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An investigation into the motives that lead to firm acquisitions

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Abstract

In today's highly competitive business environment that sees constantly changing customer requirements and thus company required adaptations and innovations, company acquisitions are sometimes a suitable way to keep the company flexible and involved in all the required aspects of business.

Through the analysis of existing M&A literature, we found motives with potential influence on acquisition decisions. Namely, synergy, agency and hubris. Acquisitions, the motives and the correlations between synergy, agency and hubris have been thoroughly researched in a multitude of settings, countries and using a wide variety of data samples. This research paper set out to build upon already existing research and attempting to add to this research by associating various independent variables to the motives based upon existing literature and testing for the results using an OLS regression.

Our sample consists of 104 acquisition announcements in Western Europe between 2007 and 2018. Our findings suggest that approximately 56.7% of acquisitions in our dataset were motivated by synergy. Our regression analysis further suggests that increased CEO age negatively influences acquirer gains.

Preface

I would like to thank my graduation committee for their valuable advice and input. I have found our regular meetings both helpful and enjoyable.

Secondly, I would like to thank my family for their support, not only during the Master thesis, but throughout the years of studying at the University of Twente.

Thirdly, I would like to acknowledge Orbis and Zephyr as excellent databases with access to major downloadable information which you are able to accurately filter using their highly specific categories.

And lastly, thank you to the University of Twente for making my time as a student both enjoyable and educationally enriching.

Contents

1. INTRODUCTION

In today's highly competitive business environment that sees constantly changing customer requirements and thus company required adaptations and innovations, company acquisitions are sometimes a suitable way to keep the company flexible and involved in all the required aspects of business.

Coach acquired Kate Spade in 2018. Coach (a luxury clothing and fashion brand tailored to the middle age market segment) acquired Kate Spade (luxury clothing and fashion brand tailored to the younger aged market) for 2.4 billion dollars in cash, a 27.5% premium on Kate Spade's share price in a move they called building a multi-brand portfolio with the hope of rivaling industry leaders. Coach was quoted stating they were expected to realize cost and operational synergies of close to 50 million dollars over three years after closing the deal and found the synergy potential very endearing. Coach paid a premium of 27.5% which suggests as mentioned they saw major synergy potential, however paid cash which according to literature is a key part of empire building and does not correlate with the synergy motive. This research, with reference to prior studies allows us to revel, build upon and analyze acquisition examples using existent and new data methods to find what the motives may truly be behind each acquisition.

Throughout this study we focus on three motives leading to acquisitions, namely: synergy, agency and hubris. Synergy in relation to acquisitions, is defined as the combination of two or more entities whose combined effects are greater than the sum of their separate parts Bradley, Desai and Kim (1988). Agency in relation to acquisitions is defined as management's self-interest with the aim to acquire further responsibility, corporate control and potential increased personal wealth Shleifer and Vishny (1989) and lastly Hubris, which is defined as the managerial decision to acquire a company that results from either a mistake Berkovitch, and Narayanan (1993) or the use of publicly available information that clearly undervalues a company in question Shleifer and Vishny (2003).

There are many papers with differing conclusions with regard to the motive behind an acquisition being synergy, agency or hubris. Studies include Berkovitch and Narayanan (1993) with research on the motives for takeovers.

Malatesta (1983) whom carries out research on acquisitions by research into the wealth effect of merger activity and the objective functions of merging firms. Guest, Bild and Runsten (2010) who look at the effects of an acquisition on the value of the acquirers and look at profitability and share return studies in light of general takeover effects. Firth (1980) who looks at takeovers, shareholder returns and the theory of the firm using a UK sample of firms. A later paper, by Shleifer and Vishny (2003) looks at acquisitions as a result of the misevaluation of companies in the stock market. Roll (1986) researches the rationality of corporate managers. And again Shleifer and Vishny (2003) who look into managers and rational markets.

The most recent study on the motives is a paper by Hodgkinson and Partington (2008) whom used Berkovitch and Naranyan (1993) as a stepping stone on which they would base their research and tried to improve results.

These are very useful studies as they give our paper a multitude of options with which we can explore the motives behind company acquisitions, which are further explored in the literature review.

All the above-mentioned papers look at either synergy, agency or hubris alone or all three in combination. They look at gain correlations or carry out a regression with acquirer CAR (gain) as the dependent variable. A CAR is used to determine the effect that events such as acquisitions have on stock prices. One common issue is the lack of certainty in concluding which one of the motives is often the main motive resulting in acquisitions. As a result, a research gap exists and as our theoretical contribution, we aim to improve on current studies by not only focusing on a CAR or a correlation like other studies, but by carrying out both.

Cuypers, Cuypers and Martin (2017) carried out research on company acquisitions. Their research paper gave us a clear indication on the types of variables we should expect to use and include in our regression. We went on to closely evaluate each variable they included in their research and analysed whether we could link those same variables to our synergy, agency and hubris motives in an OLS regression using the following papers:

Martynova and Renneboog, (2008) whom focused on merger/acquisition waves and indicate the sources of financing used in various acquisitions.
Serfling, (2014) who carried out research on the age of CEOs and the riskiness of their corporate policies, Jensen (1986) who carried out research on free cash flow theory and Shleifer, and Vishny (2003) whom as we as mentioned above, also give a good indication of a certain variable we are

able to use as part of overall research, namely; price/earnings ratio which we link to the valuation of an under/overvalued company.

Many studies have been published with regards to acquisitions and the relevant motives/reasons behind them and we have used a large number of these as set out in this paper, which looks at the following research question:

What are the motives that lead to the acquisition of a company which is listed on the Euronext Amsterdam (AEX)?

Our sample consists of non-financial companies, excluding firms from other regulated industries, listed on Euronext Amsterdam during the period 2008-2017. We have used data sources Zephyr and ORBIS to gather relevant data and information. In this study standard event study methods as well as multivariate analysis (OLS) have been applied.

We found in line with prior research that total gain was positive in 56.7% of cases in our total sample, suggesting that a little more than half of the acquisitions in our sample are motivated by synergy. We also found that synergy dominated in our correlation matrix due to the existence of both positive and significant gains at the 0.01 significance level. Further analysis through OLS regressions resulted in two significant results against the Acquirer CAR, namely CEO age and P/E ratio. Indicating that these independent variables may be a key factor surrounding abnormal returns around an acquisition announcement. This warrants further research.

With reference to academic contributions, we believe this is one of the only papers that we are aware of, which combines both testing for gain relations using Pearsons correlation matrix and also carries out an OLS regression which attempts to link independent variables (based on literature) with potential relation, to our motives synergy, agency and hubris in order to contribute to existing M&A literature   .

Our intention is, then, to suggest which motive(s) result in the majority of acquisitions, while testing for certain independent variables in order to advise businesses on attributes to take into account when looking to potentially acquire and how they can gain most synergistic value during a potential acquisition/announcement.

This research is structured as follows: in chapter two we start by assessing existing literature and relevant studies in support of this paper. As part of our literature review, we will define synergy, agency and hubris. Following this literature review we discuss the hypotheses development section in chapter three, in chapter four we reflect on the method used in this paper. In which we explain our analytical strategy as well as data and tools used for our overall analysis. In chapter 5 we focus on our collected and processed data and present our results along with findings and relations to the significance of data. Finally, in chapter 6 we discuss our academic and practical contribution, conclude our research and list limitations encountered during our paper.

2. LITERATURE REVIEW

As our paper revolves around company acquisitions, we first want to define the term acquisition in order to establish a base for our further analysis using both prior research and our own interpretations. Sufian, Muhamad, Bany-Ariffin, Yahya and Kamarudin (2012) defines acquisition as a corporate action in which a company buys most, if not all, of another firm's ownership stakes to assume control of it. Although this definition is correct, we will be using a slightly altered version to suit our data gathering method where we use a tender offer database. Acquisition is defined as: *A managerial action to take over a company using a tender offer to propose buying shares from shareholders of a publicly traded company for a certain price, usually at a premium to the current market price.* (Sufian, Muhamad, Bany-Ariffin, Yahya and Kamarudin, 2012; Berkovitch and Narayanan, 1993; Sharma and Ho, 2002; Bradley, Desai and Kim, 1988)

We will start by giving some background information on acquisitions by explaining the various merger/acquisition waves we have seen over time plus the potential factors that have been attributing to these M&A waves in 2.1 and 2.2.

Section 2.3 will discuss the motives behind company acquisitions i.e. synergy, agency and hubris respectively, while section 2.4 looks in further detail at the value effect of acquisitions, why are they carried out and what is the benefit.

2.1 Acquisition waves

Takeovers constitute one of the largest investment decisions and corporate restructuring changes made by a corporation. Acquisitions are often a suitable way to keep a company flexible and involved in all the required aspects of business. Theory presents us with 3 types of acquisition, i.e. strategic acquisitions, financial acquisitions and conglomerate acquisitions.

Strategic acquisitions are usually friendly and are motivated by operating synergies, these acquisitions are becoming more and more popular/important in recent years. Financial acquisitions are often hostile and are motivated by taxes and incentive improvements, these types of acquisitions were mainly popular in the 1980s. Conglomerate acquisitions are either hostile or friendly, they provide an opportunity to reduce capital costs and overheads while achieving other efficiencies such as financial synergies, taxes and incentives, these acquisitions were popular during the 1960s and 70s. The change in popularity of certain type of acquisitions stem from

waves, which will be further discussed below.

According to research by Schleifer and Vishny (2003), Martynova and Renneboog (2008) etc. frequency of and reasons for mergers & acquisitions come in waves. The length/start of each wave does not seem to be too specific but the end of each wave usually falls with a major war or the beginning of a recession/crisis. There are said to have been seven waves, seven being the wave we are experiencing currently, with the first two only impacting the US and the rest having a more global impact.

The first wave (1893-1904) came after a period of economic expansion. There was horizontal consolidation of manufacturers within one industry which resulted in the creation of monopolies like in the oil, mining and steel industries. The end of the first wave was due to a crash of the stock market in 1905 which slowed down the economic industry and the threat/start of the First World War was also pointed out as being a potential reason for the ending of the wave.

