pricing model (Brown & Warner (1985), Cable & Holland (1999)). The benefits from employing multifactor models, such as Fama French, 3 or 5-factor model, holds a small marginal explanatory power of additional factors (MacKinlay, 1997).

(Equitation 2)

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

$$E(\varepsilon_{it}) = 0 \ \ and \ \ Var(\varepsilon_{it}) = \sigma_{\varepsilon t}^2$$

The market model is shown in Equation 2 and works under the assumption that the variance of the error term (ε_{it}) is zero. We calculate returns using a logarithmic approach because they are more likely to be normally distributed and therefore conform to the assumptions of statistical techniques (e.g. zero variance error term) (Strong, 1992).

Our sample consists of securities from various countries and the related index of that stock was deployed as market return. We found excel to be the tool best fitted to run the model using a rolling window to calculate the daily variance of the market return and the covariance between market return and the return of each individual security. Hence, finding the beta of each company to measure sensitivity to the market return, α_i is the average rate of return the security would realize if the market return was zero.

The abnormal return was estimated for every security each day and to assess abnormal return in expanded event windows we found *cumulative abnormal return (CAR)* for each of the event windows.

(Equitation 3)

$$\overline{CAR}_i(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau t_2} \overline{AR}_{i\tau}$$

CAR is the sum of each day's average abnormal return starting at time τ_1 through time τ_2.

3.2.2 Testing the hypothesis

To test the hypothesis of a difference in abnormal return from "related acquisitions" and "diversifying acquisitions," we primarily must see if the abnormal return is present for each of the two separately before comparing. Following the approach of MacKinlay (1997), we apply a two-sided student t-distribution. The null hypothesis is that the mean cumulative abnormal return is equal to zero for both related and diversifying acquisitions separately. The following test estimator is applied:

(Equation 4)

$$\theta_1 = \frac{\overline{CAR}(\tau_1, \tau_2)}{\mathrm{Var}(\overline{CAR}(\tau_1, \tau_2))^{1/2}} \sim N(0,1)$$

Where

(Equation 5)

$$\mathrm{Var}\left(\overline{CAR}(\tau_1, \tau_2)\right) = \sum_{\tau=\tau_1}^{\tau_2} \mathrm{Var}\left(\overline{AR}_\tau\right)$$

As the variance of the abnormal return is unknown in practice, we use a sample variance estimator $\hat{\sigma}_{\varepsilon_i}^2$ from the market model regression as shown in equation 6 below (MacKinlay, 1997).

(Equation 6)

$$\sum_{\tau=\tau_1}^{\tau_2} \mathrm{Var}\left(\overline{AR}_\tau\right) = \frac{1}{N^2} \sum_{i=1}^{N} \sigma_{\varepsilon_i}^2$$

For the comparative analysis, we are interested in the means being significantly different from each other and must, therefore, perform a paired t-test.

In the case of our research, we are dealing with unequal sample sizes. We use the Satterwhite Approximation to deal with the contingency and find the standard error of the two samples combined as shown in Equation 7.

(Equation 7)

$$SE_s = \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$$

This gives us a weighted average of the standard errors, which is used to create a proxy for standard error population. The t-test statistic is computed the following way.

(Equation 8)

$$t_{stat} = \frac{\overline{CAR}_1 - \overline{CAR}_2}{se_p}$$

To find out t_{crit}, we must first calculate the degrees of freedom (df) for the two unequal sample sizes. The equation used to estimate df is presented below.

(*Equation 9)*

$$df = \frac{\left(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}\right)^2}{\left[\frac{(s_1^2/n_1)^2}{n_1 - 1} + \frac{(s_2^2/n_2)^2}{n_2 - 1}\right]}$$

We then find our t-critical and the p-value.

3.2.2.1 Limitations and econometric issues in event studies

When performing an event study there are certain limitations and issues to be aware of. The most apparent is the assumption of market efficiency where stock prices are assumed to reflect all new information within a short period of time.

As Eugene Fama wrote in 1998, one should expect by the market efficiency hypothesis that anomalies are chance results. Fama suggests if the hypothesis holds, overreaction to information should be as common as underreaction and post-event continuation of pre-event abnormal return should be observed about as frequently as post-event reversals (Fama, 1998). Hence, for our results to be considered valid, one must assume the market efficiency hypothesis holds.

4. SAMPLE AND DATA

To construct a sample of diversifying and related acquisitions in the telecommunications industry we obtained worldwide data of all M&A deals where the acquirer was a telecom operator (primary three-digit SIC-code 481) from SDC Platinum. In total, 10,762 deals were concluded, began, or terminated in the period 01/01/2000 to 31/12/2016, which was the time frame used for this research.

Following the approach of Akbulut and Matsusaka (2010), we traced the acquirer back to the parent company and the sample was trimmed to publicly traded companies with available historical prices, available prices of a reliable relatable index, and a primary SIC code of 4812, 4813, or 4899. Deals without disclosed "value of deal" and where the acquiring company already owned more than 25% of the target were excluded from the sample, similar to the study of Akbulut and Matsusaka (2010). After editing the acquisition data, we were left with 1,920 acquisitions for the whole period.

Acquirer historical prices and financial data were collected from the Bloomberg terminal if the day of the announcements was a holiday or weekend; the next or previous available trading day was applied depending on the prices being collected for days prior to or after the event. Multiple SIC codes for the target and acquirer was collected from SDC Platinum. Companies reported up to ten SIC codes each but we limited to six per company like Akbulut and Matsusaka (2010). The SIC codes collected are static and do not change, we therefore, assumed all companies operated in the same sub-industries for the entire period. As we applied three-digit SIC-codes this should not have a significant impact on the results.

1,000 transactions were classified as pre-iPhone and the remaining 920, post- iPhone. We don't make any distinction between the years prior to 2007, nor after. Meaning that all transactions conducted between 2000 and 2007 are non-dependent on which year they belong to. For a better understanding of the sample, see table 2.

TABLE 2 – TELECOM SAMPLE

	Pre iPhone	Post iPhone
Diversified	178	184
Related	822	736
Total number of deals	1000	920
Companies included	190	148

When performing the event study and regressions, the sample size varies across CARs and time horizons as we only include the acquisitions with sufficient information. Included transactions are reported as *N* in all tables.

