VALUE CREATION THROUGH MERGERS AND ACQUISITIONS IN ENERGY SECTOR

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Abstract

In today's challenging business environment, companies need to grow to be competitive on the market. Mergers and acquisitions (M&A) remains a key growth strategy for companies. This research is focused on examination of short term wealth effects of mergers and acquisitions (M&A) on shareholders. The aim of the study was to find out if M&A have any effect on financial performance of participating companies. The event study methodology was applied to investigate 100 deals in energy sector, particularly in oil and gas industry engaged in M&A activity from 2000 to 2014. The results of the study confirm that target companies gain shareholder wealth by exhibiting significantly positive cumulative abnormal returns. Interestingly, obtained results showed negative impact of M&A announcement on acquirer's stock performance. Findings are in line with previous studies of Andrade et al. (2001), Bradley et al. (1988), and Jensen and Ruback (1983).

Keywords: Mergers and acquisitions (M&A), energy sector, oil and gas, business environment, shareholders.

JEL Classification Codes: G34, G39

1. Introduction

In today's competitive world, companies face harsh competition to maintain their market share. Globalization and innovation made it easier for new entrants, which

imply that companies should constantly grow organically or inorganically. Sometimes, in cases when it is not feasible strategy for a given company to grow organically, they decide to engage in M&A.

For decades, researchers, investors and managers were interested whether M&A transactions create or destroy values for participating companies. If prior studies were focused mostly on theoretical concerns of M&A, after 1960s researchers started to employ event study and other financial and accounting techniques to analyze the financial impact of the deal on participating companies. Although more than a dozen of studies were conducted, there is no consensus on the impact of the deals on target and bidding companies.

The aim of this article is to analyze the effects of M&A announcement on wealth creation or value added to the shareholders of the companies in energy sector. First it presents the theoretical framework of M&A, motives behind engaging in activity, findings in previous research and literature. To verify the presence if abnormal returns, event study methodology is used to examine selected companies in energy sector, particularly in oil and gas industry engaged in M&A activity from 200 to 2014. Dodd (1980), Firth (1980), Kuipers, Miller, Patel (2003) as well as Mulherin, Boone (2000) find statistically significant negative abnormal returns. However, Eckbo (1983), Asquith (1983) and others show positive but significant returns in pre and post-merger period.

First, the sample of 100 M&A transactions in oil and gas sector between 2000 and 2014 were selected. Several market indexes were chosen to check existence of abnormal returns for companies engaged in the deal. Using event study and employing market

model suggested by MacKinlay (1997), abnormal returns (ARs) and cumulative abnormal returns (CARs) were computed and tested statistically. Study concludes that across industry and countries shareholders of target companies have statistically significant CAR of 19.1%. In previous studies by different researchers typically CAR is ranging from 15% to 30% percent depending on industry, time period and other factors. Acquiring companies have negative abnormal returns, with CAR of -7.46%. The outcome is in line with previous studies of Dodd (1980), Firth (1980), and Eger (1983) who indicated that acquiring companies obtain statistically significant negative abnormal returns.

There might be different reasons leading to non-value creation for acquirers. One of them suggests that during acquisition the target was overvalued by the bidder. Another reason might be management incentives to expand the firm and gain larger market share and coverage.

2. Theoretical Framework

2.1. Characteristics of M&A

From the perspective of business structures, there are three types of M&A transactions: horizontal, vertical and conglomerate (Berk and DeMarzo (2007) and Arnold (2002)). The types of M&A deals are distinguished by kind of relationship between target and the bidder.

a. **Horizontal Merger** - when companies operating in the same line of business merge their assets. For instance, for when telecommunication company acquires another telecommunication company. This type of M&A enhances the growth and

better performance by access to new markets, increase in market share, economies of scale and scope as well as cost savings. Energy companies choose horizontal type of merge to increase the leadership and market share through combining costly cutting edge technology and professions expertise.

b. **Vertical Merger** - when two companies in the same industry but in different fields of chain value combine together in business. In other words, when the target is from different production line, for instance supplier or customer, and thus vertical merger gives the acquirer an access to complementary resources. In this form, the companies in merger decide to combine all the operations and production under one shelter. Vertical Merger and Acquisition can be either upstream (backward) or downstream (forward). Rationale for energy companies to use upstream is to ensure constant supply.

c. **Conglomerate Merger** - when bidder belongs to entirely different type of business activity than the target company. Firms utilize conglomerate type of M&A as a means of diversification. Many conglomerate failed to be successful, one of the most successful one is General Electric built by Jack Welch.

