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**AN ANALYSIS OF THE CHANGES IN THE SYSTEMATIC RISK OF
EUROPEAN ACQUIRERS FOLLOWING THE TAKEOVER
ANNOUNCEMENTS**

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INTRODUCTION

In corporate finance, one of the fundamental objectives in the managerial decision making process is to maximize the firm value. To increase the firm value executives often consider engaging in takeovers as a business strategy to expand their current operations or enter into new markets/business areas. Recently, the volume of takeover activities worldwide increased significantly. In 2007, the global acquisition value amounted to 3,784.1 billion United States dollars (hereinafter: the USD), of which the acquisitions from Western Europe represented 31.3 % of the total value, up 18.0 % year-over-year (Fiordelisi, 2009). Even though the merger activity developed significantly in Western Europe, the majority of studies on mergers and acquisitions still focuses on the deals based in the United States (hereinafter: the US) and the United Kingdom (hereinafter: the UK) (Martynova, Oosting, & Renneboog, 2006).

In general, takeover activities increase during economic, regulatory or technological shocks that cause industry merger waves (Harford, 2005). Moreover, merger waves occur during economic recovery and rapid credit expansion that generates sufficient capital liquidity (Martynova & Renneboog, 2008). Beside favourable general market conditions, mergers are also stimulated by a combination of various motives, such as creating operating and financial synergies (Mukherjee, Kiymaz, & Baker, 2004), diversification to reduce risk (Amihud & Lev, 1981), acquisition of undervalued targets by overvalued acquirers (Shleifer & Vishny, 2003), acquisition of poorly managed firms (Matsusaka, 1993) and empire building motives (Trautwein, 1990).

Much of literature on Mergers and Acquisitions (hereinafter: the M&A) has focused on evaluation of the acquirer's return change following the takeover announcement in the short run using the event study methodology. The most common finding is that most takeover announcement gain [-1, +1 days relative to the announcement] is captured by the target firm shareholders, whereas the acquiring firm shareholders earn zero returns at best (Andrade, Mitchell, & Stafford, 2001; Goergen & Renneboog, 2004; Martynova & Renneboog, 2011). If we expand the time frame, the acquiring firm shareholders tend to suffer from 10% wealth loss on average in 5-year period after the completion of the deal (Agrawal, Jaffe, & Mandelker, 1992).

Given the corporate finance assumption that the managers act in a way to maximize the firm value, there is another perspective to be accounted for beside the acquirer's return – the acquirer's risk outcomes from the takeover. The topic has been given little attention so far with few exceptions. Lubatkin and O'Neill (1987) examined the relationship between merger strategies and capital market risk. They found that the horizontal or related mergers (the acquirer and the target operating in the same industry) lead to a significant decrease in systematic risk of the acquiring firm. Contrary to the modern finance assumption that

systematic risk cannot be diversified away, the analysis shows that in the case of corporate diversification the general market risk consists of both uncontrollable and controllable components, which is in line with strategic management theory. This finding leads to the conclusion that related acquisitions may lead to a decrease in systematic risk of the acquiring firm, which cannot be achieved by firm's shareholders alone. Moreover, Hackbarth and Morellec (2008) found out that the market beta of the acquirer usually first increases, only to decrease upon the takeover announcement. According to Bharath and Wu (2006), an increase in acquirer's return volatility before the takeover is driven by an industry shock. After the merger, the level of acquirer's return volatility is influenced by the following three factors, (1) the response of the acquirer to the industry shock, (2) the ability of the acquirer to integrate the target, and (3) diversification impact from imperfectly correlated cash flows from the acquiring and target firm.

The goal of this study was to understand acquirer's change in the exposure to the market (systematic) risk following the takeover announcement and determine what the drivers of such change are. Furthermore, in this study we also want to find out whether the various deal characteristics (such as industry relatedness, method of payment, domestic versus cross-border nature of the deal, target country of origin, acquirer country of origin, merger timing, deal size and change in acquirer's indebtedness) have a significant impact on acquirer's systematic risk change after the takeover announcement. Our sample comprises of 207 transactions from the Bloomberg database with the deal size between 10% and 100% of acquirer's total assets. We differentiate from other studies by focusing on the acquirers based in Western Europe that completed the M&A deal between the years 2004 and 2012. In contrast, previous literature mainly analysed US-based deals that were completed within the 1954-1973 period (Lubatkin & O'Neill, 1987), 1985-2002 (Hackbarth & Morellec, 2008) or 1995-2002 (Bharath & Wu, 2006).

In evaluation of acquirer's market risk change we follow the Lubatkin and O'Neill's (1987) approach, where acquirer's market beta is used as a proxy for its market risk. We are interested in evaluating market beta because it impacts the acquirer's expected rate of return and thus also the acquirer's firm value through the Weighted Average Cost of Capital (hereinafter: the WACC) which is used as a discount factor in the firm valuation. Market beta is calculated as the covariance between the market return and acquirer's return, relative to the variance of the market return. We first introduced Measure 1, where acquirers' returns were regressed against the Stoxx Europe 600 E price index (hereinafter: the DJ Stock 600) for 2-year period before and 2-year period after the deal announcement. To calculate the beta change, we subtracted the two betas and tested if such difference was statistically significant. Moreover, we applied two other measures to check robustness of the results. Firstly, country indexes were used as benchmark indexes (Measure 2), and secondly, the comparison period was extended to three years (Measure 3).

We then used the same three measures to examine the relationship between various deal characteristics and acquirer's beta change due to merger in a bivariate framework. We started by investigating the acquirer's decision on merger strategy to acquire a company operating in the same or different industry and how such decision affects post-announcement market risk of the acquirer. According to Vazirani (2015), conglomerate takeovers are often driven by the diversification motive intended to reduce instability of acquirer's earnings by acquiring a target firm operating in another industry. On the other hand, horizontal mergers are pursued to create operating synergies through increased market power, economies of scale and scope (Seth, 1990). With our empirical analysis, we aimed to test which effect, operating synergy or industry diversification would prevail in terms of risk characteristics.

Furthermore, the geographical scope of acquisitions was examined. We began by testing if domestic or cross-border nature of a deal proved a significant impact on acquirer's market risk after the deal announcement. According to Barbopoulos, Paudyal, and Pescetto (2007), cross-border acquisitions are driven by the motive to create value through the access to new product markets, local resources and technologies, foreign capital market as well as (geographically) diversified cash flows. On the other hand, cross-border acquirers may face difficulties in integration process resulting from legal and cultural differences, political and transactions risks. We then proceeded with analysis of the acquirer's country of origin. Martynova and Renneboog (2008) studied whether corporate environment specifics in the UK and Continental Europe in terms of the level of investor protection and deal disclosure impact acquirer's post-announcement return. Similarly, we explored if there was a significant impact on the post-announcement market risk of the acquirer. In the end, we investigated how acquirer's market risk change after the takeover announcement differentiated between the acquirers of European versus Non-European targets.

The acquirer's decision about merger timing and method of payment may be regarded as another driver of merger activity. Rhodes-Kropf and Viswanathan (2004) suggest that valuation effects not only increase the chance that a merger will occur but also influence the method of payment. Increased merger activity is associated with high market valuations and vice versa due to a significant misvaluation effect. In periods of high stock market valuations acquirers prefer to use stock, especially in cases when the acquiring firm is more overvalued relative to its target (Shleifer & Vishny, 2003). Furthermore, acquirers with high standard deviation of returns may enter stock acquisitions in order to reduce its financial leverage (Chang & Mais, 2000). On the other hand, cash acquisitions are more often announced in the periods of undervalued markets (Rhodes-Kropf & Viswanathan, 2004) or when corporate control of the acquirer's shareholders is threatened (Faccio & Masulis, 2004). In the thesis presented, we investigated whether the method of payment and merger timing influenced the acquirer's systematic risk after the takeover announcement.

Finally, we examined the determinants of acquirer's post-announcement market risk in a multivariate framework. The model included variables that were already tested in the bivariate analysis together with the total announced deal value and the acquirer's industry dummies: Basic materials, Communications, Consumer-Cyclical, Consumer-Non-Cyclical, Diversified, Energy, Financial, Industrial, Technology and Utilities. We then use three models to perform robustness check for time (2-year versus 3-year comparison) and benchmark index (European versus country index) specifics. With the multivariate analysis, we wanted to find out if we were able to explain the acquirer's market risk change after the takeover announcement with the factors included in the model.

The structure of the thesis is as follows. In Section 2, we present our research questions together with the overview of the previous literature on acquirer's systematic risk change around the takeover announcement and determinants of such change. In Section 3, we define hypotheses that we investigated in the study. Measures of acquirer's systematic risk change following the takeover announcements and multiple regression models with drivers of such change are also discussed in Section 3. Section 4 describes how we selected the sample of European acquirers and provides the sample description. In Section 5, we present key findings of our analysis regarding acquirer's systematic risk change after the takeover announcement and its determinants. Section 6 summarizes key takeaways from this study and concludes with closing remarks.

1 RESEARCH QUESTIONS AND PREVIOUS STUDIES

Mergers and acquisitions are among the most important corporate events as they tend to have a significant influence on post-acquisition performance, returns and risk of firms involved. Therefore, M&As are widely studied not only in corporate finance but also in strategic management literature.

1.1 Merger Motives

According to the traditional corporate finance theory, the main objective in managerial decision making is to maximize a firm value. Therefore, if the management decides to engage in an acquisition it means they believe that the value of the firm will thereby be increased (maximized).

However, empirical studies show that managers sometimes pursue other goals that are not necessarily in line with shareholder value maximization assumption (Brouthers, van Hastenburg, & van den Ven, 1998). Namely, Nguyen, Yung and Sun (2012) classified merger motives in the following two categories:

- value-increasing merger motives;

- value-decreasing merger motives.

There are a few company valuation models that are used for valuation purposes, however, according to Fernandez (2004) the discounted cash flow model is “the only conceptually correct valuation model”. Research by Imam, Barker and Clubb (2008) also shows that discounted cash flow model is the most widely used valuation tool in practice as indicated by the UK investment bankers.

The Discounted Cash Flow firm valuation model below suggests that the firm value can be increased by enhanced Free Cash Flows to the Firm (hereinafter: the FCFF) or reduced WACC.

$$Firm\ value = \sum_{t=1}^T \frac{FCFF_t}{(1+WACC)^t} + \frac{FCFF_T(1+g)}{(1+WACC)^T(WACC-g)} \quad (1)$$

where g represents a constant growth rate.

1.1.1 Value-increasing Merger Motives

Value-increasing merger motives are those where the acquiring firm expects to generate value by creating some sort of synergies while acquiring another firm (Nguyen et al., 2012). However, synergies can derive from different sources depending on the merger strategy.

Table 1. Free Cash Flow calculation

Net Sales
- Cost of Sales
- Selling, General and Administrative costs (SG&A)
<hr/>
= Net Operating Income after Taxes (EBIT*(1-t))
+ Depreciation & Amortization (D&A)
- Capital Expenditures (CAPEX)
+/- Change in working capital
<hr/> <hr/>
= Free Cash Flow from operating activities

Source: Z. Bodie, A. Kane, & A. J. Marcus, *Investments*, 2011, p. 612.

Acquirers engage in **strategic** acquisitions in order to create operating synergies by acquiring a target operating within the same industry and producing the same or similar products (Mukherjee et al., 2004). Mathematically speaking, operating synergies may create

firm value by increased Free Cash Flows to the Firm (see Formula 1), which may be generated by increased Net Sales, reduced Cost of Sales, reduced Selling, General and Administrative costs or reduced Capital Expenditures (see Table 1). Operating synergies in the form of economies of scale and scope (through reduced costs), gains from increased market power (increased net sales) are a source of value creation in related mergers (Seth, 1990). Devos, Kadapakkam, and Krishnamurthy (2009) found that operating synergies drive a 8.38 % value gain in mergers, with a greater impact in related than unrelated mergers. Such value is generated by a reduction in investment expenses and by better resources deployment rather than revenue increases.

In unrelated or conglomerated mergers, acquirers expect to create financial synergies by reducing the Weight Average Cost of Capital (see Formula 2). First of all, acquirers engage in diversifying acquisitions in order to stabilize the firm income streams, thereby reducing potential losses during economic downturns (Mukherjee et al., 2004). However, finance theory with the assumption of perfect capital market suggests diversification might reduce only non-systematic risk, whereas systematic risk is non-diversifiable. Therefore, no additional value is expected from acquisitions because investors can diversify their portfolio in a way to achieve desired level of risk (Amihud & Lev, 1981).

Contrary to finance theory, the Seth (1990) study shows that diversification or the so-called risk pooling effect may be beneficial to shareholders due to the existing market imperfections such as transaction cost and cost of monitoring large portfolio of stocks. Moreover, Leland (2007) claims that beside lower risk and default cost due to diversification financial synergies may also arise through the change of capital structure, as higher leverage leads to tax benefits (t_c – see Formula 2).

$$WACC = w_d r_d (1 - t_c) + w_s r_s \quad (2)$$

w_d – share of debt in capital structure

r_d – cost of debt

w_s – share of equity in capital structure

r_s – cost of equity

1.1.2 Value-decreasing Merger Motives

There are also certain acquisitions for which the prime motive is not to increase firm value, but to maximize the firm's stock value or to maximize value for the managers rather than shareholders.

Shleifer and Vishny (2003) presented the view that acquisitions are stock-market driven and represent a response to market mispricing. They claim firms have the incentive to increase

their stock price, because relatively overpriced firms have the opportunity to make acquisitions, while relatively undervalued firms become acquisition targets. In such cases stock is the preferred method of payment. However, the acquisitions initiated by overvalued bidders typically lead to adverse post-acquisition returns (Nguyen et al, 2012).

Another motive that is not necessarily driven by value maximization is agency or empire building motive, where managers tend to maximize their own utility which might be generated at the expense of the owners (Nguyen et al, 2012). Namely, managers enter into conglomerate mergers in order to reduce their employment risk, whereas no real economic nor financial benefit/synergy is created for the shareholders. Therefore, it can be regarded as an agency cost (Amihud & Lev, 1981). Similarly, managers' (personal) merger motives include enhanced sales, profitability and firm growth in order to achieve prestige or salary increase after a successfully completed acquisition (Brouthers et al. 1998).

Furthermore, managers' motive also differentiates from owners' motive in cases when managers are too optimistic about the expected synergy and offer a higher takeover premium for a target (Trautwein, 1990). Hubris-driven behaviour is associated with managers of larger firms, since they tend to overpay the target and more often complete the announced deal than managers of smaller firms (Nguyen et al, 2012).

1.2 Acquisition Gains

Even though short-term acquisition gains have not been found as one of the commonly stated merger motives, takeover performance is often evaluated by the analysis of wealth effects arising from a takeover announcement. Acquisition gains are determined using the traditional event study methodology, introduced by Brown and Warner (1985), where acquirer's and target's average abnormal returns are calculated over the three-day event window [-1, +1] around takeover announcement (Goergen & Renneboog, 2004). Andrade, Mitchell, and Stafford (2001) claim that in the efficient capital market with available public information any change in acquirer's or target's stock price right after a takeover announcement reflects expected value changes due to the merger.