For the comparative sample to test the hypotheses of telecom being different than the market average, we chose to use "S&P Global 100" as a benchmark. The sample consisted of 102 companies representing different industries and the same approach to the trimming of the mergers was followed for this sample. The sample of the market is considerably larger than the telecom-sample but by including more acquisitions we get a better picture of the general market. Telecom operators in the S&P Global 100 sample were not excluded from the event study but excluded from the regressions.

4.1 Definition of diversifying acquisition

Akbul and Matsusaka (2010) refer to defining "diversifying" and "related" acquisitions as an *empirical issue* as we look for an easily replicable and concrete way of finding relatedness between the target and acquirer. A common approach is to take multiple SIC-codes of both the acquirer and target and comparing industries in which they operate. SIC-codes are used to classify industry areas in four-digit codes. The codes can be interpreted at different levels. The first two digits represent the major group in which a company operates, the third number indicates the industry group, and by looking at all four digits you also know the division. There is not one consensus on defining diversification in acquisitions and scholars have applied different approaches and studies when applying SIC-codes to define diversification at different levels. Hubbard and Palia (1999) and Matsusaka (1993) apply two digit-level, Kapland and Weishback (1992) at the three-digit level, and Morck et al. (1990) at the four-digit level (Akbul and Matsusaka, 2010). One can also classify using only the primary SIC-code of both the target and acquirer but this excludes all sub-segments. But, as most telecom operators operate in at least three four-digit SIC-codes, we excluded this approach.

Akbul and Matsusaka (2010) defines diversifying mergers at a three-digit level where an acquisition is classified as diversifying if none of the six first SIC-codes of the target matches any of the six first SIC codes of the acquirer. We define "diversifying" in the same way. As this is a quite conservative approach, Akbul and Matsusaka (2010) argue that we can be certain the target acquired operates in an unrelated business segment.

In addition, we define "diversifying" in a less conservative way and apply the definition of Morck et al. (1990) where an acquisition is classified as "related" if one of the three four-

digit SIC-codes of the target and the acquirer match. By applying this definition more acquisitions are classified as "diversifying." A comparative event study is performed on the telecom operators using this approach to evaluate if there is any difference when more diversifying acquisitions are included. The event study following this approach was not included in this research as the results were similar and we see it sufficient to deploy only one definition. We also checked the difference in classified "diversifying acquisitions" by using the definition of Kaplan and Weisbach (1992), which is a four-digit comparison of the first four SIC-codes of the target and the bidder. However, the outcome was similar to that of Akbul and Matsusaka (2010) and we decided to not include an event study following this approach.

The definitions applied have some known limitations. The most obvious is that they do not account for vertical relations and they do not take into account the importance of each business segment (Akbul and Matsusaka 2010). In addition, Villonga (2004) suggests there are limitations in accuracy when using SIC-codes as the foundation for data analysis. Hence, one must assume the SIC-codes reflect a near true picture of reality in terms of operating segments in order to suggest that the results are valid.

4. 2 Descriptive statistics

Total acquisitions in telecom have declined substantially since 2006 until 2016, as viewed in Figure 1. As we can see from the graph, the number of acquisitions peaked in 2000 and 2006. In 2006, 208 acquisitions were made by telecom companies, while in 2016 only 78. Hence, from 2006 until 2016, we observed a 62.5% decline in total acquisitions made by telecom companies. For the descriptive statistics, we were able to include more acquisitions than in the later event study and regressions, due to a lower information requirement.

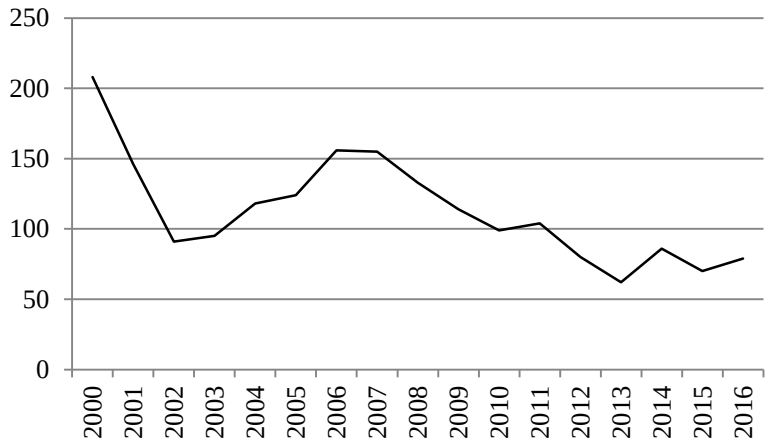

FIGURE 1 - TOTAL NUMBER OF AQUISITIONS MADE BY TELECOM FIRMS

As discussed in section 4.1 there are several ways of defining a diversifying acquisition. Figure 5 shows the different ratios between diversified and related acquisitions depending on the method of classification. The figure shows that Morck et al's (1990) categorization is more liberal and detects the highest share of diversified acquisitions. Akbulut & Matsusaka's (2010) method is perceived as the strictest for registered diversifying acquisitions, with the lowest rate of diversified acquisitions for all years of study as shown in Figure 2.