When a company decides engage in M&A activity, it should follow specific steps shown in the table below. (Zanetti 1997)

Selection of bidders candidates
Benchmarking analyses in the industry
Research and selection of potential targets
Strategic fit evaluation
Organizational fit evaluation
Financial-strategic evaluation
Negotiation
Integration process

Figure 1: Steps in M&A process (Zanetti, 1997)

After the target is confirmed to be acquired, the bidder has to choose the type of payment of the purchase. The acquirer may conduct the acquisition either by cash or with stocks. In his research Walkling (1987) states that the abnormal returns of target companies depends on whether the transaction was financed with equity or debt and if it is merger or tender offer. His first conclusion is that companies that are acquired in tender offer have higher CAR because the fair value paid by acquirer obtained directly by the shareholders. Second observation is that type of financing in acquisitions may result in different CARs due to tax considerations.

An important question that arises in the course of M&A process is whether the managers of the acquiring company should also get significant ownership in the stock of the acquired company. The main trick behind this idea is related to the agency problem in corporate finance. Agency problem is the conflict of interest between shareholders and management of the company due to the different priorities of each group. While shareholders are interested in the value creation process, managers may sometimes pursue various goals – increasing sales volume at the expense of devaluation price-cuts for getting better business results. Therefore, M&A researches have put significant attention to the question of ownership by management in M&A process. By ensuring significant stake in the acquired company, the managers would be directly interested in the value creation process and therefore, would bring decisions based on the NPV criteria of investments. The incentive of management to invest resources on positive Net Present Value projects would be much higher if they would have significant stock ownership in the company they are managing. Thus,

agency problem would be addressed in the most efficient way. The mergers depriving the possible incremental value from M&As can be this way optimized. However, in real-life business managers often tend to engage in value-depriving M&A deals due to other reasons than value creation which may be referred to as managerial hubris.

Along with globalization, the rate of investment overseas by companies has increase significantly. As a result, country's legal system and structure of regulatory organizations (bodies) play significant role during feasibility period of M&A transaction. Specifically in cross border deals, the bidder's integration in a new environment depends on efficiency of legal systems. The pace of integration and subsequent performance in a given foreign country depends partly on efficiency of legal framework. As a result, for instance compliance issues are one of the main aspects, when searching and screening potential target companies.

Various researchers have studies the relationship between legal system and corporate governance of target companies' countries and financial performance. The legal system of a country has an impact on its economic growth and industrial sector. In their research Claessens and Laeven (2003) document that companies invest less, in particular in intangible assets in countries with weak legal structure. According the research conducted by La Porta e al (1998), the development of a country's capital markets are to a certain degree linked with the legal and regulatory framework there. To put it another way, the cost of debt and equity capital in a specific country significantly depends on the enforcement of laws and regulations in

that country. During last decades, liberalization and deregulation of energy sector in specific countries increased M&A activity.

2.2. Mergers and Acquisitions waves

Along with economic and industrial environment, the evolution of M&A activity is predisposed to take place in cycles, similar to the economic ones. M&A activities are not as volatile as stock markets, where any event occurred is reflected in stock price. However, similar to market bubbles mergers and acquisitions activity are strongly concentrated with high peaks and drops in certain periods of time, thus referred to 'waves'.

Merger and Acquisition activities in United States have occurred in waves. Nelson (1959) indicated that mergers are highly concentrated in time, clustering during periods of high stock market valuations, where the form of payment is generally stock. In the history of the U.S., M&A activity can be characterized by five waves (Weston 2001) and (Gaughan, 2002). The first wave occurred between 1897 and 1904, the second between 1916 and 1929, the third between 1965 and 1969, the fourth between 1981 and 1989, and the fifth between 1993 and 2000.

Waves occurred as a result of certain events or changes in industries, such as innovation, deregulation, and economic shocks and came to an end because of an economic recession.

The first and second wave were examined by Thorp (1941), Stigler (1950), Markham (1955), Nelson (1959), Weston (1961), Eis (1969), Lamoreaux (1985), Leeth and Borg (2000), while the third wave has been studied by Nelson (1966),

Reid (1968), Lintner (1971), Lynch (1971), Markham (1973), Steiner (1975), Scherer and Ross (1990), Hubbard and Palia (1999), and others. The fourth and fifth waves together with previous ones, were analyzed by Ravenscraft (1987), Andrade et al. (2001), Holmstrom and Kaplan (2001), Jovanovic and Rousseau (2002) or Harford (2005), correspondingly.

The first merger wave arose with the completion of transcontinental railway system and lasted from 1897 to 1904. This movement formed the first common market that in turn fostered monopolies. According to Fligstein (1990), between 1895 and 1904, 78% of the mergers were horizontal, 10% horizontal and vertical, the remainder vertical. Most of horizontal mergers took place in steel, oil and basic manufacturing industries (Ribeiro, 2010).

Innovation in automobile and radio in 1920s gave companies the possibility to advertise their products and services organize the distribution channel and expand geographic sales. In this period it was crucial for the companies to manage their distribution channels in effective way, that is why this wave is characterized by vertical mergers. It was ceased by economic shock of 1929.

The third merger wave known as ‘conglomerate’ one is characterized by conglomerate mergers in late 1960s. The aim of companies was to reduce expenditures and diversify. According to Weston (2001) in every sample of conglomerates, at least one half of the companies were aerospace or natural resource-depleting companies (oil and forest).