In the last few decades extensive research was carried out analysing shareholder gains from the takeover announcement using the event study methodology. Even though the papers differ in many perspectives such as period, area of research (US-based or European-based), sample size, listed/unlisted targets, the results show similar trends. The most common finding is that most takeover announcement gain is captured by the target firm shareholders, whereas the acquiring firm shareholders earn zero returns at best. Andrade, et al. (2001) studied stock price changes of publicly traded US-based acquirers and targets driven by takeover announcement between 1973 and 1998. Their results indicate a statistically significant 16% (23%) abnormal return for the target firm shareholders within the time

window [-1, +1] ([-20, merger close]) and an insignificant -0.7% (-3.8%) negative abnormal return for the acquiring firm shareholders.

Similar conclusions were also drawn from the European-based takeovers. Extensive research was conducted by Martynova and Renneboog (2011). They examined abnormal returns of the acquiring and target firms within the 1993-2001 period. Their results show that the cumulative average abnormal returns are much higher for the target shareholders (+9.13%) than for the acquirer shareholders (+0.53%) at the announcement date, whereas within one-day time window [-1, +1] target shareholders earn on average +12.47%; and acquirer shareholders +0.72%.

Common consensus is that acquiring firm shareholders are not able to capture the gain from takeover announcements. Brouther et al. (1998) claim that there are three possible explanations for this: (1) managers of the acquirer may follow some non-value maximization goals, (2) they may have been overly optimistic about the acquisition gains so they overpaid for the target, or (3) we do not have the appropriate data and tools to evaluate whether the mergers are successful or not.

Shleifer and Vishny (2003) presented the view which is in line with non-value maximization merger goals. Namely, a drop in acquirer's return is expected in cases when the acquisitions are stock market driven, so the acquirers engage in stock acquisition in order to benefit from their high valuation on the market. Therefore, post-announcement returns only reflect the new acquirer stock value, which has been re-evaluated after the takeover announcement, and do not necessarily indicate whether the acquisition was successful or not. On the other hand, Roll (1986) supported the assumption that acquirer's adverse post-announcement returns are driven by overpayment of the target, which is reflected through a decrease in acquirer's stock price.

The relevance and applicability of the event study methodology remains open for discussion. On the one hand, the method is widely used because it is simple to apply or gather data and understand the outcomes. However, it appears that managers are not significantly impacted by its key findings in their managerial decision making: despite zero reported merger gains for the acquirer's shareholders, M&A activity still remains popular.

1.3 Risk Concept

In this thesis, we did not focus on post-announcement returns, but rather on post-announcement risk changes applicable to acquiring firms. Namely, we wanted to find out whether acquirers are able to create value from acquisition announcement in the form of reduced systematic risk.

In this chapter, the Capital Asset Pricing Model (hereinafter: the CAPM) is introduced, where expected firm return is a function of its market beta (proxy for firm's market risk), as well as risk free rate and average market return, but the latter two variables are not in the scope of firm management. Moreover, two alternative risk models are introduced and key takeaways from previous studies on risk changes after the takeover announcement are discussed.

1.3.1 Capital Asset Pricing Model (CAPM)

In the mid-60s, researchers examined equilibrium market return on risky assets. The studies by Sharpe (1964), Lintner (1965) and Mossin (1966) formed the capital asset pricing model based on a set of assumptions. Even though the model cannot fully withstand empirical results (Fama & French, 1992), it is believed to be the best available model to explain the returns on risky assets (Bodie, Kane, & Marcus, 2011), therefore it is often used not only by theorists but also by practitioners. Recent literature by Levy and Roll (2010), adopting a reverse-engineering approach, and Levy (2010), testing the CAPM within behavioural economics and psychologists' framework, concludes that the CAPM model cannot be rejected and, therefore, should be used when estimating the cost of capital of the firm.

The variation in the CAPM market beta can be explained by the degrees of operating and financial leverage (Mandelker & Rhee, 1984). But according to Schlueter and Sievers (2014), the key determinant of the cost of equity capital is intrinsic business risk. The most appropriate proxy to capture the intrinsic business risk is growth risk, calculated as covariance of changes in firm sales with changes in market-wide sales.

Expected return-beta relationship in the CAPM

$$E(r_i) = r_f + \beta_i[E(r_M) - r_f] \quad (3)$$

Basic expression from the CAPM is the expected return-beta relationship. It is assumed that the expected return of the firm's stock equals the market premium over the risk-free rate adjusted with market beta of the firm's stock (measure of risk) that is added on to the risk-free rate. Damodaran (Estimating Risk-Free Rates) suggests that a default-free (government) bond rate is used as a proxy for the risk-free rate. The government bond rate should match up the currency in which the cash flows are estimated as well as its respective duration.

Derivation of beta coefficient

$$\begin{aligned} Cov(r_i, r_M) &= Cov(\beta_i r_M + e_i, r_M) \\ &= \beta_i Cov(r_M, r_M) + Cov(e_i, r_M) \\ &= \beta_i \sigma_M^2 \end{aligned} \quad (4)$$

$$\beta_i = \frac{Cov(r_i, r_M)}{\sigma_M^2}$$

Sharpe (1964), one of the co-authors of the CAPM, outlined the differences between systematic and non-systematic risk. Namely, he explained why investors need to evaluate only the risk that is attributable to the assets' return responsiveness to the economic activity (his term for systematic risk), when observing the risk-return relationship. He proved that rates of return from all efficient combinations are perfectly correlated assuming that they are affected by changes in economic activity. Therefore, the rational investors diversify their financial assets to escape from firm-specific risk. The main conclusion from this study is the fact that only systematic risk (terms non-diversifiable risk and market risk are also in use) is relevant to the investors when assessing their risk, whereas non-systematic risk can be diversified away.

Moreover, Lintner (1965) also contributed to the asset pricing model by defining the factors that have a direct impact on the market price of a dollar risk (the factor of proportionality). He proposed that the relevant risk of the firm's stock is not calculated by the standard deviation from its dollar return, but rather by "the sum of the variance of its own aggregate dollar returns and their total covariance with those of all other stock".

In the last decade, some research papers were conducted that questioned the reliability of the CAPM and its assumptions. Demsey (2013), for instance, referred to the assumption that markets are essentially rational while not being in line with the facts. Therefore, new models are being developed that are not a sophisticated upgrade of the CAPM, but rather an econometric exercise of data mining.

1.3.2 Alternative Risk Models

After the introduction of the CAPM, certain new studies followed that were also in favour of using market beta as a measure of risk. Marshall (1971) stated that the beta indicates the risk premium of a particular stock relative to the market risk premium or, similarly, the stock's volatility relative to the market rate of return (Babcock, 1972). Furthermore, analysing beta coefficient as risk measure, Babcock suggested that additional stock should be included in the portfolio provided that its beta is lower than the beta of the existing portfolio.

Black, Jensen, and Scholes (1972) performed empirical tests of the CAPM and demonstrated opposite views on the CAPM model characteristic that "the expected excess return from holding an asset is proportional to the covariance of its return with the market portfolio (its beta)". His study showed that the CAPM model on average predicts a too low return for low beta assets and a too high return for high beta assets.

As a response to certain shortcomings of the CAPM model, two models were introduced that present a slightly alternative views on capital asset pricing-risk relationship. Even though both models failed to introduce a relevant alternative procedure of simple and widely-used return-risk calculation, they are worth to be considered when using the CAPM model because they highlight some relevant concerns about weak explanatory power of the model.

- Arbitrage Pricing Theory

An alternative model to the CAPM was proposed by Ross (1976), by introducing the Arbitrage Theory of Capital Asset Pricing. Like the CAPM, the Arbitrage Pricing Theory also assumes that the investors have essentially identical expectations. Moreover, the model incorporates many common risk factors, therefore it is easier to use the model for predicting the returns of firms that are affected by similar risk factors. However, the model does not specifically define what factors to include, so it is left to the researcher's discretion (Tufte, 2011).

- Three Factor Model

Another alternative model is Fama and French's Three Factor model from 1993. The authors were sceptical about explanatory power of the market beta (from classical CAPM) on cross-section of average US-stock returns. Common risk factor's model was developed from Fama and French's (1992) asset pricing tests that showed two variables, size (market equity) and book-to-market equity, are able to explain a large portion of average US-stock returns. The expended model consisted of three stock market factors, market premium, size premium and book-to-market premium (Fama & French, 1993), and therefore helped overcome the shortcomings of the Arbitrage Pricing Theory (Tufte, 2011).

1.3.3 Risk Changes Following Takeovers

There have been few studies that would examine acquirer's systematic risk changes around a takeover. Hereinafter, we will discuss the key considerations of the studies presented by Lubatkin and O'Neill (1987), Bharath and Wu (2006), and Hackbarth and Morellec (2008).

Lubatkin and O'Neill (1987) investigated the relationship between merger strategies (single-business, vertical, related or unrelated) and risk (unsystematic, systematic and total risk). In the first part of the study, the authors underlined the differences between modern finance and strategic management theory regarding the purpose of corporate diversification. On the one hand, the modern finance literature defends the view that diversification can only reduce firm's unsystematic risk, whereas its systematic risk is non-diversifiable. On the other hand, strategic management literature suggests that when two firms merge, the expected variance

will not be the linear extension of historical values because corporate diversification may lead to additional reductions of risk that shareholders cannot achieve on their own.

The research by Lubatkin and O'Neill (1987) was conducted on 297 large mergers during the 1954-73 period, with the acquirers listed on the New York Stock Exchange. The results from the analysis show a significant decrease of systematic risk of the acquiring firm in related mergers, whereas other merger types did not result in any significant changes in acquirer's systematic risk. Moreover, Chatterjee, Lubatkin, and Schoenecker (1992) demonstrated that the reduction in systematic risk of the acquiring firm may also be achieved in vertical mergers, where the two firms showed the seller-buyer relationship before the merger (classified by the Federal Trade Commission as vertical acquisition).

The key findings are in favour of the strategic management theory because in contrast to the modern finance theory assumptions, the related merger did lead to a decrease of systematic (market) risk. This conclusion suggests that in the cases of corporate diversification, the market risk has beside uncontrollable components also controllable components, and the latter cannot be affected by shareholders. Therefore, the key message from this study is that firms should acquire business-related firms to build competitive advantage (in the market they participate in) and thereby reduce the acquiring firm systematic (and total) risk (Lubatkin & O'Neill, 1987).

Helfat and Teece (1987) further investigated the components of the systematic risk and came to the conclusion that the systematic risk is primarily affected by two factors: the level of uncertainty in the macro-economic environment such as changes in fiscal or monetary policies, business cycles, technologies (Chatterjee et al., 1992) and the response of the firm's return to such disturbances. Therefore, the assumption from the CAPM about the non-diversifiable nature of the market risk may be applicable to the security managers rather than the corporate managers. This is due to the fact that the corporate managers can act in a way to reduce the systematic risk that the shareholders alone could not achieve on their own (Chatterjee & Lubatkin, 1990).

Furthermore, Bharath and Wu (2006) examined acquirer market beta changes around the takeover announcement. They found that the acquirer market beta first increases and then decreases after the takeover announcement. Pre-merger run-up in returns volatility and risk are driven by industry shocks, which may have arisen from unexpected technological changes or movements in capital markets. As a response to such shocks many companies within the industry decide to engage in acquisitions, which often leads to clustering of M&A activities and merger waves. On the other hand, acquirer's post-merger market risk is mainly driven by the following three factors: (1) acquirer's ability to neutralize increased volatility (due to industry shock) and (2) integration risk, and (3) acquirer's ability to benefit from diversification effect (due to merger).

Bharath and Wu (2006) came to the following conclusions. Firstly, increased volatility during an industry shock usually lasts for one year after the merger before stabilizing. Secondly, integration risk of not achieving the desired objectives in the M&A process may persist for a longer period, but usually it gets resolved over time. In cases when an acquirer makes more than one acquisition, or when the targets are of larger scope, it takes longer time to mitigate the negative impacts from integration risk. And thirdly, acquirers tend to benefit from diversification impact after the merger, since they have imperfectly correlated cash flows with their target company. Thus, they concluded that immediately after the merger the acquirer volatility remains increased due to industry shock impacts and integration risk, which prevail over diversification benefits from reduced cash flow volatility. However, over a certain period, when the integration risk becomes manageable, the acquirer may overall benefit from reduced volatility in returns.

Another study that discussed the dynamics and acquirer beta movements around the takeover announcement was conducted by Hackbarth and Morellec (2008). They claim that the acquirer beta movements around the announcement date depend strongly on its pre-announcement beta levels compared to its target. In cases when the acquirer beta exceeds its target beta in the pre-announcement period the acquirer beta will first increase and then decline upon the takeover announcement. On the other hand, the acquirer beta will first drop and then rise at the time of the announcement, if the acquirer experienced lower pre-announcement beta levels than its target.

1.4 Deal Characteristics

In this section, various deal characteristics are presented which were analysed in studies on mergers and acquisitions with respect to acquirer's post-acquisition performance and its market risk change. We will present deal characteristics, where an acquirer holds an active role and can decide upon them, such as whether to acquire a target from the same or another industry, from the same or another country, to finance the deal by cash or stock. On the other hand, we will also discuss certain deal characteristics that reflect circumstances which accompanied the acquisition process, such as the acquirer's country of origin and merger timing (from the acquisition time perspective rather than the today's perspective).

1.3.1 Industry Relatedness

The relationship between corporate strategy and systematic risk was carefully examined in the 1970-1995 period. At first, the market-related performance of the acquiring firms was studied through the assumptions of the CAPM model (Joehnk & Nielsen, 1974). Finance theory assumes that the combined firm experiences the same level of risk as is the risk of the weighted average of the acquiring and target firm returns. In this case, the corporate takeover cannot reduce risk to a greater extent than the acquirer's firm shareholder can achieve on

their own. On the other hand, strategic management theory assumes that related mergers may decrease acquirer's market risk through exploiting potential economies of scale and scope as well as benefiting from collusive gains, as larger firms are more likely to influence price and cost on the market (Chatterjee & Lubatkin, 1990). The question now is, the assumptions of which theory, modern finance or strategic management theory, will prevail in our empirical analysis.

The empirical evidence on the relationship between merger strategy and corporate market risk are mostly in line with strategic management predictions. Lubatkin and O'Neill reported on significant reduction of acquirer's systematic risk in related mergers, whereas conglomerate or unrelated mergers either resulted in increased level of acquirer's systematic risk (Joehnk & Nielsen, 1974) or no relationship was found between conglomerate mergers and changes in acquirer's systematic risk (Thompson, 1984). Similar conclusions were also drawn by more recent studies, i.e. by Anderson, Stowe and Xing (2011), who found that some diversifying acquirers experience risk reduction following corporate diversification, while other diversifying acquirers record an increase in their risk levels.

1.3.2 Type of Merger

Technological development and globalization trends in the 1990s led to the increased merger activity, also known as the 5th merger wave. Beside product diversification, as one of the most popular corporate strategies so far, international diversification in the form of cross-border acquisitions has become an important alternative for strategic expansion (Shimizu, Hitt, Vaidyanath, & Pisano, 2004). According to PengCheng and Yijay (2012), the major part of foreign direct investment is now driven by cross-border acquisitions. In cross-border deals the acquirers aim at obtaining synergies by exploiting imperfections in the factor, capital and product markets that result in short-term wealth gains for the acquiring firm shareholders (Uddin & Boateng, 2009). However, sometimes expected synergies do not materialize due to cultural and regulatory differences between the acquirer country and target country of origin that prevent a smooth post-merger integration process (Martynova & Renneboog, 2008).