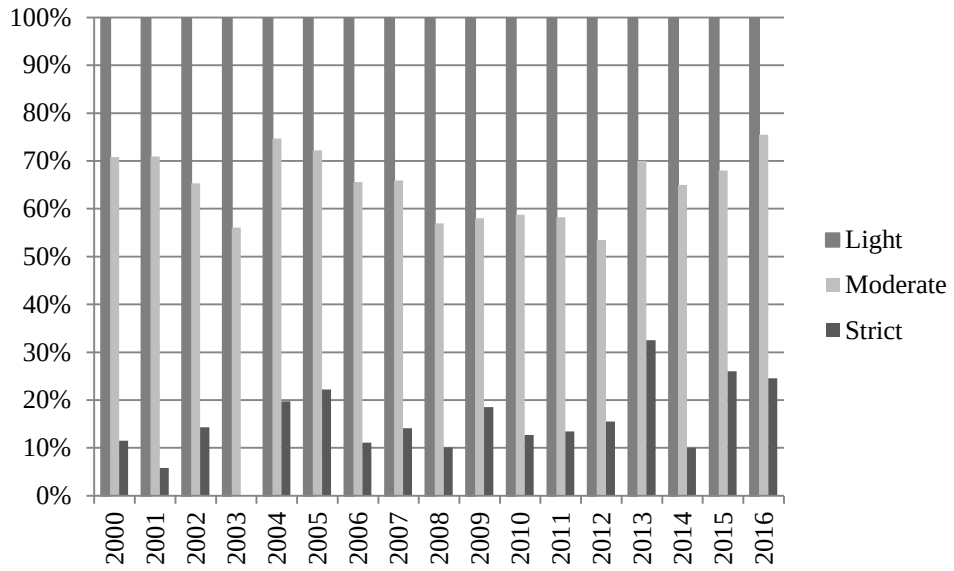

FIGURE 2 - DIFFERENT MEASURES OF CATEGORIZING DIVERSIFICATION

By looking at the descriptive graph combining the total M&A and percentage of which are diversifying, we can observe the trend of acquisitions in the telecommunications sector. The graph shows that prior to 2011, the percentage of diversifying acquisitions were lower than the years after.

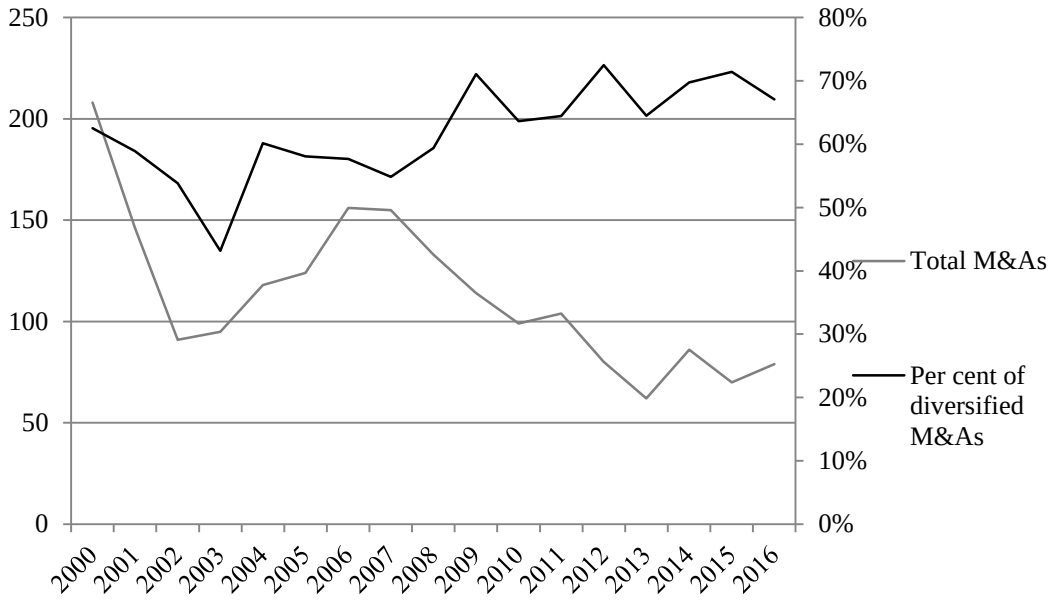

FIGURE 3 - TOTAL AQCUISITIONS WITH PERCENT OF ACQUISITIONS CLASSIFYING AS DIVERSIFYING (AM)

When conducting our research it was clear that most target companies could be classified either in the field of Telecom (SIC 40-49) or as service providers (SIC 70-89) such as content providers. When looking at the target industry, one may see from Figure 4 that firms in 2016 acquired fewer telecom companies compared to 2006. In 2006 target companies in the telecommunications sector made up 59% and in 2016, the share had declined to 46%.

It appears that acquisitions made with targets in services have filled some of the gap made by fewer telecom targets. Services made up 30% of total acquisitions in 2006 and 38% in 2016. This graph also supports our theory of a changing acquisition strategy in the later years.

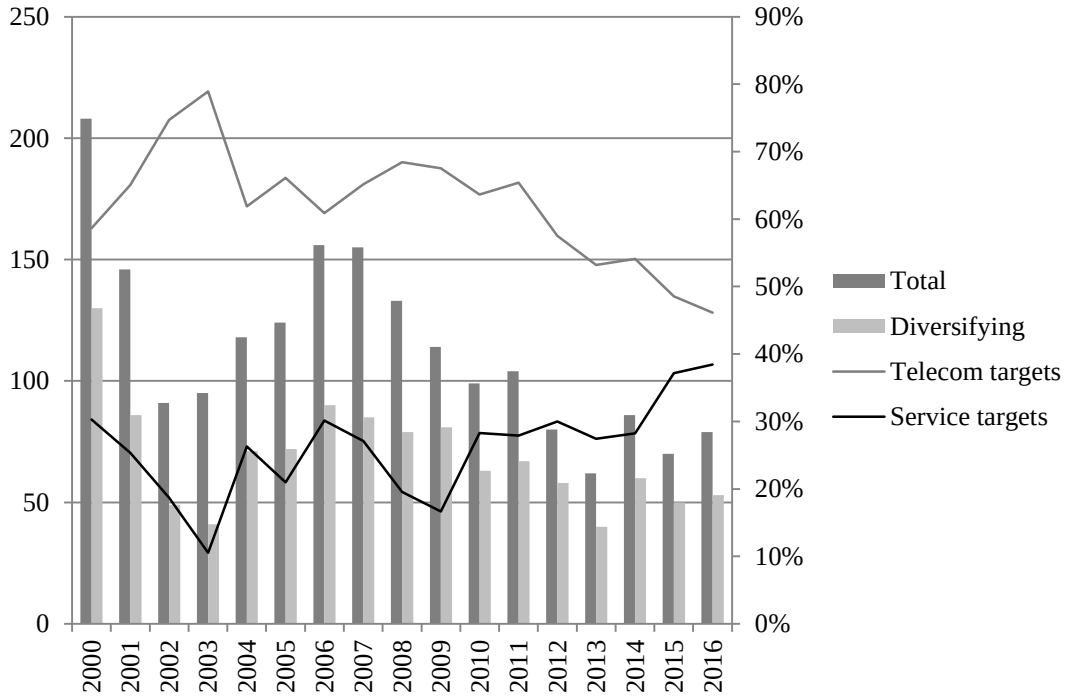

FIGURE 4 – TARGET INDUSTRY

5. EMPIRICAL RESULTS

5.1 Trend plots of AR

Pre iPhone

Figure 6 shows the average abnormal return (AR) in the days prior to and after a diversifying acquisition announcement when the acquirer is a telecom company for the period of 2000 to mid-2007. The gray lines represent the confidence interval at 95% level. As the sample sizes vary slightly due to missing prices, the confidence interval varies slightly as well. As seen from the graph, AR is only significantly different from zero on the day of the announcement. In the days prior to and after the event, the market seems to be behaving in a random matter, which is a sign of an efficient market. By viewing this graph, one may assume that the information regarding the event did not leak before the announcement.