The fourth M&A movement was triggered by deregulation in various industries. The top five industries in terms of M&A activity were oil and gas, textile, miscellaneous manufacturing, non-depository credit and food (Andrade et al., 2001). Remarkably, amount of deals during third wave exceed the one in fourth, but the dollar value of the transactions that occurred in the 1980s was much higher. In addition, this wave dismantled the diversification movement in 1960s (Ribeiro, 2010). Overall the fourth wave is known for its billion –dollar mega transactions, many of which were financed with large amount of debt (Mangold and Lippok, 2008). In addition, international transactions accounted for a significant percentage of M&A activity (Gaughan, 2002).

The fifth M&A wave was driven mainly by globalization. Unlike the precedent wave, majority of the deals were financed through equity. The top five industries in terms of M&A activity were metal mining, media and telecommunications, banking, real estate and hotels (Andrade et al., 2001). This wave was ended by burst of the "internet-bubble" and the overall downshift of the global economy in the following years (Wübben, 2007).

2.3. Efficiency Rationale for M&A

There are various reasons behind M&A decision of companies. Those may be split into two groups according to firms' objectives and goals in merging or acquiring the target: value maximizing and non-value maximizing motives. Efficiency rationale which originates from neoclassical theory of firm states that a firm exists to maximize the wealth of its shareholders. (Gravelle and Rees (1981)).

This theory views the company as a set of production opportunities where the manager chooses the production plan that maximizes the present value of future cash flows. Despite strong underlying logic, it lacks to provide the ways to resolve conflict of interest among shareholders, managers and stakeholders. Berkovitch and Narayanan (1993) have classified motives for M&A into three groups: synergy, hubris and agency problems hypotheses. The classification was made on the basis of expected value added in stock prices, accordingly positive in synergies, zero in hybrids and negative in agency problem hypothesis.

Synergy hypothesis suggests that merger occurs when the combined value of target and acquirer is greater than sum of the values of both companies separately. Seth (1990) points out that synergies add value by enhancing the operating efficiency, increasing the market share and create financial gains.

The main types of synergies are the following:

a. Financial synergies:
b. Operating synergies
c. Strategic considerations (entering new markets):

One of the main types of the operational synergy is economies of scale which arise from the fact that cost in labour, fixed assets and technology is extended to a larger production level. In energy sector, economies of scale may be achieved by rationalizing Research and Development (R&D) expenses. Another type of operating synergy proposed by Teece (1982) is economies of scope which arises from intangible assets held by both companies. Those can be expertise of the labour,

know how in using certain technology and etc that could be applied to several products or services. In general, if the company wants to acquire certain know how it is rational to merge or acquire the possessor, since the transfer of knowhow from one firm to another is not feasible and coherent.

3. Analysis of Energy sector

Throughout the history, mergers and acquisitions have been employed as a growth strategy tool. There are different motivations for a given company to acquire or merge with another company. Motives may vary from geographic expansion, unification of distribution channel, increase in sales, expertise in technology and know-how depending on objective of the bidder. In energy sector most of decisions regarding M&A are driven by demand for huge capital investment in technology and R&D. As a result, necessity to constantly grow in order to maintain the market share pushes firms to find targets with brand new technology, new skills and acquaintance with new environment and regulations.

Volume of M&A activities dropped significantly with the crisis stared in 2007, but recovered eventually and increased in 2011. In United States the increase in M&A deal volumes was driven by regulation that allowed exploiting shale gas and other rocks. Our sample constitutes many examples of acquisitions of O&G companies targeting U.S firms prevailingly based in Houston, Texas. During last decade top acquirer has been United States with the total value of transactions equal to $163 billion. The second and third places are taken by United Kingdom ($19 billion) and China ($14 billion) respectively. (Bloomberg, 2011) The statistics

confirm that United States has been investing heavily in energy sector both on domestic and foreign levels. Target companies were mainly from United States, Canada and Norway. Surprisingly, emerging countries were not on top of potential target lists of acquirers. This can be partly explained by complex regulations, high level of corruption, poor infrastructure and lack of highly skilled engineers, which are crucial in energy industry in developing countries.

Despite, potential economic gains companies refrain from investing or entering those markets being afraid to damage company reputation, not to be able to guarantee safety to their employees and incur big amount of sunk cost in case of shutting down operations in those locations. Libya is one of the recent examples, demonstrating which type of challenges oil companies may face when investing in culturally, economically and politically dissimilar country. Companies operations have been interrupted by civil war and instability in Libya. Biggest energy company in Italy by market capitalization, Eni which produced 12% of its total global oil production in Libya incurred the losses due to turmoil. Saras, Italian refinery company reported a total loss in the sum of €44.3 million. The figure below shows impact of different historical conflicts on oil production capacity (PIRA Consulting, 2011).