In terms of risk perspective of international (or geographical) diversification strategy, the empirical studies present some inconclusive results. Focarelli, Pozzolo, and Salleo (2008) show that the acquirers with lower ex-ante systematic beta enter domestic deals, whereas the cross-border deals are undertaken by the acquirers with higher systematic risk prior the transaction. After the deal is closed, the domestic acquirers experience a slight increase in systematic risk, while no significant change in systematic risk is documented for cross-border acquirers. Kling, Ghobadian, Hill, Weitzel, and Regan (2014) found that systematic

risk reduction in the cross-border deal only occurs if the acquirer is a host-region firm¹. Learning from experience of prior international acquisitions, especially within the same foreign country, may help overcome challenges associated with facing different institutional and cultural environment (Collins, Holcomb, Certo, Hitt, & Lester, 2009).

1.3.3 Acquirer's Country of Origin

Moreover, differences in laws and regulations between UK/Ireland and the countries of Continental Europe might have different impacts on changes in systematic risk of the acquiring firm following the transaction as well. In general, Rossi and Volpin (2004) argue that targets are usually from a country with poorer shareholder protection than is to be found in the country of their acquirers because acquirers want to benefit from different business and regulatory environment. Martynova and Renneboog (2008) documented that there were weaker investor protection and lower disclosure requirements in the Continental Europe, which was reflected by a higher level of partial acquisitions and undisclosed deal terms of payment type or/and transaction value. This might lead to the expropriation of minority shareholder rights by transferring wealth from minority shareholders of the target firm to large block-holders of the acquiring firm. Another indicator of weak shareholder protection in civil-law countries is the high ownership concentration, as the majority of company's shares are often owned by not more than three of its largest shareholders (La Porta, de Silanes, Shleifer, & Vishny, 1998).

On the other hand, merger activity procedures such as partial acquisitions and undisclosed deal terms are almost non-existent in the common-law countries of UK/Ireland (Martynova & Renneboog, 2008), where capital markets are highly developed (Damiani & Pompei, 2009). Better accounting standards and better domestic investor protection are one of the main drivers for higher level of M&A activity (Rossi & Volpin, 2004) and relatively fewer cross-border acquisitions by the UK-based acquirers. Therefore, the UK bidders on average earn lower returns after the deal announcement when compared to their counterparts from the Continental Europe (Martynova & Renneboog, 2008). Impacts of the UK versus the Continental Europe origin of the acquirer on the change in systematic risk have not been documented yet (to my knowledge).

1.3.4 Target's Country of Origin

Since the European acquirers are in the centre of the analysis, it might be interesting to know, whether target's country of origin (European vs Non-European) impacts the systematic risk of the acquirer. The process of economic integration within the European Union did help overcome obstacles in cross-border M&As to a certain degree by the introduction of the

¹ Host region-oriented firm achieves at least 50% of total sales in another region (Europe-North America-Asia Pacific) (Rugman & Collinson, 2005).

single currency and a more homogenous regulatory system (Moschieri & Campa, 2009), through the Takeover directive by the European Commission (Moschieri, Ragozzino, & Campa, 2014). Moreover, integration also leads to intensified pre-merger competition in the market, which is reflected in lower acquisition price of the target firm (Bjorvatn, 2004). As a result, since 2001 significant increase in cross-border deals within the EU has been recorded, but domestic acquisitions continue to prevail (Moschieri & Campa, 2009).

On the other hand, there are still barriers preventing a smooth M&A process within Europe as a result of different ownership and governance structure of the corporations and the changing willingness of banks to finance those acquisitions. Economic policy remains subject to national regulation, which prevents rapid progress toward the active European M&A market (Moschieri & Campa, 2014). For example, national governments tend to implement measures that indicate economic nationalism by favouring domestic acquirers over international ones, because certain right-wing parties hold the view that large domestic firms (or so called national champions) in particular are thought to be too big to be acquired, which may significantly impact the market economy and deter future foreign acquisitions in that particular country (Dinc & Erel, 2013).

1.3.5 Method of Payment

One of the key considerations in acquisition process is also acquirer's decision about how to finance the M&A deal. Faccio and Masulis (2005) present the view that choice of payment method is associated with trade-off between acquirer's corporate control threats and its financing constraints. Acquirers decide for cash payment² in cases when acquirer's controlling shareholder holds between 20% and 60% of shares or when their corporate control is threatened by high concentration of target shareholdings. Moreover, cash payment is also preferred in cases when the acquirer has high credit rating (Karampatsas, Petmezas, & Travlos, 2014), special access to bank borrowings (Faccio & Masulis, 2005), or when tax increase is anticipated (Boone, Lie, & Liu, 2014). However, acquirers implement stock-financed acquisitions in the periods of uncertainty (Boone et al., 2014), when the acquirer experiences a worsened financial condition (Faccio & Masulis, 2005), or in cross-border deals to partially reduce information asymmetry in a foreign market (Dutta, Saadi, & Zhu, 2013).

In terms of payment method dynamics through the last two decades, Boone et al. (2014) report that stock payment peaked in the late 1990s, when it reached 60% with the downward trend, whereas cash payment was at its lowest point at the turn of the century and has doubled since. Mixed payment also exerts a positive trend with more flexibility to offer to the target shareholders.

² Acquirers make cash-financed acquisitions by raising additional debt, issuing new equity, or by using internal funds (Bouzgarrou & Louhichi, 2014).

Dube and Glascock (2006) suggest that mergers and acquisitions in general lead to an increase in risk, especially if they are financed with cash. The analysis show that equity as well as business risk for cash acquisitions increased in the three-year period after the deal completion. On the other hand, acquisitions financed with stock did not show significant impact on risk characteristics of the acquirer.

1.3.6 Merger Timing

When company's strategy is considered, pertaining to the issue whether to expand through mergers and acquisitions, the question about merger timing is especially crucial (Carelli, 2013). Iyer and Miller (2008) suggest that decision about merger timing is primarily impacted by exogenous shocks, company misvaluations and market timing. Furthermore, Garfinkel and Hankins (2011) argue that the starts of merger waves were associated with increases in cash flow volatility. In order to hedge against commodity price and cash flow uncertainties, vertical acquisitions were undertaken as an effective risk management tool for an operational hedge.

According to Martynova and Renneboog (2008), merger activity in Europe peaked in the 1999-2000 period, at the end of the 5-th takeover wave (1993-2001), when European transactions nearly reached US levels for the first time. After a short slow-down, it started to increase again during the 2003-2007 period. Increased merger activity in rising product markets was driven by merger gains from economies of scale (Lambrecht, 2004). Merger activity during the economic expansion was additionally stimulated by hazard acquisition behaviour (Iyer & Miller, 2008) and strong market power of some of the largest market players (Lambrecht, 2004). Moreover, finance deregulation led to significant imbalances between core and non-core (peripheral) countries within the EU, as the core countries grew on the basis of export, while the peripheral countries accumulated high levels of debt (Perez-Caldentey & Vernengo, 2012). According to Alexandridis, Mavrovitis, and Travlos (2012), in 2003 the sixth merger wave occurred reaching the peak in 2006 and then slowing down in the late 2007. Increased M&A activity within the euro area was driven by introduction of euro, technological innovation, globalisation, privatisation, deregulation, low interest rates and high level of liquidity on the financial markets (Vancea, 2013).

However, with the outburst of sub-prime and credit crisis in 2007, the change of landscape for M&A followed shortly (Martynova & Renneboog, 2008). Global markets were affected by growing budget deficits and vulnerable banking systems. Therefore, the companies needed to adapt to new economic conditions by focusing on growth in foreign countries through geographical diversification. Acquirers started to search for cross-border targets in order to diversify risk and simultaneously maximize efficiency and productivity (Grave, Vardiabasis, & Yavas, 2012). Reddy, Nangia, and Agrawal (2014) suggest that the global financial crisis of 2007-2008 and the crisis of euro in 2011 negatively affected cross-border

activities and led to a reduction in asset prices mainly in the developed countries. As a result, a reverse trend occurred, when emerging market firms started to acquire targets from the developed economies.

Tarsalewska (2015) demonstrates the motives for merger activity during economic upturns and downturns in vertical acquisitions and reports on underlying changes in systematic risk. In economic upturns, acquirers enter the M&A deals to reduce inefficiencies in their production chain, while in economic downturns they strive for keeping their existing production chain operational. The risk analysis shows that the acquirers manage to reduce their systematic risk following the acquisition both in economic upturn and downturn periods, but only when a firm has a low level of debt.

1.3.7 Deal Size

Deal size was also one of the analysed factors in the previous studies on corporate takeovers that might explain acquirer's post-announcement returns and its post-acquisition operating performance. Moeller, Schlingemann, and Stulz (2004) studied how the acquirer's size impacts acquirer's returns after the takeover announcement and showed that smaller acquirers earn on average 2.2% points higher abnormal returns than larger acquirers. Larger acquirers were found to offer larger takeover premiums and are more likely to make acquisitions with negative synergy gains.

On the other hand, Alexandridis, Fuller, Terhaar, and Travlos (2013) rather focused on the analysis of the target relative size potential impacts on the returns of acquiring firm shareholders. Their results suggest that despite the fact that acquirers pay on average lower relative acquisitions premium for larger targets, more value is destroyed in acquisitions of larger targets. Unfavourable acquirer's returns in acquisitions of a larger target are driven by additional complexity and concerns about strategic potential, which might prevent the acquirer to achieve expected benefits from the acquisition.

In terms of acquirer's post-acquisition performance, acquirers of larger firms (with target firm sales contributing to at least 20% of acquirer firm sales) are more likely to increase combined firm profitability by exploring financial and operating synergies after the merger. However, the largest M&A deals result in lower profitability increases compared to medium-sized deals due to complexity of managing a large combined firm that was newly created (Martynova et al., 2006).

1.3.8 Acquirer's Indebtedness

We intend to examine how an acquirer's change in debt level might impact its post-acquisition performance and risk outcomes. Theoretical perspective on relationship between

acquirer's indebtedness and acquisition performance suggests that higher debt levels might lead to a better post-acquisition performance by encouraging managers to allocate financial sources productively (Harrison & Oler, 2008). Moreover, highly indebted acquirers are often strictly monitored by banks, which means that unprofitable acquisitions are prevented beforehand (Martynova et al., 2006). However, empirical studies report somewhat contradictory results. Ghosh and Jain (2000) document statistically significant increase in financial leverage of the combined firms following the acquisition, as a result of higher debt capacity. Furthermore, higher indebtedness of the combined firm leads to inferior post-merger returns (Harrison & Oler, 2008).

From risk perspective, related mergers were found to result in lower systematic risk despite the increase in financial leverage (Lubatkin & O'Neill, 1987). On the other hand, cross-border mergers are associated with a decrease in debt levels of the UK acquirers, because international strategy is perceived to be more risky, therefore managers tend to avoid debt financing in order to limit firm's risk exposure (Agyei-Boapeah, 2015).

2 HYPOTHESES AND MODEL

In the second chapter, we will first outline the hypotheses which will be tested and analysed in the following sections. We will also present the measures which were used to assess an acquirer's market risk change following the takeover announcement. In the end, we will introduce a model to define what the key drivers of such change are.

2.1 Hypotheses Formation

Below, there are nine hypotheses, which will be tested in the thesis, with respect to deal characteristics that were discussed in the literature overview.

Chatterjee et al. (1992) and Lubatkin and O'Neill (1987) found that the corporate managers managed to decrease acquirer's systematic risk after the takeover announcement. According to Bharath and Wu (2006), acquirer's pre-merger increase in return volatility is driven by unexpected technological changes that cause industry shocks. However, in the period after the takeover the acquirers tend to benefit from reduced cash-flow volatility and neutralize the impact of integration risk. This leads us to our first hypothesis, where we will test whether acquirer's market risk changes after the takeover announcement.

Hypothesis 1: Acquirer's beta level before and after the takeover announcement

H₁: Takeover announcement will have a significant impact on the systematic risk of the acquiring firm ($\beta_{before} \neq \beta_{after}$).

Modern financial theory suggests that with diversification companies can only decrease their unsystematic risk, whereas their systematic risk is non-diversifiable. However, Lubatkin and O'Neill (1987) found that acquirers were able to reduce their systematic risk in cases of related mergers, since they managed to build a competitive advantage on the market. They further claimed that in cases of corporate diversification, market risk has uncontrollable and controllable components and the latter can only be exploited by corporate managers in contrast to shareholders. The second hypothesis tests whether there is a significant difference in acquirer market risk change between focused and unfocused acquisitions.

Hypothesis 2: Industry Relatedness – focused versus diversification strategy

H₁: Industry relatedness between the acquiring and the target firm will have a significant impact on the acquirer's systematic risk change after the takeover announcement ($\mu_{focused} \neq \mu_{unfocused}$).

During the 5th merger wave in the 90s, the level of cross-border deals increased significantly and thus internalization of diversification has become a good alternative for strategic expansion (Shimizu et al., 2004). Uddin and Boateng (2009) claim that in cross-border deals acquirers expect to increase shareholder value by exploiting imperfections on the foreign market. However, the acquirers may face difficulties in integration processes due to cultural and regulatory differences that prevent the expected synergies to materialize (Martynova and Renneboog, 2006). Therefore, we will test whether there is a significant difference in acquirer's market risk change between acquirers entering domestic or cross-border acquisitions.

Hypothesis 3: Domestic versus Cross-border Merger Type

H₁: Type of merger, domestic versus cross-border deal, will have a significant impact on the acquirer's systematic risk change after the takeover announcement ($\mu_{domestic} \neq \mu_{cross-border}$).

Martynova and Renneboog (2008) reported on differences in laws and regulations between common-law and civil-law countries. There is high ownership concentration (La Porta et al., 1998), high level of partial acquisitions and undisclosed deal terms in civil-law countries, which indicate weaker investor protection and lower disclosure requirements in Continental Europe. In UK and Ireland, on the other hand, there is a higher level of M&A activity (Rossi & Volpin, 2004) where capital markets are more developed (Damiani & Pompei, 2009) and partial acquisitions as well as undisclosed deal terms are almost non-existent. Therefore, we will test whether the differences in law and regulations between UK/Ireland (common-law countries) and Continental Europe (civil-law countries) will also translate in differences in acquirer's systematic risk changes following the takeover announcement.

Hypothesis 4: Acquirer's Country of Origin

H₁: Acquirer's country of origin (UK/Ireland versus Continental Europe) will have a significant impact on the acquirer's systematic risk change after the takeover announcement ($\mu_{UK/Ireland} \neq \mu_{Continental\ Europe}$).

Moschieri and Campa (2009) reported on significant increase in cross-border deals within the European Union since 2001, driven by the process of economic integration with introduction of the single currency and more homogenous regulatory system. However, domestic acquisitions continue to prevail due to potential risks associated with different ownership structure and corporate governance among the European countries, as well as national governments favouring domestic over foreign acquirers (Moschieri & Campa, 2014). We will investigate if there are any significant differences in acquirers' post-announcement risk changes between M&A deals with European- and Non-European-based targets.

