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MASTER THESIS

The post-merger performance of "smart" and "non-smart" acquirers: the issues of stock overvaluation and merger motives

Natalia Tumasheva,

Student ID: 414882nt

MSc Economics and Business

Specialisation Entrepreneurship and Strategy Economics

Abstract

This paper examines the post-merger performance of the acquirers, who buy fundamental growth options of targets using the overvalued stock (the "smart" acquirers), and those who follow other merger strategies ("non-smart"). The results show, that smart acquirers outperform the non-smart ones at the periods (and in sectors) that are associated with the higther volatility, e.g. years of crisis or innovative industries. At the periods of stable economic environment the "smart" strategies do not bring the better results to the acquirers. Even further, smart bidders are able to capitalize on the market inefficiencies, increasing the fundamental growth option value at the expence of the excess pricing component, while non-smart ones are not able to do so.

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SECTION 1. INTRODUCTION

Since the middle of the twentieth century mergers and acquisitions have attracted a huge interest from the researches in the fields of corporate finance, strategic management and, later, from the new stream of studies in behavioral economics. Such tendency is not accidental, and the number of announced deals and their volume is rapidly growing since that time. The overall annual value reaches the hundreds of billions of dollars and numbering in tens of thousands (Collan & Kinnunen, 2009).

Empirical studies revealed a number of characteristics and underlying rationalities of the takeovers. Companies choose to engage in M&A in order to enhance the efficiency of operations, achieve financial or managerial synergy, or create the greater market power; in other cases takeovers could be initiated under the internal motives of the executive managers. Managerial hubris and empire building motives are also proved to be drivers of takeovers. It has also been verified that some of the theories are appear to be more relevant in particular time periods. Thus, in the 1960s the diversifying mergers predominated the field, while the period of 1980s was characterized as a period of market discipline and hostile takeovers, which were made in the response to the imposed antitrust policies. The huge merger wave of the late 1990s was dominated by deregulation and was associated with higher stock valuations and a greater use of equity as a method of payment for transactions. A number of later studies indeed evidenced that valuation levels of the companies matter when considering the merger: higher valuation levels lead to higher probability that a firm will be involved in a merger, and act as an acquirer (Rhodes-Knopf, Robinson, & Viswanathan, 2005; Dong, Hirshleifer, Richardson, & Teoh, 2006). In this line, some authors argue that rational managers try to exploit the market inefficiency before it will be discovered.

While the one stream of the research is concentrated on the determinants of the merger activity, the other stream analyses the post-merger performance of the companies and tries to answer the simple question: do M&A create value? Interestingly, the answer is not straightforward. The target companies are undoubted winners in the takeovers, though a the number of factors influence the post-merger profitability of the acquirer: how measure improvements are

measured, the type and the mood of the deal, the method of payment, the relative valuation of the participants and so on.

However, up to now no research has investigated the correlation between the rationality of the merger motives and the consequent performance. It is quite understandable, since it is almost impossible to find out the true motive the management pursued in the deal. However, the real option theory allows researches to look further in this field. (Rhodes-Knopf, Robinson, & Viswanathan, 2005) was one of the first who divided the market-to-book ration of the firm into three major components: long-run value-to-book, which represents the firm's long-run growth options; time-series sector error, which implies the "over-heating" of some industries; and firm-specific misevaluation component. Further, (Van Bekkum, Smit, & Pennings, 2011) distinguish market-to-book ratio into a fundamental growth option component, a market growth option and the excess pricing of the company. This makes me suggest that, among other motives, buying fundamental growth options of the target using the overvalued stock, which represents the cheaper deal currency, is indeed rational from the viewpoint of the acquiring firm. I base my research on the comparison of the post-merger performance of the companies, who follow such strategy, and those who not.

The research was conducted using the sample of 20,036 company-level observations between 1995 and 2006 years. The results show that the assumption of superior performance of rational "smart" bidders is rather supported than rejected in terms of both operating income growth values and abnormal rates of return. Although it is hard to generalize the results to the total population of the acquirers, I can state that buying growth options using the overvalued stock may lead to a better post-merger performance, since no significant results were found to support the opposite. Smart bidders are more successful in the most volatile and innovative industries and even further, in years of economic instability.

These results are also supported by the results of additional research concerning the post-merger changes in valuation levels. The outcomes show that rational managers are able to capitalize on market inefficiencies, while the non-rational are not. While, in general, the total valuation levels of both smart and

non-smart bidders do not significantly change the year after the merger announcement, the smart bidders significantly increase the value of fundamental growth options at the expense of rather sentimental excess pricing.

The research contributes to the literature in a number of ways: firstly, I propose a way to ex-post distinguish between rational and irrational motives of the merger, which is novel in the literature; secondly, I found that in the years of stable economic environment the rational merger strategies do not bring the better results to the acquirers, while essential in the periods (and sectors) with high volatility; thirdly, using the example of smart bidders who lose the share of the excess pricing component after the merger, I show that the market is able to correct the stock prices when it understands their mismatch (that was stated in many studies, but never actually proved).

The remainder of this paper organized as follows: Section 2 will present the literature analysis concerning growth opportunities and mispricing characteristics of the M&A counterparts and the determinants of after-deal performance of the acquirers. This section also discusses all hypotheses. Section 3 will present the employed methodology and a description of the dataset. In the following Section 4, I will discuss the results showing the effect of acquirer stock misevaluation on long-term shareholder wealth creation and profitability at the company-level. Section 5 will conclude and discuss future research directions.

SECTION 2. LITERATURE REVIEW

M&A occur when an acquiring firm and a target firm agree to combine under the legal procedures. A takeover is a voluntary investment decision by the acquiring firm and, from the perspective of the value maximization motivation, should meet the same criteria as any other investment decision: M&A should generate positive economic gains, or at least earn a normal rate of return (Halpern, 1983).

However, researches argue that the after-deal performance of the M&A counterparts is not always as good as stakeholders would desire.

2.1. Acquirer performance: the puzzle from event studies

The choice of the appropriate performance measure varies considerably between studies. However, since 1970s the event study approach dominated the field[1] (Bruner, 2001). There are many stakeholders who can be affected by the takeover deal: governments, suppliers, creditors, employees, customers etc. However, as a rule, researches use the event studies approach to measure the performance of two primary parties of a merger deal: the target and the bidder company. The performance is commonly measured in terms of shareholder wealth creation, since they are ultimate holders or the rights to organizational control and therefore must be the focal point of any decision concerning the firm (Jensen, 1984). The methodology of event studies assumes that the stock prices react in a timely and unbiased manner to the new information (Tuch & O'Sullivan, 2007) and that the extent of the gains is reflected in the value of the firm in the forthcoming periods (Fama & French, 1993).

Event studies examine the abnormal returns in the period surrounding the transaction announcement. The term "abnormal returns" (or abnormal rate of returns, ARR) associated with the difference between the actual performance of the company and the returns that investors require (or expect) for this period. In order to calculate ARR, it is essential to identify two further dimensions: the

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[1] "This technique was a genuine innovation – theoretically well grounded, cheap to execute and able to evade the problem of holding constant other factors that plague ex-post studies of mergers' effect. A better product, available at a lower price, naturally swept the intellectual marketplace" (Caves, 1989)

appropriate event "window" and the related benchmark. Typically, the benchmark is the return dictated by the capital asset pricing model, introduced by William Sharpe in 1964, or simply the return on a stock market index (Bruner, 2001) associated with the company. While researchers agree on the definition of the benchmark, the time range of analysis varies considerably between studies. (Andrade, Mitchell, & Stafford, 2001) argue that the entire wealth effect of the merger should be incorporated into the stock prices by the time uncertainty is resolved, namely, by the merger completion. Therefore, two commonly used event windows are the short-term (3 days surrounding the M&A announcement) and the long-term, beginning few days prior the announcement and ending at the close of the merger. Nevertheless, researches also choose other periods for analysis.

Target firm shareholders are the undeniable winners from the takeover. Despite the variations in the observation period, many studies reveal positive and significant returns for the target companies. For example, looking at 5 year post-acquisition returns, (Loughran & Vijh, 1997) found 47.9% growth for the average target, while the target participated in a tender received 129.6% abnormal returns after 5 year period from the deal. In the study of (Schwert, 1996), comparing the return of 42 days before the takeover announcement and 4 months after, a positive return of 26.3% for targets was revealed. (Smith & Kim, 1994) discovered that even unsuccessful tenders bring positive returns to the target shareholders at the day before the earliest report offer in the Wall Street Journal or the Dow Jones News Wire. In their study such gain equals, on average, 15.84%. The later survey of (Mulherin & Boone, 2000) also confirmed the previous results for target companies. On average, the equity value of a target firm appreciates 21.2%, net-of-market, in the three days around the initial announcement of the acquisition. The median abnormal return in the (-1, +1) period was equal 18.4%.