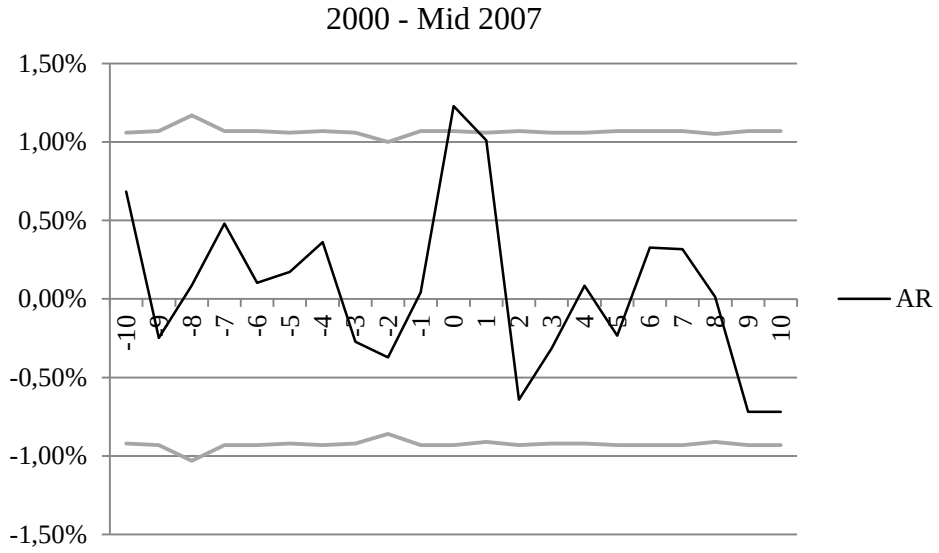

FIGURE 5 – AVERAGE ABNORMAL RETURN BEFORE AND AFTER DIVERSIFYING ACQUISITION ANNOUNCEMENT

Post iPhone

From the trend plot of abnormal return in the period of mid-2007 to 2016 in Figure 6, the same trend applies in this period as well. The abnormal return from diversifying acquisition announcement on day 0 is less than that of 2000-mid 2007.

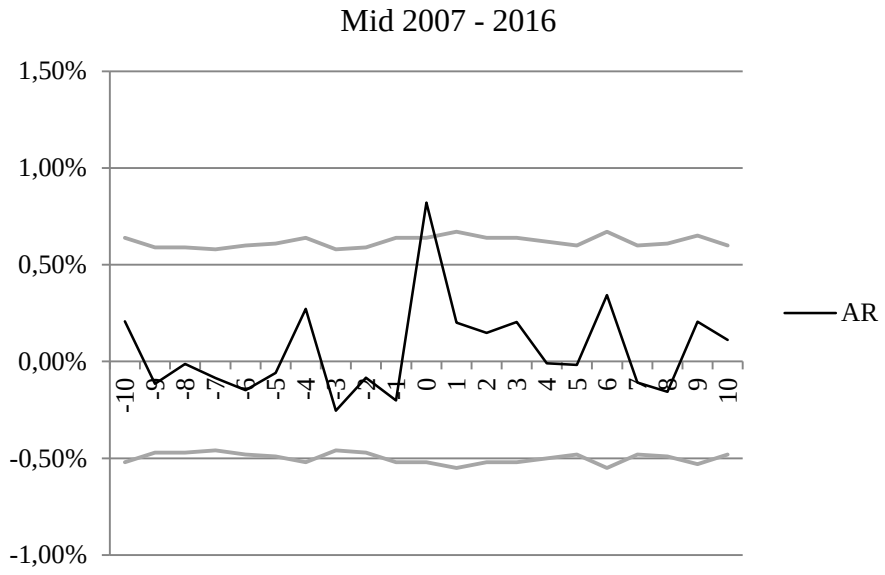

FIGURE 6 – AVERAGE ABNORMAL RETURN BEFORE AND AFTER DIVERSIFYING ACQUISITION ANNOUNCEMENT

5.2 Results from comparative event studies

Results from the event studies are viewed in different event windows for cumulative abnormal returns. Further for the robustness of tests, we have continued with an event window of (-1, +1). To see if the potential changes are a phenomenon in the telecommunications sector and not a market wide change in investor behavior, the results are tested against the sample of abnormal return from the acquisition announcements of our benchmark firms. In addition to creating robustness, the sample from the benchmark may also provide more confidence in our findings if the results match those of previous studies. The tests are run on either the telecom sample or the market sample for all available values. The sample size differs because of the exclusion of acquirers with missing CAR´s for the desired period. That is, we might have been able to calculate CAR(-1,+1) but not CAR(-2,+2) if prices were missing for specific days.

Alternative hypothesis 1 states that abnormal return from diversifying and related acquisitions are significantly different from zero. This is tested for the whole sample of telecommunicators and the benchmark, before using the paired t-test to test samples and periods against each other to answer the hypothesis. The p-values reported in each event study table are the probability from the paired t-test of the average of the two samples to be similar. Hence, if the p-value is significant we can conclude that there is a difference in the average CAR of the two samples.

In Table 1 we focus on the difference between related and diversifying acquisitions in the period before iPhone (Panel A) and the period after iPhone (Panel B). This is to determine whether there is a difference between the average abnormal return from related acquisitions and diversifying acquisitions, as stated in alternative hypothesis 3.