Hypothesis 5: Target's Country of Origin

H₁: Target country of origin (European versus Non-European) will have a significant impact on the acquirer's systematic risk change after the takeover announcement ($\mu_{European} \neq \mu_{Non-European}$).

Faccio and Masulis (2005) claim that acquirers decide for payment method based on their corporate control threats and financing constraints. Cash is the preferred payment method when corporate control is threatened by high concentration, acquirers have high credit rating (Karampatsas et al., 2014), or tax increase is anticipated. In periods of uncertainty (Boone et al., 2014) and when acquirers experience worsened financial condition, acquirers decide for stock acquisitions. We will investigate whether the choice on method payment impacts the acquirer's market risk change around the takeover announcement.

Hypothesis 6: Method of Payment

H₁: Method of payment (cash versus other) will have a significant impact on the acquirer's systematic risk change after the takeover announcement ($\mu_{cash} \neq \mu_{other}$).

The period under our investigation may be divided in two parts, the first part stretching before the outburst of global financial crisis in 2007 and the second part relating to the period after it. In pre-crisis period, increased merger activity was stimulated by technological innovation, finance deregulation, globalization and high liquidity on the markets (Vancea, 2003). With the outburst of crisis in mid-2007, M&A environment changed significantly due to growing budget deficits and vulnerable banking system (Martynova & Renneboog, 2008).

The difference in acquirer's market risk change for merger announcements before versus after the fiscal year 2007 was tested with the Hypothesis 7.

Hypothesis 7: Merger Timing

H₁: Merger (announcement) timing, before versus after global financial crisis outburst in 2007, will have a significant impact on the acquirer's systematic risk change after the takeover announcement ($\mu_{before} \neq \mu_{after}$).

Hypothesis 8 predicts that there is a significant difference in acquirer's market risk change depending on the deal size (calculated as deal announcement value relative to acquirer's total assets). Alexandridis et al. (2013) claim that more value is destroyed in acquisitions of larger targets due to concerns about strategic potential and additional complexity, despite the fact that relatively lower acquisition premium is paid for larger targets.

Hypothesis 8: Deal Size

H₁: Deal size (deal announcement value relative to acquirer's assets) will have a significant impact on the acquirer's systematic risk change after the takeover announcement (at least one μ_j is different from others).

Our last hypothesis tests whether the change in acquirer's debt ratio one year around the takeover announcement will influence its market risk change. Harison and Oler (2008) assumed that high debt levels may encourage the managers to allocate their assets productively, and as they are strictly monitored by the bank unprofitable acquisitions may be prevented (Martynova et al., 2006). However, Ghosh and Jain (2000) found that acquirers tend to increase their debt capacity following the acquisition.

Hypothesis 9: Acquirer's Indebtedness

H₁: Acquirer's change in debt ratio will have a significant impact on the acquirer's systematic risk change after the takeover announcement ($\mu_d > 0$).

2.2 Measures of Systematic Risk Change

Acquirers' shift in the systematic risk after M&A deal announcement was estimated using a technique similar to that of Lubatkin and O'Neill in their study on capital market risk from 1987. Systematic risk of an acquirer was measured by its market beta, which was derived from the CAPM model. Market beta was calculated as the covariance of the market and acquirer's return relative to the variance of the market return.

Calculation of Beta, following the CAPM:

$$\beta_i = \frac{Cov(r_i, r_M)}{\sigma_M^2} \quad (5)$$

Where: $Cov(r_i, r_M)$ = covariance between the market return and acquirer's return

σ_M^2 = variance of the market return

Market and acquirer's return were calculated on the weekly basis for average daily stock price on Tuesdays and were downloaded from the Datastream database:

$$r_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} \quad (6)$$

Acquirers' beta in 2-year period before the deal announcement was subtracted from beta in 2-year period after the public announcement date, while the periods of 1 month before and after the announcement were excluded from the analysis (to eliminate potential uncertainties surrounding the deal announcement).

$$\Delta\beta_i = \beta_{i(\text{post-merger})} - \beta_{i(\text{pre-merger})} \quad (7)$$

The acquirer returns were regressed against Stoxx Europe 600 E price index for 2-year period before and after the deal announcement (Measure 1). However, to check the correctness of the testing, two robustness tests were applied. Firstly, country indexes were used as benchmarks for 2-year period (Measure 2), and secondly, the comparison period was extended to three years' time (Measure 3). The list of benchmark index per country is stated in Table 2, whereas their variability during 2002-2015 is shown in Appendix D. The graph shows that most country stock price indexes started to increase in 2003, peaked in 2007/2008, dropped significantly in 2009 and then entered a recovery period in the following years.

Changes in acquirers' market beta after the deal announcement (in comparison with market beta before the deal announcement) were tested with paired samples t-test for related groups. Such test was performed on deal level (rather than acquirer level) because four acquirers were involved in two deals within the period 2003-2014 (assumption applied: time interval between the two deal announcements by a single acquirer was at least 3 years, otherwise the acquirer was excluded from the analysis).

Table 2. Benchmark Price Index by Country

Country	Benchmark index
European Benchmark Index	STOXX EUROPE 600 E - PRICE INDEX
Austria	ATX – Austrian Traded Index
Belgium	Bel 20
Cyprus	FTSE Cyprus SE20
Denmark	OMX Copenhagen (OMXC20)
Finland	OMX Helsinki 25 (OMXH25)
France	France CAC 40
Germany	DAX 30 Performance
Greece	FTSE/ATHEX Large Cap
Iceland	OMX Iceland All Share
Ireland	ISEQ 20
Italy	FTSE MIB Index
Netherlands	AEX Index (AEX)
Norway	OSLO SE OBX
Portugal	Portugal PSI-20
Spain	IBEX 35
Sweden	OMX Stockholm 30 (OMXS30)
Switzerland	Swiss Market (SMI)
UK	FTSE 100

Source: Thomas Reuters, *Datastream*, 2016.

Test form for testing differences between arithmetic means of two paired samples:

$$t = \frac{\bar{y} - \mu_d}{se(\bar{d})} \quad (8)$$

\bar{y} – mean value of the dependent variable

Paired sample t-test was firstly used for total sample, and secondly, the sample was split by several deal characteristics: industry relatedness (focused versus unfocused), method of payment (cash versus stock/mix payment), domestic vs cross-border nature of a deal, target country of origin (European versus Non-European), acquirer country of origin (UK/Ireland versus Continental Europe), merger-announcement timing (2003-2007 versus 2008-2012), deal size (deal value represents 10%-25% of acquirer's total assets; 25%-50%; 50%-100%), change in acquirer's indebtedness (increase in acquirer's debt ratio vs. decrease in debt ratio).

Moreover, to test the difference in arithmetic means of average market beta across each stated deal characteristic, analysis of variance was used.

2.3 Pearson Correlation

Pearson product-moment correlation coefficient or Pearson correlation coefficient is the descriptive measure of the relationship between two explanatory variables x and y (Field, 2013). It is defined as follows:

$$r_{xy} = \frac{cov_{xy}}{s_x s_y} = \frac{\sum(x_i - \bar{x})(y_i - \bar{y})}{(N-1)s_x s_y} \quad (9)$$

r_{xy} – correlation coefficient in the sample

cov_{xy} – covariance between two independent variables x and y in the sample

s_x – sample standard deviation of an independent variable x

s_y – sample standard deviation of an independent variable y

The value of correlation coefficient varies between -1 in +1, with -1 indicating perfect negative correlation between the two variables, 0 showing no relationship and +1 suggesting perfect positive correlation.

In the results section, we will present the correlation matrix to show the linear relationships between the independent variables – identified M&A deal characteristics. Moreover, we will perform the correlation test to identify potentially very strong correlations between two independent variables, which might lead to multicollinearity in the multivariate model.

2.4 Multiple Regression Model

Multiple regression equation shows how a dependent variable y is dependent on two or more independent variables (Ehrhardt & Brigham, 2011). Based on the identified hypotheses, we will test the following multiple regression model in order to determine the factors that might drive acquirer's systematic risk change after the takeover announcement.

Estimated multiple regression equation:

$$\hat{y}_i = b_0 + b_1 IndR_i + b_2 CB_i + b_3 EurT_i + b_4 UKIR_i + b_5 CASH_i + b_6 Aft7_i + b_7 SIZE_i + b_8 AqDEBT_i + b_9 AqTA_i, \quad (10)$$

where

- y_i refers to the absolute change in acquirer's market beta in 2-year period after the M&A announcement, compared to acquirer's market beta in 2-year period before the M&A announcement;

- $IndR_i$ (Industry Relatedness) is a dummy variable that takes the value of 1 if the acquirer and the target are from the same industry, while the value is zero in other scenarios (refers to Hypothesis 2);
- CB_i (Cross-border) is a dummy variable that takes the value of 1 for cross-border acquisitions and 0 for domestic acquisitions (refers to Hypothesis 3);
- $EurT_i$ (European Target) is a dummy variable that takes the value of 1 if the target firm comes from a European country and 0 for target from a non-European country (refers to Hypothesis 4);
- $UKIR_i$ is a dummy variable that takes the value of 1 if the acquirer comes from UK/Ireland (Anglo-Saxon countries), while the value is zero in other scenarios (refers to Hypothesis 5);
- $CASH_i$ is a dummy variable that takes the value of 1 if the acquisition is financed with cash/debt and 0 if the acquisition is financed with mix (cash/debt and stock) or stock only (refers to Hypothesis 6);
- $Aft7_i$ (after 2007) is a dummy variable that takes the value of 0 if the deal was announced during 2003-2007 and 1 if announced during 2008-2012 – before versus after the outburst of the global financial crisis (refers to Hypothesis 7);
- $SIZE_i$ relates to the relative target size, calculated as deal value relative to acquirer's total assets (refers to Hypothesis 8);
- $AqDEBT_i$ relates to acquirer's debt ratio change one fiscal year after versus one fiscal year before the takeover announcement, calculated as total liability relative to total assets (refers to Hypothesis 9);
- $AqTA_i$ relates to the value of acquirer's total assets.

Models are defined in the same manner as in the previous section. In Model 1, the dependent variable of acquirer's market beta change after the takeover announcement is calculated for 2-year period before and after the takeover announcement and is compared with Stoxx Europe 600 index. Model 2 is similar as Model 1, except that the acquirer's returns are compared with various country indexes (listed in Table 2). Model 3 is similar as Model 1, except that the acquirer's market beta is calculated for the three-year period before and after the takeover announcement.

3 DATA AND SAMPLE

Chapter three defines how the sample of M&A deals was selected and shows a detailed sample description based on previously identified deal characteristics that are subject to the analysis.

3.1 Sample Selection

Acquirers were analysed through a sample of completed M&A deals retrieved from the Bloomberg database. The extended sample includes the West-European acquirers that completed M&A deal between 01/01/2004 and 30/09/2014. The acquirers are public firms and are listed on West-European stock exchanges.

For analytical purposes, additional filters needed to be applied because of data (market price) unavailability in the period three years before and after the deal announcement. Only targets with significant impact (deal size is greater than 10% of acquirer's total assets) on acquirer's risk were taken into consideration. However, outliers with deal size over 100% of acquirer total assets were excluded from the final sample. Additional filters applied are shown in the table below.

Table 3. Additional Filters Applied

Description	Number of deals
Extended sample	6685
No market price accessible in the Datastream database	165
Acquirers were dead sooner than 3 years after the deal announcement	36
Acquirers that could not be found in the Datastream database	11
Deal value < 10% Acquirer's Total Assets	6067
Acquirers were involved in more than 1 deal in the period 3 years before and after announcement	116
Deal announcements in 2013, 2014 (no corresponding data for the period two years after the announce.)	67
Deal value > 100% Acquirer's Total Assets	17
Final sample	207

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

3.2 Sample Description

In terms of sample description, number of deals (in absolute and relative terms), total deal value (in absolute and relative terms) and average deal value were obtained for the sample. The sample consists of 207 deals with the total deal value of €59,995.0 million and the average deal value of €289.8 million. Below, the sample is presented through various deal characteristics that are included in the M&A analysis.

Table 4 shows that the most acquisitions were announced in 2007 (36; 17.4%), whereas the deals with the highest total deal value (€22,703.1 million; 37.8%) and the highest average deal value (€840.9 million) were announced in 2006.

Table 4. Breakdown by Announcement Date

	N° of deals³	Percent (%)	Deal Value (m €)	Percent (%)	Average Deal Value (m €)
2003	4	1.9	44.6	0.1	11.2
2004	17	8.2	2,573.3	4.3	151.4
2005	19	9.2	843.1	1.4	44.4
2006	27	13.0	22,703.1	37.8	840.9
2007	36	17.4	4,972.8	8.3	138.1
2008	24	11.6	13,915.3	23.2	579.8
2009	25	12.1	7,057.7	11.8	282.3
2010	24	11.6	5,967.3	9.9	248.6
2011	17	8.2	1,214.2	2.0	71.4
2012	14	6.8	703.6	1.2	50.3
Total	207	100.0	59,995.0	100.0	289.8

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

To outline the difference between pre- and post-financial crisis outbreak, we further split the sample into two groups, one with the announcement date being within the period 2003-2007 and the other within the period 2008-2012 (see Table 5). However, there is hardly any difference between the two subgroups neither in number of deals (103 vs. 104) nor in average deal values (€302.3 million vs. €277.5 million).

Table 5. Breakdown by Announcement Date Period

	N° of deals	Percent (%)	Deal Value (m €)	Percent (%)	Average Deal Value (m €)
2003-2007	103	49.8	31,136.9	51.9	302.3
2008-2012	104	50.2	28,858.1	48.1	277.5
Total	207	100.0	59,995.0	100.0	289.8

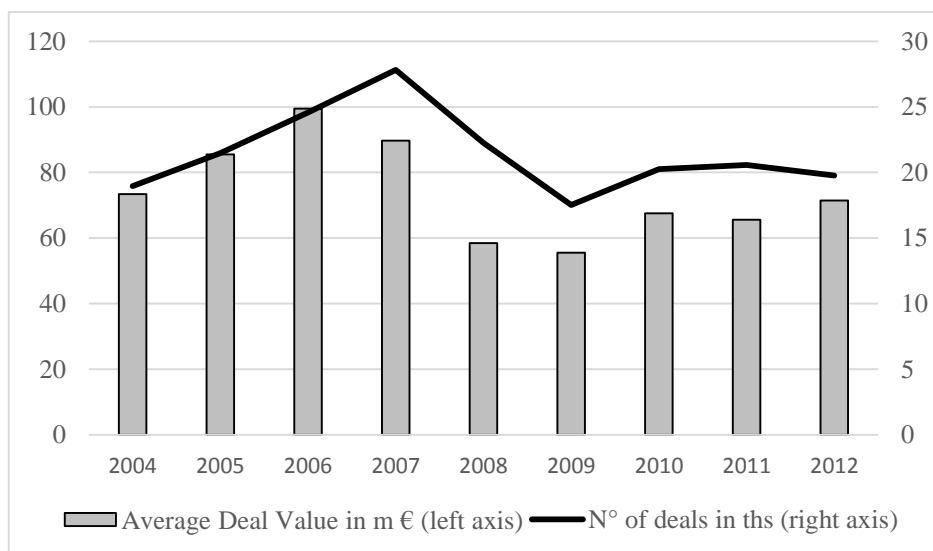
Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

Comparing our sample to M&As completed by European acquirers 2004-2012, we can see an increasing trend in number of deals with the peak in 2007 reaching around 28k deals, followed by a sudden drop in 2008. Similar trend has been observed for average deal value that peaked in 2006 with around 100 million EUR, which then dropped in 2007 and stabilized in 2010 at around 70 million EUR. The overall market trend is more or less in line with our sample, except that deal size in our sample is larger than on the market because we applied

³ The retrieved data from Bloomberg database include deals that were completed between 01/01/2004 and 30/09/2014.

certain filters in our analysis, i.e. excluding deals where the acquirers acquired less than 10% of target's value.