Whereas M&A transactions deliver a significant premium to the target shareholders, finding the overall pattern for bidder companies is more complicated and remains a puzzle in the finance and strategy literature. In the

short-run period, the overall results suggest that there is little if any positive returns for the acquiring companies. At the same time, interpretation of long-term abnormal returns following the transaction is complicated by the possible confounding events that have nothing to do with the transaction.

Negative and insignificant returns are found in the majority of performance studies for the acquiring firms. For example, (Bradley, Desai, & Kim, 1988) revealed that cumulative abnormal returns of the acquirer firms fell from 4.09% in the 1960s to -2.93% in the 1981-1984 years, along with 18.92% to 35.34% growth for the target companies in the same years. More recent studies, which cover period from 1980s and further, indeed provide evidence for negative acquirer abnormal returns between one and three percent. Looking at the period from -1 day to +1 day around the announcement period, (Sirower, 1997) found statistically significant abnormal returns of -2.3% for the deals made between 1979 and 1990 years. Analysing the deals made in 1990-1999 years, (Mulherin & Boone, 2000) also confirm negative, but insignificant returns of -0.37% around (-1, +1) period. Using the variety of the benchmarks, (Sudarsanam & Mahate, 2003) reveal that UK bidders gain between -1.39% and -1.47% (all significant) abnormal returns at the same short-time period.

The results of the long-term research do not differ significantly. (Gregory, 1997) finds that only 31% to 37% of the firms earn positive abnormal returns, while, on average, controlling for firm size, risk and growth opportunities, significant abnormal returns of -8.25% to -11.25% (for the different benchmarks) are found for the acquirers. (Conn, Cosh, Guest, & Hughes, 2005) show that over 3 years public domestic bidders lose -19.78% relative to the benchmark matched by size and market-to-book ratio.

Positive and significant returns for the shareholders of the acquiring firm appear rarely in the literature. Such results were found for the 3 day period around the takeover announcement by (Kohers & Kohers, 2000) for the sample of high-tech mergers. The results are robust both for cash (+1.37%) and stock (+1.09%) bidders (+1.26% for total sample). Also, in the period from 1998 to 2000 years, average Canadian acquiring firms earn 1.6% announcement abnormal returns as opposed to the negative or null results documented in the US (Ben-Amar & Andre, 2006). Authors relate the findings to the dual class

voting shares/pyramidal structures that allow separation between ownership and control that has a positive impact on value creation. (Loughran & Vijh, 1997) found positive 5 year post-acquisition abnormal returns of 61.3% for the acquirers participated in tender and negative -14.2% for those participating in merger.

Such a wide difference in results makes researches conclude that buyers break even, in other words, that acquirers tend to offer zero net present value, or equivalently, that investors earn their required return (Bruner, 2001).

2.2. Accounting performance puzzle

Most of the researchers use stock data while assessing the results of the takeover. The analysis of the reported financial performance, as a way to evaluate the merger gains and loses, seem to be less reliable. This is due to a couple of reasons: accounting information could be subject to manipulation through earnings management and accounting policies changes (Stanton, 1987); accounting performance measures are harder to compare; and also after the M&A deal the target either ceases to exit or remains as independent subsidiary (Tuch & O'Sullivan, 2007), making it hard to ascertain a valid measure of combined performance. Nevertheless, the use of measures such as profit margins, growth rates, different measures of return (on assets or equity) etc. is a second major stream in M&A research. Researches attempt to estimate long run operating performance changes, arguing that any benefits of the merger will eventually appear in accounting records.

One of the first researches in this field (Meeks, 1997) found that mergers in his sample suffered a mild decline in profitability. He examined the return on assets (ROA) of 233 UK firms between 1964 and 1971 years and compared these returns with average ROA of bidder's industry. His finding showed a significant decrease in profitability of the bidders in each of five years following the takeover, while for the year of takeover abnormal profits were positive (+0.114%). The findings of (Healy, Paleru, & Ruback, 1992), generated for 50 largest US mergers between 1979 and 1984, reveal that combined firm shows

significant abnormal improvements in asset productivity (turnover), while operating cash flow margins do not exceed the industry median values. Interestingly, their results show that, on average, operating cash flows of combined firm drop from their pre-merger levels, but non-merging firms at the same time loose considerably more. Both studies have data limitations, that is why there are concerns about the generality of the results. One more survey on the same theme, the later research of (Ghosh, 2001) for the years between 1981 and 1995 suggest that for the total sample of 315 companies there is no significant evidence that operating performance improves following the takeover. However, he indicates that cash flows increase significantly after the deal that was financed with cash, but decline for stock acquisitions. This research seems to be one of the most reliable in this area, since, as a benchmark, the author used companies that are matched on performance and size, while performance comparisons with the industry-median firms most likely lead to biased results (acquirers are likely to be larger and have a superior performance than industry-median firms).

2.3. Possible solutions to the puzzle

It is intuitively implied that mergers and acquisitions are carried out by the companies with the only aim to generate profits. However, the overview of the studies presented earlier showed that actual after-deal performances rather decline than increase. The significant part of M&A literature addresses this trend and tries to find the determinants of merger profitability.

The after-deal performance of the companies engaged in M&A is undeniably tied with the economic and managerial motives to execute such deal. A number of reasons can push the top-managers towards the initiation and execution of a merger. There are two classes of acquisition theories researchers agree with. The first class of the theories refers to value maximization motivations in which the merger should meet the same criteria as any other investment decision (Halpern, 1983). In other words, there should be the positive expected economic gains for the firm and the shareholders. The main

motivation that appear in the literature and that is consistent with the goal of value maximization is the desire to achieve synergy.

A number of authors address the value maximization motives from the viewpoint of the real option theory. This means that the gains of the merger are analyzed not only in terms of economic capital (the cash-generating active assets), but also in terms of strategic capital, that includes intellectual and human capital, and the know-how of turning the plans into economically viable capital (Collan & Kinnunen, 2009). The value of real options is a part of the value of the company.

Synergy that arises after the merger is also considered as a real option. However, these options are not the same thing as growth options of the target alone. (Collan & Kinnunen, 2009) argue that if the synergies were real options and other strategic capital already existing in stand-alone target, then they should be included in the value of the company (acquisition price), and acquisitions made at such prices would never be wealth creating (with positive NPV).

Post-merger synergy should be seen as an added option above the real options of combined entity, as it is a potential value that is created on top of the stand-alone value of target and realized by acquirer. Some of the options are unavailable for the target alone just because the company is "far out of money", while the acquirer, usually the bigger and richer in resources, can exploit such potential and turn it into cash flows.

In general, three types of synergies can be isolated (Kinnunen, 2010). Financial synergy can be achieved through lowering the cost of capital, tax benefits, reductions in capital expenditures etc. Managerial synergy is realized when the superior planning and monitoring abilities of acquirer's managers benefit the target's performance (Trautwein, 1990). Operating synergy is the main potential value creator in the mergers. It arises primarily from the economy of scale and scope, utilization of core competencies and resources, and other ways of cost savings and revenue enhancements.

Besides the options of the synergy, (Collan & Kinnunen, 2008) mention the other real options that arise with a merger:

1)   *Option to postpone and to stage acquisitions* often arise when the management make a cost-benefit assessment of losses during the period of waiting and the gains of waiting. The options that are sequential to a takeover may also gain or lose in value if the acquisition is postponed. That is especially important for the corporate strategy named "buy and build" (Smith & Trigeorgis, 2004), in which firm initially undertakes a "platform" acquisition in an industry and then leverages core competencies into follow-on acquisitions in a broadened geographical or market base.

2)   *Option to abandon or split existing business into parts* is a kind of restructuring, arising when the target is composed of parts and acquirer wants to concentrate on core-businesses and abandon or divest non-core parts. In the other case, such option is executed in order to enhance efficiency of the company. If the parts are more profitable when separated, then such option can create profits.

The opportunity of creating the revenue increasing synergy can be seen as a type of growth options (Kinnunen, 2010) and be attributed to the rational M&A motives. In this case CEOs and CFOs act in the best interests of the company and its shareholders. Interesting results were found by (Rhodes-Knopf, Robinson, & Viswanathan, 2005). The authors show that firms that act as acquirers usually lack internal growth options (have low value-to-book ratios) and try to buy such options from aside or exploit growth options brought together with M&A.

Indeed, rational acquirers will attempt to maximize the value of real options that is generated by M&A. That is confirmed by research of (Van Bekkum, Smit, & Pennings, 2011), who proved that bidders "buy smart". This is expressed in the fact that target companies, though overvalued, have a significant component of fundamental growth options, which is desirable for bidders. Buying fundamental growth allow smart acquirer to get maximum out of the range of available deals and leverage the growth.