The second wave (1916-1929), had a primary focus of merger activity in the iron, paper and printing industries. This wave was a fair amount smaller than the first wave. The first wave exceeded more than 15% of the total asset base in the US market, the second wave had an impact of less than 10%. The second wave started after the First World War when economic recovery was taking place and people grew wary of monopoly power. The second wave was increasingly known for its major contribution to the creation of oligopolies. i.e. industries were now dominated by a small number of larger sellers as opposed to one dominant company. The end of the second wave was due to a share market crash in 1929 which started the Great Depression.

The third wave (1955-1975), resulted in diversification as opposed to horizontal mergers/acquisitions in wave 1 and vertical mergers/acquisitions in wave 2. Diversification led to the rise of conglomerates, which are very large corporations which consist of several, often unrelated businesses. The subject diversification can be a method to offset cashflow volatility by limiting exposure to industry specific risk as shocks in one industry are offset by potential increase in income in another industry. The third wave started to slow down significantly towards the end of the 1970s and collapsed completely in 1981 when an economic regression was triggered due to an oil crisis.

The fourth wave (1984-1989), differs from the others in the sense that relevant takeover attempts were often hostile, i.e. without the management of the targeted companies being aware. The source of financing also shifted from equity (waves 1-3) to debt and cash financing. Ravens

Craft (1987) suggest the beginning of the wave could have been a bargain hunt, considering it would have taken place in a depressed stock market, where the conglomerates from the previous wave fell apart. After 1989 the merger/acquisition activity slowed down when another stock market crash ended the wave.

The fifth wave (1993-2000), started due to technological innovations, i.e. information technology, and corporations starting to reconfigure their core competences in order to increase their competitive advantage. The financial markets were thriving, and globalization was on the rise. As a direct result of globalization, cross border acquisitions largely increased with the goal to keep up with economic growth and the global opportunities at hand. Organizations explored outside of their own domestic borders for potential target companies. Growth was a highly significant driver for merger activity. Corporations wanted to participate in the globalization of the economy. The end of the wave was once again caused by an economic recession. The beginning of the new millennium started with the burst of the internet bubble, causing global stock markets to crash.

The sixth wave (2003-2008) was characterised by shareholder activism, globalization and private equity. Shareholders became more involved in companies, as they exercised more power over both the management and board of directors. This led to shareholders splitting ownership with management and investors of the company, which led to a large amount of private equity. Leveraged buy outs also became a popular way to acquire companies. This is where the acquiring company borrows money to fund the purchase of the target company. Globalization became a key feature in the mergers and acquisitions during the sixth wave. Companies were intent on expanding their reach to the global market. In December 2007, however, the subprime mortgage crisis in the US, which happened at the same time as the recession of the US economy, marked the end of the Sixth Wave.

The seventh wave (2011-present), is on-going especially in the largest emerging economies in the world like Brazil, Russia, India, China and South Africa (BRICS countries). These countries have started thorough co-operation and there is no doubt that, their focus on commercial and corporate activities will result in a lot of M&A activity in these countries.

The table on the following page as adopted from Martynova and Renneboog, (2008), and as further updated by us to include wave 7, has been included in this paper to give a clear overview of the waves.

Table 1
Summary of takeover waves

	Wave 1	Wave 2	Wave 3
Period	1890s-1903	1910s-1929	1950s-1973
Geographical scope	US	US	US, UK, Europe
M&A outcome	Formation of monopolies	Formation of oligopolies	Growth through diversification
Industry relatedness	Focus	Focus	Diversification
Industries	Hydraulic power, textiles industry, iron industry	Steam engines; steel, railways	Electricity, chemicals, combustion engines
Dominant sources of financing/means of payment	Cash	Equity	Equity
Hostile takeover activity	n.a.	n.a.	None (US&UK) / None (Europe) / None (Asia)
Cross-border M&A Activity	n.a.	n.a.	n.a.
Other specifics			
Events coinciding with beginning of wave	Econonomic expansion; industrialisation process; introduction of new state legislations on incorporations; development of trading on NYSE; Radical changes in technology	Economic recovery after the market crash and the First World War; strengthen enforcement of antimonopoly law	Economic recovery after the Second World War; tightening of anti-trust regime in 1950
Event coinciding with end of wave	Stock market crash; economic stagnation; beginning of First World War	Stock market crash; beginning of Great Depression	Stock market crash; oil crisis; economic slowdown

	Wave 4	Wave 5	Wave 6	Wave 7
Period	1981-1989	1993-2001	2003-2008	2011-present
Geographical scope	US, UK, Europe, Asia	US, UK, Europe, Asia	US, UK, Europe, Asia	BRICS
M&A outcome	Elimination of inefficiencies	Adjustment to globalization processes	Global expansion	Cooperation of emerging economies
Industry relatedness	Focus	Focus	Focus	Focus
Industries	Petrochemicals, aviation, electronics, communications technology	Communications/information technology	Globalization, private equity, shareholder activism	Commercial/corporate activity
Dominant sources of financing/means of payment	Debt financed/cash paid	Equity	Debt and Cash financed/Cash paid	Debt and Cash financed/Cash paid
Hostile takeover activity	High (US & UK) / None (Europe) / None (Asia)	Some (US & UK) / None (Europe) / None (Asia)	Some (US & UK) / Some (Europe) / Some (Asia)	Some (US & UK) / Some (Europe) / Some (Asia)
Cross-border M&A Activity	Some	Medium	High	High
Other specifics	LBOs, MBOs, going-private deals, and divestures	Mega-deals, divestitures	Deals by private equity funds	
Events coinciding with beginning of wave	Economic recovery after recession; changes in anti-trust policy; deregulation of fin. Services sector; new financial instruments and markets (e.g. junk bonds); technological progress in electronics	Economic and financial markets boom; globalization processes; technological innovation, deregulation and privatisation	Economic recovery after the downturn in 2000-2001	Economic recovery after the 2008 subprime mortgage crisis and recession
Event coinciding with end of wave	Stock market crash	Stock market crash; 9/11 terrorist attack	Subprime mortgage crisis/Recession	n.a.

Acquisition waves: Martynova and Renneboog (2008)

2.2 Factors attributing to M&A Waves

There are three factors most commonly attributing to M&A waves as explored in the mentioned research papers.

The first factor is business environmental changes; Martynova and Renneboog (2008) state that economic factors that trigger firms to restructure as a response to changes in the business environment is potentially one way of explaining the occurrence of M&A waves.

Secondly, managerial behaviour, which suggests that other than the viewpoint that economic factors explain the occurrence of merger/acquisition waves there also exists a viewpoint regarding agency problems and the overconfidence of managers Martynova and Renneboog (2008). Agency problems exist when there are conflicts of interest between the agent (managers) and the principal (shareholders). These agency problems can exist due to large free cash flows that are at the hands of managers who have an incentive to grow a company beyond its optimal size as these managers may perceive growth as a way to increase their power. The existence of these cash flows can create M&A waves in times of industrial shock or the presence of booming financial markets Jensen (1986).

Lastly, market timing; Shleifer and Vishny (2003) concluded in relation to the fifth wave that the occurrence of merger/acquisition waves is related with the boom of financial markets and the overvaluation of stocks. In times of financial boom stocks tend to be overvalued but this overvaluation varies significantly across firms. The management of firms with less overvalued stocks will therefore buy the more overvalued ones. According to Martynova and Renneboog (2008) the theory assumes that the target manager maximizes his own short-term benefits, by accepting the stock offer.

2.3 Motives

As this paper is researching into synergy, agency and hubris motives and using target, acquirer and total gains in order to assess each of the motives relations to acquisitions, we have defined them here below. Subsequently we look at each motive in finer detail along with the excepted gains relations as well as research into variables which may influence the motives such as the age of the CEO of an acquiring company, etc.

Target gains is defined as the sum of the change in wealth of shareholders of the target firms Berkovitch and Narayan (1993).

Acquirer gains is defined as the sum of the change in wealth of shareholders of acquiring firms Berkovitch and Narayan (1993). Total gains are defined as the sum of target and acquirer gains Berkovitch and Narayan (1993).

2.3.1 Synergy incentive

Berkovitch, and Narayanan (1993) define synergy as takeovers that occur because of economic gains that result by merging the resources of two firms. These mentioned economic gains are reflective of synergy as it results in a more effective business with a more appropriate allocation of (scarce) resources, or the result of synergy in the form of market power by becoming a monopoly and dictating prices etc as stated by Sharma and Ho (2002).

Bradley, Desai and Kim (1988) similarly state that synergy as a combination of the two above mentioned definitions by Berkovitch and Sharma. They state that the value created by the combination may result in more efficient management, economies of scale, improved production techniques, the combination of complementary resources, the redeployment of assets to more profitable uses, the exploitation of market power or any other value creating mechanism.

Considering the mentioned definitions for synergy, synergy is defined as as: *The combining of two or more entities through acquisition, resulting in the streamlining of many different functions and the appropriate use of available resources and economies of scale that leads to value creation.* (Berkovitch and Narayanan, 1993; Sharma and Ho, 2002; Bradley, Desai and Kim, 1988)

As we have mentioned, the synergy motive suggests that managers of both target and acquirer firms want to maximize shareholder wealth and would only participate in takeover activity if there were gains to shareholders of both organizations. This further suggests that after data collection we can expect to find that the gains for target and acquirer firms are positive. If the target firm is in a position to resist the takeover attempt or ensure there are more candidate acquirers for their firm, then the target gain increases with the total gain. We therefore suggest that if takeovers are motivated by synergy, gains to the target and the acquirer, and the total gain, will be positive and positively correlated with one another.

Berkovitch and Narayanan, (1993) confirm these relationships through their findings and results regarding a synergy motivated takeover. They stated that the target obtains part of the synergy if it can threaten to resist the takeover or if there is competition among potential acquirers. In this case, it can be shown that the higher the synergy, the higher the target gain, everything else

remaining the same.