TABLE 1 - ACQUIRER RETURN FROM ACQUISITION ANNOUNCEMENT, TELECOM

	Diversifying acquisitions				Related acquisitions				
	Avgerage abnormal return	t-stat	% > 0	*N*	Average abnormal return	t-stat	% > 0	*N*	P-value: div = related
Panel A: Before iPhone									
CAR(-1,+1)	1,55%*	1.8152	50.3	143	1,09%***	2.7606	52.2	651	0.6239
CAR(0,+1)	1,70%**	2.4731	51.4	146	0,86%***	2.7998	53.6	674	0.2646
CAR(-2,+2)	1,17%	1.3855	47.9	140	1,00%**	2.3593	51.2	633	0.8524
Panel B: After iPhone									
CAR(-1,+1)	0.93%	1.5187	56.7	141	0.35%	1.2030	51.8	627	0.3903
CAR(0,+1)	0,9%*	1.7614	60.4	149	0.27%	1.0654	52.6	642	0.2688
CAR(-2,+2)	0.42%	0.9547	53.0	134	0.12%	0.4314	50.7	607	0.5598

***, ** and * indicate statistical significance at the 0.01, 0.05 and 0.10 level, respectively

The results show that we can reject the null hypothesis of abnormal returns equal to zero for Panel A (2000-2007). Except from CAR(-2,+2) of diversifying acquisitions, the average CAR is positive and significantly different from zero at 5% level or less.

For Panel B, only CAR(0,+1) of diversifying acquisitions is significant, while we find no support for abnormal returns from related acquisitions. From the findings, we also observe that the average CAR(-2,+2) tends to have a lower t-stat indicating that for a larger event window the abnormal returns are increasingly difficult to prove. This can come from an efficient market or the increased probability of encountering other events. Our hypothesis of abnormal return in the days around an acquisition announcement is confirmed for Panel A, but not for Panel B.

The p-value of the paired t-test for related and diversifying acquisition is not significant for any CAR's and we obtained no evidence of a significant difference between the abnormal returns from related and diversifying acquisitions so far. However, we do observe a higher average CAR from diversifying acquisitions.

TABLE 3 – DIFFERENCE TEST BETWEEN 2000-MID 2007 AND MID 2007 - 2016

	P-value: pre = post
Panel A: Diversifying Acquisitions	
CAR(-1,+1)	0,5556
CAR(0,+1)	0,3497
CAR(-2,+2)	0,4286
Panel B: Related Acquisitions	
CAR(-1,+1)	0,1296
CAR(0,+1)	0,1368
CAR(-2,+2)	0.0799*

***, ** and * indicate statistical significance at the 0.01, 0.05 and 0.10

The second p-value reported is the paired t-test for the two periods being significantly different from each other. The findings of insignificant p-values do not support the hypothesis of a difference in the two periods for either related or diversifying acquisitions, with the exception of CAR(-2,+2) for Panel B.

There is evidence that during the period of 2000-mid 2007 announcements of telecommunication acquisition activities did result in a significant increase in the market value of acquiring firms. This suggests that the market, in general, viewed these activities as value adding. However, for the period after 2007, we cannot conclude that the market had any reaction to acquisition announcements, independent of the type of acquisition. These findings are particularly interesting when compared to previous studies on mergers and telecommunications. In the study of Wilcox et al. (2000), we observe a significant average CAR of 3.35% for telecommunication acquisition announcements in the 1990s. As we find different results in different time periods we further strengthen the findings of time difference by Akubul & Matsusa (2010).

Contrary to our hypothesis, acquisitions categorized as “diversifying” yield lower average CARs during the Smartphone era. However, one may argue that the financial crisis of 2008 had an impact on market reactions and that the decrease in average CAR can be an overall change in investor behavior. In addition, though average CARs are not significant during the Smartphone era, we cannot say that the means of the two periods are significantly different from each other.

As previously mentioned, the findings are not necessarily connected to changes in the telecom industry and to better understand how the changes affect investor response to acquisitions, we compare the telecom industry to a sample of S&P Global 100 firms. As our hypotheses are based on the idea of a difference in response to acquisitions in a fast-changing environment, it is necessary to compare the results to a benchmark for a better understanding of the telecom industry and more reliable results.

The sample size of S&P Global 100 is larger than the one of the telecom industry. This is simply because more information was available on the market-sample and we chose not to exclude other companies than telecom operators to get a better view of the global market.

The findings of the comparative study of diversifying acquisitions are reported in Table 3.

TABLE 3 - ACQUIRER RETURN FROM DIVERSIFYING ACQUISITION ANNOUNCEMENTS

	Telecom				Benchmark				
	Avgerage abnormal return	t-stat	% > 0	*N*	Average abnormal return	t-stat	% > 0	*N*	P-value: Tele = Mark
Panel A: Before iPhone									
CAR(-1,+1)	1,55%*	1.8152	50.3	143	-0,12%**	-2.407	48.4	2930	0.0526
CAR(0,+1)	1,7%**	2.4731	51.4	146	-0,10%**	-2.471	48.9	3009	0.0100
CAR(-2,+2)	1.17%	1.3855	47.9	140	-0,09%	-1.609	48.2	2839	0.1375
Panel B: After iPhone									
CAR(-1,+1)	0.93%	1.5187	56.7	141	-0,11%*	-1.912	47.8	2899	0.0932
CAR(0,+1)	0,9%*	1.7614	60.4	149	-0,06%	-1.3	48.4	2997	0.0639
CAR(-2,+2)	0.42%	0.9547	53.0	134	-0,12%*	-1.86	48.6	2834	0.2287

***, ** and * indicate statistical significance at the 0.01, 0.05 and 0.10 level, respectively

First, we see from the table that the average CARs of the benchmark are negative and significant at the 5% level for the event windows (-1,+1) and (0,+1) in the period before iPhone (Panel A). The average CARs are negative, unlike for the telecom sample. This supports our hypothesis of a different investor behavior in a changing industry, though we cannot conclude for certain that the changing environment is the main reason. We also see that the CARs of the benchmark sample are relatively close to zero but as the sample is large some of the CARs are still significantly different from zero.

Second, if we look at the benchmark of Panel B the average CAR with event windows (-2,+2) and (-1,+1) are significant at 10% level. The values are negative for the second period as well.

When looking at the p-value of the comparative study for Panel A we see that CAR (-1,+1) is significant at the 10% level and CAR (0,+1) is significant at the 1% level. For Panel B the same average CAR's are significant at the 10% level. The findings support our hypothesis and we can conclude that there is a difference between the telecom industry and the market in investor reaction to diversifying acquisitions.