Oil and gas are one of the significant sources of energy. Historically, the ownership of oil reserves meant power in economic, political, and military relationships among 12 Corporation, BP, ChevronTexaco, ConocoPhillips Company and Royal Dutch/Shell Company are mostly integrated along the value chain. These companies are active in most activities from sourcing, drilling to distribution to end

customers as well as invest in marketing. In essence, each of these key players is fully integrated in as such that they invest and take part in most of the activities present in the value chain. Thus these companies explore and produce oil and gas globally. Furthermore they are most likely to own pipelines and tankers that transport the fossil fuels from oilrigs and gas platforms to their desired location, as well as refineries to process the crude oil into refined products. Lastly, the key players of the industry are more likely to sell their products wholesale and retail globally and sell these products through a global network of wholesale and retail outlets. There are companies that are considered key players in the oil industry in terms of their size rather than their integration along the value chain.

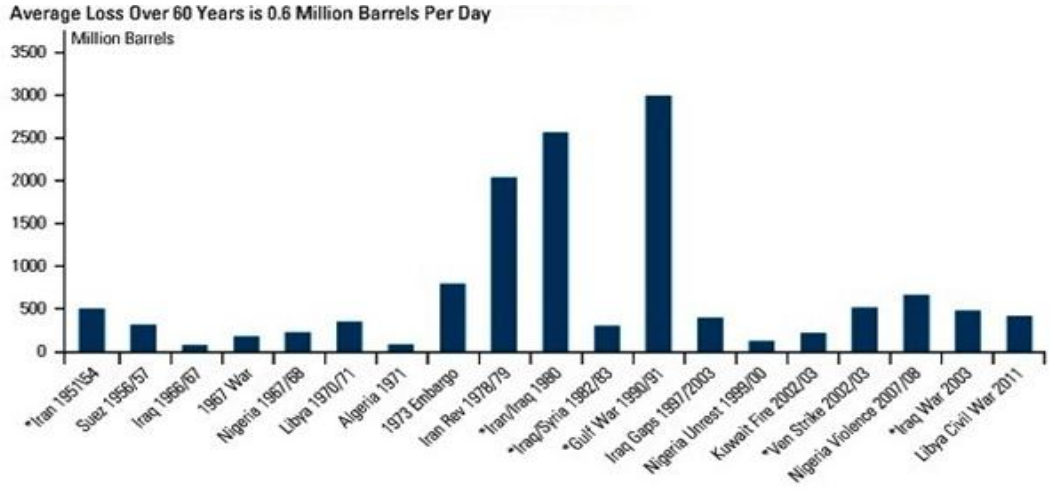


Figure 2: Effect of Geopolitical Events on Global Oil Production Capacity (PIRA Consulting, 2011)

Companies such as the National Iranian Oil Company and Saudi Arabian Oil Company are the largest producers of oil per barrel per day overshadowing many existent oil companies. In contrast, there are smaller yet important players that are

less integrated along the value chain that is specialized in one part of the value chain. For example, there are independent refiners that purchase crude oil and process it into finished products, independent marketers that purchase refined products or even independent pipeline companies specialized in the transportation of oil and gas. In the latter case, larger companies present in the industry can also own them. For example, Colonial Pipeline Company is a major interstate pipeline that moves from refined products from the Gulf Coast to the East Coast. owned by BP (17.96%), CITGO Petroleum (15.79%), Conoco (8.53%), Equilon (16.12%), Koch Industries (7.30%), Marathon Oil Company (2.82%), Phillips Petroleum (8.02%) and Union Oil Company of California (23.44%).

Finally there are key players that are external to the production and distribution of the energy source. These are, for example, Trade and professional organizations that support the industry and its employees as well as government agencies that regulate industry operations to ensure compliance with national laws.

Beyond multinational global oil conglomerates, there are also important national oil suppliers that are also considered important in defining the industry. These are mainly found in major oil producing nations such as Saudi Arabia, Iran and Venezuela that supply much of the world with their oil. Indeed national oil companies hold the majority of petroleum reserves and produce the majority of the world's supply of crude oil, and have exclusive rights over exploration and distribution of oil. Compared to private based organizations, national oil companies typically do not operate strictly on the basis of market principles. In many cases their objectives might include wealth

re-distribution, jobs creation, general economic development, economic and energy security, and vertical integration and in contrast to a private firm unlikely to be equivalent to the maximization of shareholder value. Thus, many of these companies have been found to be inefficient, with relatively low investment rates.

There are three types of M&A transactions in energy, particularly in oil and gas sector: accomplishment of growth objectives, survival and divesture. (Booz & Company, 2009). First group of deals can be grouped as companies following growth opportunities. Key players in the industry, especially fully integrated oil companies are constantly looking for growth opportunities to stay competitive in the market. Some researchers state that major oil companies choose M&A as growth strategy when they are incapable of achieving the growth rate organically. Others argue that management of big oil companies decide to participate in the deal even if the is no need for the growth, just to maintain their reputation as continually growing company. Management perceives growth as a tool that sends positive signal to the investors and the market, as a result increasing financial performance in the short term. Divesture is seen as second type of deals observed recently in energy industry. Oil and gas companies are highly capitalized and require continuous capital investment in particular in technology, research and development, and highly skilled professionals. Companies have to divest some parts of their assets, so that they can reorganize and focus on core activities. Independent players in engaged in upstream activities sell parts of their business which are not related to exploration and production, to be gain greater market share and increase competitiveness in those operations. Third type of

M&A deals include companies that are in financial stress or lack capabilities to stay on the market, and as a result decide to merge with companies in the same situation to create synergies.