Hodgkinson and Partington (2008) similar to Berkovitch and Narayanan (1993) carrying out research on "The motivation for Takeovers in the UK" hypothesised that synergy motivated offers will have a positive correlation for both target and acquirer gains as well as target and total gains. However, they concluded that general results are significantly different when adjusting for the means of payment. They not only, suggested that there are differences in the significance and signs of coefficients conditional on the means of payment but also that the explanatory power of regressions between target, acquirer and total gains increase substantially after introducing adjustments for the means of payment. As a result of these findings, we too will be controlling for the means of payment.

Financing method under synergy incentive

The prior research as further analysed and listed below theorises that certain financing decisions are made rationally by management for a multitude of reasons including tax benefits, information sensitivity, empire building, synergy etc. Based upon our conclusions drawn from the mentioned research papers we have come to the belief that certain financing decisions may be indicators of synergy, agency or hubris and have allocated these financing decisions to one of the three motives along with reasoning below.

While cash offers in general are viewed as positive signals that the firm's shares are not overvalued, debt financing conveys an additional signal that the takeover is profitable and generates a tax shield (Martynova and Renneboog 2008). Another important aspect, especially in a European context where debt capital is typically raised via borrowing from a bank (Martynova and Renneboog, 2008), is the positive signal conveyed by the bank's decision to provide funding. Martynova and Renneboog (2008) argue that this is because banks use their superior information and evaluation capabilities to identify bad acquisitions and therefore, they fund only value-creating deals. These findings imply that when acquirers are convinced of the synergy gains, they will accept the monitoring by banks to send a positive signal to the markets. Loans will only be provided if banks can be convinced of the value-creation effects, so they act as a signal proving the acquisition potential.

(Serfling, 2014) who researched CEO age and the riskiness of corporate policies found (in line with other research) that the older the CEO the more they make diversifying acquisitions (25% increase in age = 18.9% increase in diversifying acquisitions made) and in turn decrease risk for

the firm.

When firms know they are being acquired they can resist the takeover attempt or ensure there is competition for their firm. If synergy is apparent for the acquiring firm they would likely go through with the acquisition as the total value of the firms is larger than the sum of parts and in their effort to succeed, they are typically willing to pay a premium (Berkovitch and Narayanan, 1993). We see a premium paid as an indication of synergy as the motives agency and hubris would normally not warrant a premium payment for a target.

2.3.2 Agency incentive

Agency is another one of the incentives for takeover and is defined by Berkovitch, and Narayanan (1993) as the reason behind takeovers that occur because they enhance the acquirer management's welfare at the expense of acquirer's shareholder. Agency can be further explained by the following quotes:

o Shleifer and Vishny (1989) "agency include acquiring assets that increase the firm's dependence on management"

o Amihud and Lev (1981) "takeovers occur due to the personal interest of a management person who wants to diversify their portfolio"

o Jensen (1986) "firms management use free cash flow to increase the size of the firm through takeover".

Berkovitch and Narayanan's (1993) definition along with the abovementioned quotes can be combined to explain that through agency methods of acquisition, value is taken from acquirer shareholders and transferred to acquirer management. Management can take advantage of takeover situations to better suit themselves, their task responsibilities and their wealth.

Considering the mentioned definitions and additional characteristics of agency as spelled out above, agency is defined as: *The reallocation of value from acquirer's shareholders to relevant management who out of self-interest aim to acquire further responsibility, corporate control and potential increased personal wealth. (*Shleifer and Vishny, 1989; Amihud and Lev, 1981; Jensen, 1986; Berkovitch and Narayanan, 1993*)*

As we have mentioned, the agency motive suggests that the management of an acquirer firm has found a target firm that is most suited to increase their own welfare at the expense of their shareholders, resulting in negative gains to acquirer shareholders. In turn, target shareholders who realise that they are of value to the acquirer management, will try to exploit this opportunity to gain some of this value for themselves. If target shareholders have some level of bargaining power, the value they obtain through the deal will increase alongside the value that the acquirer management is able to secure. The more severe the agency problem, the higher the target gain. The more money allocated to a takeover by acquirer management (target firm realisation of their value), the lower the total gain, there is an inverse relation between total and target gains. Since the acquirer gains are inversely related to the severity of the agency problem, the target and acquirer gains are also negatively correlated. The agency motive suggests management has found a target firm which if acquired will increase their own welfare, therefore positive gains will be realised by acquirer management if successful.

Berkovitch and Narayanan, (1993) confirm our relational expectations with regards to agency. From their empirical results we see that agency is the primary motive in the negative total gain subsample and their results show that there is a negative correlation between target and acquirer gains which is further confirmed and in line with their regression results.

A more recent study by Georgen and Renneboog (2004) on the shareholder wealth effects of European domestic and cross border takeover bids, further confirms our relation expectations, as their empirical results were in line with those of Berkovitch and Narayan (1993) and also show that there is a negative correlation between target and acquirer gains as well as a negative correlation between target and total gain.

Financing method under agency incentive

Internal funds or capital generated internally by the business are common sources of financing. Using internal funds can be very favourable in that there is no outside pressure e.g. no covenants, no fixed obligations such as interest or instalment payments and investing retained earnings in positive NPV projects will have a positive impact on shareholders wealth.

However, the agency motive suggests management has self-interest in mind and not necessarily the best interest of shareholder. According to Jensen (1986) with their research on free cash flow theory, managers motivated by self-interest and empire building and whom are endowed with free cash flow will invest it in negative present value projects using internally generated funds.

According to the pecking order theory by Myers and Majluf (1984), companies prefer the method of financing with the least information sensitivity, thus internal financing is preferred, given that alternatives like debt financing and equity financing have high information sensitivity.

With the above argumentation in mind, we believe that a large amount of free cash flow with relation to the market cap suggests a company may not actively be looking for opportunities to invest in positive NPV projects and could imply management is, as mentioned, not working in best interest of shareholders.

We also believe that the debt equity ratio which indicates how much debt a company is using to finance its assets relative to the value of shareholders' equity can be a good indicator of agency. Companies with low debt/equity have not used significant debt to fund their growth. This may be an indication of agency in that the company's management may refrain from taking on debt to prevent being monitored (Martynova and Renneboog, 2008), to avoid obligations to debt payments/covenants and to make sure there are no restrictions on their own goals e.g. increasing own welfare, increase firm dependence on them etc.

2.3.3 Hubris incentive

Hubris as defined by Berkovitch, and Narayanan (1993) suggests that managers make mistakes in evaluating target firms and engage in acquisitions even when there is no synergy. This definition is further confirmed by Roll (1986) who suggested that in corporate takeovers, financial markets are rational but corporate managers are not. Other research by Shleifer and Vishny (2003) looks at the other side of the coin and state that managers respond to and take advantage of less than rational markets by acquiring firms that are undervalued.

Taking into account the aforementioned definitions for hubris, hubris is defined as: *The managerial decision to acquire a company that results from either a mistake from relevant management in valuing a takeover candidate firm in question, or the use by management of publicly available information that clearly undervalues a company in question.* (Berkovitch and Narayanan, 1993; Roll, 1986; Shleifer and Vishny, 2003)

As we have mentioned, the hubris hypothesis suggests that acquisition attempts are motivated by managers mistakes in valuing a company or by incorrectly assuming certain synergy benefits to result from an acquisition. As we presume that synergy is likely to be zero, a payment to the target firm represents a transfer between the acquirer and target firm. We further suggest

that the higher the target gain, the lower the acquirer gain and that the total gain is less than zero. We therefore assume that target and acquirer gains are negatively correlated and that the target and total gains are uncorrelated. Berkovitch and Narayanan, (1993) confirm our relational expectations through their statements and results regarding gains and hubris. They state that gains are merely a transfer of wealth from acquirers, that there will be zero correlation between target and total gains and that takeovers merely occur due to managerial mistakes in estimating gains.

Seth, Song & Pettit, (2000) too hypothesised and found through empirical results that (in case of hubris) the wealth of shareholders of acquiring firms declines while the wealth of target firms rise and that there are zero total gains realized by the combined firms. Since the hubris hypothesis proposes that acquisitions entail nothing more than a transfer of value from the acquirer to the target, there should be no correlation between total gains and the wealth gained by the target, and a negative correlation between wealth gained by the acquirer as opposed to the target. Malmendier and Tate, (2008) and Moeller et al, (2005) further confirm our relational expectations as they too suggest that there is a strong behavioural bias during the decision-making process of management in take over related activities. They found that following periods of good firm performance, takeover announcements as well as the engaging in multiple takeover acquisitions in a short time frame were usually the result of overestimation of management's ability to select profitable investment opportunities.

Financing method under hubris incentive

The hubris motive implies overconfident acquirer management. For these acquisitions, cash offers are the most obvious choice since managers would want to avoid the negative signalling associated with equity offers, the reactions would be negative as equity offers signal that bidding managers believe that their firm's shares are overvalued.

It may be expected that the method for financing of takeovers motivated by hubris is similar to that of financing for synergy reasons, since management is convinced that their takeover qualifies as synergetic. Debt financing requires management to convince lenders who may be more sceptical about the value creation of the takeover in question and see through the exaggerated optimism. This is confirmed by Malmendier and Tate (2008), who find that overconfident CEOs are most likely to make diversifying takeovers without using external financing.

So, we assume that acquisitions motivated by hubris will most likely be financed with cash.

Serfling (2014) who researched CEO age and the riskiness of corporate policies found (In line with other research) that the younger the CEO the less they make diversifying acquisitions (25% decrease in age = 18.9% decrease in diversifying acquisitions made) and in turn increase risk for the firm. Seeing as the hubris motive implies overconfident management and as suggested by Serfling's (2014) research that young CEO's make less diversifying and potentially more careless acquisitions, we believe that a company with a young CEO too could be more likely to partake in hubris motivated acquisitions, seeing as their lack in diversifying acquisitions could suggest that they make less diversifying, more risky and less efficient acquisitions.