However, even following the rational value maximizing strategies of M&A does not imply the further positive performance. The post-acquisition integration and realization of synergies play the vital role in the consequent

value creation. Thus (Habeck, Kroger, & Tram, 2000) report that post-merger integration is the primary reason for failure in 53% of all unsuccessful deals.

The second class of the theories in the field of merger motivations focuses on the non-value maximizing behavior of the management of the acquiring firms. This approach can be also referred to the agency theory, which predicts that under the lack of shareholder's monitoring, the managers may be motivated to raise the firm beyond the optimum and follow the strategies that increase their personal utility arising from status, power, compensation payments or prestige, potentially reducing shareholder value. Such "empire building" decisions decrease operating performance and reduce firm value (Jensen, 1986). (Hope & Thomas, 2008) found that managers of the firms that no longer disclose geographic earnings are more willing to extend international operations, which, in turn, is associated with higher foreign sales growth and a decrease in foreign profit margin. The similar results, but specifically in relation to M&A, were obtained by (Morck, Shleifer, & Vishny, 1989). They confirm the importance of managerial objectives in shaping acquisition strategies and argue that bad acquisitions are driven by bad managers, who have the greater personal incentives to acquire than do good managers, perhaps to avoid replacement or to find new businesses they might be good at.

In other words, due to a number of reasons some managers (non-smart) tend to make M&A decisions, which contradict the rational economic expectations and reduce the firm value.

Hypothesis 1: The post-merger performance of the company is better, when the management initiates a M&A deal on the basis of rational rather than irrational motives.

Not only the underlying motives of the merger can provide the glimpse of the future performance, but also the issues that arise after the decision to acquire. Thus, one of the common explanations of the poor merger performance is the mood of the takeover. Acquisitions are typically characterized as friendly or hostile. In friendly affairs, the top management of buyer and target firms

negotiates the conditions and come to joint agreement. The hostile takeovers arise when the tender offers are made. Usually they are structured in take-it-or-leave-it way applying directly to target firm shareholders. Researches confirm that appeal to the target shareholders can positively affect the bidder performance in the future. (Dong, Hirshleifer, Richardson, & Teoh, 2006) report that tender offers have a significant and positive impact on the long-run (5 years) abnormal returns of the acquirer. These findings are consistent with (Cosh & Guest, 2001), who also find the positive improvements in acquirer's profitability over three years after the deal by 4.9% each year, compared to -0.7% for friendly takeovers. However, it is not always the case. Thus, (Loughran & Vijh, 1997) did not find any significant evidences of positive abnormal returns from the hostile takeovers. Even further, (Goergen & Renneboog, 2004) using a sample of European firms from 1993 to 2000 years proved that hostile bids loose -2.51% at 3 days around the announcement and -3.43% at 5 days. But if the hostility is one of determinants of future profits, it can be explained by the fact that participating in tenders bidder tries to retain value for itself, rather than give it up in the negotiations (Bruner, 2001).

The post-merger performance of the combined entity can also be influenced by the relative characteristics of the target and bidder firms. Better post-acquisition performance could be associated with acquiring of a bigger target. (Dong, Hirshleifer, Richardson, & Teoh, 2006) report that target size has a positive effect on the long run bidder performance, while significantky reduces the announcement returns.

2.4. Misvaluation and Real Options as a Solution to the Puzzle

One more common explanation of lack of returns is related to differences in the valuation of the companies at the stock market and the method of payment for a deal. Classical economics of mergers and acquisitions assumes the rationality of the managers and the shareholders of the companies involved in takeover and also the rationality of the market as a whole. In this view the stock price is set rationally in an efficient market and reflect the reference point for the

shareholder best interests. However, since late 1970's researches have pointed out the number of anomalies that contradict with the predicted efficient world (Langevoort, 2010). Complexity and contingency of the trader reactions to the market news, high volatility and non-rational price movements, such as formation and crashes of financial bubbles, confront the hypothesis about the rationality of the market. On the large scale traders are affected by the number of intellectual and behavioral biases, such as limited arbitrage, time and intellectual constraints, loss and ambiguity aversion etc. All that disturbs the actual "rational" pricing of the company's stock.

At the same time market irrationality is a great opportunity to be exploited by CEO's and CFO's, who are, by hypothesis, substantially more "rational" (Langevoort, 2010). Many theories have been created to explain the correlation between the sentimental valuation of the firms, the related motives to execute a merger and the consequences of such takeovers. The majority of them agree that managers can exploit the information asymmetry between the firms and the market. For instance, in the market affected by the irrational sentiments and believes there will be companies that are traded at the price lower than their fundamental values, which makes them desirable for picking as an M&A target for less than a fair price. In contrast, the companies with higher than actual stock price are interested in such deals, especially if paying with stock (Shleifer & Vishny, 2003).

However, there are consistent evidences exist that stock bids are associated with the worse performance of acquirers in both short run (Dong, Hirshleifer, Richardson, & Teoh, 2006) and long-run periods (Loughran & Vijh, 1997; Cosh & Guest, 2001). The general idea is that if managers announce payment with shares, it could signal that they believe the firm's shares are overvalued. Otherwise, if managers believe their stock is undervalued, they will pay cash.

(Andrade, Mitchell, & Stafford, 2001), analyzing performance of a sample from 1973 to 1998 years, found that acquirers that use at least some stock to finance the takeovers have significantly negative three-day abnormal returns of -1.5%, while acquirers that abstain from equity financing have positive, but insignificant ARR. (Loughran & Vijh, 1997) also confirm that acquiring firms

experience negative abnormal returns of -24.3% over five years after merger if they use stock, and positive AR of 18.5% if using cash as a method of payment. Authors argue that announcement period reaction for the acquirer to finance a deal with stock represents the combination of investor attitude both to merger announcement and an equity issue announcement, but they did not go further in analyzing this trend.

(Mis)valuation of stock matters not only when choosing the method of payment, but also when considering the merger decision. In the last decade the growing body of literature indicated that mergers are driven, at least in part, by valuation levels. (Rhodes-Knopf, Robinson, & Viswanathan, 2005) is a founder of the new wave in valuation studies. Authors explore market-to-book ratio and break it into three parts: firm-specific error, time-series sector error, and long-run value to book. They measure firm-specific error as the firm-specific deviations from the contemporaneous sector multiples (idiosyncratic misevaluation component). Time-series sector error is a difference that arises when contemporaneous multiples differ from long-run multiples. The underlying idea is that some segments of the market could be "over-heated", and thus the firms in the same market can share a common component of misevaluation. The long-run value-to-book component represents the firm's long-run growth opportunities.

The main results conclude that firm-specific errors increase the probability that a firm will be involved in merger, that it will be an acquirer, and that it will use stock as a payment method. Second result is that both acquirers and targets are clustered in the sectors with high time-series error. All together these findings mean that the companies participating in mergers are generally more overvalued relative to non-mergers.

However, this overvaluation does not necessary provide company with the positive results in the future. The negative performance of the overvalued bidders was, among others, analyzed by (Rau & Vermaelen, 1998). He presents the evidences that underperformance of acquiring firms both in stock and cash takeovers is not uniform across the companies. It is predominantly caused by the poor post-acquisition performance of "glamour" acquirers, the companies that have low book-to-market ratios, meaning that they are highly overvalued.

Comparing to "value"[2] acquirers, who have positive cumulative abnormal returns of 26% in mergers and 36% in tender offers, "glamour" firm earn -57% and -24%, respectively. Making conclusions from studies of (Rhodes-Knopf, Robinson, & Viswanathan, 2005) and (Rau & Vermaelen, 1998), we can find that overvaluation of the bidder promotes him to participate in merger, while the consequent stock performance is poor.

(Savor & Lu, 2009) point at the phenomenon of endogeneity of the acquisition decision: it is exactly those firms that are most overvalued that have the greatest incentive to make an acquisition before the market discovers the mispricing. Moreover, (Shleifer & Vishny, 2003) argue that acquisitions by overvalued firms may represent the attempts by rational managers to capitalize on market inefficiencies. Such takeovers may be in the best interests of shareholders because they result in the long-run returns that are not as bad as they could be otherwise, assuming that acquiring premium is less than the option value of created synergies. This means that there should exist particular strategies to get maximum out of inefficient markets, and the number of companies, which understand and act it such rational direction.

Hypothesis 2: For rational acquirers the post-merger long-run (fundamental) growth options value will increase, while excess pricing will decrease.