4. Literature Review

Whether M&A create economic value are key questions in strategy research (Haspeslagh and Jemison 1991, Hitt et al. 2001). Various researchers in different periods have analyzed the behavior of stock returns in mergers and acquisitions.

Event studies have a long history, including the original examination of price effects of stock split by Dolley (1933) and Fama et. al (1969). Event study examines the performance of companies' stock during certain corporate events such as M&A deal announcements, dividend announcements, bonus issue, executive succession, earning announcements, diversification and etc. In other words, researchers employ event studies to evaluate how fast stock prices act in response to macroeconomic or business news.

Empirical results in previous literature have exhibited well correlation between stock market reaction to deal announcement and consequent performance of acquisitions. In most studies abnormal returns around announcement date indicates if transaction succeeded to create value for both: the target and bidder or not.

Despite Malkiel (2003) challenging the market-based measure of performance, Singh and Montgomery (1987) confirmed that abnormal returns are reliable measure of acquisition or merger performance in finance. Studies of Kaplan and Weisbach (1992) confirms that abnormal returns are good predictors of transaction's impact

on companies and whether target will be subsequently divested or integrated within the acquirer's structure. Event studies compute cumulative abnormal returns (CAR), where the abnormal return for each day is added from the n day before. For instance, if abnormal return for the day t_{-1} is -2%, to is 3%, and t_{+1} are 5% the CARs would be -2%, 1%, and 6% (Ross et al, 2005).

Andrade, Mitchell and Stafford (2011) et al, studied if there was the evidence that mergers and acquisitions create value by using event study. According to Sirower (1997), M&A transactions are not profitable for the shareholders of the acquiring firm averaging zero or even slightly negative returns, even with the existence of supposed synergies (Andrade et al. 2001, Bradley et al. 1988, Jensen and Ruback 1983).

Empirical studies reveal that deals create value, with the lion's share of the gains going to target's shareholders while acquirer's having small losses in some cases (Jensen & Ruback, 1983; Jensen, 1988; Harrison, Oler,& Allen, 2005).

A reasonable explanation could be that since markets are highly competitive, bidders pay very big premiums for target companies not to miss the opportunity of acquisition. As a consequence, when the market receives the news about M&A announcement stock price of target companies increase at rocket pace. In this case market receives negative signal concerning the decision of the bidder and stock prices are immediately decreasing in prices reflecting market's lower expectation. On the other hand, after examining sample of Canadian companies from 1994 to

2000, Yuce and Ng (2005) suggested that acquirers earned significant positive abnormal returns when target was private company and not listed one.

Methodology, model, selected estimation period and sample are factors affecting the results of various studies. Some researchers state that type of company, industry; means of payment, firm size, economic conditions, and regulations have significant impact on performance of bidders and targets stock prices. In order to scrutinize this assumption Choi & Russell (2004) conducted a research with a sample of construction companies in United States. They found that after merger or acquisition firms have better performance to some extent and there is no impact above mentioned factors on economic and financial performance acquirer and target.

Moreover, when testing the realtion between the size of the firm and financial performance after the deal completion, Loderer and Martin (1992) found no relationship between those.

Likewise, research on firms listed on London Stock exchange conducted by Dodds and Quek (1985) with a sample of approximately seventy transactions in mid-70's exhibits a CAAR of –6.8% over the 60 months after the announcement day.

There are not many studies on energy sector regarding financial performance of companies during mergers and acquisitions. Leggio and Lien (2000) inspect seventy six M&A announcements of electric companies in the period from 1983 to 1996. In their paper, they conclude that target companies obtain abnormal returns with event window of three days. Since one of the aspects of their study was to examine how diversification impacts the financial performance of acquirers, results exhibited that

cross industry acquirers' returns are insignificantly different from zero, while others had negative returns.

On the contrary, several studies confirm considerable positive abnormal returns for the acquirers after deal announcement. In a sample of nearly four hundred US companies between 1975-1984, Franks, Harris and Titman (1991) confirm positive abnormal returns solely for small deals. In addition, Dutta and Jog (2009) find positive cumulative abnormal returns during six days event window of 1.6 %

Wealth creation after M&A has been always a matter of debate, particularly returns of acquirer firms. Some researchers state that economic conditions are one of the driving factors impacting performance of target and the bidder after transaction completion. Soufani and Tse (2001) studied in depth the reaction of the stock prices to the deal announcement in both economic boom and recession. Their sample comprises over hundred companies engaged in M&A deal in different time intervals from 1990 to 1993 and 1994 to 1996. Companies have positive abnormal returns in times of economic prosperity from 1990 to 1993 and negative during 1994-1996.Their results confirms that there is relationship between economic conditions and financial performance of targets and bidders.