Figure 1. M&A Market Dynamics 2004-2012



Source: Bloomberg, *Bloomberg Professional*, 2016.

Table 6. Breakdown by Acquirer's Country of Origin

	N° of deals	Percent (%)	Deal Value (m €)	Percent (%)	Average Deal Value (m €)
Belgium	3	1.4	722.5	1.2	240.8
Cyprus	3	1.4	120.2	0.2	40.1
Denmark	7	3.4	765.2	1.3	109.3
Finland	16	7.7	646.1	1.1	40.4
France	11	5.3	1,622.0	2.7	147.5
Germany	8	3.9	1,871.5	3.1	233.9
Greece	5	2.4	1,098.4	1.8	219.7
Iceland	1	0.5	302.8	0.5	302.8
Ireland	3	1.4	241.3	0.4	80.4
Italy	12	5.8	4,568.2	7.6	380.7
Netherlands	4	1.9	384.7	0.6	96.2
Norway	9	4.3	19,971.3	33.3	2,219.0
Portugal	1	0.5	483.1	0.8	483.1
Spain	12	5.8	4,841.7	8.1	403.5
Sweden	10	4.8	1,298.0	2.2	129.8
Switzerland	11	5.3	13,421.5	22.4	1,220.1
U.K.	91	44.0	7,636.5	12.7	83.9
Total	207	100.0	59,995.0	100.0	289.8

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

Acquirers from the UK were by far the most active in the M&A activity, as they were involved in 91 acquisitions (44%), but with a relatively small average deal size of €83.9 million. On the other hand, the acquisitions with the largest average deal size were announced by Norwegian (€2,219.0 million) and Swiss (€1,220.1 million) acquirers.

Due to significant differences between Anglo-Saxon (the UK and Ireland) and Continental-European legislation, the sample was further split into deals acquired by UK/Ireland firms and those obtained by firms from other European countries. As previously indicated, UK/Ireland firms acquired almost half of the sample deals (94 vs. 113), whereas their average deal value was much lower than the deal value of acquirers from the Continental Europe (€83.8 million vs. €461.2 million).

Table 7. Breakdown by UK/Ireland and Other Country of Origin

	N° of deals	Percent (%)	Deal Value (m €)	Percent (%)	Average Deal Value (m €)
UK/Ireland	94	45.4	7,877.8	13.1	83.8
Other	113	54.6	52,117.2	86.9	461.2
Total	207	100.0	59,995.0	100.0	289.8

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

Most of the targets come from European countries (152 vs. 55), with higher average deal value than the targets from Non-European countries (€337.5 million vs. €158.1 million). Almost half of the Non-European targets (27) originates from developed countries (the US, Canada, Australia and Hong Kong), while the other half (28) originates from the developing countries (Asia, Latin America and Africa).

Table 8. Breakdown by Target Country of Origin

	N° of deals	Percent (%)	Deal Value (m €)	Percent (%)	Average Deal Value (m €)
European	152	73.4	51,299.4	85.5	337.5
Non-European	55	26.6	8,695.6	14.5	158.1
Total	207	100.0	59,995.0	100.0	289.8

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

Cross-border deals account for larger share of the sample (55.6%), while domestic deals resulted in higher average deal value (€453.9 million vs. €158.6 million). This is probably the consequence of more companies searching for growth opportunities outside their domestic borders. However, since cross-borders deals are riskier, firms tend to acquire targets of relatively smaller size.

Table 9. Breakdown by Type of Merger

	N° of deals	Percent (%)	Deal Value (m €)	Percent (%)	Average Deal Value (m €)
Domestic	92	44.4	41,754.3	69.6	453.9
Cross-border	115	55.6	18,240.7	30.4	158.6
Total	207	100.0	59,995.0	100.0	289.8

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

All-cash acquisitions represent 70% of payment types, followed by Mix (cash and stock payment), with 12.6%, and stock payments, 11.1%. In 6.3% of the deals the payment type was not disclosed. The highest average deal value was achieved by acquisitions that were financed exclusively with stock (€816.0 million), followed by deals of undisclosed payment type (€250.0 million), cash acquisitions (€232.0 million) and deals financed with cash-stock mix (€166.6 million).

Table 10. Breakdown by Type of Payment

	N° of deals	Percent (%)	Deal Value (m €)	Percent (%)	Average Deal Value (m €)
Cash	145	70.0	33,643.9	56.1	232.0
Mix	26	12.6	4,332.5	7.2	166.6
Stock	23	11.1	18,768.1	31.3	816.0
Undisclosed	13	6.3	3,250.5	5.4	250.0
Total	207	100.0	59,995.0	100.0	289.8

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

Smaller targets (deal size is lower than 25% of acquirer's total assets) represent more than two-thirds of the sample and were involved in deals with largest average value (€334.7 million). The largest targets (deal sizes between 50% and 100% of acquirer's total assets, since deals larger than 100% were excluded from the sample) were rarest (about 5%) and had lowest average deal value (€75.4 million).

Table 11. Breakdown by Relative Target Size

	N° of deals	Percent (%)	Deal Value (m €)	Percent (%)	Average Deal Value (m €)
.10<x≤.25	141	68.1	47,190.7	78.7	334.7
.25<x≤.50	56	27.1	12,050.0	20.1	215.2
x>.50	10	4.8	754.2	1.3	75.4
Total	207	100.0	59,995.0	100.0	289.8

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

In terms of acquirer sector, most acquirers operated in Consumer, Non-Cyclical (49; 23.7%) and Industrial sectors (48; 23.2%), whereas acquirers in the Energy sector announced the highest average deal value (€1,605.3 million).

Table 12. Breakdown by Acquirer Sector

	N° of deals	Percent (%)	Deal Value (m €)	Percent (%)	Average Deal Value (m €)
Basic Materials	20	9.7	6,253.7	10.4	312.7
Communications	28	13.5	2,327.6	3.9	83.1
Consumer, Cyclical	29	14.0	3,918.1	6.5	135.1
Consumer, Non-Cyclical	49	23.7	17,645.7	29.4	360.1
Diversified	1	0.5	16.2	0.0	16.2
Energy	11	5.3	17,657.8	29.4	1,605.3
Financial	3	1.4	8.6	0.0	2.9
Industrial	48	23.2	7,952.7	13.3	165.7
Technology	15	7.2	405.2	0.7	27.0
Utilities	3	1.4	3,809.4	6.3	1,269.8
Total	207	100.0	59,995.0	100.0	289.8

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

The breakdown of target firm industry is shown in Appendix C. Since Bloomberg database is missing some data regarding the sector of the target firm, breakdown on higher level than target industry is not possible. The most targets operated in commercial services (21; 10.1%), whereas the highest average acquisition value of €2,929.4 million applied to “Oil and Gas” industry.

The majority of firms acquired targets from the same industry (143; 69.1%), which are classified as focused acquisitions. However, Table 13 shows that the average deal value does not differentiate substantially between focused and unfocused deals (€296.4 million versus €275.3 million).

Table 13. Breakdown by Industry Relatedness

	N° of deals	Percent (%)	Deal Value (m €)	Percent (%)	Average Deal Value (m €)
Unfocused	64	30.9	17,616.5	29.4	275.3
Focused	143	69.1	42,378.4	70.6	296.4
Total	207	100.0	59,995.0	100.0	289.8

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

Acquirer's financial leverage is defined as the ratio of total debt to total assets. In the sample, there is a slightly higher number of deals, where the acquirer's leverage increased one fiscal year after the deal announcement, rather than staying the same or decreasing. In terms of average deal value, no sizeable difference was documented between different debt level dynamics around the takeover announcement.

Table 14. Breakdown by Change in Acquirer's Indebtedness

	N° of deals	Percent (%)	Deal Value (m €)	Percent (%)	Average Deal Value (m €)
x≤0	91	44.0	26,902.1	44.8	295.6
x>0	116	56.0	33,092.9	55.2	285.3
Total	207	100.0	59,995.0	100.0	289.8

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

4 EMPIRICAL ANALYSIS

The forth chapter represents the crucial part of the thesis because it outlines the results of our analysis and provides comments of the key takeaways. It consists of descriptive statistics, bivariate analysis, correlation and multivariate regression analysis.

4.1 Descriptive Statistics

Table 15 shows descriptive statistics for the dependent variable.

Table 15. Descriptive Statistics

	2Y DJ Stock 600	2Y Country price index	3Y DJ Stock 600
N	207	207	207
Mean	-0.0614	-0.0595	-0.0347
Median	-0.0706	-0.0319	-0.0366
Mode	-2.1778	-1.7963	-1.656
Std. Deviation	0.4649	0.456	0.4364
Variance	0.216	0.208	0.19
Skewness	-0.356	-0.625	-0.502
Kurtosis	2.328	1.854	1.548
Range	3.6747	2.9727	2.7682
Minimum	-2.1778	-1.7963	-1.656
Maximum	1.4969	1.1764	1.1123

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

The sample consists of 207 M&A deals. On average, the acquirer's market beta dropped by 0.06 (2-year period) and 0.03 (3-year period), respectively. Negative value for skewness indicates that the distribution of the market beta changes after the deal announcement (the dependent variable) and is asymmetric to the left. Positive value for kurtosis indicates a flatter distribution of the dependent variable and the absolute number below 3 indicates no major deviations from the normal distribution.

In the univariate analysis, we tested whether the decrease in acquirer market beta is statistically significant. The results show that M&A announcements did have a significant impact on the systematic risk of the acquiring firms. Measures 1 and 2 indicate that the acquirer's market beta decreased on average by 0.06 from 0.68 (2-year period before deal announcement) to 0.62 (2-year period after deal announcement) at the significance level of 0.06. If the observable period is extended to three years, the analysis also reports on a decrease in acquirer's systematic risk, but the results are not statistically significant (Table 16).

Table 16. Changes in Systematic Risk

N	2Y DJ Stock 600		2Y Country price index		3Y DJ Stock 600	
	Means	s.d.	Means	s.d.	Means	s.d.
207	-.0614*	.4649	-.0595*	.4560	-.0347	.4364

Note. */** denote significance at 10%/5%

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

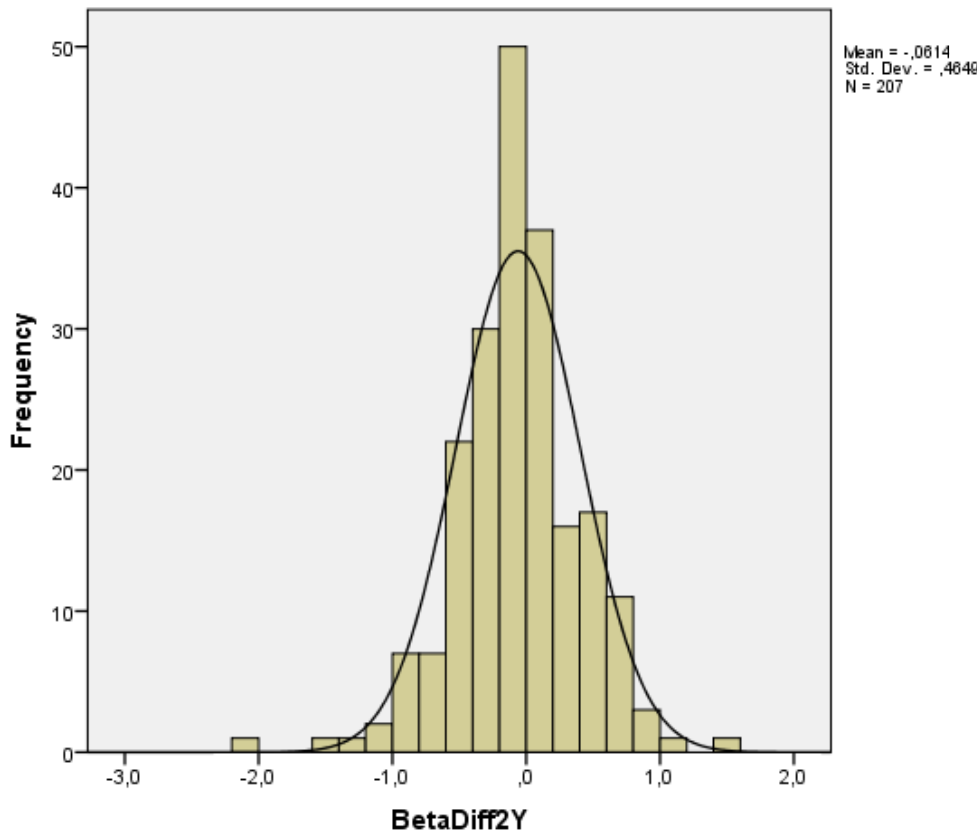
To ensure the validity of the dependent t-test, the distribution of the changes in acquirer's market beta was tested (Field, 2013). Figure 2 shows that the acquirer's market beta change after the deal announcement (the dependent variable) is normally distributed.

Therefore, here is the answer to the first research question in this study. For the sample of acquisitions analysed in this study, we can claim that the announcement of a takeover deal within the period 2003-2012 by the West-European acquirers led to a significant reduction in acquirers' systematic risk. The drivers of such systematic risk reduction are analysed in the multiple regression section.

Such findings are in line with previous empirical studies supporting the decline in systematic risk of the acquirer following the deal announcement. Bharath and Wu (2006) documented that volatility and systematic risk started to increase four years before the merger, whereas the two measures entered a reverse trend one year after the merger, once acquirers started to benefit from reduced cash flow volatility due to diversification. Similar conclusions were drawn by Hackbarth and Morellec (2008), who showed that the market beta of the acquirers

first increased and then decreased upon the takeover announcement. Such firm-level beta dynamics was found for the subsample, where the acquirer's market beta was higher than the target's market beta.

Figure 2. Distribution of the Dependent Variable



Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

Contrary to the modern finance assumption that systematic risk cannot be diversified away, the outcomes outline both uncontrollable and controllable components of the general market risk. This leads to the conclusion that corporate takeovers may lead to a decrease in systematic risk of the acquiring firm, which cannot be achieved by firm's shareholders alone, which is in line with strategic management theory assumptions (Lubatkin & O'Neill, 1987).

As suggested by Lubatkin and O'Neill (1987) such findings have important implications on managerial decision making. If corporate managers are able to decrease firm's systematic risk, they will enhance firm effectiveness by reducing its cost of capital and thereby increasing firm's investment opportunities.