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[2] Companies with high book-to-market ratios

SECTION 3. DATA AND METHODOLOGY

3.1. Data collection

The paper was inspired by the studies of (Rhodes-Knopf, Robinson, & Viswanathan, 2005; Van Bekkum, Smit, & Pennings, 2011), who found the evidences of interconnection between irrational overpricing in the financial markets and merger activity. (Rhodes-Knopf, Robinson, & Viswanathan, 2005) in their paper propose the methodology to distinguish the market-to-book ratio (M/B) of the company into three components: the firm-specific price deviation from the short run industry pricing; sector-wide, short-run deviations from firms' long-run pricing; and long-run pricing to book. (Van Bekkum, Smit, & Pennings, 2011) adjusted this approach with relation to growth option theory and calculated three firm value elements: 1) the market based growth option (V_{GO}^M), 2) the fundamental growth options value (V_{GO}^F) and 3) excess pricing (XSP). This particular dataset[3] became a foundation of my research. Initially it contains 24,591 annual observation for the firms involved in merger activity in the period between 1995 and 2006 years (both targets and acquirers) and firms that are "ultimately involved in merger activity", but have no takeovers in some of the years. This non-merger group of companies was originally created with the aim to increase the sample size and facilitate the comparison between takeovers and non-takeovers. I will follow this approach further and use the non-merger companies as a benchmark to analyse the operating performance of my sample.

Using the Thomson ONE workspace I was able to identify to which of M&A groups (acquirer, target or non-merger) each company belongs at the year of observation. I had to restore the sequence of actions carried out by (Van Bekkum, Smit, & Pennings, 2011) to get the closest results. The fact that companies have different fiscal year end dates created the major difficulties. Following (Rhodes-Knopf, Robinson, & Viswanathan, 2005) compensating method, authors matched the year of the data with the year in which accounting

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[3] The dataset available at the personal web-page of Sjoerd Van Bekkum at:
[http://people.stern.nyu.edu/svanbekk/]

information was filled. Then they associate these observations with the SDC[4] merger announcements, and if the announcement occurred between the fiscal year end and one month after, the merger announcement was associated with the previous year accounting information. Having the aim to find as many merger participants as possible, I created the set of search queries separately for each year both for acquirers and targets with the time boundaries that exceed the last possible fiscal year end date, which will be associated with the current year (31 December), by a month. So, I searched for merger announcement of the companies that appear in the sample in 1996 year at the time period from 1 January 1996 to 1 February 1997.

Some of the companies were not classified as they were engaged in more than one M&A deal in one-year period and act both as a target and acquirer. Although Thomson ONE included these deals in the search results, companies that had repurchasing deals with shareholders and other kinds of relocation of assets between subsidiaries also were not classified neither as targets nor as acquirer, because it does not meet the criteria how the companies were chosen by (Van Bekkum, Smit, & Pennings, 2011)[5]. Then due to invalid SEDOL codes gathered from Thomson database I was forced to again ignore nearly 0.05% of the observations. In all these problem cases companies were allocated into non-merger category.

One more issue was faced while dealing with this part of dataset: for unknown reasons some of the companies appeared twice within one year with the different values of growth options and mispricing. In this case I took the mean value for each of characteristics, and the total number of observations fall to 23,034.

Overall, I was able to identify 946 targets and 2,153 acquiring companies, which together corresponds to the 13.5% share out of initial sample. This, in turn, with the high degree of accuracy consistent with the numbers used by (Van Bekkum, Smit, & Pennings, 2011). The share of firms involved in mergers in their study was equal to 14.6% out of total sample.

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[4] Security Data Company's Platinum M&A database
[5] The original data collection process can be found in (Van Bekkum, Smith, & Pennings, 2011) (p.918)

Besides the values provided by (Van Bekkum, Smit, & Pennings, 2011), the variables that are commonly associated with the measures of wealth creation and operational performance of the company were gathered using Thomson One Banker and Datastream. The idea of the research is to figure out how the differences in growth option values and mispricing component affect the post-merger efficiency of the acquirer, namely, abnormal returns and operating income.

3.2. Smart Bidders: who they are?

Before testing any hypotheses one should provide the clear definition of the main concept used in the study. In this case, the distinction between smart and non-smart bidders[6] plays a significant role. This distinction is directly related to the rationality of merger motives. As been mentioned before, rational managers will attempt to maximize the synergetic gains from the merger and use for this aim the "cheap money" of the overvalued stock. Of course, the term "rational" can be attributed to the different strategies, however, in my research I will follow this one.

The term "smart" firstly appeared at (Van Bekkum, Smit, & Pennings, 2011) study, when the authors tried to explain the merger activity of the firm using the growth option perspective. They found that bidders "buy smart" and "time smart", meaning that they have high market values mainly due to growth opportunities and irrational overpricing, and select targets that are less overpriced with a similar or higher fundamental growth values.

This is also consistent with the finding obtained by (Rhodes-Knopf, Robinson, & Viswanathan, 2005) and (Dong, Hirshleifer, Richardson, & Teoh, 2006) that "targets have market-to-book ratio higher than the average firm, though lower than bidders' market-to-book ratio" and "after controlling for firm-specific and time-series sector error, low long-run value-to-book firms buy high long-run value-to-book targets".

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[6] The use of the terms "smart" and "non-smart" is not intended to insult, criticise or challenge the qualifications or managers responsible for the execution of merger deals, or various strategies pursued by firms at the period. Terms are used just in order to distinguish and compare the subsequent performance of the firms that follow the rational pattern in a merger and those who for some reason deviate.

These findings were applied in my research in order to investigate whether the firms that meet the criteria of being "smart" actually outperform those firms that deviate from the overall trend. Three elements were used to isolate smart bidder group. First of all, (I) market-to-book ratio of the acquirer should be higher than the M/B ratio of the target and therefor higher than average market-to-book ratio of the firms that are not involved in the merger activity in particular year, but located at the same geographical region, and also belong the same industry group (equation A).

$$M/B_{cyi}^a > \frac{1}{n}\sum_{i=1}^{n} M/B_{cyi}^t \qquad \text{Equation A}$$

Unfortunately, due to the number of reasons[7] at the time of the initial data collection process, it became impossible to allocate each target with the bidder, that is why the average ratios of target market-to-book value, fundamental growth options and excess pricing were constructed for each country- year- and industry- specific groups.

Also acquirer that found to act in a "smart" way should (II) have the fundamental growth potential lower or equal to targets ratio (equation B). It can be explained by the fact that bidders search for the possible synergetic effect after the merger, when its own growth potential is not sufficient to maintain the growth tendency. "Buying fundamental growth may cushion bidders against a future drop in the market" (Van Bekkum, Smit, & Pennings, 2011).

$$V_{cyi}^{Fa} \le \frac{1}{n}\sum_{i=1}^{n} V_{cyi}^{Ft} \qquad \text{Equation B}$$

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[7] The reasons why there are roughly three times more bidders than targets are: lack of the nessessary data as targets are private or foreign firms, targets can disappear after the complete acquisition, multiple bids were made for a single target and some were rejected (Van Bekkum, Smith, & Pennings, 2011)

The third element that differentiates smart and non-smart bidders in this study is the short-term deviations in valuations from the long-run trends. In terms of (Van Bekkum, Smit, & Pennings, 2011) – excess pricing. The excess price values provide bidder with the "cheap" money especially when stock is used as a M&A currency. Thus, (III) the higher the differences between short-term overpricing of target and bidder companies, the more favorable the deal for the bidder (equation C).

$$XSP_{cyi}^a > \frac{1}{n}\sum_{i=1}^{n} XSP_{cyi}^t \qquad \qquad \text{Equation C}$$

The calculations result in the sample of 681 smart bidder versus 1163 non-smart. Companies that are included in the sample belong to 29 different countries and 13 industry groups (also referred as sectors) defined by Kenneth French.

3.3. Methodology

The paper uses the standard event studies methodology. The t-test assesses whether the means of two groups are statistically different from each other. It allows to figure out whether the acquirers of my sample outperform the non-merger companies, and more importantly, whether the smart bidders outperform the non-smart. I examine the post-merger performance of the acquirer companies by studying the long-run abnormal returns and relative operating income growth. The event window choice was limited by the characteristics of the initial data, since many companies are involved in serial merger activity, which could bias the results for performance indicators. So, the time window is equal to one year. Detailed description of the variables is presented below.

3.4. Abnormal Rate of Return

Abnormal rate of return (ARR) is the standard approach in the event studies to test the reaction to particular event at some point of time. ARR represents the difference between actual return on the firm stock and the expected return or the return for the equally weighted index on the same date. Often abnormal returns appear in the studies concerning short-run stock performance and calculated on the daily basis in order to isolate the effect of the merger. When the ARR is computed for the period of several days, the probability that any deviation from the stock trend of previous days or the trend of corresponding stock index is caused solely by the announcement of the M&A deal is greater than in cases when ARR computed for the months or years. Any abnormalities in the firm stock behavior in the long-term can be also caused by external market conditions or internal changes in the company, not related to the M&A transaction. Even further, some companies are engaged in the number of merger deals within the year, which also affect the firm's stock return. In such situations ARR does not provide the reliable reflection of the stock consequences of the merger.