2.4 General motives

Aside from the mentioned synergy, agency and hubris motives, the value of acquisitions are well known, and companies choose to carry out acquisitions for a multitude of reasons:

In a KPMG transactions services survey (2001) on global M&A deals, results showed that managers and boards of directors consider gaining market share as the most important reason for acquisitions. Many companies carry out acquisitions simply to prevent a competitor from owning it, so that they can protect their current and future market position, however sometimes an acquisition can be attractive just because of the people it brings with it, such as technology innovators, an exceptional sales team, or seasoned executives.

Firms engage in M&A activity to increase market power Kim and Singal (1993), the market power hypothesis as mentioned by Eckbo (1992) suggests that increases in market share through acquisitions fuel dominant firm pricing and monopolies. Many companies use acquisitions to increase market share, they do this by acquiring a company that is directly competitive and thereby securing their customer base. Furthermore, aside from acquiring directly competitive companies it is also possible to create synergies and economies of scale by acquiring a company whose products are complementary to your current products, or will add to quality of your company e.g. a company with advanced technology, in the expectation that the sum of the parts will be greater than the whole.

Another rationale for acquisitions by Hayn (1989) suggests acquisitions are value enhancing where increased value stems from efficiency benefits like tax savings, better usage of target firms' assets (Healy et al., 1992) and financial synergy (Ghosh and Jain, 2000). Acquisitions offer several possible tax advantages, such as a tax loss carry-forward. If one of the firms involved has

previously sustained net losses, these losses can be offset against the profits of the firm it has merged with.

3. Hypothesis development

Motives synergy, agency and hubris, have different effects on the relation between target and total gains as well as target and acquirer gains. As mentioned, target and acquirer gains are defined as the sum of the change in wealth of the shareholders of the target and acquiring firms. Total gain is defined as the sum of the target and acquirer gains.

Taking into account the literature review in chapter 2 and the information shared below, this paper investigates the following hypotheses.

H1: Under the synergy incentive, the correlation between target gain and total gain as well as the correlation between target gain and acquirer gain are expected to be positive.

Berkovitch and Narayanan (1993) in their text, explain the correlation between synergy, agency, hubris, target gains, total gains and acquirer gains, and find that the synergy motive should result in a positive correlation between target gain and total gain, as well as target gain and acquirer gain;

H1a: Synergy variables like payment type, CEO age and premium paid for target will have a positive influence on acquirer gain.

Payment type is important under the synergy incentive, especially in a European context where debt capital is typically raised via borrowing from a bank (Martynova and Renneboog, 2008), is the positive signal conveyed by the bank's decision to provide funding. Martynova and Renneboog (2008) argue that this is because banks use their superior information and evaluation capabilities to identify bad acquisitions and therefore, they fund only value-creating deals. These findings imply that when acquirers are convinced of the synergy gains, they will accept the monitoring by banks to send a positive signal to the markets. Loans will only be provided if banks can be convinced of the value-creation effects, so they act as a signal proving the acquisition potential.

CEO age is also an indicator of potentially synergy, Serfling (2014) who researched CEO age and the riskiness of corporate policies found (in line with other research) that the older the CEO the more they make diversifying acquisitions (25% increase in age = 18.9% increase in diversifying acquisitions made) and in turn decrease risk for the firm. We therefore decided to use

CEO age as a variable in our indication of synergy related acquisitions as older CEO's would go into an acquisition carefully and would ensure suitability of the takeover.

We also decided on premium paid in the synergy hypothesis H1a, this because Berkovitch and Narayanan 1993 if synergy is apparent for the acquiring firm they would aim to go through with the acquisition as the total value of the firms is larger than the sum of parts and in their effort to succeed they are typically willing to pay a premium. We see a premium paid as an indication of synergy as the motives agency and hubris would normally not warrant a premium payment for a target.

H2: Under the agency incentive, the correlation between target gain and total gains as well as the correlation between target gain and acquirer gain are expected to be negative.

Berkovitch and Narayanan (1993) in their text, explain the correlation between synergy, agency, hubris, target gains, total gains and acquirer gains, and find that the agency motive should result in a negative correlation between target gain and total gain as well as target gain and acquirer gain

H2a: Agency variables like free cash flow and financial leverage will have a negative influence on acquirer (target) gain.

A large amount of free cash flow suggests the company is not actively looking for opportunities to invest in positive NPV projects and could imply management is not working in the best interest of shareholders. (Jensen, 1986).

The debt equity ratio is calculated by dividing a company's total liabilities by its stockholders 'equity. It is a debt ratio used to measure a company's financial leverage. It indicates how much debt a company is using to finance its assets relative to the value of shareholders' equity. Companies with low debt/equity have not used significant debt to fund their growth and we see this as an agency variable due to the fact that the company may not take on debt to prevent being monitored (Martynova and Renneboog, 2008), to avoid obligations to debt payments/covenants and to have no restrictions on their own goals e.g. increasing own welfare, increase firm dependence on them etc.

Payment method, acquisitions motivated by self-interest and empire building will be financed with internally generated funds. Industry-shocks or stock market booms often lead to

excessive cash at the discretion of managers. In the case of agency problems, self-interested managers use these free cash flows to go for empire building instead of returning them to the shareholders. Managers may prefer to maximise corporate growth rather than corporate value as their private benefits tend to increase in line with firm size

H3: Under the hubris incentive, we expect zero correlation between target gain and total gain as well as a negative correlation between target gain and acquirer gain.

Berkovitch and Narayanan (1993) in their text, explain the correlation between synergy, agency, hubris, target gains, total gains and acquirer gains, and find that the hubris motive should result in no correlation between target and total gain and a negative correlation between target gain and acquirer gain.

H3a: Hubris variables like CEO age and P/E ratio will have a negative influence on acquirer (target) gain. See section 4.2 for further argumentation for this hypothesis.

Serfling (2014) who researched CEO age and the riskiness of corporate policies found (In line with other research) that the younger the CEO the less they make diversifying acquisitions (25% decrease in age = 18.9% decrease in diversifying acquisitions made) and in turn increase risk for the firm. We therefore decided to use CEO age as a variable in our indication of hubris related acquisitions as younger CEO's would go into an acquisition more recklessly and less focused on diversifying and in turn may make mistakes.

The price-earnings ratio (P/E ratio) is the ratio for valuing a company by measuring its current share price relative to its per-share earnings. The P/E ratio can be calculated as market value per share/earnings per share. Based on research by Shleifer, and Vishny (2003) we have selected this variable as we assume that management has spotted an undervalued firm in a less than rational market and has taken full advantage of the opportunity through acquisition.

To identify hubris, we carry out a separate test as hubris obviously may exist in either sample.

Since hubris leads to a negative correlation between target and acquirer gains, it further strengthens the effects of agency which leads to the same negative correlation. However, it dampens the impacts of synergy, which as we have mentioned leads to a positive correlation between target and acquirer gains. For this reason, we are carrying out the aforementioned two subsamples whereby

we are assuming that agency is the primary motive in takeovers with negative total gains and synergy is the primary motive in takeovers with positive total gains.

The following hypotheses are obtained in the absence of hubris:

H4: Target and acquirer gains are negatively correlated in the subsample of negative total gains.

H5: Target and acquirer gains are positively correlated in the subsample of positive total gains.

4. METHODOLOGY

In this section will outline the theoretical/quantitative analysis of the method applied to this field of study, i.e. Event study, which we use to be able to further develop our research on;

What are the motives that lead to the acquisition of a company which is listed on the Euronext Amsterdam (AEX)?

4.1 Normal and abnormal returns

Gain in the acquisition is measured by the stock returns to both target and acquirer as carried out in a paper by Shah and Arora (2014) on M&A announcements and their effect on return to shareholders. Gain is calculated using abnormal returns which is calculated using the difference between actual and expected returns of the firms. Abnormal return of a security i,

$$AR_{i,t} = R_{i,t} - E\,[R_{i,t}]$$

Where, Ri,t is the actual return and E[Ri,t] is the expected or normal return (Duso, Gugler, & Yurtoglu, 2010).

There are two different methods we found suitable to calculate abnormal returns; Constant Mean Return Model (mean adjusted), and Constant Mean Return Model (market corrected) (Peterson 1989). This study used the constant mean return (market corrected) model since the constant mean return (mean-adjusted) model does not reflect the fair and constant normal returns of the firms involved in the acquisition announcement in the estimation period as against the market index returns in the market adjusted model. Hence there is bias in the abnormal returns calculated by the mean-adjusted model. (Shah & Arora, 2014).

This study has used Constant Mean Return Model (Market corrected), where abnormal returns on each day in the event window are calculated.

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

Where, ARit is the abnormal return on the stock i, on day t

Rit is the return on a particular equity stock i, on particular day t and,

Xi is the average return on the market index that is assumed to be constant over the event window.

A market index can appropriately measure the benchmark returns that are considered to be the "normal" return expected by an investor at a particular point of time in the market. To measure any sort of "abnormal" returns we subtract the "normal market return" of a broadly traded market index from the stock's (target or bidding firms) return Shah and Arora (2014).

The CAR of the target and bidding firms have been tested using a short event window (-6, +6 days), the CAR is made up of average abnormal returns which is the difference between the expected and actual return of a stock. The CAR is used to determine the effect that events such as acquisitions, lawsuits, etc., have on stock prices.

We use a short time frame instead of a long-time frame to prevent abnormal returns resulting from alternate events, e.g. a positive/negative news story, an executive wrongdoing etc., which has a greater chance of occurring in a long-time frame, we hope it does not in the short time frame. By using a short time frame (-6, +6 days) we can be more confident that a possible abnormal return is due to the announcement of an acquisition.

Hodgkinson and Partington (2008)/Berkovitch and Narayanan (1993) had similar reasoning surrounding the acquisition announcement and were also sceptical about using a long-time frame. Hodgkinson and Partington however, used both a short and long-time frame on the same data. They found that results originating from the long-time frame study are skewed to be far more positive or negative than results from the short time frame study and also have a far lower explanatory power.