Table 17. Does systematic risk decrease after M&A announcement?

	Measure 1 (2Y EU ¹)	Measure 2 (2Y CP ²)	Measure 3 (3Y EU ¹)
Number (%) of risk-reducing deals	121 (58.5%)	109 (52.7%)	114 (55.1%)
Average Beta Before	0.86	0.80	0.81
Average Beta After	0.51	0.42	0.49
Average Beta Diff	-0.35	-0.37	-0.32
Number (%) of risk-increasing deals	86 (41.5%)	98 (47.3%)	93 (44.9%)
Average Beta Before	0.43	0.47	0.41
Average Beta After	0.77	0.76	0.73
Average Beta Diff	0.34	0.29	0.32
Total deals	207 (100%)	207 (100%)	207 (100%)

¹Stoxx Europe 600 E index used as benchmark

²Country indexes used as benchmark

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

The overview of risk-reducing and risk-increasing deals suggest that on average 58.5% (Measure 1) of deals resulted in risk reduction of the acquiring firm, whereas 41.5% of deals resulted in acquirer's market risk increase. From the Table 17 we can see that acquirers with higher market beta (average of 0.86) before the M&A announcement managed to decrease its systematic risk following the deal announcement, whereas acquirers with lower pre-acquisition market beta (average of 0.43) experienced systematic risk increase after the takeover announcement. Those findings are consistent across all three measures. Andresen et al. (2011) explain that it is more likely that risky firm will manage to reduce its high risk level by undertaking an investment project that would potentially generate less risky cash flows.

4.2 Bivariate Analysis

In this section, we test various deal characteristics in order to analyse their impact on post-announcement market risk change of the acquirers. The following deal characteristics are analysed below: industry relatedness, method of payment, type of mergers, acquirer's country of origin, target's country of origin, merger (announcement) timing, deal size and acquirer's indebtedness change.

4.2.1 Industry Relatedness

Previous studies suggest that horizontal (Lubatkin & O'Neill, 1987) and vertical mergers (Chatterjee & Lubatkin, 1992) lead to systematic risk reduction of the acquiring firm after the deal announcement, whereas conglomerate mergers are associated with acquirer's

systematic risk increase (Joehnk, 1974), or no significant change was documented (Thompson, 1984). The results of this study differentiate to a certain extent. Focused (horizontal) acquirers managed to decrease their level of market beta on average by -0.04 with Measure 1 (not statistically significant with any measure).

However, in terms of conglomerate mergers, our results of the study show that the acquisition of a target operating in unrelated industry resulted in significant systematic risk reduction of the acquirer, namely the acquirer's market beta decreased by -0.11 (Measure 1), -0.14 (Measure 2) and -0.10 (Measure 3), respectively, and was statistically significant across all three measures. These findings suggest that acquirers entering unrelated deals managed to create some financial synergies with diversification strategy by stabilizing their income streams and thereby decreasing their risk levels. Such findings are not completely in line with previous literature but, as indicated by Barton (1988), a different set of environment circumstances might lead to significant differences in relationships between corporate strategy and capital market risk. In terms of differences between related and unrelated deals, the analysis of variance shows that the relatedness-level of a deal (related vs. unrelated) has a significant impact on the post-acquisition risk change of the acquirer (Measure 2 is statistically significant).

Table 18. Changes in Systematic Risk by Industry Relatedness

Industry Relatedness	N	2Y DJ Stock 600		2Y Country price index		3Y DJ Stock 600	
		Means	s.d.	Means	s.d.	Means	s.d.
Unrelated	64	-.1099*	.4670	-.1432**	.5003	-.0995*	.4076
Related	143	-.0398	.4640	-.0220	.4313	-.0056	.4470
F ^b		.907		2.974*		2.158	

Note. */** denote significance at 10%/5%

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

4.2.2 Type of Merger

There is almost no difference between cross-border and domestic deals, in terms of its impact on acquirer's post-announcement risk change. Measures 1 and 2 document a decrease of acquirer's market beta by 0.06 and measure 3 the decrease of 0.03 for both merger types, but the findings are not statistically significant. Therefore, we can claim that merger type (domestic versus cross-border) does not have a significant impact on acquirer's systematic risk change after the takeover announcement.

Reeb, Kwok, and Baek (1998) argue that internationalization strategy for multinational firms might increase their systematic risk due to potential political risk, foreign exchange risk, asymmetric information and agency problems. However, since managers are aware of such

risks, they tend to use higher discount factors for evaluating international acquisitions, in order to incorporate higher risk into their decision making on the acquisition.

Table 19. Changes in Systematic Risk by Type of Merger

Type of Merger	N	2Y DJ Stock 600		2Y Country price index		3Y DJ Stock 600	
		Means	s.d.	Means	s.d.	Means	s.d.
Domestic	92	-.0590	.4012	-.0568	.4016	-.0322	.3672
Cross-border	115	-.0634	.5120	-.0617	.4970	-.0366	.4863
F ^b		.003		.005		.028	

Note. */** denote significance at 10%/5%

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

Moreover, an interesting finding from our study is also that acquirers with lower systematic risk entered domestic deals, whereas acquirers with higher risk levels decided for cross-border acquisitions. For domestic acquirers, pre-announcement market beta was estimated at 0.59, and for cross-border acquirers at 0.75. Such results are in line with the conclusions from the study by Focarelli et al.(2008) showing that acquirers with higher ex-ante beta carefully choose their targets in order to prevent excessive increase in their cost of capital after the acquisition.

4.2.3 Acquirer's Country of Origin

Beside target country of origin, the acquirer country of origin may be another determinant of post-acquisition risk change of the acquirers, especially because of differences in laws and regulations between UK/Ireland and Continental European countries. According to Martynova and Renneboog (2008), lower disclosure requirements and weaker investor protection in the Continental Europe resulted in higher level of partial acquisitions and undisclosed deal terms, such as payment type and transaction value.

Furthermore, better accounting standards and better domestic investor protection in the UK and Ireland are among the main drivers for higher level of M&A activity (Rossi & Volpin, 2004) and relatively fewer cross-border acquisitions by the UK-based acquirers. These findings are also in line with our study, since more than 50% of UK acquirers entered domestic acquisitions, whereas in Continental Europe less than 40% of acquirers acquired the targets within their domestic borders. The number of deals with UK/Ireland and Continental European acquirers in our sample is 94 versus 113.

Table 20. Changes in Systematic Risk by Acquirer Country of Origin

Acquirer Country	N	2Y DJ Stock 600		2Y Country price index		3Y DJ Stock 600	
		Means	s.d.	Means	s.d.	Means	s.d.
UK/Ireland	94	-.0609	.4708	-.0772	.5200	-.0040	.4358
Continental Europe	113	-.0619	.4621	-.0448	.3968	-.0602	.4372
F ^b		.000		.265		1.037	

Note. */** denote significance at 10%/5%

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

Moreover, the results from our analysis about the changes in acquirer's systematic risk after the takeover announcement, by acquirer country of origin (UK/Ireland versus Continental Europe), are inconsistent across measures applied. Namely, Table 20 shows that the impact of acquirer country of origin highly depends on risk measure. Measure 1 (2-year comparison period and Stoxx Europe 600 used as benchmark) documents almost no difference between UK/Ireland and Continental European acquirers, as for both subgroups the average acquirer's market beta decreases by 0.06 after the deal announcement. Measure 2 (2-year comparison period and country indexes used as benchmark) favours UK/IR acquirers over Continental European acquirers due to higher risk reduction, 0.07 versus 0.04, whereas measure 3 (3-year comparison period and Stoxx Europe 600 used as benchmark) favours Continental European acquirers with 0.06 risk decrease versus no risk change for UK/IR acquirers. Since none of the measures document statistically significant results, we cannot confirm that the acquirer's country of origin has a significant impact on the acquirer's systematic risk change after the takeover announcement.

4.2.4 Target's Country of Origin

In this section, we tested whether target's country of origin has a significant impact on systematic risk of acquirer after the deal announcement. Some studies report that the process of economic integration within the European Union, in the form of single currency introduction and more homogenous regulatory system (Moschieri & Campa, 2009), may lead to the enhanced M&A market activity. For cross-border deals within the EU a significant increase was recorded since 2001, whereas domestic acquisitions still prevailed. Similar conclusions can also be drawn from this study, as 152 targets (out of 207) are reported to come from the Europe, whereas the other 55 targets are Non-European (28 from the developed countries – the US, Canada, Australia and Hong Kong and 27 from developing countries in Asia, Latin America and Africa).

In terms of risk characteristics, the results show that acquisition of the Non-European target led to a higher risk reduction – market beta decrease of 0.11 on average with Measure 1, whereas European-target acquisitions resulted in acquirer's market beta decrease of 0.04 on

average. The reason might be that M&A process within Europe is still not smooth as some politicians tend to protect large domestic firms by claiming that they are too big to be acquired (Dinc & Erel, 2013). It appears that European acquirers benefit more (in terms of systematic risk reduction) if they acquire targets from the developed countries outside Europe with more liberalized markets and with lower degree of political intervention in the market economy. Alternatively, they can also benefit from acquisitions of target firms from the developing countries, where economic legislation is not adequately enforced. However, documented risk change of the acquirers is not statistically significantly different from zero with any measure applied in this study.

Table 21. Changes in Systematic Risk by Target Country of Origin

Target Country	N	2Y DJ Stock 600		2Y Country price index		3Y DJ Stock 600	
		Means	s.d.	Means	s.d.	Means	s.d.
Non-European	55	-.1083	.5654	-.0893	.5738	-.0698	.5212
European	152	-.0445	.4237	-.0487	.4068	-.0219	.4025
F ^b		.827		.363		.571	

Note. */** denote significance at 10%/5%

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

4.2.5 Method of Payment

Table 22 shows that both cash and stock/mix-financed acquisitions resulted in acquirer's risk reduction after the deal announcement, but the results are not statistically significant. Therefore, we can conclude that no significant relationship between method of payment and acquirer's post-announcement returns has been found in our sample. Such findings are to some extent in line with previous study by Dube and Glascock (2006), who documented no significant impact of any type of payment method on acquirer's systematic risk within one year around the acquisition, whereas a significant risk increase was reported for cash-financed mergers and acquisitions analysed over three-year period around the acquisition event.

There are no large differences between acquisitions financed with stock/mix and cash in terms of systematic risk change after the deal announcement (market beta decrease of 0.07 and 0.04, respectively). However, deals with undisclosed payment type resulted in a large risk reduction (acquirer's market beta decreased by 0.22), but this is only applicable to 13 deals in our total sample, therefore such findings cannot be generalized.

Moreover, in cross-border deals, cash is the preferable payment type, as the target firms are unwilling to accept payment with stock of the foreign acquirer (Kohli, 2015). These findings

are also consistent with our sample, as 77 out of 108 (71%) cross-border deals (excluding 7 deals of undisclosed payment type) were financed with cash.

Table 22. Changes in Systematic Risk by Method of Payment

Payment Method	N	2Y DJ Stock 600		2Y Country price index		3Y DJ Stock 600	
		Means	s.d.	Means	s.d.	Means	s.d.
Stock or Mixed	49	-.0771	.6442	-.0923	.5222	-.0646	.5296
Cash	145	-.0414	.4811	-.0338	.4231	-.0128	.3898
Undisclosed	13	-.2254	.6442	-.2222	.5378	-.1659	.5432
F ^b			.207		.566		.444

Note. */** denote significance at 10%/5%

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

4.2.6 Merger Timing

Outburst of the global financial and economic crisis in 2007 may be another influencing factor on merger dynamics (Martynova & Renneboog, 2008c) and underlying risk characteristics. During the pre-crisis period (2003-2007), an increase in merger activity was recorded that was driven by merger gains from economies of scale and strong market power of certain largest market players (Lambrecht, 2004), as well as by higher option-based CEO pay (Crocì & Petmezas, 2015). The outburst of crisis in 2007 changed the global market environment significantly due to increased budget deficits and vulnerable banking systems, which forced companies to adapt.

Comparison of acquirers' market beta changes across different time periods shows that acquirers that announced M&A deal before the 2007 year-end on average experienced higher systematic risk decrease. Namely, acquirer's market beta decreased by 0.07 for deals announced before 2007, whereas the market beta decreased by 0.05 for deals announced after 2007 (according to Measure 1). This might be explained by the fact that the systematic risk of a particular firm tends to decrease in the period up to three years after financial deregulation, when the firm learns to compete in deregulated environment (Semaan & Peterson Drake, 2011). However, since the results are not statistically significant, we conclude that merger timing does not have an influence on the change of the acquirer's systematic risk.

During the period 1998-2000, an increased merger activity within the euro area was recorded, most of which was related to the acquisitions of domestic targets (Campa & Hernando, 2004). However, Grave et al. (2012) suggested that the new economic conditions that followed the global financial crisis outburst in 2007/08 influenced acquirers in the way that they started to search for growth and risk-diversifying opportunities in cross-border

acquisitions. This was also confirmed with our analysis. In our sample, the number of domestic acquisitions after 2007 decreased from 53 to 39, whereas the number of cross-border acquisitions increased from 50 to 65 after 2007.

Table 23. Changes in Systematic Risk by Merger Timing

Merger Timing	N	2Y DJ Stock 600		2Y Country price index		3Y DJ Stock 600	
		Means	s.d.	Means	s.d.	Means	s.d.
2003-2007	103	-.0745	.5261	-.0805	.4964	-.0359	.4753
2008-2012	104	-.0485	.3974	-.0387	.4135	-.0334	.3964
F ^b		.118		.350		.002	

Note. */** denote significance at 10%/5%

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

4.2.7 Deal Size

In terms of deal size (calculated as acquisition value relative to acquirer's total assets), our analysis documents a statistically significant decrease of acquirer's post-acquisition level of market beta by 0.09 (Measure 1), 0.08 (Measure 2) and 0.07 (Measure 3), respectively, in cases when acquisition value amounted between 10% and 25% of acquirer's total assets. Thus, we can conclude that acquirer's shareholders tend to benefit from acquisitions of relatively smaller targets, where expected synergies are likely to be achieved through the acquisition.

Table 24. Changes in Systematic Risk by Deal Size

Deal Size	N	2Y DJ Stock 600		2Y Country price index		3Y DJ Stock 600	
		Means	s.d.	Means	s.d.	Means	s.d.
.10 < x ≤ .25	141	-.0924**	.4920	-.0819**	.4621	-.0724*	.4421
.25 < x ≤ .50	56	.0184	.4049	-.0097	.4573	.0596	.4310
x > .50	10	-.0707	.3537	-.0213	.3663	-.0302	.3254
F ^b		1.201		.589		1.942	

Note. */** denote significance at 10%/5%

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

On the other hand, the acquisition of larger targets (deal sizes 25%-50% and 50%-100%) does not result in any significant changes in acquirer's risk level after the M&A deal announcement. The reason is that acquirers of larger targets are facing more difficulties in integration processes due to additional complexity of managing larger firms (Martynova et al., 2006). Therefore, larger targets are perceived as riskier projects by investors, which

translates into more uncertain return movements around the takeover announcement, despite the documented lower relative acquisition premia paid for larger targets compared to their smaller counterparts (Alexandridis et al., 2013).