However, despite the objective disadvantages of using long interval abnormal returns, in the research I have to do just that. This is primary due to the way the three main measures of growth options are calculated. Since the significant differences in the financial year end dates exist, authors (Van Bekkum, Smit, & Pennings, 2011) of my initial part of data were forced to compensate for it and correspond the year of the growth option data to the year in which the accounting information was filled. The accuracy of interaction between the abnormal returns calculated for the days around the announcement and the growth options calculated at the end of a year could become a problem. Interpretation of the results could be confusing if the merger occurred, for example, in January, while option values are calculated for the values submitted in October of the same year (originally, the reverse causality is meant in the research).

The calculation of abnormal rate of return included three steps. First of all, for each company I gathered the return index for the year of the merger announcement and the following year. The firm's rate of return was calculated as

a percentage change (growth or decline) compared to the previous year. Secondly, for each company I obtained the corresponding Stock Market Index using the Datastream database and calculated the rate of return in the same manner as for the companies. Then the measure of abnormal rate of return for the firm was created by deducting the corresponding index return from the firm return:

$$AR_{it} = R_{it} - R_{Mt}$$

where *Rit* is the firm i's stock rate of return (in percentage points) for the year that follows the year of merger, *Rmt* is the rate of return of the corresponding stock index at the same period. Overall, in this study I assume that ARR shows how merger deal affected the stock valuation of the stand-alone company.

Using Thomson ONE Datastream it was possible to gather information for 52 stocks indices (40 Indices are actual stock indices, while 12 indices are the mnemonic Datastream indices that cover the main country stocks). The use of the stock indices as a benchmark is a valuable tool both for investors and researches. Stock Market Indices are used for gauging the overall state of the economy or a performance of a particular stock. However, as many other ways to calculate the benchmarks, the use of stock market indices also has the drawbacks.

Stock indices have the different methodologies of construction and updating, represent the different segments of market and therefor the different sample of companies is included in each index. Thus, one of the most known indices Standard&Poor's 500 (that happen to be a benchmark for 37.37% of all companies in my dataset) accumulate the data from 500 American large-cap companies that belong to the different industries, and that is why does not reflect the actual changes in one particular industry and can under- or over-estimate the firm's performance. Also with the high degree of doubt it can be used as a proxy for international sample, since the dynamics of each region is unique. One thing worth mentioning is that the use of country-specific indices is also not a cure here, the majority of them contain only larger market cap companies, while the company we are looking at could be a small- or mid- cap and act differently in the same economic conditions.

Using country- and industry- specific indices could be a better option compared to those been described, though very limited number of such indices exist.

The other, and maybe the best, way to isolate the country and industry specific returns is to construct a new index for each of the SIC group codes. This way seems to be the most reliable, since one can generalize the groups at his own discretion using 1-, 2-, 3- or 4 digits SIC codes. However again some difficulties arise, for example, which companies from the total SIC group to choose: large-caps, small-caps or even all possible? Which weighting technique to choose: simple average or give same weight to larger firms? All answers depend on the pursued objectives of the researcher. Thus, the most rational way is to choose the companies within the SIC code group that are similar in terms of market value, however, for the large samples it could be problematic. As for me, I use 52 country-specific indices obtained from Thomson One Datastream trying to neutralize the most significant time- and country- shocks.

Overall, abnormal rates of returns were obtained for 16,144 observations.

3.5. Operating Income growth

Besides analyzing the impact of the merger announcement on the stock return, I also examine the influence of initial growth option distribution on the firm's operating performance. The percentage point changes in operating income were calculated for the year that follows the year of the merger announcement.

To be able to isolate the actual acquirer's performance, the industry-, country- or time- specific effects should be removed. For this aim I decided to use the characteristics of the non-merger group as a benchmark for those, who were involved in mergers. There is an objective reason to do so: only 14,6% of the observed firms had M&A deals in one of 12 years, the other companies are "ultimately involved in merger", but do not have the deal in a particular year.

Following (Barber & Lyon, 1996), most researchers adopt industry, size, and pre-performance based matching. Thus, (Ghosh, 2001) matched firms using the criteria of total assets which lie within 25-200% and closest EBITDA to assets ratios.

In my multinational sample benchmarks should be created on the level of each of the 29 countries, 13 Fama-French sectors and within each of 12 years of observations. The number of companies within those subsamples is very small. Nearly in 60% of cases the number of companies that belong to one country- industry- time group is lower than 3. So, there is almost nothing to choose from, if using (Barber & Lyon, 1996) performance-based approach. That is why I took the simple median value for each group, that is consistent with the (Clare & Faelten, 2012) approach. Then this benchmark was deducted from the corresponding value obtain on the company level.

There are many options to measure economic performance of the firm. Researches address such ratios as operating profit margin, cash-flow-to-total-assets ratio, operating cash flow returns, operating income to assets (Bruner, 2001). In the research I will look at operating income growth the year after the M&A deal. The reason for this is that I want to analyse the direct synergetic effect of the combined firm without any side effect of the associated taxes and other extraordinary expenses that can occur at this time and modify the other measures.

Overall, 18 636 observations of operating income growth values were gathered for the research.

3.6. Outliers

The first screenings of the dataset showed that the results are exposed to the effect of outliers. Substantial deviations from the mean values were present in the values of abnormal returns and operating income growth (table I). In my sample extreme values are not concentrated neither in a particular year, nor country, nor industry, and therefore I suppose that such values of the performance belong to some unique companies and do not represent a general pattern, which I am trying to investigate, and can bias the results. The considerable biases could appear for the values of relative operating income growth, since the benchmarks were created as a simple mean of the non-merger firms' observations that belong to one country- year- industry group. There are two standard approaches to diminish the effect of the outliers exist.

Table I. Initial summary statistics

Variable	Number of observations	Mean	Standard Deviation	Min	Max
ARR	16 144	0.086	0.759	-2.254	27.969
Company OIG	18 636	82.419	3357.979	-100	453341.5

The first one is winzorising, which assigns the lesser weight or modifies the tail values so they are closer to the other sample values (Ghosh & Vogt, 2012). In other words, winzorising replaces any values below the fifth percentile and above the 95th percentile by the value of fifth and 95th percentile, respectively. As been mentioned above, the tail values of my sample belong to the different countries, years and industries, and therefor replacing them with the 5th of 95th percentile values could be hardly justified. These values will show something that is not actually true. That is why I addressed the other method of dealing with outliers. Consistent with many studies in the different fields of science, I replaced the first and the last 1% of observations with missing values. These observations were not completely deleted from the sample, since in many cases extreme values of e.g. operating income growth were accompanied by non-extreme values of ARR and vice versa.

I deleted all the observations that have missing values of either abnormal returns, or operating income growth and get the sample of 11,755 observations. The t-test results of such sample do not significantly differ from the values presented in the section 4, that is why I could say that the results are robust and not biased by the outliers.

After all data transformation procedures, my sample consists of 20 036 company-level observation, including 591 observations for target companies, 1937 observations for bidder companies, of which 427 bidders are "smart" and 1 510 are "non-smart". Abnormal rates of return are observed for 15 822 cases, relative operating income growth is observed for 15 969 cases. Definitions and the sources of the variables in the sample are provided in the table 2.

Table 2. Definition and the sources of the variables of this study

1	Fundamental Growth Option Value *(fpvgo)*	The component of actual market value of the company that represents the value of growth options that could be executed by a firm	(Van Bekkum, Smit, & Pennings, 2011)
2	Excess price *(xsp)*	The component of actual market value of the company that represents irrational believes and sentiments of the investors.	(Van Bekkum, Smit, & Pennings, 2011)
3	Market Growth Value *(pvgo)*	The variable that represents both rational valuation of company (fpvgo) and excess pricing (xsp).	(Van Bekkum, Smit, & Pennings, 2011)
4	Acquirer or Target *(AorT)*	Dummy variable. Variable equal to 1 if the company in particular year act as acquiring firm. Variable equal to 0 if company was a target. Missing values of the variable represent the group of "non-merging" companies that do not act neither as an acquirer nor a target.	Thomson One
5	Smart Bidder *(smart)*	Dummy variable that represents the merger strategy of the acquiring firm. Variable equal to 1 if two conditions are satisfied simultaneously: 1) bidder's excess pricing (XSP) is higher or equal to average XSP of acquired targets in the same country-year-industry group, and 2) fundamental growth option value (FPVGO) of average target of the same year and country is higher or equal to FPVGO of acquirer. Variable takes value 0 otherwise.	
6	Industry *(sector)*	One of the industries belonging to Fama-French 12-industry classification, plus mining.	(Van Bekkum, Smit, & Pennings, 2011)
7	Stock Index *(SI)*	The mnemonic of the leading Stock Market Index or Datastream Market Index for the country with which the firm's stock is associated.	Thomson One Banker Datastream
8	Stock Market Return Index	Growth value of a Stock Market Index as a percentage relative to the previous year, assuming that dividends are reinvested.	Datastream
9	Company Return Index	Growth value of a firm's share as a percentage relative to previous year, assuming that dividends are reinvested.	Datastream
10	Abnormal Rate of Return *(ARR)*	The percentage point difference between Company Return Index and Stock Market Return Index.	
11	Relative Operating Income *(OIG)*	The percentage point difference between actual 1 year operating income growth of the company (measured in percent relative to previous year) and the benchmark, which is calculated as median of 1 year operating income growth values of non-merging firms for each country-year-industry group.	Thomson One Banker

SECTION 4. RESULTS

This section provides the empirical part of the research and shows that acquirers who pursue the rational "smart" strategy in M&A deals, meaning that they are buying fundamental growth options of targets using the overvalued stock, generally outperform the "non-smart" bidders and non-merging companies. However, the differences in the means are rarely significant. Moreover, the scatter of the results is not uniform across sectors and years of the observation.