As a result of this we are focusing on the short time frame.

4.2 Event study

Fig.1

Estimation Window
- Estimate market model

Event Window
- Predict normal returns from market model
- Measure abnormal returns for each day
- Calculate cumulative abnormal returns over entire window

T_0 T_1 Event T_2
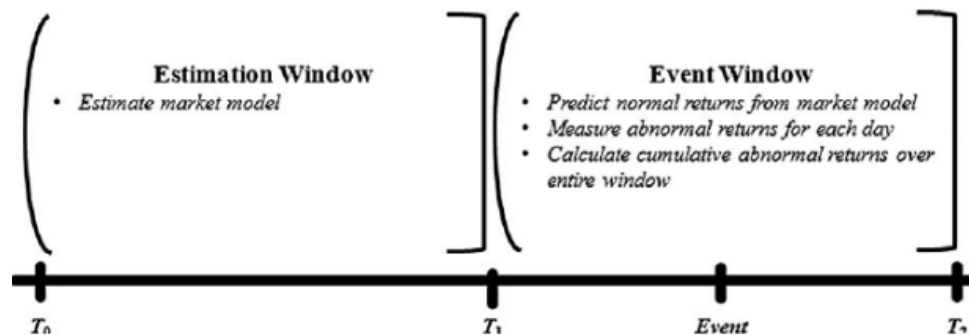
Meyer, Gremler and Hogreve (2013)

Event studies were first introduced by Fama et al. (1969) whom suggested event studies produce relevant evidence on how stock prices respond to information. Barber and Lyon, 1997; Campbell et al., (1997) stated that event study methodology contributes to a greater understanding of the effects of corporate behaviour and decisions, in our case being an acquisition announcement. The relevant interest with regards to event studies are to test if abnormal returns surrounding the event (acquisition announcement) for sample firms are statistically different from zero. If they are confirmed to be non-zero, the market has either over-reacted or under-reacted to the event.

The initial task of conducting an event study is to define the event of interest and identify the period over which the security prices of the firms involved in this event will be examined in the event window (MacKinlay ,1997). In our case this is measured using financial market data 6 days before (T1) announcement date of the acquisition through to 6 days after (T2) the initial announcement. Using a market model (Tn) we have a reference point to which our event is compared to measure for the impact, it looks at the actual returns of a baseline index and tracks the correlation of the firm's stock with the index. This model tracks abnormal returns on a specific day (-6, +6) and is meant to represent the difference between the stocks return on those days versus the standard stock return. This allows us to reflect on the potential abnormal returns with reference to the acquisition announcement and further carry out regressions with the usage of independent variables in order to suggest a possible relation. Referring to MacKinlay (1997), an event study is beneficial in that the effects of an event will be reflected immediately in security prices, hereby

assuming a rational marketplace, whereby relevant data is collected over a relatively short period of time.

MacKinlay (1997) states that there are multiple studies regarding acquisitions which make use of event studies and usually come to similar conclusions about the general result, i.e. that given a successful takeover, the abnormal returns of targets are large and positive, and the abnormal returns of the acquirer are close to zero. It is assumed with relation to event studies that the market processes information about the event in an efficient and unbiased manner.

4.2.1 Variables

The table below provides an overview of the measurement/ways in which the data for the independent variables used for regression was collected

Table 1: Regression variables	
Dependent variable	
Cumulative abnormal returns (CAR)	CAR = Calculated using an event study (-6, +6), see section 4.2.
Independent variables	
CEO age acquirer	The age of the CEO used was the age at the time of the acquisition announcement. CEO age was found using Zephyr, Bloomberg financial markets and by searching through firm financial statements.
Premium paid	The premium paid amount (in euros) used is the amount that an acquirer pays for a target above the pre-acquisition market value (price per share). This information was collected using Zephyr as well as relevant acquisition news articles, using the same market value principles.
FCF	The free cash flow used is the FCF that an acquirer has available at year end (seeing as this info is made public after an audit), E.g. announcement on 1-1-2018 = FCF per 31-12-2017 (year taken prior to the acquisition announcement). This information was collected by assessing financial statements and using Zephyr.
Debt/Equity ratio	The D/E ratio used is long-term debt a firm has opposed to (/) equity the firm has. Similarly to FCF (seeing as this info is made public after an audit), D/E ratio figure is taken the year prior to the acquisition announcement. This information was collected by assessing financial statements and using Zephyr, Zephyr ratio too is based on long-term debt and equity and taken from the same time periods.

Payment method	The payment method used in our data was the payment method used to finance the acquisition, this data was collected using M&A database Zephyr and was occasionally collected by searching through financial statements.
Price/Earnings ratio	The P/E ratio used in our data is calculated as market value per share/earnings per share. As this value too is available at the end of an audit, we have taken the prior year value for current year acquisition announcement. This is a value which is readily available in Zephyr.

4.3 Correlation and Regression Model

The method used to measure for correlation between target, acquirer and total gains in H1, H2 and H3 is adapted from Berkovitch, and Narayanan (1993):

o The target gain is computed by assessing the target firm's CAR as of the end of six trading days prior to and following the acquisition announcement and is further statistically compared to the European market using the STOXX50E index figures six days prior to and following the acquisition announcement to calculate target gains.

o The acquirer gain is computed by assessing the acquirer firm's CAR as of the end of six trading days prior to and following the acquisition announcement and statistically compared to the eastern European market using the STOXX50E index figures six days prior to and following the acquisition announcement to calculate the acquirer gains.

o The total gain is the sum of the target and acquirer gains.

As explained in the literature review in section 2 and the hypothesis development in section 3, hypothesis development, the synergy motive should result in a positive correlation between target gain and total gain, as well as target gain and acquirer gain, the agency motive should result in a negative correlation between target gain and total gain as well as target gain and acquirer gain and finally the hubris motive should result in no correlation between target and total gain and a negative correlation between target gain and acquirer gain.

In order to further assess the synergy, agency and hubris motives in H1a, H2a and H3a, we have selected 6 independent variables as mentioned in the literature review and hypothesis

development. These independent variable values are calculated and/or found using the methods indicated in table 4.2.1 and further explained under section 4.4.

The variables used in the OLS regression model below will be used to further address the motives and their combined relation to acquisitions. OLS regression (Ordinary least squares regression) is a statistical method of analysis that estimates the relationship between one or more independent variables and a dependent variable; the method estimates the relationship by minimizing the sum of the squares in the difference between the observed and predicted values of the dependent variable configured as a straight line.

$$\textbf{Acquirer CAR i} = \alpha + \beta 1 \, Payment \, type \, \textbf{i}, \textbf{t} + \beta 2 \, CEO \, age \, \textbf{i}, \textbf{t} + \beta 3 \, Premium \, paid \, \textbf{i}, \textbf{t} + \beta 4 \, Free \, cash \, flow \, \textbf{i}, \textbf{t} + \beta 5 \, \frac{D}{E} \, ratio \, \textbf{i}, \textbf{t} + \beta 6 \, \frac{P}{E} \, ratio \, \textbf{i}, \textbf{t} + \varepsilon i$$

Where α is the constant, i the case, $\beta 1 - \beta 6$ the weight of the predictor variables, t the timing (-6, +6) and ε the error term.

4.4 Data

We use acquisition announcements as our acquisition data alongside daily stock return data to determine the gains.

Our sample consists of non-financial companies, excluding firms from other regulated industries, listed on Euronext Amsterdam during the period 2007-2017. We have used data sources Zephyr and ORBIS to gather relevant data and information.

The data collection method used to assess gains made from acquisitions is taken from Bradley, Desai and Kim (1988) who proposed a sample of tender offers, where they identify the beginning of a tender offer contest with the announcement of a bid for a given target. We will be using Bradley, Desai and Kim (1988)'s data collection method for our paper but instead of using a tender offer contest we use the acquisition announcement.

Acquisition samples are chosen based upon:
(1) The shares of both the acquirer and the target company are traded on the Euronext Amsterdam
(2) the price and/or number of shares outstanding is available for each of the six days before and after the event date, and

(3) Enough financial information is available for our regression variables

The data in Orbis – Zephyr is easily accessed by selecting the mergers and acquisitions section and eliminating data based on certain criteria. We set criteria for: Sub-deal type: tender offer, Time period: 2007 - current date (Announced), Deal type: Acquisition. All stock exchange: Euronext Amsterdam, (Acquiror OR Target), World region: Western Europe. Data availability in terms of balance sheet, profit & loss account and key financials.

All three criteria mentioned above are satisfied using the Orbis – Zephyr database to collect tender offer data and daily stock return data on the tender offer sample to compute the gain and Cumulative Abnormal Returns (CAR) of the target and acquirer upon announcement of a takeover.

With reference to the variable section in 4.2.1, seeing as both free cash flow and debt/equity are made public after an audit, we have taken the free cash flow and D/E ratio at year end (prior year) to the acquisition. E.g. for an acquisition taking place on 1-1-2018, we have taken the FCF and D/E ratio at 31-12-2017 as this gives us the best indication of the FCF and D/E ratio available before the acquisition. Zephyr (M&A database used) indicates premium paid, the P/E ratio as well as payment type for acquisitions. However, seeing as Zephyr only had 36 data pieces available for each of these three variables, financial statements as well as acquisition media was searched through in order to gather more relevant data. CEO age was gathered using Zephyr, Bloomberg financial markets as well as financial statements, where CEO age was gathered based upon the age of the CEO at time of the acquisition.

In order to treat outliers that we knew were not mistakes, but rather a potential unusual observation, we winsorized. This was done to ensure we do not lose power of our data sample. Through winsorizing we transformed the statistics of the variable's P/E ratio, D/E ratio and premium paid by limiting extreme values in the data set to reduce the effect of outliers. This was done using SPSS by assessing normal distributions and literature on the variables and identifying the outlying observations in question. We then replace the extreme values by the maximum and/or minimum values at the threshold to ensure the outlier no longer has the potential to skew our data.