In Table 4, the findings of the comparative study of related acquisitions are presented. The benchmark holds no significant average CARs for neither Panel A or Panel B.

TABLE 4 – ACQUIRER RETURN FROM RELATED ACQUISITION ANNOUNCEMENTS

	Telecom				Benchmark				
	Avgerage abnormal return	t-stat	% > 0	*N*	Average abnormal return	t-stat	% > 0	*N*	P-value: Tele = Mark
Panel A: Before iPhone									
CAR(-1,+1)	1,09%***	2,7606	52,2	651	-0,01%	-0,236	50,3	2320	0.0058
CAR(0,+1)	0,86%***	2,7998	53,6	674	0,02%	0,4306	51,3	2375	0.0071
CAR(-2,+2)	1,00%**	2,3593	51,2	633	-0,08%	-1,238	48,5	2251	0.0118
Panel B: After iPhone									
CAR(-1,+1)	0,0035	1,203	51,8	627	-0,01%	-0,166	51	2865	0.2258
CAR(0,+1)	0,0027	1,0654	52,6	642	0,01%	0,2457	50,7	2941	0.3154
CAR(-2,+2)	0,0012	0,4314	50,7	607	0,00%	0,0332	50,5	2797	0.6805

***, ** and * indicate statistical significance at the 0.01, 0.05 and 0.10 level, respectively

The p-value of Table 3 holds a significant difference in CAR between the benchmark and the telecom operators for the period 2000-mid 2007. However, for the period after iPhone, we find no significant difference between the two samples. The findings imply that the response to related acquisition announcements in telecom used to be viewed more positively than the average market but that there has been a shift in market reactions.

5. 3 Robustness and discussion

5.3.1 Tests

In order to evaluate the relationship between diversification, telecom, and abnormal returns in different time periods, we estimate a series of regressions in which the dependent variable is the cumulative abnormal return from the acquisition announcements (CAR(-1,+1)). We are interested in whether variables linked to diversification in acquisition announcement and telecom have an impact on abnormal returns and if that relationship changes with time.

The primary regression presented in Equation 10 is constructed to test diversification, telecom, and the interaction between the two variables. $Diversified_{deal}$ is a dummy variable equal to 1 if the acquisition is classified as diversifying according to the method explained in Section 4.1. The second independent variable $Telecom_{acquirer}$ is a dummy variable equal to 1 if the acquirer belongs to the telecom sample and 0 if the acquirer is a company from S&P Global 100. The last term presented in the equation is an interaction term between the two dummy variables. The interaction term is necessary to understand the effect on abnormal return if both outcomes occur at the same time.

(Equation 10)

$$\overline{CAR_i} = \alpha + \beta_1 Diversified_{deal} + \beta_2 Telecom_{acquirer} + \beta_3 (Telecom * Diversified) + e_i$$

The regression of equation 10 is tested on both periods separately but including the whole sample of S&P Global 100 and Telecom.

The second regression is designed to test the time difference hypothesis. This time we apply the regression to the whole sample including both time periods together in one regression. In this case, we include the independent variable *Smartphone* which indicates that we are in the smartphone era, that is, 1 if the acquisition happened after the release of iPhone.

(Equation 11)

$$\overline{CAR_i} = \alpha + \beta_3 Smartphone + \beta_4 (Smartphone * Diversified * Telecom) + \beta_3 (Smartphone * Telecom) + \beta_3 (Smartphone * Diversified) + e_i$$

Equation 11 presents the second regression where the dummy variable for smartphone era is included together with its interaction with diversification and Telecom. Primarily we are interested in the three-way term ($Smartphone * Diversified * Telecom$) to see if it has a

significant impact on abnormal return if the acquirer is a telecom operator, the deal is diversifying, and we are in the smartphone era. The other two interaction terms are included to be able to better interpret the results.

In addition, to minimize the effect the financial crisis might have on market reactions, we perform the regressions and exclude the sample of acquisitions performed during the financial crisis of 2008. As Reddy et al (2014) we define the crisis period as starting in the fourth quarter of 2007 and lasting until the end of 2008.

5.3.1.1 Control variables

The control variables included are known in the literature to affect abnormal return in acquisition announcements. The included variables are either categorized as *Panel A: Deal Characteristics* or *Panel B: Acquirer characteristics*.

For the deal specific variables, we included relative size, cross border, and toehold. The variables are collected from previous literature (see Appendix. 1). Relative size was found using deal value and market capitalization 20 days prior to the announcement (similar to Doukas & Travols, 1987). As "deal size" was reported in USD, we had to transform the foreign currency stock prices to USD before calculating market cap. For this, we used the Bloomberg terminal and the prices should reflect the stock price in USD as correctly as possible. Toehold and cross border are dummy variables, and we define toehold at 5%.

We also include Q-ratio of the acquirer as a control variable following Lang & Stultz (1994). Size of the acquirer is included as the natural logarithm of total assets reported in the fiscal quarter prior to the acquisition announcement. Each bidder is defined as either diversified or not, following the approach of Hubbard and Palia (1999), classifying firms as a single segment or diversified (firms with two or more business segments) according to three-digit SIC-codes.

For an optimal research, we would have included more variables linked to the target and acquirer but as we are using a specific and worldwide industry, and the targets are both public and private, we are unable to collect data on components connecting to all targets if the sample size is to remain sufficiently large.

5.3.2 Regression results and discussion

Next, we investigate whether the findings from the event study are robust by controlling for deal-specific variables and the firm-specific characteristics discussed in section 5.3.1.1. The results of this analysis are reported in *Table 5* and *6* with the t-statistics in parentheses below. As previously mentioned, we follow the study of Akbul and Matsusaka (2010) and continue the robustness-testing using CAR(-1,+1). Each column reports the results from one regression. 2009-2016 is estimated to exclude the possible impact of the 2008 financial crisis.

TABLE 5 – REGRESSIONS OF ACQUIRER RETUNS FROM ACQUISITIONS ANNOUNCEMENTS

The Table shows the regression results from estimating *Equation 10* on the full sample divided into time periods using firm fixed effects. The evnt window on which the cumulative abnormal return is estimated is (-1, +1). The values under each coefficient represent the t-statistics from the regressions. The interaction term is the two dummy variables multiplied. 2000-2007 represents the period pre iPhone, that is from 01/01/2000-29/06/2007, 2007-2016 is defined as the Smartphone era ane rund from 30/06/2007-31/12/2016.