4.1. Sector level results

Table III presents the results obtained for the values of operating income growth (OIG) of the companies in the year that follows the merger announcement. It can be seen that companies, which earlier had a merger, are significantly more productive in terms of operating performance than non-merger firms. On average, they earn 5.62 percentage points higher rates in OIG comparing to the non- mergers. These results are significant at 1% significance level. Acquirers get the higher mean values of OIG in all sectors except Energy, Business Equipment and Healthcare. Although insignificant, this relative underperformance account for no more than 5.24 percentage points (in Business Equipment sector), while if bidders outperform non-merging firms, they gain up to 37.76 p.p. (in Mines sector).

The significant results for the t-test appear in the sectors of nondurable products, utilities, finance sector and mines and show that acquirers get the higher values of operating income than non-mergers. Such results are consistent with the theory of value maximization motives of the mergers and also could be partly attributed to the average valuation levels of the companies within a sector (see table IV). Sectors of nondurable goods, utilities and finance have the lower values of market growth value, meaning that they are less overvalued. Consistent with the results of (Rau & Vermaelen, 1998) I proved that lower levels of overvaluation is linked with the better performance.

The pattern changes when starting comparing smart bidders and non-smart ones. The significant results in a favor of smart bidders were found only in the Business Equipment sector. Here smart bidders gain 34.44 percentage points growth in operating income comparing to the benchmark, while non-smart bidders gain only 0.93 p.p. The similar results in a favor of smart bidders, although insignificant, also appear in the sectors of Energy (40.13 p.p. for smart bidders vs 3.07 p.p. for non-smart), Chemicals (26.68 p.p. vs 6.05 p.p.) and Telecom (42.71 p.p. vs 11.26 p.p.).

TABLE III. Relative operating income growth. Sector level results

The values of relative operating income growth show the difference between the actual firm operating income growth (measured in percentage points) and the benchmark, constructed as a mean value of OIG of non-merging companies that belong to the same country- year- industry- group. Sectors are defined by the Fama-French 12-industry classification, plus mining (Van Bekkum, Smit, & Pennings, 2011). Non-durables include consumer non-durables. Durables include cars, TVs, furniture and household appliences. Manufacturing includes machinery, trucks, airplanes, office furniture, paper, and commercial printing. Energy includes oil, gas and coal extraction (products). Chemicals include chemicals and allied products. Business Equipment includes computers, software and electronic equipment. Telecom includes telephone and television transmission. Utilities includes utilities. Shops includes wholesale, retail, and some services such as laundries and repair shops. Healthcare includes medical equipment and drugs. Finance includes banks, insurance companies, and other financials. Mining includes mining and minerals. Other includes construction, transportation, recreation, business services, and entertainment.

		Smart Bidders	Nonsmart Bidders	t(diff)	Acquirers	Non-mergers	t(diff)
Nondurables	Obs.	17	108		125	1384	
	Mean	-3.88	20.5	1.1172	17.18	6.95	-1.7961*
Durables	Obs.	7	53		60	534	
	Mean	33.02	20.57	-0.3711	22.02	10.04	-1.2258
Manufacturing	Obs.	87	171		258	2236	
	Mean	8.51	16.65	0.6974	13.91	12.22	-0.3309
Energy	Obs.	17	41		58	725	
	Mean	40.13	3.07	-0.8668	13.93	15.33	0.1075
Chemicals	Obs.	9	59		68	656	
	Mean	26.68	6.05	-0.9877	8.78	6.31	-0.3372
Business Equipment	Obs.	65	126		191	1756	
	Mean	34.44	0.93	-2.678***	12.33	17.57	0.715
Telecom	Obs.	13	40		53	477	
	Mean	42.71	11.26	-0.8534	18.97	8.61	-1.1227
Utilities	Obs.	6	48		54	784	
	Mean	9.59	19.87	0.408	18.73	5.44	-2.2989**
Shops	Obs.	46	173		219	1891	
	Mean	16.99	16.36	-0.0424	16.5	10.6	-1.0814

Healthcare	Obs.	37	83			120	971	
	Mean	1.21	8.82	0.4602		6.48	10.61	0.612
Finance	Obs.	9	27			36	549	
	Mean	9.45	54.4	1.1898		43.16	10.42	-2.7596***
Mines	Obs.	2	36			38	201	
	Mean	-5.55	55.53	0.4137		52.32	14.56	-1.6543*
Other	Obs.	47	152			199	1943	
	Mean	22.96	23.54	0.038		23.41	14.13	-1.4254
TOTAL	Obs.	362	1117			1479	14107	
	Mean	18.4	16.8	-0.2806		17.19	11.57	-2.6252***

***Significant at the 0.01 level

**Significant at the 0.05 level

*Significant at the 0.1 level

Interestingly, smart bidders even have negative values of OIG relative to the chosen benchmark. Thus, in the sector of nondurables they show - 3.88 p.p. decline, in the sector of mining - 5.55 p.p.

Overall, the operating income growth of smart bidders is 18.4 p.p. higher comparing to a benchmark, while non-smart bidders gain 16.8 p.p. (the difference of the means, however, is not significant).

Summarizing both significant and insignificant t-test results, it could be concluded that the first hypothesis that state the better performance of rational "smart" bidders receives limited support in terms of operating income. The outcomes made me suppose that the bidders that are buying fundamental growth of targets are more successful in the most volatile and innovative industries.

TABLE IV. Sector level mean values of the valuation components

		Market Growth Option Value (PVGO)	Fundamental Growth Option Value (FPVGO)	Excess pricing (XSP)
Nondurables	Mean	0.78	0.64	0.51
	SD	0.66	0.6	0.85
Durables	Mean	0.82	0.69	0.55
	SD	0.67	0.48	0.81
Manufacturing	Mean	0.82	0.7	0.53
	SD	0.63	0.49	0.78
Energy	Mean	0.79	0.65	0.54
	SD	0.68	0.57	0.82
Chemicals	Mean	0.83	0.66	0.56

		0.66	0.6	0.87
Business Equipment	Mean	0.93	0.78	0.39
	SD	0.73	0.55	0.85
Telecom	Mean	0.86	0.72	0.53
	SD	0.69	0.55	0.9
Utilities	Mean	0.71	0.64	0.59
	SD	0.55	0.43	0.68
Shops	Mean	0.8	0.68	0.52
	SD	0.63	0.52	0.79
Healthcare	Mean	0.84	0.69	0.4
	SD	0.7	0.54	0.87
Finance	Mean	0.73	0.75	0.39
	SD	0.58	0.45	0.71
Mines	Mean	0.91	0.71	0.51
	SD	0.76	0.59	0.84
Other	Mean	0.81	0.7	0.5
	SD	0.64	0.56	0.81
TOTAL	Mean	0.82	0.7	0.5
	SD	0.66	0.54	0.82

Table V shows the results obtained for the abnormal returns. Here also little support for the first hypothesis is found. Overall, abnormal returns are not significantly different for each of the observed pairs. I rather found the support for the earlier findings. Both acquirer companies and non-mergers generally outperform the country-specific stock market indexes and have positive return rates. However, when comparing to each other, bidders do not gain more than non-merger firms and rather loose. This means that acquisitions as a whole are not appreciated by the stock market.

Consistent with the results obtained for the values of operating performance, the acquirers got significantly higher abnormal returns relative to non-mergers in the sector of Utilities. In other words, mergers made in this industry bring not only the increase in sales, but also significant wealth increase for the shareholders of the acquirers. The interesting feature of the utilities sector can be observed. It is exactly that sector that have the lowest market growth value and the fundamental growth value components (see table IV). Again, it is consistent with the results of (Rau & Vermaelen, 1998) in terms of total valuation levels.