On the other hand, depending on the transactions and various external factors, Cisco, General Electric and Intel have increased shareholders' wealth by engaging in mergers and acquisitions, while IBM-Lotus or Novel-Word Perfect generated losses for acquiring firm shareholders (Capron and Pistre 2002).

When analyzing the mergers and acquisition transaction one of the characteristics to consider is whether the deal is domestic (i.e. the target is located in the same country as the bidder) or cross-border (i.e. bidder is acquiring the target that is located in different country). A large number of studies classify the following factors that influence the decision whether to enter foreign market by acquiring or merging with local companies or not:

a. Country-level factors such as growth opportunities and market size, cost cutting, strategic geographic location, cultural and behavioral differences between target's and bidder's countries, and openness to Foreign Direct Investment (FDI).

b. Industry-level factors such as innovation and technology concentration and sales force intensity.

c. Company-level factors such as international and/or local experience, innovation strategies, know-how and etc.

Rossi and Volpin (2004) found that firms located in countries with weak investor protection tend to be acquired than those with strong ones, while bidders are likely to be from countries with comparatively stronger investor protection. Buch and DeLong (2004) argue that information costs and restrictions in regulatory systems evidently decrease the number of cross-border deals. Empirical findings of common studies shows that CAR of target companies in cross-border deal is higher than target companies involved in domestic deals (Dewenter, 1995). One of the possibly reasons for lower shareholder gains of the bidder is the fact that when executing cross-border deal and thus entering into foreign market, the company has to deal

with diverse culture. Collins e al (2009) have examined a sample of S&P 500 companies and found out that the probability of cross- border acquisition is higher if the company had prior international experience than only domestic.

According to the research conducted by Deloitte Touche (2009) regarding Chinese markets, energy, mining and utilities sector prevails Chinese M&A deals oversees. The results show transactions in energy sector comprises twenty nine percent by volume and sixty five percent of total transaction value of all cross-border deals from 2003 to 2009. Moreover, recent financial crisis created incentives for Chinese companies to invest abroad, as foreign entities at that time easier to acquire.

4.Methodology

The topic of value creation through M&A has been studied by researchers coming from both: economic and business background. Different methods evolved to measure the impact of a certain event on company's financial returns. The main approaches of analyses have been framed by the researchers (Beitel and Schiereck (2001)) are the following:

1.Dynamic efficiency studies

2.Performance analysis

3.Event studies

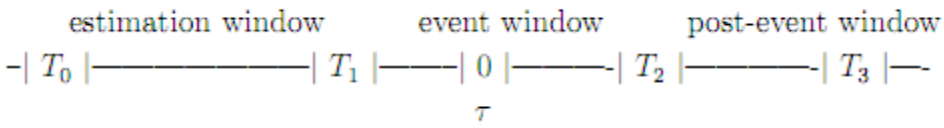
To measure and compare the shareholder wealth effects for our sample, this paper follows the event study methodology. An event study measures the impact of a specific event such as deal announcements, share repurchases, joint venture and etc. on the value

of a firm. Event study approach has been used by Fama (1969), Brown and Warner (1980), Bowman (1983), Peterson (1989), Salinger (1992), and McWilliams and Siegel (2001). One of the biggest advantages of this study method is that Event study is based on the assumption that if players in the market are rational, then any event related to the company will be incorporated in its stock prices immediately.

When utilizing the event study there is no unique structure, but there is a common flow of analysis. In his paper MacKinlay (1991) indicated main steps of an event study:

1.Select event window and estimation period

Event window is number of days before and after the event used to measure the stock returns of companies in the sample. In other words, it is amount of days when companies' share prices are analyzed. There are no guidelines for choosing specific event window, but rather the choice depends on the objective and aim of the research. Important step is to make sure that days included in event period capture necessary time for the information to reach the markets. Rule of thumb implies that smaller event window; the more reliable will be the significance measurement of impact of an event on the financial performance of the companies. For study purposes M&A deal announcement day has been chosen as an event date T_o:



As exhibited in Figure above, the returns (Ţ) in various time intervals are the following (Campbell 1997):

- Estimation window

Ţ incorporates returns from T_{0+1} through T_1

- Event window

Ţ incorporates returns from T_{1+1} through T_2

- Post-estimation window

Ţ incorporates returns from T_{2+1} through T_3

The length of estimation and event windows are specified by:

$$L_1 = T_1 - T_0$$

$$L_2 = T_2 - T_1$$

For the purpose of our study, we have applied the estimation window of 321 days, meaning that information on returns on every security and corresponding control market index in our sample was collected from 300 prior and 20 days after the announcement day of a transaction. Brown and Warner (1985) stated in their research that estimation period for daily security prices of 120 days before the day of event are satisfactory to calculate the abnormal returns.