We tested for collinearity between the independent variables by running a correlation matrix and found no collinearity, to ensure that multicollinearity was also tested for, we looked at the variance inflation factor (VIF), which indicates whether multicollinearity is apparent between

two or more variables by carrying out linear regressions between them. Seeing as all our independent variables have a VIF below 1.35, it can be assumed that there is no multicollinearity.

Finally, we tested for Heteroscedasticity, seeing as OLS regression has assumptions that dependent and independent variables must meet the homoscedasticity assumption and be normally distributed. We tested the independent variables against the dependent variable using a scatterplot, with regression standardized predicted value on the X axis and regression standardized residual value on the Y axis. We found that our datapoints on the scatterplot are equally distributed above and below zero on the X axis, and to the left and right of zero on the Y axis. Thus, the data does not form a specific pattern and the homoscedasticity assumption is met (See appendix, chart 1).

We further conducted robustness tests under section 5.1.4 to ensure our analysis, taking all possible variables and combinations into account and running further OLS regressions with/without winsorizing to ensure our original data set gives us accurate results.

5. Discussion, contribution and implications

5.1 Main results

In this section we will describe the main results of our analysis. In Table 2 we present our descriptive statistics for both our independent as well as dependent variables. Tables 3 shows frequency statistics for payment type and table 4 provides the correlation statistics of gain variables as a total sample (positive and negative total gains), positive subsample (positive total gain figures only) and negative subsample (negative total gain figures only). In Table 5 we test for collinearity and in table 6 the results of our OLS regression are presented.

5.1.1 Descriptive statistics

In Table 2 the descriptive statistics of the total sample are presented. The total sample is 104.

Table 2: Descriptive statistics: Gains and independent variables (CAR -6, +6)

Panel A	Mean	Median	Standard Dev	Min	Max	# Obs
Total sample						
Target	0.03	0.01	0.14	-0.41	0.47	104
Acquirer	0.01	0.00	0.13	-0.39	0.79	104
Total	0.04	0.02	0.20	-0.80	0.75	104
Positive total gains only						
Target	0.10	0.06	0.12	-0.15	0.47	59
Acquirer	0.06	0.02	0.15	-0.09	0.79	59
Total	0.16	0.11	0.17	0.00	0.75	59
Negative total gains only						
Target	-0.06	-0.06	0.10	-0.41	0.08	45
Acquirer	-0.05	-0.04	0.08	-0.39	0.08	45
Total	-0.11	-0.09	0.13	-0.80	0.00	45

Panel B: *Variables*	Mean	Median	Standard Dev	Min	Max	# Obs
FCF (* €1,000)	39744.56	42.92	237669.53	-21218.01	1673101.03	74
Log FCF	7.30	7.33	0.91	0	9.23	74
D/E Ratio	1.51	1.34	1.10	0	3.59	82
P/E Ratio	16.76	11.53	15.22	0.75	57.86	78
Premium paid	8.00	2.88	13.43	-16.57	46.23	40
CEO Age	54.00	53.50	7.46	38.00	72.00	90
Payment type	2.07	2.00	0.62	1.00	3.00	44

It can be seen from the panel A in table above that the mean target gain in the total sample is approximately 3% higher in comparison to the market index and the mean acquirer gain is 1% higher. In 50% of cases, acquirers obtained positive gains, while in 60.5% of the cases, target gains were positive. The total gain was positive in 56.7% of the cases. This suggests that a little more than half of the takeovers are motivated by synergy and the remaining half by agency and/or hubris, this result in line with data gathered by Berkovitch and Narayan (1993).

In 69.5% of acquisitions with positive total gains, the acquirer gains were positive. The statistics in table 1 suggest that when total gains are positive, acquirers fare better. From the subsample of negative total gains, it can be seen that loss from acquisitions may be large (minimum value 80% below market index, 11% mean loss). A similar large loss potential loss was found in Berkovitch and Narayanan's (1993) gains.

Acquirers achieve positive mean gains in the positive total gains sub sample and negative mean gains in the negative total gains sub samples. Targets similarly achieve positive means gains in the positive gain subsample and negative mean gains in the negative mean subsample. Both cases suggesting that with total positive gains, both acquirer and target benefit, target firm gain is approximately 10% higher than the market index in a positive total gain subsample, whereas acquirer firm gain is approximately 6% higher than the market index in the same positive total gain subsample.

Panel B shows the independent variables, the mean of the free cash flow is 39.744K, which means that at the time of acquisition announcements, the average company in our sample had 39.7 million of FCF available. The median amount is 42.92k, this means that the data is positively skewed. The maximum: 1.6 billion and the minimum: -21.2 million are spread far apart. The FCF was further transformed using a LOG with a base number of 10, this was done as the data was skewed. Using a LOG we reduce this skewness by bringing our data closer together.

The mean D/E ratio is 1.51. A ratio of 1 suggests a company funds its projects with an even mix of debt and equity and that investors and creditors have an equal stake in the business' assets. Our mean D/E ratio of 1.51 suggests that the acquiring companies in our sample, fund their acquisitions with more debt than equity. Our minimum value of 0 suggests a company has no leverage, this is a natural minimum. Although this is an indicator of a financially health company, it could also be an indicator of a management unwilling to take risks/avoid monitoring (Martynova

and Renneboog, 2008). Our median value of 1.34 suggests our data is slightly skewed to the right. The maximum value is 3.59, which suggests that a company heavily funds its projects with debt.

Our mean P/E ratio of 16.76 suggests that investors are willing to pay 16.76 euros for every euro of a company's earnings. Our minimum P/E value is 0.75, a low P/E can indicate either that a company may currently be undervalued or that the company is doing well relative to its past expected trends. Our maximum figure of 57.86 suggests that investors are expecting higher earnings growth in the future compared to companies with a lower P/E.

Frequencies in table 3 suggest that approximately 3/5 of all acquisitions in this sample use cash. 1/6 of all acquisitions in this sample use shares and 2/9 another form (mixed / debt).

Table 3: Payment type at time of acquisition		
	Frequency	Percent
Shares	7	15.9
Cash	27	61.4
Mix	10	22.7
Total	44	100.0

We have a median age of 54 in our sample of acquiring company CEO's. With a minimum of 38 and a maximum of 72. The mean and median are rather similar which suggests that our data is not skewed and is normally distributed. We have classified CEO age of > 55 as an older CEO taking into consideration research by Yore and Adam (2015) who researched into CEO age, experience and firm value. Greater age is greater experience and thus an expectation of more diversifying acquisition decisions.

Premium paid is the difference between the estimated real value of a company and the actual price paid to obtain it. The maximum value suggests that an acquiring company paid a 46.23% premium for a target firm, this could be due to several reasons including synergy potential. The minimum value of -16.57% suggests underpaying, which may be due to undervaluation of a firm.

5.1.2 Correlation matrix

In table 4 we report the correlation matrix for our gain variables. In table 5 using the Pearson correlation measure we want to detect correlation between our independent variables.

Table 4: Pearson Correlation Matrix		
Panel A ($n = 104$)		
Total sample	1	2
1. Acquirer gain		
2. Target gain	0.141	
3. Total gain	.749**	.761**
Panel B ($n = 59$)		
Positive total gains only	1	2
1. Acquirer		
2. Target	-0.202	
3. Total	.719**	.535**
Panel C ($n = 45$)		
Negative total gains only	1	2
1. Acquirer		
2. Target	0.069	
3. Total	.686**	.773**

**. Correlation is significant at the 0.01 level (2-tailed).

The existence of positive and significant gains at the 0.01 level in panel A indicates that synergy is present, but the lack of a significantly positive relationship between acquirer and target gains prevents an indication of how acquirers share in this synergy. The data indicates that there is little to no agency present as agency following H2 should result in a negative correlation between target and total gain as well as target and acquirer gain. The data further indicates that there is also little to no hubris present as a presence of hubris in the data set according to H3 would result in no

correlation between target and total gain and a negative correlation between target and acquirer gain, both of which are not apparent in the set.

In the subsample of positive total gains in panel B, the correlation between target and total gains is both positive and significant at the 0.01 level, indicating that the synergy motive dominates. In the subsample of negative total gains in Panel C, the correlation too is positive and significant, this is an unexpected result as we had assumed agency would be a dominant motive in our negative total gains subsample (negative correlation between target and total gain/target and acquirer) as found in research by Berkovitch and Narayanan (1993).

Table 5: Pearson Correlation Matrix

Variables	FCF	LOG FCF	CEO age	P/E ratio	D/E ratio
FCF					
Log FCF	.351**				
CEO Age	-0.111	-0.064			
P/E ratio	0.218	0.163	-0.114		
D/E ratio	-0.207	-0.212	0.190	-0.145	
Premium paid	0.187	0.192	0.115	-0.096	0.265

**. Correlation is significant at the 0.01 level (2-tailed).

In table 5 above, collinearity is assessed for the independent variables. Collinearity is apparent between independent variables FCF and Log FCF, this is logical as these variables are constructed using the same data. We tested for collinearity between the independent variables by running a correlation matrix and found no collinearity, to ensure that multicollinearity was also tested for, we looked at the variance inflation factor (VIF), which indicates whether multicollinearity is apparent between two or more variables by carrying out linear regressions between them. Seeing as all our independent variables have a VIF below 1.35, it can be assumed that there is no multicollinearity.

5.1.3 Regression analysis

In table 6, the results of our OLS regression are presented. The first five models are separate independent variables along with their effect on the acquirer CAR. The sixth model combines all six variables. Table 7 shows the results of regression considering the combined independent variables in line with hypotheses under section 3. Table 8 further outlines combinations with significant results. Tables 9 and 10 under section 5.1.4 consider potential limitations of independent variable sample size and also display robustness tests. The coefficients as well as the adjusted R^2 are flagged (*, **, ***) if they are significant. The significance for the adjusted R^2 is taken from the f test and implies that the independent variables are significantly a better fit than a model without them. Adjusted R^2 square measures the proportion of the total variability in the dependent variable that is explained by the independent variables. A low R^2 suggests that a small amount of variance can be predicted by the model.