Comparing results for smart and non-smart bidders, significant results can be found in "Other" sector and Energy. Energy is a sector worth a closer look. Smart bidders operating in this sector outperform the company stock market index, on average, by 34 percentage points, while non-smart got just 0.2 p.p. higher (the mean difference is significant at 1%). Operating performance of the smart bidders in energy sector is also superior than for the non-smart ones. This sector is also characterized as the one with the lowest value of fundamental growth (see table IV). And therefore, such results can confirm that buying fundamental growth (when the company lacks it) is a strategy that will result in the positive post-merger performance at the stock market.

Summarizing the results obtained on the sector level, I found only some support for the first hypothesis, which argues that the performance of smart bidders, who buy fundamental growth while the company is overvalued, is better comparing to non-smart ones. However, these results cannot be generalized to all sectors. Even though I did not find any significant results that show the underperformance of the smart bidders relative to non-smart, in some sectors it indeed happens (according to the values of the means).

TABLE V. Abnormal rates of return. Sector level results

The values of abnormal rates of returns show the difference between the rate of return of the firm stock (measured as a fraction of total) and the rate of return of the country specific stock market index, with which the company is associated. Sectors are defined by the Fama-French 12-industry classification, plus mining (Van Bekkum, Smit, & Pennings, 2011). Non-durables include consumer non-durables. Durables include cars, TVs, furniture and household appliances. Manufacturing includes machinery, trucks, airplanes, office furniture, paper, and commercial printing. Energy includes oil, gas and coal extraction (products). Chemicals include chemicals and allied products. Business Equipment includes computers, software and electronic equipment. Telecom includes telephone and television transmission. Utilities includes utilities. Shops includes wholesale, retail, and some services such as laundries and repair shops. Healthcare includes medical equipment and drugs. Finance includes banks, insurance companies, and other financials. Mining includes mining and minerals. Other includes construction, transportation, recreation, business services, and entertainment.

		Smart Bidders	Nonsmart Bidders	t(diff)	Acquirers	Non-mergers	t(diff)
Nondurables	Obs.	17	114		131	1224	
	Mean	-0.01	-0.02	-0.1193	-0.02	0.02	1.2405
Durables	Obs.	6	70		76	546	
	Mean	0.07	0.05	-0.0861	0.05	0.04	-0.1739
Manufacturing	Obs.	90	174		264	2151	
	Mean	0.13	0.09	-0.5516	0.1	0.06	-1.5327
Energy	Obs.	18	53		71	656	

Chemicals	Mean	0.34	0.002	-3.7103***	0.09	0.15	1.1005
	Obs.	6	68		74	647	
Business Equipment	Mean	0.04	0.08	0.2234	0.07	0.04	-0.857
	Obs.	70	166		236	2028	
Telecom	Mean	-0.03	0.03	0.9204	0.01	0.04	0.8595
	Obs.	13	66		79	496	
Utilities	Mean	-0.13	-0.002	1.0538	-0.02	0.009	0.5898
	Obs.	5	58		63	669	
Shops	Mean	0.11	0.11	-0.014	0.11	0.02	-2.1873**
	Obs.	49	199		248	1953	
Healthcare	Mean	-0.05	0.03	1.1761	0.02	0.04	0.6973
	Obs.	34	84		118	885	
Finance	Mean	0.02	0.04	0.2878	0.04	0.07	0.6456
	Obs.	1	22		23	229	
Mines	Mean	0.42	0.007		0.03	0.05	0.2309
	Obs.	6	53		59	246	
Other	Mean	-0.16	0.18	1.6254	0.14	0.08	-0.9301
	Obs.	51	183		234	1943	
TOTAL	Mean	0.2	0.08	-1.6741*	0.1	0.06	-1.2491
	Obs.	366	1310		1676	13673	
	Mean	0.06	0.05	-0.4773	0.05	0.05	-0.2766

***Significant at the 0.01 level

**Significant at the 0.05 level

*Significant at the 0.1 level

4.2. Year specific results.

Tables VI and VII show the year specific outcomes for the values of abnormal rates of return. Looking at the outcomes, the sensitivity of the acquirer firm performance to the financial shocks can be traced. All the significant results are concentrated nearby the historical crises. Using the MSCI World Price Index (Moeller & Faelten, 2015) identify three historical crises that fall into the observed period:

1998 year: The Asian crisis that affected most of South-East Asia and which followed after the Russian crisis in 1997

2001 year: The initial dotcom crash together with the terrorist attack on the Twin Towers in New York in the same year

2003 year: The second round of large falls in stock market valuations following two years of highly volatile market conditions

Thus, in ARR the significant underperformance of acquirers compared to non-merger category is found in 2001 year. Still both acquirers and non-mergers outperform the country specific market stock indexes. This means that risking executing a merger while the stock is falling does not pay off itself, comparing to the other strategies that the non-merger firms could follow. However, it can also be supposed that without the merger these companies would perform even worse, and the merger is an only way to survive.

(Moeller & Faelten, 2015) argue that buying the distressed targets in periods of crises leads to a better performance, while buying healthy targets does not work so. Partly, this conclusion can be supported by my results. The "smart" acquirers who bought targets with the higher fundamental growth values (I suppose these targets were "healthy") did not show better abnormal rates of return compared to "non-smart" firms, who pursued the other strategies.

Still looking at the ARR results, it can be found that smart bidders significantly outperformed the non-smart ones, when executed the merger in 2000. In other words, they could recognize the forthcoming burst of the dotcom bubble and invest in the highly potential target. By the way, in 2000 year the largest number of smart acquirers was observed. So, the smart bidders bought the target that promised the higher synergetic effect, and in the following year they outperform the non-smart mergers by 17 p.p., at the same time the operating income growth was also (insignificantly) higher for smart bidders. Of course, this assumption should be tested in further researches.

Considering operating income growth, the values of OIG are significantly higher for acquirers that for non-mergers around the Asian crisis of 1998. The significant difference in the operating performance between smart and non-smart acquirers is obtained in 2002. I suppose the same logic as been described for the ARR at the period of 2000 year, just adjusted for the crisis of 2003 year.

Overall, the results obtained at the year level show, that the post-merger performance of the companies could be sensitive to economic shocks. Analyzing the results, I suppose that the acquirer companies outperform the non-merger firms in more or less economically stable years due to enhanced capacity caused

by synergetic effect after the merger. The contrary happens at the years of instability, mergers bring the relatively negative results, mainly caused by underperformance of "non-smart" bidders. Smart bidders, in turn, in the years around the economic instable periods significantly outperform the non-smart ones and also the non-merger companies. However, It seems impossible to generalize such results, since I do not observe the higher performance of smart bidders, for example, around the crisis of 2003, though, it is also hard to ignore such findings.

Table VI. Abnormal rates of return. Year specific results.

The values of abnormal rates of returns show the difference between the rate of return of the firm stock (measured as a fraction of total) and the rate of return of the country specific stock market index, with which the company is associated.

		Smart Bidders	Nonsmart Bidders	t(diff)	Acquirers	Non-mergers	t(diff)
1995	Obs.	9	45		54	969	
	Mean	0.06	0.05	-0.062	0.05	0.02	-0.5799
1996	Obs.	12	57		69	1003	
	Mean	-0.1	0.03	0.9987	-0.007	-0.05	-1.0479
1997	Obs.	15	69		84	1010	
	Mean	-0.21	-0.006	1.6271	-0.04	-0.08	-0.6983
1998	Obs.	28	84		112	754	
	Mean	-0.19	-0.1	0.6945	-0.12	-0.07	0.8975
1999	Obs.	41	112		153	978	
	Mean	0.06	0.16	1.132	0.13	0.15	0.4237
2000	Obs.	52	121		173	1035	
	Mean	0.26	0.09	-2.7295***	0.14	0.18	1.2510
2001	Obs.	22	122		144	1225	
	Mean	0.05	0.06	0.0769	0.05	0.11	1.6781*
2002	Obs.	43	110		153	1275	
	Mean	0.19	0.19	-0.071	0.19	0.2	0.3045
2003	Obs.	32	141		173	1320	
	Mean	0.03	0.04	0.2513	0.04	0.09	1.6745**
2004	Obs.	34	133		167	1246	
	Mean	0.04	0.08	0.5555	0.07	0.02	-1.7698*
2005	Obs.	34	150		184	1483	
	Mean	0.09	-0.01	-1.4781	-0.005	-0.002	-0.2218
2006	Obs.	44	166		210	1375	
	Mean	0.04	0.004	-0.5081	0.01	-0.02	-0.9601
TOTAL	Obs.	366	1310		1676	13673	
	Mean	0.06	0.05	-0.4773	0.05	0.05	-0.2766

***Significant at the 0.01 level

**Significant at the 0.05 level

*Significant at the 0.1 level

Table VII. Relative operating income growth. Year specific results.

The values of relative operating income growth show the difference between the actual firm operating income growth (measured in percentage points) and the benchmark, constructed as a mean value of OIG of non-merging companies that belong to the same country- year- industry-group.