	2000-2007		2007-2016		2009-1016	
	(1)	(2)	(3)	(4)	(5)	(6)
Dummy = 1 if deal diversified	-0.002224 (-0.895765)		-0.006398** (-2.535025)		-0.003406 (-1.303219)	
Dummy = 1 if acquirer is a Telecom operator		-0.000247 (-0.068148)		0.001935 (0.848065)		0.003278 (1.362894)
Interaction term = Diversified*Telecom	0.006317 (1.096718)	0.002999 (1.042213)	0.004243 (0.748976)	0.007632 (0.234695)	0.003230 (0.554835)	0.002922 (0.650844)
Constant	-0.078966* (-2.260852)	0.046839** (2.752332)	0.022589 (0.570433)	0.016819* (1.783064)	0.106523** (2.157065)	0.017916*** (3.634421)
Panel A: Deal Characterstics						
Relative Size	-5.52E-06 (-1.492028)	-4.65E-06 (-1.557623)	-1.53E-05*** (-3.836768)	-1.35E-05*** (-3.448824)	-1.63E-05*** (-4.011037)	-1.39E-05*** (-3.433083)
Crossboarder	-0.000751 (-0.394006)	-0.000749 (-0.255455)	-0.001918 (-0.991727)	-0.002414 (-1.305354)	-0.001255 (-0.623738)	-0.001472 (-0.759170)
Toehold	0.004687 (0.972511)	0.001127 (0.144936)	-0.007708 (-1.382009)	-0.008790 (-1.559677)	-0.002285 (-0.398566)	-0.002631 (-0.446853)
Panel B: Acquirer characteristics						
Diversified Acquirer	-0.002286 (-0.414098)	0.004495 (1.419794)	-0.007220 (-1.434455)	-0.002607 (-1.328243)	-0.005147 (-0.986924)	-0.003890 (-0.930175)
Tobin's Q	-5.69E-05* (-1.907140)	-5.35E-05* (-1.856845)	-0.000301** (-2.381307)	-1.83E-05** (-2.442309)	-0.000522** (-2.540439)	-0.000632** (-2.634092)
Acquirer Size	0.007447** (2.437277)	-0.004171** (-2.420742)	-0.000758 (-0.229552)	-0.000984 (-0.687818)	-0.007828** (-1.908348)	-0.001184*** (-3.081611)
N	1705	1705	2226	2226	1786	1786
R-squared	0.708389	0.543612	0.177537	0.144219	0.225545	0.188453
Adjusted R-Squared	0.672226	0.304423	0.096752	0.080863	0.135459	0.102700

**** and ** indicate statistical significance at the 0.01 and 0.05 level, respectively*

Table 5 considers diversification and telecom in addition to the interaction between the two dummy variables in different time periods. We observe insignificant variables connected to telecom and the interaction between telecom and diversification for all time periods. Column (3) reports significant negative impact on CAR by 0.064% if the deal is diversifying. However, as the variable is no longer significant when excluding the period of the financial crisis we cannot say that return from an acquisition is affected by diversification.

The findings from the first regressions are in accordance with the findings of the comparative event study (see. Table 1), where no significant difference was found in average CARs between the two periods and between the two classifications of acquisition announcements. These results are also in agreement with the results presented by Akbulut and Matsusaka in 2010 where they tested if there was a significant difference in return from diversifying and related acquisition announcements and found no significant evidence for the period 1999-2006. However, as the only difference is that our test includes telecom acquirers, we expected a slightly different result based on previous discussions.

The results imply that a telecom operator being the acquirer has no significant impact on abnormal returns following an acquisition announcement neither before the smartphone era nor after. The regressions fail to provide support for the hypothesis of a higher CAR for telecom operators from diversifying acquisitions in the smartphone era. These findings are contradictory to previous findings in the telecom industry where a study concluded that firms participating in related acquisitions experienced a significantly greater market value increase than if the acquisition was more diversifying (Wilcox et al, 2001).

In addition to the previous robustness test, we ran one more regression to better test the impact of the smartphone era on CAR from diversification. Table 6 reports the results and this time the full sample is pooled together with the only difference between the time periods are the exclusion of the acquisitions that took place during the financial crisis (reported in column (3) and (4)).

TABLE 6 – ROBUSTNESS TEST OF TELECOM, DIVERSIFICATION AND THE SMARTPHONE ERA

The Table shows the regression results from estimating *Equation 11* on the full sample using firm fixed effects. The evnt window on which the cumulative abnormal return is estimated is (-1, +1). The values under each coefficient represent the t-statistics from the regressions. The interaction tersm are multiplied dummy variables. 2000-2016 excl. crisis is the sample excluding the acquisitions that took placxe during the financial crisis of 2008.

	2000-2016		2000-2016 excl. crisis	
	(1)	(2)	(3)	(4)
Dummy = 1 if Smartphone era	0.002932* (1.658245)	0.001714 (0.855391)	0.001849 (1.032277)	0.001390 (0.678504)
Interaction term = Smartphone*Diversified*Telecom	0.002135 (0.426274)	0.002183 (0.433513)	-0.001384 (-0.265338)	-0.001477 (-0.281760)
Interaction term = Samrtphone*Diversified	-0.004044* (-1.929449)	-0.004224** (-1.980186)	-0.001973 (-0.905474)	-0.002021 (-0.911850)
Interaction term = Samrtphone*Telecom	-0.005824* (-1.709491)	-0.004883 (-1.414294)	-0.002795 (-0.795948)	-0.002160 (-0.608062)
Constant	0.001869** (1.961055)	-0.020488 (-0.963385)	0.001759* (1.922927)	-0.003843 (-0.180047)
Panel A: Deal Characterstics				
Relative Size		-1.07E-05*** (-3.959313)		-1.06E-05*** (-3.911693)
Crossboarder		-0.001578 (-1.175912)		-0.001384 (-1.030318)
Toehold		-0.003106 (-0.853842)		-0.000197 (-0.054786)
Panel B: Acquirer characteristics				
Diversified Acquirer		-0.006091* (-1.787988)		-0.005053 (-1.475987)
Tobin's Q		-7.18E-05** (-2.427621)		-7.03E-05** (-2.466963)
Size		0.002498 (1.353966)		0.000942 (0.509863)
N	3992	3931	3618	3562
R-squared	0.478208	0.484183	0.523774	0.529429
Adjusted R-Squared	0.443932	0.448841	0.489929	0.494356