Table 6: OLS Regression, Influence of independent variables on the acquirer CAR (-6, +6)

Variables	Expected sign	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
		B	S. E	B	S. E	B	S. E	B	S. E	B	S. E	B	S. E
LOG FCF	-	-.006	0.013									0.096	0.138
D/E Ratio	-			0.004	0.012							0.011	0.010
P/E Ratio	-					-.001	0.001					0.000	0.001
Premium paid	+							0.000	0.001			-0.001	0.001
CEO age	+									-.005***	0.001	-0.001	0.001
Number of observations		74		82		78		40		90		40	
Adjusted R²		-0.011		-0.012		0.005		-0.017		0.108		0.002	

Significance at the 0.01*** level

CEO age (model 5) in table 6, has a negative influence on the acquirer CAR and is significant at the 0.01 level, this leads to the acceptance of hypothesis H3a that CEO age will have a negative influence on acquirer CAR, but a rejection of hypothesis H1a that CEO age will have a positive

influence on acquirer CAR. The adjusted R^2 for the model containing CEO age is also significant as indicated by the F-test, suggesting that CEO age as a predictor is a better fit than a model without it. The R^2 of 0,108 also indicates that CEO age predicts the proportion of the total variability in the dependent variable by 10.8%.

Table 7: OLS Regression (hypothesis testing), Influence of independent variables on the acquirer CAR (-6, +6)

Variables	Expected sign	H1a		H2a		H3a		Model 4	
		B	S. E	B	S. E	B	S. E	B	S. E
CEO age	+	-0.001	0.001					-0.001	0.001
Premium paid		0.000	0.001					-0.001	0.001
D/E Ratio	-			0.004	0.011			0.011	0.010
LOG FCF				-0.005	0.013			0.096	0.138
CEO age	-					-0.002	0.001		
P/E ratio						-0.001*	0.001	0.000	0.001
Number of observations		40		74		78		40	
Adjusted R²		-0.023		-0.023		0.028		-0.008	

Significance at the 0.1* level

In table 7 we have tested for our hypotheses (mentioned under section 3), using the hypothesised independent variables in combination in the regression to assess whether we can accept or reject the hypothesis about the expected relation with acquirer CAR.

Hypothesis H1a that CEO age and premium paid will lead to a positive influence on the acquirer CAR is rejected, CEO age and premium paid are both not significant under both header H1a and model 4.

Both under header H2a and model 4 there were no significant results for D/E ratio or FCF. Hypothesis H2a that variables free cash flow and financial leverage will have a negative influence on acquirer CAR is rejected.

P/E ratio under header H3a is significant at the 0.1 level and is line with the expected relation. H3a that P/E ratio would have a negative influence on the acquirer CAR is accepted. The adjusted R^2 under header H3a is also significant as indicated by the F-test, suggesting that P/E

ratio as a predictor is a better fit than a model without it. The R^2 of 0.028 also indicated that P/E ratio predicts the proportion of the total variability in the dependent variable by 2.8%. CEO age however, is not significant.

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Table 8:   OLS Regression, Influence of independent variables on the acquirer CAR (-6, +6)

Variables	Model 1		Model 2		Model 3	
	B	S. E	B	S. E	B	S. E
D/E Ratio	0.017*	0.009				
P/E Ratio	-0.001	0.001				
D/E Ratio			-0.001	0.012		
CEO age			-0.005*	0.002		
P/E Ratio					-0.001*	0.001
CEO age					-0.002	0.001
Number of observations	78		82		78	
Adjusted R²	0.036		0.096		0.028	

Significance at the 0.1* level

Having used all independent variables and having tried all variable combinations, we found that D/E ratio, P/E ratio and CEO age are significant in certain combinations. In table 8 above we highlight these mentioned models against the acquirer CAR, with a significance at the 0.1 level where appropriate.

When D/E and P/E ratio are regressed against the acquirer CAR together, D/E ratio is both positive and significant to the 0.1* level with an adjusted R² of 0.036, which indicates that D/E ratio predicts the proportion of the total variability in the dependent variable by 3.6%.

With D/E ratio and CEO age regressed together, CEO age is significant to the 0.1* level, the R² predicts the proportion of the total variability in the dependent variable by 9.6%.

P/E ratio is significant to the 0.1* level when regressed against the acquirer CAR along with CEO age and predicts the proportion of the total variability in the dependent variable by 2.8%

5.1.4 Robustness

Seeing as our regressions under 5.1.3 contain the variable premium paid, the results may be somewhat skewed. This is because the sample size is significantly smaller for this variable than the others. We therefore carried out an additional "model 6" regression whereby we take all the variables against the acquirer CAR, this time excluding premium paid (table 9). Additionally, in order to test for the robustness of the results we carried out regressions on the data including the original values before winsorizing (table 10).

Table 9: OLS Regression, Robustness check			
Variables	Expected sign	Model 6	
		B	S. E
LOG FCF	-	-0.002	0.011
D/E Ratio	-	0.012	0.010
P/E Ratio	-	-0.001	0.001
CEO age	+	-.003*	0.001
Number of observations		74	
Adjusted R²		0.026	

Significance at the 0.1* level

The results in table 9, excluding the premium paid variable show that our total model including premium paid is robust, this seeing as we have similar results in table 6. The only notable difference in table 9 is CEO age, which as a part of the total model excluding premium paid is now significant to the 0.1* level. This may suggest that the lack of data for premium paid is having an impact on the significance of CEO age in the total model.

The regressions in table 10 produce extremely similar results for all the individual independent variables against the acquirer CAR. There is one noticeable difference, and that is the significance of premium paid in the total variable model, model 6. Seeing as the values we winsorized were extreme outliers and practically not reasonable in daily acquisition practise, we stand by our decision to winsorize and find that our results under section 5.1.3 are robust.

Table 10: OLS Regression, Robustness check
CAR (-6, +6)

Variables	Expected sign	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
		B	S. E	B	S. E	B	S. E	B	S. E	B	S. E	B	S. E
FCF	-	0.000	0.000									0.000	0.000
D/E Ratio	-			0.000	0.001							0.014	0.010
P/E Ratio	-					0.000	0.000					0.000	0.000
Premium paid	+							0.000	0.001			-.001**	0.000
CEO age	+									-.005***	0.001	-0.001	0.001
Number of observations		74		82		78		40		90		40	
Adjusted R²		-0.012		-0.011		0.005		-0.011		-0.017		0.002	

Significance at the 0.05**, 0.01*** level

5.2 Discussion and interpretation of the results

In this section we discuss the findings of our correlation matrix as well as OLS regression, where the goal of our research was to find which motive most often influences acquisitions along with the independent variables which potentially impact these motives. Following the structure of our literature review and hypotheses development we will now assess our results.

5.2.1 Synergy incentive

Total gain was positive in 56.7% of cases in our total sample, suggesting that a little more than half of the acquisitions in our sample are motivated by synergy. We found synergy was present in our correlation matrix due to the existence of both positive and significant gains at the 0.01 significance level, however the lack of a significantly positive correlation between target and acquirer gains prevents an indication of how acquirers share in the synergy. However, in our positive total gains subsample we found in line with research by Berkovitch and Narayan (1993) that synergy dominated the sample due to the positive and significantly correlated target and total gain as well as acquirer and total gain at the 0.01 level. The correlations are in line with hypothesis H1 which too suggested a positive and significant correlation between target and total as well as acquirer and total gain, H1 is accepted. Results from the OLS regression however show that the independent variables which we hypothesised to relate to synergy in H1a (CEO Age, payment method and premium paid) with expected positive influence on acquirer CAR did not meet expectations and the hypothesis H1a is rejected.

5.2.2 Agency incentive

The correlation matrix (total sample) indicates that there is little to no agency present, following H2, agency presence in the sample should result in a negative correlation between target and total gain as well as target and acquirer gain, both of these expected relations did not occur. In the subsample of negative total gains in table 4 we had assumed agency would dominate in line with research by Berkovitch and Narayanan (1993), however, the correlation too is positive and significant, suggesting a dominating synergy presence even in the negative total gain subsample. H2, is therefore rejected. Results from the OLS regression show that independent variables which

we hypothesised to relate to agency (FCF, D/E ratio) with expected negative influence on acquirer CAR in the OLS did not meet expectations and the hypothesis H2a is therefore also rejected.

5.2.3 Hubris incentive

The correlation matrix (total sample) indicates that there is little to no hubris present, following H3, hubris presence in the sample would result in no correlation between target and total gain and a negative correlation between target and acquirer gain. These correlations are not apparent in any of the correlation matrixes. H3 is therefore rejected. Results from the OLS regression show that one of the independent variables which we hypothesised to relate to hubris (CEO age, P/E ratio) with expected negative influence on acquirer CAR was met. CEO age has a negative influence on the acquirer CAR and is significant at the 0.01 level. This suggests that for every year older a CEO becomes there is a -0.5% effect on the acquirer CAR. The P/E ratio did not meet hypothesised expectations.

6. Conclusions

Research on acquisitions, the motives and the correlations between synergy, agency and hubris have regularly been researched in a multitude of different settings, samples, countries and using a wide variety of data samples. This research set out to build upon already existing research and attempting to add to this research by associating various independent variables to the motives based upon prior research and testing for the results.

Our study focused on: *What are the motives that lead to the acquisition of a company which is listed on the Euronext Amsterdam (AEX)?*

In order to assess these motives, we developed several hypotheses based on existing literature and tested for these using Pearson's correlation matrix as well as an OLS regression. Our sample included 104 cases of acquisition announcements in western Europe from 2007 through to 2018.

Our research led to several findings, namely that on average acquisitions yield positive total gains in approximately 56.7% of cases. In the positive total gains subsample the correlation between target and total gains is positive, indicating that the synergy motive dominates.

In the subsample of negative total gains, the correlation too is positive, this surprised us as it too indicates that synergy is the dominating motive when we expected to find the agency motive to dominate in the subsample following research by Berkovitch and Narayan (1993) and further suggests that agency and hubris are not apparent in the data sample.