		Smart Bidders	Nonsmart Bidders	t(diff)	Acquirers	Non-mergers	t(diff)
1995	Obs.	10	41		51	974	
	Mean	4.62	20.48	0.5581	17.37	9.26	-0.8361
1996	Obs.	15	56		71	1444	
	Mean	8.48	25.2	0.5838	21.67	14.76	-0.6825
1997	Obs.	17	73		90	1435	
	Mean	17.03	12.45	-0.292	13.32	11.5	-0.2446
1998	Obs.	34	91		125	1002	
	Mean	21.23	23.96	0.1238	23.22	9.61	-1.7605*
1999	Obs.	51	109		160	1191	
	Mean	32.5	29.28	-0.1742	30.31	13.86	-2.2195**
2000	Obs.	49	101		150	1088	
	Mean	18.34	12.26	-0.3768	14.24	11.9	-0.3181
2001	Obs.	20	99		119	1119	
	Mean	11.08	13.64	0.0774	13.21	9.95	-0.4255
2002	Obs.	40	93		133	1158	
	Mean	24.41	2.32	-1.8345*	8.96	13.48	0.6072
2003	Obs.	31	106		137	11.85	
	Mean	25.24	18.47	-0.3018	20.00	13.78	-0.7840
2004	Obs.	30	97		127	1120	
	Mean	8.53	22.96	0.9797	19.55	11.07	-1.2441
2005	Obs.	29	116		145	1234	
	Mean	24.58	8.07	-0.967	11.37	11.79	0.0662
2006	Obs.	36	135		171	1156	
	Mean	-0.84	17.09	1.1076	13.31	6.31	-1.2664
TOTAL	Obs.	362	1117		1479	14107	
	Mean	18.4	16.8	-0.2806	17.19	11.57	-2.6252***

***Significant at the 0.01 level

**Significant at the 0.05 level

*Significant at the 0.1 level

4.3. Post-merger changes in valuation components

The valuation levels of the companies are not stable during the different periods of time and, more importaintly, the sentimental over- or under-valuation also changes, what is supported by the market inefficiency and the bubble creation and burst theories. Many authors confirmed that mergers are driven by valuation levels and argue that acquirers try to capitalise on the market inefficiency and buy the hard assets before the market discovers it (Dong, Hirshleifer, Richardson, & Teoh, 2006; Shleifer & Vishny, 2003; Rhodes-Knopf, Robinson, & Viswanathan, 2005). It is intuitively implies that, when the merger is made using the stock as a payment method, the market understands that the stock of the company is overvalued relative to the fundamentals and try to correct. However, the little amount of the literature was found to indeed research this theory.

The initial data allow me to test, whether this is true or not. Some of the companies in the sample had the merger activity in the number of years during the observed period and therefore the valuation variables were included in the sample by (Van Bekkum, Smit, & Pennings, 2011). I selected those companies that had the sequential mergers, and marked the first year in a sequence as a benchmark for further comparison with the following year values. In cases when the company had three or four mergers in a row, I created two or three pairs, respectively. For example, if the mergers were made in 1995, 1996 and 1997 years, I compare the valuation levels for the pair of 1995 and 1996 years and, as a second observation for the same company, the pair of 1996 – 1997 years. Overall, such sample consists of 303 observations.

It is argued that market understand that the stock of the acquirer company is not trading at the realistic levels when the stock payment method is announced. There are no such assumptions about the cash mergers. That is why my results are biased by the fact that the sample consists a mix of stock and cash acquisitions deals. For the further research in this area it is indeed important to include the payment method distinction.

The results of ttest (see table VIII) show that for the total sample of the acquirers there is no significant difference between the valuation levels at the time of the merger initiation and the year after. Taking into account the

limitations of my data, such results can not be reliably interpreted, while the results for smart and non-smart bidders are more interesting.

For the bidders, which are buying fundamental growth of the target while their equity is overvalued, the significant redistribution of the valuation components is found. Indeed, smart bidders successfully capitalize on the market inefficiencies. No matter, which method of payment they choose, the levels of fundamental growth options of smart bidders significantly increase after the merger, while the excess pricing component fall closer to the fundamentals, which is in line with the second hypothesis. At the same time the overall valuation of the company does not significantly fall.

The results obtained for non-smart bidders are different. After the merger there were no significant changes in the total valuation levels of the companies. Also the fundamental growth option value did not change after the merger that could signal that synergetic effect was not achieved. This, in part, confirms why the non-smart bidders underperform the smart ones in operating performance. They just did not manage to exploit the potential of the combined entity, while the size of the company increased. At the same time the significant increase in the excess pricing component is observed, which could indicate the irrational motives pursued with the merger, e.g. CEO's empire building objective. After the merger the company seems to be a big one, which is appreciated by the market, while there are little underlying fundamentals.

Table VIII. Changes in valuation components for the acquirers

		Excess pricing (XSP)			Fundamental Growth Option Value (FPVGO)			Market Growth Option Value (PVGO)		
		Y	Y+1	t(diff)	Y	Y+1	t(diff)	Y	Y+1	t(diff)
Smart Bidders	Obs	79	79		79	79		79	79	
	Mean	1.07	0.67	3.39***	0.41	0.65	-2.15**	0.996	0.9	0.97
Non-smart Bidders	Obs	224	224		224	224		224	224	
	Mean	0.63	0.74	-1.81*	0.69	0.68	0.29	0.87	0.96	-1.56
Acquirers	Obs	303	303		303	303		303	303	
	Mean	0.75	0.72	0.46	0.62	0.67	-1.22	0.91	0.94	-0.78

***Significant at the 0.01 level
**Significant at the 0.05 level
*Significant at the 0.1 level

SECTION 5. CONCLUSION AND DISCUSSION

This paper is mainly focused on the comparison of the post-merger performance of the bidders, who pursue the undoubtedly rational strategy by buying the fundamental growth options of the target using the overvalued stock, and those bidders, who follow the other merger strategies.

Summarizing both significant and insignificant t-test results, it can be concluded that the hypothesis of the superior performance of rational "smart" bidders receives limited support in terms of operating income. The outcomes seem to suggest that bidders that are buying fundamental growth of targets are more successful in the most volatile and innovative industries and even further, in the years of economic instability.

The results for abnormal rates of return state that both smart and non-smart mergers are generally not appreciated by the market. The performance of acquirers does not significantly differ from the performance of non-merger firms (only in sector of utilities the significant positive results were found). However, when looking at the year specific results, it can be seen that smart acquirers gain significantly higher returns than the non-smart in the years of crises, while the total sample of acquirers underperform the non-mergers.

Overall, it seems impossible to generalize such results to the total population of the acquirers, since the pattern of the outcomes is quite unbalanced. However, I can state that buying growth options using the overvalued stock is not a bad strategy either, since no significant results were found to support the opposite.

These results are also supported by the fact that rational managers are able to capitalize on market inefficiencies, while the non-rational are not. While, in general, the total valuation levels of both smart and non-smart bidders do not significantly change the year after the merger announcement, the smart bidders significantly increase the value of fundamental growth options at the expense of sentimental excess pricing no matter, which payment method they choose.

Being strict to myself I understand the limitations on the each step of the research. The majority of the limitations are associated with my inability to gather the necessary information. Thus, starting with the distinction between

smart and non-smart bidders, I compare the excess pricing (XSP) and fundamental growth option values (FPVGO) of the acquirers with the mean values of the targets that belong to the same country- year- industry- specific group. This approach is a rough one, given the growing number of international mergers. Also the scatter of valuation components of the companies involved in mergers is not uniform, and it would be better to compare these values on the actual deal level. However, it was impossible to allocate each target to its acquirer.

Secondly, the limitations are connected with the chosen methodology. The one–year window of analysis is quite wide when looking at the abnormal rates of return. At the same time, it is quite narrow, when looking at the operating income growth, since reorganization processes are time consuming and companies can achieve the desired synergetic effect some time latter. In both cases the results can be biased by the events that have nothing to do with the merger. Moreover, the ARR values were created by comparing to the country-specific stock market index. Such indexes usually include the large cap companies of the country and use different weighting methodologies, and cannot explain the actual tendencies of a particular industry. The possible cure here is to chose for each company the number of firms that operate in the same country and industry and have the closest values of market –to-book ratios, and compare firm's return results to such benchmark. However, It was impossible to execute on the annual scale, since such benchmark should be created on the level of 29 countries, 13 industries and 12 years, and there is a little number of companies that belong to such groups.

The same limitation appears on the level of operating income growth values. Here the benchmarks are the simple means of the operating income growth values of the non-merger companies that belong to the same country- year- and industry- specific group. It would be more accurate to also create such benchmarks using the companies with the close market-to-book ratios.

Further accurate research is needed when tracking the post-merger changes in valuation components. It is essential to distinguish the cash and stock acquirers, unfortunately, for my sample I was not able to do so.

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