**** and ** indicate statistical significance at the 0.01 and 0.05 level, respectively*

The regressions in column (1) and (3) consider only the smartphone era-dummy and its interaction with the telecom acquirer and diversified acquisitions. The interaction term *Smartphone*Diversified*Telecom* is included to capture the three-way interaction to see whether there is a significant impact on CAR when the three outcomes of diversifying acquisition, telecom acquirer, and smartphone era occur at the same time. Contrary to our hypothesis on diversification during an industry distress, the results provide no evidence of increased value creation from diversifying acquisition announcements in the smartphone era. In addition, column (1) states a negative impact on CAR if the acquirer is a telecom operator and the acquisition took place in the smartphone era. From the event study (table 4), we found no significant difference between telecom acquirers and non-telecom acquirers but based on the findings of column (1) there is a significant impact. However, these results are not robust when including control variables and excluding the acquisitions that took place during the financial crisis. Hence, we cannot reject the null hypothesis.

The regression in column (2) holds a significant negative impact on CAR when a diversifying acquisition in the general market occurred in the smartphone era. Similar to previous findings the effect is no longer significant when the crisis years are excluded which indicates that the financial crisis held the significant impact on CAR seen in column (2).

In column (3) and (4) we report no significant evidence that the smartphone era, diversification, and the distressed telecom industry have any effect on abnormal return from acquisition announcements. These results indicate that the findings from the event study (see table 2) of diversifying acquisitions in the telecom industry are significantly different from the market in the period after iPhone are not robust when including control variables and excluding the financial crisis. Next, from the event study, we also found a significant difference in CAR from diversifying acquisition announcements when comparing the two samples (see table 3). These results are also not robust and we cannot conclude that the acquirer being a telecom operator has any significant impact on CAR.

From the robustness tests, we find no significant evidence supporting the alternative hypotheses of this research, with the exception of significant abnormal returns in the period 2000-mid 2007.

As mentioned in the introductory section, the telecom value chain has changed rapidly and the change was frequently mentioned in literature from 2006. Akbulut and Matsusaka (2010) argue that diversification could be a value-maximizing response to changing industry

conditions and the main hypotheses of this research rely upon investors understanding why telecom operators diversify into new segments and have a long-term perspective. In 2014, Christensen & Bever introduced the capitalist's dilemma stating that investors favor short term gain over long term economic growth. In the case of telecom, we argue that as long as the companies are increasing sales and revenues, there is something to gain for investors from expanding core business rather than diversifying. Hence, diversification is not yet seen as creating more value. In addition, research from Campa and Kedia (2002) suggest companies that choose to diversify as a strategic decision have a better chance of creating value than companies pressured to do so by external competition or industry changes, which can further explain the findings.

Campa and Kedia (2002) also state that firms may diversify as a method used to explore diversifying opportunities, as it allows a slowly growing firm to further explore new attractive business opportunities. The second incentive would support our theory of the diversification in telecom allowing for firms to explore new productive opportunities. As stated in the introduction, these are not productive opportunities for the sector of choice, but necessary strategic moves to survive. Hence, the absence of positive abnormal returns from acquisitions may be a result of firm-specific characteristics (e.g. slow growth) forcing the firm to seek new opportunities.

The conclusion of the research is similar to that found in the banking industry in the 1980s by Dos Santos et al. (1993) in terms of diversification occurring in a distressed industry. Abnormal returns from acquisition announcements do seem to vary with time but we cannot conclude that a distressed industry has an effect on cumulative abnormal return. In addition, we find no robust evidence of the telecom sector being significantly different from the average market, though the event study shows a significant difference between the two for CAR(-1,+1) and CAR(0,+1).

6. CONCLUSION

In this research, we study the impact industry conditions can have on market reactions to diversifying acquisition announcements. We argue that, with disruptions and the telecom industry moving from a value chain to a more complex value network, investors view diversification as more value creating than if the industry was not in distress. However, we find no evidence of increased abnormal return from diversifying acquisition announcements in the smartphone era. There is evidence that during the period of 2000-mid 2007, announcements of telecommunication acquisitions activities did result in a significant increase in the market value of acquiring firms. This suggests that the market in general view these activities as value adding. However, for the period after mid-2007, we cannot conclude that the market has any reaction to acquisition announcements independent of the type of acquisition.

In addition, the study of abnormal returns from diversifying and related acquisition announcements in the telecom industry are compared to abnormal returns from a market sample. The alternative hypothesis states that investor reaction in the telecom industry is different from that of the average market when it comes to diversification in acquisitions. We find no evidence to support the alternative hypothesis and we cannot conclude that investors respond differently when the acquirer is a telecom operator.

The study is limited by the lack of information on target companies. If we had been able to control for target-specific variables, the findings might have yielded a different result but if we were to include only acquisitions with sufficient information on target companies, the sample size would have been too small. For future research one could include other industries that went through change and disruptions and include more information on target companies before comparing to acquisitions made by companies in more static industries.

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APPENDIX

Appendix 1: Variable Description

Variable	Definition	Exp. sign	Authors
Panel B: Deal characteristics			
Relative Size	Deal value divided by the equity market capitalization twenty days prior to announcement date	+/-	Tavols (1987)
Crossborder	Dummy variable that takes the value 1 if acquirer and target hold their business in different countries	-	Moeller and Schlingemann (2005)
Toehold	Dummy variable that takes the value 1 if acquirer holds at least 5% stake in target	+	Bretton et al. (2008)
Panel C: Acquirer characteristics			
Diversified	Dummy variable that takes the value 1 if aquirer is classified as a diversified company		
Q ratio	Market value of total asset divided by the book value of asset in the fiscal quarter prior to the acquisition announcement	+	Akbulut and Matsusake (2010) Servaes (1991)
Size Acquirer	Natural logarythm of acquirer assets	-	Moeller et al. (2004)