In a sample of 44 acquisitions, payment type was determined, we found in line with research by Martynova and Renneboog (2008) and Jensen (1986) that cash is most popular among financing options regarding acquisitions. Cash was used 61.4% of the time, with shares being used 15.9% of the time and a mix of debt and shares at 22.7%.

Our results for the OLS regression were mostly non-significant with the exception of CEO age in the single independent variable model and P/E ratio in the hypothesis model.

Our hypotheses suggested a positive correlation between target and total gains for synergy, a negative correlation between target and total gains for agency and zero correlation for hubris. We tested the hypotheses using the sample of acquisition announcements between 2007-2018, we

tested the hypotheses using a sample containing both values of positive and negative total gains corresponding to acquiring and target gains, a subsample made up of only positive total gains corresponding to acquiring and target gains and a subsample made up of only negative total gains also corresponding to acquiring and target gains. This, to differentiate between potential results. We found that there was indeed a positive correlation between target and total gains in all three samples, we found no negative significant correlation between target and total gains nor did we find zero correlation for hubris.

Our regression hypotheses were mostly rejected, hypothesis H1a that CEO age and premium paid would lead to a positive influence on the acquirer CAR was rejected,

Hypothesis H2a that variables free cash flow and financial leverage would have a negative influence on acquirer CAR was also rejected

H3a that P/E ratio would have a negative influence on the acquirer CAR was accepted and was significant to the 0.1* level. CEO age too was significant to the 0.01*** level, but not as part of a model against the acquirer CAR. We believe these significant variables warrant further research.

6.1 Academic implications

This research paper contributes to existing M&A literature. The outcome of our correlation matrix produces results in line with that of Berkovitch and Narayanan (1993) and Hodgkinson and Partington (2008) where synergy motivated acquisition announcements have a positive correlation for both target and acquirer and target and total gains.

Additionally, this is one of the only papers that we are aware of, which combines both testing for gain relations using Pearsons correlation matrix and also carries out an OLS regression which attempts to link independent variables (based on literature) with potential relation, to our motives synergy, agency and hubris.

CEO age aside, the results to come from the OLS regression were largely insignificant. However, these insignificant results warrant potential further studies on the independent variables which may have an influence on the motives as well as acquisitions in general.

CEO Age especially with its significance to the 0.01 level warrants further research.

6.2 Practical implications

This research shows that synergy is the motive for a majority of acquisitions. This could suggest that potential acquiring companies should research into synergy and the related aspects to figure out what it is that makes synergy important, which relevant related aspects are most relevant and how can they gain most synergistic value during a potential acquisition/announcement.

With relation to existing literature we could not significantly relate the chosen independent variables to motives/the acquirer CAR other than CEO age and P/E ratio, this could imply that CEO age and thus the aforementioned experience that comes with age are an important factor that influences the abnormal returns during an acquisition announcement. It may thus be important for an acquirer to ensure their CEO comes across as professional, has relevant experience and does not make rash decisions.

The fact that our other independent variables were not significantly related to our motives/acquirer gain could imply that variables such as free cash flow, premium paid, debt/equity etc. do not have an impact on the stock price during the event window as they do not impact the markets decision with regard to the acquisition announcement. Rather, acquisitions may be judged on simpler variables such as making an announcement to acquire horizontally or vertically, and reasoning used by management for the acquisition. These potential "simpler" reasons for acquisitions may have a larger overall impact. This research may also help potential acquiring companies figure out that certain variables they may take into account when considering signalling to the market with regard to the acquisition announcements are relatively unimportant.

6.3 Limitations and suggestions for future research

Just like every research paper, this paper had its share of limitations. The largest limitation is the lack of readily available data on acquisitions. This lack of available data may also be a result of access restrictions to more informative databases, seeing as we had access to one database.

A majority of the limitations lie in the data. The lack of available information both in the database and outside of it prevented research with a vast amount of data which may indirectly impact the results gathered and the conclusions drawn.

Further risks associated with data is the data collected outside of the database, e.g. CEO

age on Bloomberg Financial Markets, we of course do not know for certain that this information is reliable. Certain independent variables such as the debt equity ratio and the free cash flow are yearly figures which are only available in the financial statement at year end. This could suggest that for certain acquisitions we noted a free cash flow which was not indicative of the true figure at the time of the acquisition announcement.

Future research could focus on gaining access to a wider variety of databases and sources with relevant, up to date and reliable information.

A further suggestion for future research is to fully analyse the event window. Based on prior literature (Hodgkinson and Partington 2008; Berkovitch and Narayanan (1993) we chose an event window of (-6, +6) and we assumed this relatively short time frame would be beneficial instead of a long-time frame in order to prevent abnormal returns resulting from alternate events, e.g. a positive/negative news story, an executive wrongdoing etc., which has a greater chance of occurring in a long-time frame. As further analysis we have taken a sample of acquirer abnormal returns against the market index for other event windows and calculated the CAAR, we find that while an even shorter event window (-3, +3) (see section 7. Appendix) would have been slightly more favourable in capturing the abnormal returns as a result of the acquisition announcement, the results for the event windows are not substantially different from one another. However, in line with our findings we suggest further researchers look in further depth at event windows and chose one suitable for both their data and research.

7. Appendix

Dependent variable: Acquirer gain

ACQUIRER CAAR

Event window
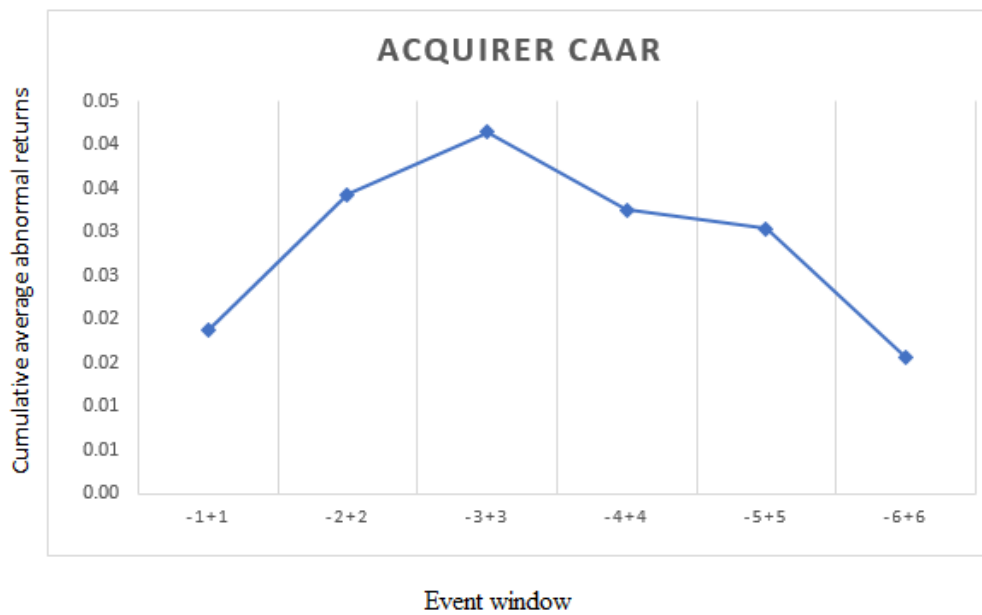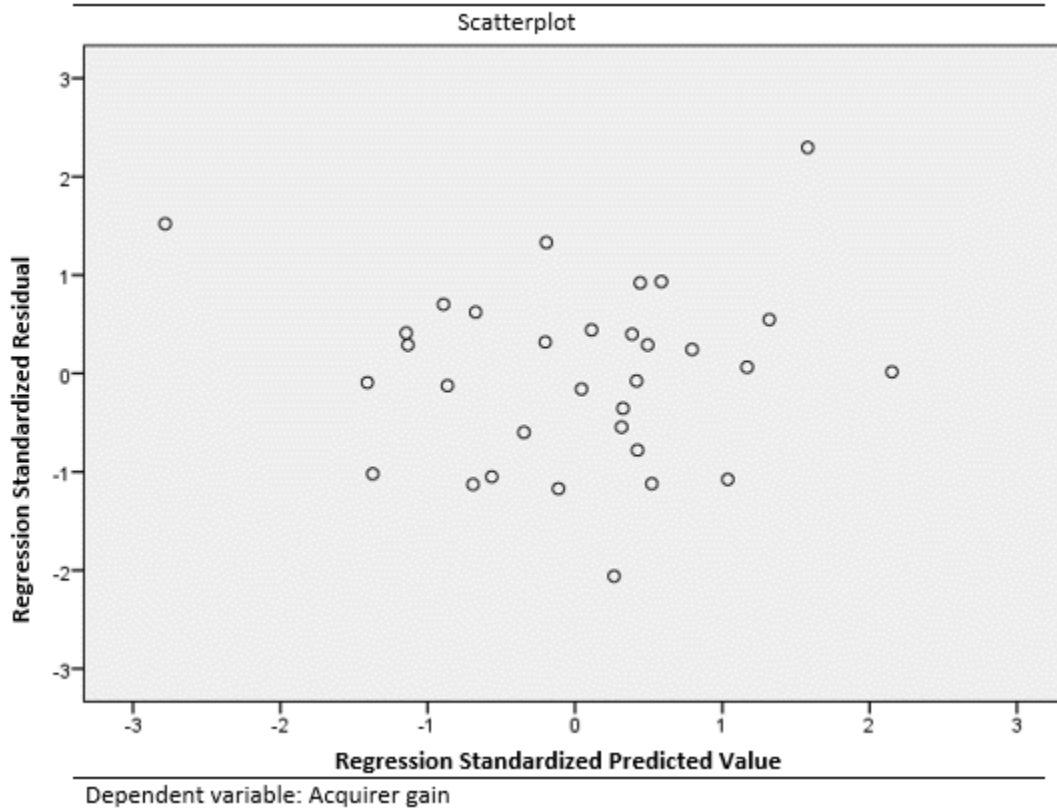
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