2. Select the sample of analysis

Before selecting the sample, researcher should establish the criteria for screening and filtering the firms to be included in study. One of the prerequisites for event study is to choose only public companies listed on any stock exchange. Other criteria can be regarding size, industry and geographic coverage of the companies, form of payment

and transaction value. In further chapters, we will cover in depth the criteria employed when screening the companies in our sample.

3. Select the performance model to measure abnormal returns

4. Calculate normal (non event) and abnormal events returns through time for every security

5. Identify statistical significance of ARs and CARs

Several models can be used to measure abnormal returns including factor model, market model, and capital asset pricing model (CAPM). In our research, we use market model suggested by MacKinlay (1997) to calculate abnormal returns.

Statistical relationship between the return on company's share and the return on the market portfolio may be determined by employing market model. The model was suggested by Markowitz (1959) and enhanced by Sharpe (1963) to easy problems related with selection of portfolio by investors, economists and etc.

In stable economic conditions, the stock prices move along with the market on a daily basis based on its performance. Event study uses market model to determine how certain announcements or events impact stock price, capturing the statistical errors in estimates of historical relationship between security and market. According to Fama (1976) if assumption of bivariate normality holds then expected return of a given security conditional on some value of return on the market is a linear function. In other words the variance of the financial return of certain security subject to expected market return is the same for each value of expected return on security.

The market model can be stated as: (MacKinlay , 1997)

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

$$\mathrm{E}(\varepsilon_{it}) = 0 \qquad \mathrm{var}(\varepsilon_{it}) = \sigma_{\varepsilon_i}^2$$

Where variables are following:

R(i) - rate of return of a security (i) over the period (t)

R (mt)- rate of return on market portfolio m

βi -the coefficient for the market portfolio return (expresses the sensitivity of a security to financial market)

α – constant; and εit - the error term

The variable in formula suggest that variance of error term in time-series linear regression same over the time.

Next step in our analysis is to estimate market model equation by ordinary least squares (OLS) applying the data from estimation window. The use of OLS in market model is justified by the fact that OLS is best linear unbiased (BLUE) estimate of linear model coefficients when error are Gausian (Douglas and Simin (1999)). OLS estimated coefficients for each security stock price in our sample are following (MacKinlay, 1997):

Variance of error term:

$$\hat{\sigma}_{\varepsilon_i}^2 = \frac{1}{L_1 - 2} \sum_{\tau=T_0+1}^{T_1} (R_{i\tau} - \hat{\alpha}_i - \hat{\beta}_i \hat{R}_{m\tau})^2$$

Intercept of regression:

$$\hat{\alpha}_i = \hat{\mu}_i - \hat{\beta}_i \hat{\mu}_m$$

Slope of regression:

$$\hat{\beta}_i = \frac{\sum_{\tau=T_0+1}^{T_1} (R_{i\tau} - \hat{\mu}_i)(R_{m\tau} - \hat{\mu}_m)}{\sum_{\tau=T_0+1}^{T_1} (R_{m\tau} - \hat{\mu}_m)^2}$$

Estimated mean of security's stock return:

$$\hat{\mu}_i = \frac{1}{L_1} \sum_{\tau=T_0+1}^{T_1} R_{i\tau}$$

Estimated mean of market benchmark return:

$$\hat{\mu}_m = \frac{1}{L_1} \sum_{\tau=T_0+1}^{T_1} R_{m\tau}$$

Now we can calculate the abnormal returns of every security over the period (Ţ) caused by announcement of M&A deal of every company by using the following formulas:

$$\hat{AR}_{i\tau} = R_{i\tau} - \hat{\alpha}_i - \hat{\beta}_i R_{m\tau}$$

$$\hat{AR}_{i\tau} \sim \mathrm{N}(0, \sigma^2(\hat{AR}_{i\tau}))$$

Conditional variance of abnormal returns:

$$\sigma^2(\hat{AR}_{i\tau}) = \sigma^2_{\varepsilon_i} + \frac{1}{L_1}\left[1 + \frac{(R_{m\tau} - \hat{\mu}_m)^2}{\hat{\sigma}^2_m}\right]$$

After we have obtained the abnormal returns of every security and benchmark market index, we can calculate cumulative abnormal returns (CARs) by using following:

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

$$\sigma^2_i(\tau_1, \tau_2) = (L_2 + 1)\sigma^2_{\varepsilon_i}$$

Afterwards, the CARs are testes for statistical significance level. The null hypothesis establishes that event chosen for the analysis does not have any effect of the stock prices of a security engaged in M&A deal. The CAR under null hypothesis is measured according to formula (MacKinley 1997):

$$\hat{CAR}_i(\tau_1, \tau_2) = \mathrm{N}(0, \sigma^2_i(\tau_1, \tau_2))$$

Advantages of event study approach:

- Variables impacting macroeconomic outlook are constant
- Minor standard errors
- Evades endogeneity issues
- Immediate incorporation of M&A announcement into stock prices (may take month to measure using accounting approach)

Pitfalls of event study approach:

1. May be applied to only public companies thus narrowing the sample

2. Insider trading and rumors around the company may impact the study and deliver biased results.

3. Several announcements at the same time may create a problems to define and choose the window period

5. Data description and Event Study Results

In order to test our model and analyze the behavior of security stocks during announcement of corporate event, the sample of 100 companies engaged in M&A activity was selected. For objective of the research the sample comprises of energy companies with deal announcement day between 2000 and 2014. The information regarding stock prices, transactions and other financial performance was extracted from Bloomberg, Datastream, Zephyr and corporate web pages of companies. As one of the prerequisites of event study methodology, only public companies listed on stock exchanges are included in analysis, both targets and acquirers. In order not to have biased results, the companies that had more than one corporate event over same period of time are excluded from the analysis. As a control benchmark, market indexes were selected for each security.

First, the list of the M&A deals between 2000 and 2014 were obtained from Bloomberg. In order to be included in our study, companies had to meet the following criteria:

- be energy sector, engaged in activities related to Oil & Gas products and services
- be publicly traded on Stock Exchange
- have transaction value greater than $250 million
- have announced only one corporate event during estimation period

The stock prices of all companies in the sample were collected from Datastream for 300 days prior and 19 days after M&A announcement day.

In order to determine the parametres of the market model (α,β), we have regressed daily returns of each security on a daily corresponding market index returns through estimation period utilizing OLS method. For better results, where possible depending on type of services provided and geographic market coverage corresponding indexes were utilized. Some examples of indexes used are the following:

- Dow Jones U.S. Oil & Gas Index
- FTSE 350-OIL & GAS
- NYSE Energy Sector Index
- S&P Asia 50
- SSE Composite (Shanghai Stock Exchange)
- Hang Seng Indexes (Hong Kong Stock Exchange)
- MICEX Index (Moscow Interbank Currency Exchange)

For instance, Dow Jones U.S. Oil & Gas Index evaluates financial performance of energy sector of U.S equity market. In author's opinion this index is most accurate

and relevant benchmark for securities listed in U.S since some companies like Schlumberger, National Oilwell Varco Inc, Halliburton Co., Apache Corp. included in index are participants of M&A transaction in our sample. The scope of activity of firms include oil drilling equipment, pipelines and etc.

National Stock exchange indices were used in case if international energy indexes were not covering the scope of activity or geographic location of a company.

Next step after obtaining estimates for parametres a and b and selecting only statistically significant ones, is to employ market model to obtain expected daily returns for each company in our sample through the selected event window (20 days with $t_{(o)}$ being announcement day of the deal. The computation of daily abnormal returns is the difference between actual stock returns of the companies and market model expected returns. In order to verify impact of that specific transaction on the shareholders, different time periods pre and post deal were taken into account. Bradley (1980) in his research has found that security prices had significant fluctuation several days before the announcement of the deal. This can be explained by the leaked of information or insider trading. In our research, we have to test the significance of CARs (i.e. testing null hypothesis Ho). The null hypothesis states that the day of event which is announcement day of a deal in our case has no impact on security returns.

The analysis in this paper was conducted by examining the sample of companies selected during give 2000-2014 years. The results are described below and compared to previous research done in this area. First, we will describe the impact effect of M&A deal announcement on target companies shareholders and then on the acquirers.

Conclusion

This study examined effects of M&A announcement date on financial performance of both: target and acquirer. First, the sample comprising companies in oil and gas industry that announced M&A between 2000 and 2014 was built. To check the presence of abnormal returns, a benchmark for normal returns was selected. Market indexes related to energy sector or national stock exchanges were selected as s proxy for expected market returns. After security and index prices were collected, event study approach together with market model suggested by MacKinlay (1997) was used to calculate abnormal returns caused by deal announcement. Afterwards, the results were tested for significance level against null hypothesis.

Results, of the study on M&A in energy sector show significant positive returns for the target companies, while negative for acquiring ones. Target companies in oil and gas industry exhibit statistically significant CAR of 19.1% during event window of [-20;+19] days. Results are consistent with Eckbo, Thorburn (2000) and De Long (2001) who showed evidence of positive abnormal security returns in their studies.

Acquirers show negative abnormal returns with CAR of -2.16% for the period of [-3; +3]. Outcome regarding acquirers confirms efficient market hypothesis by obtaining significant negative abnormal returns on event date. In addition, result of this study on stock performance of acquirers is consistent with works of Mulherin, Boone (2000), De Long (2001) and Kuipers, Miller, Patel (2003) who found negative abnormal returns for bidders around M&A announcement date.

Majority of empirical studies confirms that big share of financial gains during M&A transaction go to the target companies. It is difficult to determine exact causes of this phenomenon. Some researchers refer to "winner's curse", while others blame on management who pay larger value for the target companies in order to sustain inorganic company growth.

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