4.2.8 Acquirer's Indebtedness

In this section, we investigate whether the change in acquirer's indebtedness after the M&A announcement has a significant influence on post-acquisition risk level of the acquirer. According to our analysis, the acquirers that managed to decrease their indebtedness level one year after the deal announcement benefited from lower systematic risk as well. The results show market beta reduction of 0.11 (Measure 1), 0.10 (Measure 2) and 0.12 (Measure 3), respectively, with statistically significant impacts across all three measures for acquirers with reduced debt ratios one year after the takeover announcement. Namely, acquiring firms that manage to reduce their debt usage are less likely to face liquidity issues during the integration process due to a potentially heavy debt burden (Deng, 2014). On the other hand, the acquirers with increased debt ratios one fiscal year after the takeover announcement are not associated with any significant changes in acquirer's post-announcement risk levels.

F test in measure 3 shows that there are significant differences in systematic risk outcomes among acquiring firms with different debt ratio trends around the takeover announcement.

Table 25. Changes in Systematic Risk by Change in Acquirer's Indebtedness

Change in Debt	N	2Y DJ Stock 600		2Y Country price index		3Y DJ Stock 600	
		Means	s.d.	Means	s.d.	Means	s.d.
x≤0	89	-.1087*	.5243	-.1045*	.5209	-.1171**	.4959
x>0	116	-.0189	.4115	-.0239	.4024	.0337	.3754
F ^b		.1.736		1.415		6.166**	

Note. */** denote significance at 10%/5%

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

To summarize, the results from the bivariate analysis show that acquirers that acquired a target from another industry, a relatively small target, and acquirers that decreased their debt levels, were able to decrease their market risk around the takeover announcement. On the other hand, no significant results were found for any other deal characteristics. This leads us to the conclusion that we can confirm Hypothesis 1 (acquirer's systematic risk decreased after takeover announcement), Hypothesis 2 (unfocused acquirers managed to decrease their systematic risk), Hypothesis 8 (acquirers of relatively smaller targets were able to decrease their systematic risk) and Hypothesis 9 (acquirers that reduced their indebtedness level one year after the takeover announcement were able to benefit from reduced market risk as well).

Table 26. Hypothesis Testing Summary

Hypothesis	Variables	Is there a significant change in acquirer's market risk for each group individually? ¹	Are the differences across sub-groups statistically significant?
Hypothesis 1	Acquirer's market beta change	Total sample: -.0614*	/
Hypothesis 2	Industry Relatedness	Unrelated: -.1099* Related: -.0398	Yes with Measure 2 (significance at 10%)
Hypothesis 3	Domestic versus Cross-border Merger Type	Domestic: -.0590 Cross-border: -.0634	No
Hypothesis 4	Acquirer's Country of Origin	UK/Ireland: -.0609 Continental Europe: -.0619	No
Hypothesis 5	Target's Country of Origin	Non-European: -.1083 European: -.0445	No
Hypothesis 6	Method of Payment	Stock or Mixed: -.0771 Cash: -.0414 Undisclosed: -.2254	No
Hypothesis 7	Merger Timing (deal announcement)	2003-2007: -.0745 2008-2012: -.0485	No
Hypothesis 8	Deal Size (deal value relative to Acquirer's total assets)	.10<x≤.25: -.0924** .25<x≤.50: .0184 x>.50: -.0707	No
Hypothesis 9	Acquirer's Indebtedness change one year around deal announce.	x≤0: -.1087* x>0: -.0189	Yes with Measure 3 (significance at 5%)

Note. */** denote significance at 10%/5%

¹Conclusions in third column of the Table 26 are based on the Measure 1 (regressing acquirer's return against Stoxx 600 E price index for 2-year period before and after the deal announcement).

4.3 Correlation Matrix

Correlation matrix shows the linear relationships between our independent variables (deal characteristics). From the M&A deals included in the sample we can claim that there is a weak positive relationship between Merger announcement timing after 2007 (2008-2012) and Cross-border nature of the deal, $r = .140$, $p < .05$. The relationship between Merger announcement timing 2008-2012 and European target as well as acquirer's increase in debt ratio is weak and negative ($r = -.161$ and $r = -.142$, respectively, both $p < .05$).

Cross-border acquisitions seem to be positively related to industry-related deals ($r = .138$, $p < .05$) and negatively related to acquisitions of European target ($r = -.538$, $p < .01$). There is a weak negative relationship between acquisitions of European target and acquirers coming from UK/Ireland ($r = -.176$, $p < .05$) and a weak positive relationship between acquisitions of European target and acquirer's change in debt ratio ($r = .216$, $p < .01$). The relationships between other reported independent variables are not statically significant.

Table 27. Correlation Matrix

	Acq. TA	Deal Size	After 2007 ¹	Cross-border ¹	Industry-related ¹	European Target ¹	UK/IR Acq. ¹	D/A change	Cash ¹
Acq. Total Assets	1.000	-.063	.012	-.117	-.009	.057	-.132	-.007	-.051
Deal Size	-.063	1.000	.069	-.010	-.086	.031	-.068	.099	-.126
After 2007 ¹	.012	.069	1.000	.140*	-.080	-.161*	-.024	-.142*	-.036
Cross-border ¹	-.117	-.010	.140*	1.000	.138*	-.538**	-.102	-.087	-.089
Industry-related ¹	-.009	-.086	-.080	.138*	1.000	-.047	-.041	.018	.009
European Target ¹	.057	.031	-.161*	-.538**	-.047	1.000	-.176*	.216**	.043
UK/IR Acq. ¹	-.132	-.068	-.024	-.102	-.041	-.176*	1.000	-.131	.041
Acq. D/A change	-.007	.099	-.142*	-.087	.018	.216**	-.131	1.000	.102
Cash ¹	-.051	-.126	-.036	-.089	.009	.043	.041	.102	1.000

Note. */** denote significance at 10%/5%

¹Dummy Variables

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

Moreover, the announced value was also included in the model, but it had a very strong correlation with acquirer's total assets. Therefore, the variable acquirer's total assets were excluded from the model in order to avoid the problem of multicollinearity in the multiple regression model.

The key takeaways from the correlation analysis suggest that after the global financial crisis outburst in 2007 the acquirers preferred to acquire targets from another country, mostly outside Europe, and managed to decrease their debt levels in the fiscal year following the acquisition. Moreover, acquirers that engaged in cross-border deals tended to acquire targets within the same industry. And finally, acquirers of European targets usually increased their debt ratio one year after the takeover.

4.4 Multivariate Analysis

In a multivariate framework, we tested what the combined impact of potential determinants was on acquirer's risk change after the takeover announcement. Multiple regression statistics for three different models are summarized in Table 28.

Model 1, with the R² of .130, indicates that the stated independent variables can account for 13.0% of the variation in the acquirer's market beta change following the deal announcement. However, 87.0% of the variability in the dependent variable is explained with other variables that were not included in the model. Models 2 and 3 are able to explain 9.4% and 12.5% of the variability, respectively. In terms of regression model fit, the

significant F-value in Model 1 shows that the regression model predicts the acquirer’s market beta change following the deal announcement well, in contrast to Model 2 and Model 3 with insignificant F values.

Table 28. Regression Statistics

	Model 1	Model 2	Model 3
	2Y EU	2Y CI	3Y EU
Number of deals	205	205	205
F-statistic	1.549*	1.074	1.473
R	.361	.307	.353
R ²	.130	.094	.125

Note. */** denote significance at 10%/5%

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

Regression coefficients (Table 29) in all three models are mostly insignificant, with a few exceptions. Deal size (Model 3) and industry related dummy variable (Model 2) are statistically significant, which is also in line with the results reported in bivariate analysis. Therefore, we can claim that if the acquirer announces the acquisition of a target in the same industry its market beta will increase, ceteris paribus, by 0.130 in 2-year period after the takeover announcement, compared to its market risk in 2-year period prior the announcement. Moreover, if the acquirer announces the acquisition of a target of 1%-point higher deal size (measured as deal value divided by acquirer’s total assets), the acquirer’s market beta will increase by 0.005 after the takeover announcement, with all other variables in the model held constant. However, the results are not statistically significant across all three models.

The regression analysis also shows that we have strong inter-industry impacts in our sample. Consumer cyclical variable is statistically significant in all three models, meaning that if the acquirer operates in a sector of consumer-cyclical, its market beta will increase by 0.342 (Model 1), 0.226 (Model 2) and 0.277 (Model 3) after the takeover announcement, respectively, holding all other variables in the model constant. Financial dummy variable is significant in two models (Model 1 and Model 2), showing that acquirers from financial industry are associated with market risk increase around the announcement. Finally, acquirers from Energy sector were able to reduce market beta by 0.280 following the takeover announcement (significant in Model 1).

Table 29. Regression Coefficients

	Model 1	Model 2	Model 3
	2Y EU	2Y CI	3Y EU
Intercept	-0.380** (-2.193)	-0.286 (-1.637)	-0.409** (-2.501)
Announced Value	0.000 (.262)	0.000 (0.103)	0.000 (0.221)
Deal Size	0.002 (0.771)	0.001 (0.345)	0.005** (1.977)
After 2007 (dummy)	0.061 (0.877)	0.064 (0.913)	0.022 (0.328)
Cross-border (dummy)	0.027 (0.335)	-0.010 (-0.126)	0.025 (0.323)
Industry related (dummy)	0.116 (1.524)	0.130* (1.695)	0.102 (1.426)
Acquirer's indebtedness	0.0012 (0.750)	0.001 (0.445)	0.002 (1.145)
European target (dummy)	0.045 (0.488)	0.027 (0.292)	0.053 (0.601)
UK/IR acquirer (dummy)	-0.007 (-0.089)	-0.077 (-1.038)	0.063 (0.908)
Cash (dummy)	0.073 (1.001)	0.106 (1.454)	0.075 (1.099)
Basic materials (dummy)	0.028 (0.215)	0.056 (0.421)	0.073 (0.588)
Communications (dummy)	0.079 (0.717)	0.036 (0.329)	-0.000 (000)
Consumer, cyclical (dummy)	0.342** (3.154)	0.226** (2.071)	0.277** (2.710)
Diversified (dummy)	0.084 (0.174)	0.004 (0.008)	-0.020 (-0.043)
Financial (dummy)	0.650** (2.367)	0.502* (1.818)	0.135 (0.520)
Industrial (dummy)	0.023 (0.229)	-0.035 (-0.348)	0.035 (0.378)
Technology (dummy)	-0.062 (-0.440)	-0.153 (-1.075)	-0.161 (-1.203)
Utilities (dummy)	0.128 (0.460)	-0.032 (-0.115)	0.219 (0.833)

Note. ** denote significance at 10%/5%
t-statistics in parentheses

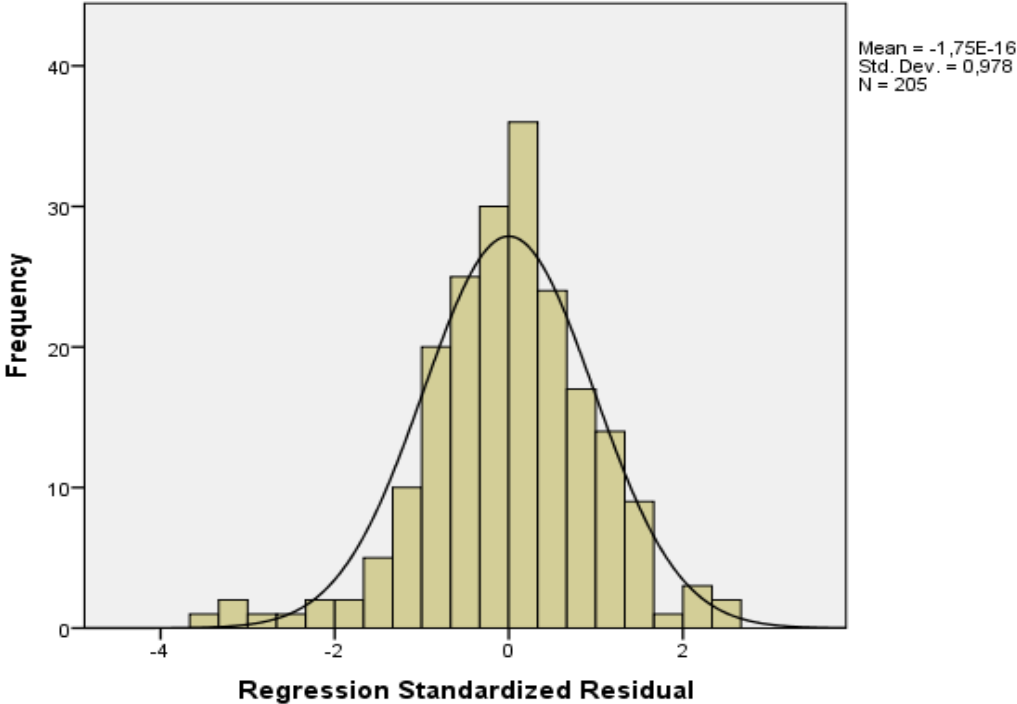
Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

Regression constants are significantly different from zero in two models (-0.380 in Model 1 and -0.409 in Model 3). Thus, we can conclude that there are factors that drive the acquirer’s market beta decrease following the takeover announcement, but we are unable to define those factors. We need to take into consideration that beside unidentified factors the regression constant also includes the impact of the variable Consumer, non-cyclical.

The other deal characteristics do not have a significant impact on acquirer’s systematic risk change. On average, the following deal characteristics or variables: merger announcement After 2007, European target, acquirer’s indebtedness change, cash as payment type, acquirers from sector of Basic Materials; lead to acquirer’s market beta increase after the takeover announcement in all three models. On the other hand, acquirers from Technology sector tend to reduce their market beta. The impacts of cross-border, UK/IR acquirer, and acquirers from Communications, Diversified, Industrial and Utilities sector vary among the models (having positive or negative impacts on the dependent variable). And finally, announced Value does not have any sizeable impact on acquirer’s risk change after the takeover announcement.

Figure 3 shows that the residuals of the dependent variable are normally distributed, which is in line with the normality of the error distribution assumption in linear regressions.

Figure 3. Distribution of the Residuals of the Dependent Variable



Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

With the multivariate analysis we confirmed the results concluded from univariate and bivariate analysis relating to firms market risk change following the takeover announcement for the acquirers included in our sample. Negative regression constant indicated that there were certain factors that drove acquirer's market risk down after the takeover announcement. Decrease in acquirer's market risk may lead to reduced cost of capital and thereby also to the increase in the firm value. The results from the multiple regression also showed that acquisitions of relatively larger targets or targets from related industry resulted in acquirers' market risk increase relative to their counterparts.

Moreover, strong inter-industry factors were reported. Acquirers from consumer cyclical and financial industries increased their market risk after the takeover announcement, whereas acquirers operating in energy sector managed to benefit from M&A announcement by reducing its market risk. None of the other deal characteristics included in our analysis had the significant power to explain the post-announcement market risk of the acquirers.

CONCLUSION

The thesis has researched the acquirer's systematic risk outcomes after the takeover announcement in the case of West-European acquirers. The present M&A literature mostly studied short-term acquirer's post-announcement abnormal returns and has led to the conclusion that target firm shareholders have the greatest gain from takeover announcement, whereas the acquiring firm shareholders earn zero returns at best. In the thesis presented, we rather focused on acquirer's post-announcement systematic risk changes, since they have a direct impact on acquirer's cost of capital and thus also its firm value.

Acquirer's market beta was used as a proxy for its systematic risk. Acquirer's market beta was regressed against European stock market index for the 2-year period after the takeover announcement and was subtracted from its market beta in the 2-year period before the takeover announcement. Next, we introduced two alternative measures, whereby we used country indexes as benchmarks for the first alternative measure, while with the second alternative measure the comparison period was extended to three years. We then selected a sample of 207 acquirers from the Bloomberg database, which were based in Western Europe and completed an M&A deal during the period 2004-2012 with an deal value 10%-100% of acquirer's total asset.

The results of the univariate analysis show that the takeover announcement led to a statistically significant decrease in acquirer's systematic risk in the 2-year period after the announcement, compared to 2-year period before that. Namely, the acquirer's market beta on average decreased by 0.06, from 0.68 to 0.62. Such findings are in line with previous literature (Bharath & Wu, 2006 and Hackbarth & Morellec, 2008). Moreover, contrary to the assumption of the modern finance that systematic risk cannot be diversified away, we confirmed Lubatkin and O'Neill's (1987) view that corporate acquisition may lead to such a decrease in acquirer's systematic risk which shareholders cannot achieve on their own.

In addition, we tested whether acquirer's post-announcement systematic risk change differentiates among various deal characteristics, by performing the bivariate analyses. Our results show that acquisition of a target from unrelated business, acquisition of relatively small targets and decrease in acquirer's debt level were associated with acquirer's systematic risk decrease following the takeover announcement. Therefore, we can claim that acquirers in our sample managed to create financial synergies through diversification strategy, which led to stabilized income streams and thereby reduced systematic risk levels. Moreover, acquirers benefited from acquisitions of relatively smaller targets, where deal size amounted to between 10% and 25% of acquirer's total asset. On the other hand, acquisitions of larger targets were considered to be riskier projects (Alexandridis et al., 2013), as acquirers faced more difficulties integrating larger targets (Martynova et al., 2006). In terms of acquirer's change in indebtedness level, our findings showed that the examined acquirers with reduced

debt ratios one fiscal year after the takeover announcement benefited from systematic risk reductions as well, as they managed to withstand liquidity issues, which might have arisen from heavy debt burden (Deng, 2014). As far as all the other deal characteristics are concerned, the analysis did not lead to any statistically significant results.

Finally, we introduced a multivariate model, where we tested the combined impact of potential determinants of the acquirer's systematic risk change after the takeover announcement. The results of the multiple regression incorporating previously indicated deal characteristics, announced deal value and acquirer's industry dummies were consistent with the outcomes from the univariate and bivariate analyses described above. Regression constants with negative values were statistically significant, suggesting that there exist certain factors that drive acquirer's market beta down after the takeover announcement, but were not adequately accounted for in this model. Regression coefficients were mostly insignificant, except for the positive impact of industry relatedness dummy and the positive impact of deal size on the acquirer's market risk change, with all other variables in the model held constant. Moreover, the regression analysis also showed that we proved strong inter-industry impacts in our sample, wherein acquirers from consumer cyclical industry and financial industry increased their systematic risk following the takeover announcement, while acquirers from energy sector managed to decrease it. However, in most cases the regression coefficients were not statistically significant across all three model. The other deal characteristics did not prove to have the significant power to explain acquirer's post-announcement change in market risk.

This study contributed to the M&A literature on acquirer's systematic risk changes, because we analysed West-European acquirers that completed an acquisition between 2004 and 2013, compared to the other comparable studies that analysed US-based acquirers which completed an acquisition before 2003. Additionally, we incorporated more variables into the model, such as testing merger announcement timing, acquirer country of origin, target country of origin, deal size and acquirer's debt level change.

However, there were still some limitations to be pointed out. For example, when we analysed acquirer's risk change around the takeover announcement, we assumed that all the risk change was associated with the takeover announcement. We did not control for other firm-specific events or other changes on the market. Secondly, the results of the study could not be generalized, but were valid for the sample under investigation only, because the sample was relatively small and more regression models would need to be tested to check the robustness of the results. Moreover, we found that acquirer's systematic risk decreased following the takeover announcement. Nevertheless, with our multivariate model we were not able to identify, what those factors are. Therefore, there an opportunity arose for future studies to investigate what the drivers of such acquirer's systematic risk decrease are and to find out what the potential implications are in terms of managerial decision making.

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APPENDIXES

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Appendix A: Frequently used Abbreviations

Table 1. List of Abbreviations

Abbreviation	Meaning
CAPM	Capital Assets Pricing Model
D/A	Debt to Assets ratio
DJ Stock 600	Stoxx Europe 600 E price index
M&A	Mergers and Acquisitions
UK	The United Kingdom
US	The United States
WACC	Weighted Average Cost of Capital
WC	Working Capital

Appendix B: Breakdown by Target's Country of Origin

Table 1. List of Target's Country of Origin

	N° of deals	Percent (%)	Deal Value (m €)	Percent (%)	Average Deal Value (m €)
Argentina	2	1.0	6.8	0.0	3.4
Australia	2	1.0	29.4	0.0	14.7
Belgium	5	2.4	1,119.7	1.4	223.9
Brazil	2	1.0	4,039.3	5.0	2,019.7
Burkina Faso	1	0.5	22.2	0.0	22.2
Canada	3	1.4	14.0	0.0	4.7
Chile	1	0.5	583.2	0.7	583.2
China	2	1.0	196.5	0.2	98.3
Cyprus	1	0.5	52.3	0.1	52.3
Denmark	5	2.4	1,186.5	1.5	237.3
Finland	9	4.3	458.3	0.6	50.9
France	13	6.3	2,958.9	3.7	227.6
France, Belgium	1	0.5	77.9	0.1	77.9
France, Denmark	1	0.5	233.4	0.3	233.4
Germany	8	3.9	574.1	0.7	71.8
Greece	2	1.0	692.7	0.9	346.4
Hong Kong	2	1.0	188.1	0.2	94.0
India	1	0.5	7.5	0.0	7.5
Ireland	1	0.5	204.5	0.3	204.5
Israel	2	1.0	64.3	0.1	32.2
Italy	10	4.8	4,564.6	5.7	456.5
Mexico	1	0.5	46.1	0.1	46.1
Mozambique	2	1.0	22.4	0.0	11.2

table continues

Table 1. List of Target's Country of Origin (Cont.)

	N° of deals	Percent (%)	Deal Value (m €)	Percent (%)	Average Deal Value (m €)
Netherlands	11	5.3	3,313.3	4.1	301.2
Nigeria	1	0.5	14.5	0.0	14.5
Norway	5	2.4	21,083.4	26.2	4,216.7
Norway, Germany	1	0.5	68.9	0.1	68.9
Panama	1	0.5	30.2	0.0	30.2
Portugal	1	0.5	662.0	0.8	662.0
South Africa	5	2.4	431.6	0.5	86.3
Spain	8	3.9	5,587.6	6.9	698.4
Sweden	10	4.8	1,334.8	1.7	133.5
Switzerland	5	2.4	17,163.3	21.3	3,432.7
Tanzania	2	1.0	9.2	0.0	4.6
Turkey	1	0.5	88.0	0.1	88.0
U.A.E.	1	0.5	172.1	0.2	172.1
U.K.	54	26.1	6,306.7	7.8	116.8
U.K., Italy	1	0.5	1,101.3	1.4	1,101.3
U.S.	21	10.1	4,797.6	6.0	228.5
Uganda	1	0.5	957.3	1.2	957.3
Zambia	1	0.5	8.3	0.0	8.3
Total	207	100.0	80,472.9	100.0	388.8

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

Appendix C: Breakdown by Target Industry

Table 1. List of Target's Firm Industry

	N° of deals	Percent (%)	Deal Value (m €)	Percent (%)	Average Deal Value (m €)
Advertising	2	1.0	75.9	0.1	37.9
Aerospace/Defense	2	1.0	742.8	1.2	371.4
Agriculture	1	0.5	14.9	0.0	14.9
Apparel	3	1.4	68.6	0.1	22.9
Auto Manufacturers	1	0.5	8.4	0.0	8.4
Auto Parts&Equipment	2	1.0	138.2	0.2	69.1
Beverages	3	1.4	511.3	0.9	170.4
Biotechnology	3	1.4	217.7	0.4	72.6
Building Materials	4	1.9	793.5	1.3	198.4
Chemicals	6	2.9	2,939.8	4.9	490.0

table continues

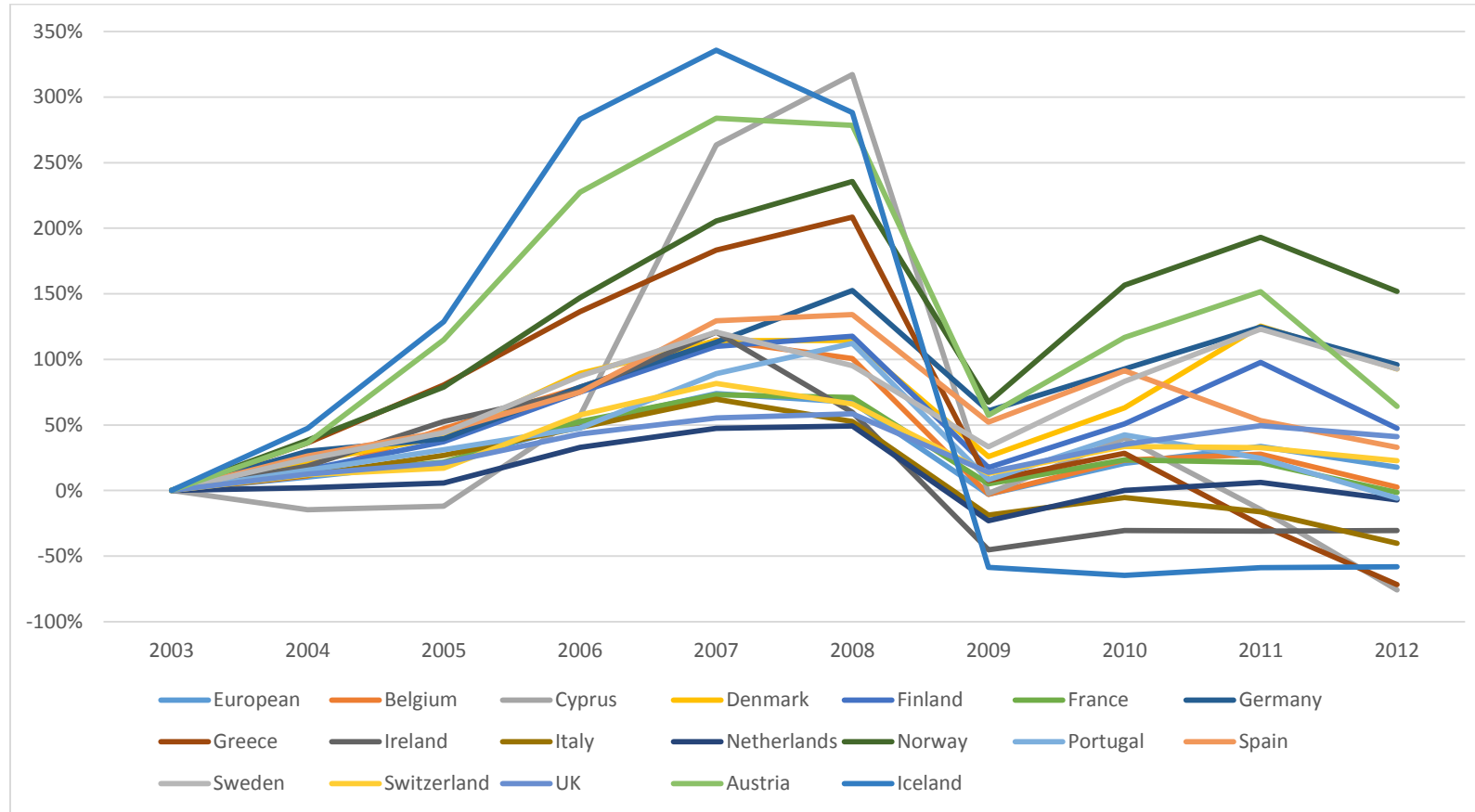
Table 1. List of Target's Firm Industry (Cont.)

	N° of deals	Percent (%)	Deal Value (m €)	Percent (%)	Average Deal Value (m €)
Coal	1	0.5	21.3	0.0	21.3
Commercial Services	21	10.1	2,130.5	3.6	101.5
Computers	8	3.9	161.4	0.3	20.2
Distribution/Wholesale	5	2.4	979.4	1.6	195.9
Electric	2	1.0	2,976.9	5.0	1,488.4
Electrical Compo&Equip	2	1.0	456.3	0.8	228.1
Electronics	4	1.9	239.3	0.4	59.8
Energy-Alternate Sources	4	1.9	105.0	0.2	26.2
Engineering&Construction	4	1.9	128.7	0.2	32.2
Entertainment	4	1.9	59.3	0.1	14.8
Food	10	4.8	1,737.7	2.9	173.8
Gas	2	1.0	2,852.6	4.8	1,426.3
Hand/Machine Tools	2	1.0	101.9	0.2	51.0
Healthcare-Products	7	3.4	11,931.7	19.9	1,704.5
Holding Companies-Divers	1	0.5	2.2	0.0	2.2
Home Builders	1	0.5	268.0	0.4	268.0
Home Furnishings	3	1.4	131.5	0.2	43.8
Internet	4	1.9	841.0	1.4	210.3
Investment Companies	2	1.0	11.4	0.0	5.7
Iron/Steel	2	1.0	70.4	0.1	35.2
Leisure Time	1	0.5	69.3	0.1	69.3
Machinery-Diversified	6	2.9	554.2	0.9	92.4
Media	9	4.3	1,300.3	2.2	144.5
Metal Fabricate/Hardware	1	0.5	19.0	0.0	19.0
Mining	14	6.8	3,313.5	5.5	236.7
Miscellaneous Manufactur	11	5.3	1,679.0	2.8	152.6
Office/Business Equip	2	1.0	93.2	0.2	46.6
Oil&Gas	6	2.9	17,576.5	29.3	2,929.4
Oil&Gas Services	1	0.5	22.8	0.0	22.8
Packaging&Containers	2	1.0	166.5	0.3	83.3
Pharmaceuticals	5	2.4	657.5	1.1	131.5
Retail	9	4.3	1,931.5	3.2	214.6
Software	4	1.9	33.9	0.1	8.5
Telecommunications	12	5.8	513.3	0.9	42.8
Textiles	1	0.5	118.8	0.2	118.8
Transportation	7	3.4	1,228.4	2.0	175.5
Total	207	100.0	59,995.0	100.0	289.8

Source: Bloomberg, *Bloomberg Professional*, 2016; Thomas Reuters, *Datastream*, 2016; own analysis.

Appendix D: Variation in Stock Price Indexes within the Period, 2003-2012

Figure 1. Country Stock Market Index Movements, 2003-2012



Source: Thomas Reuters, *Datastream*, 2016.