INVESTMENT BANKING, THE CERTIFICATION EFFECT AND M&A DEALS: AN EVENT STUDY APPROACH

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Abstract

Several studies have found the existence of a relationship between the role of investment banks appointed as advisors in M&A deals and the yields earned by their clients. Traditionally this relationship is fostered by the ability of the leading investment banks to arrange and structure the best deals – i.e. the Superior Deal Hypothesis – and by the "certification effect", namely that their presence provides assurance to the capital markets where are traded the companies involved– i.e. the Certification Effect. Our study also investigates the strength and direction of this relationship before and after Lehman Brothers collapse. The analysis, which uses an original composite metric in order to measure the reputation variable, is focused on the transactions that took place between listed companies in two time frames specifically pre and post the Lehman Brothers bankruptcy. The total sample is composed of 229 transactions, divided into 161 and 68 observations, pre and post Lehman respectively. The analysis conducted allows us to separate the Superior Deal Hypothesis from Certification Effect. On evidence, after the Lehman default, the wealth of shareholders involved (both relating to the targets and acquirers) is significantly influenced by the reputation of the investment banks which acted as advisors. Conversely, before the start of the financial turmoil in September 2008, no significant evidence has been found. The analysis conducted suggests that subsequent to the Lehman Brothers collapse, the certification effect has been playing a crucial role in shareholders' choice.

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1. INTRODUCTION

Merger and acquisition deals (M&A) are one of the most important activities in the field of corporate finance and, also relating to those who offer and carry out investment banking activities. The importance of this phenomenon can be understood from the fact that in 2007, at the time of the most recent wave of M&A activities, about 4.2 trillion dollars were invested in such activities at the global level. In the meanwhile, investment banks acting as advisors for the counterparties in such transactions, generated revenues in the form of fees to a value of approximately 39.7 billion dollars. A large proportion of this value was earned by only ten banks, which acted as advisors in most of the operations. It is difficult to find empirical support in the literature for the relationship between the reputation of investment banks appointed as advisors, and the quality of the services offered by these banks (McConnell and Sibilkov, 2016). Indeed, the results obtained on this matter are often discordant or not significant. Possible reasons for such discordances can be found in the use of different measurement methodologies selected by scholars for the proxy reputation (McLaughlin, 1990; Chemmanur and Fulghieri, 1994; Rau, 2000; Bau and Edmans, 2011, Morrison *et al.*, 2014) as well as in the different business areas – securities issuances in capital markets, M&A advisory, private equity investments, risk management services – of the investment banking industry investigated (Megginson and Weiss, 1991; Servaes and Zenner, 1996; Morrison and Wilhelm, 2007; Fernando *et al.*, 2012; Li, 2016).

Motivated by the new economic-financial context that has developed after the Lehman Brothers bankruptcy, which has undoubtedly altered the investment banking competitive landscape, this paper aims to study the relationship between investment bank reputation and the quality of the services they offer as advisors in M&A operations. According to the previous literature (Ellis *et al.*, 2006; Capizzi, 2007a, Bau and Edmans, 2011; Morrison *et al.*, 2014), the quality of services offered would be expressed by the bank's capacity to increase the potential for creating shareholder value in corporate mergers and acquisitions, i.e. the

operations in which the control of a company is transferred by means of the transfer of ownership. A distinctive feature of the research carried out in this paper compared to the previous literature, is represented by the focus on a sample of acquisitions and mergers which have taken place between listed companies only. This choice was made for several reasons. The first is that the investment banks reputation is not equally important in all transactions and its effects are more pronounced in situations which create a greater exposure to the reputation risk (Golubov, Petmezas and Travlos, 2012). As Rhee and Valdez (2009) suggest, greater visibility leads to higher potential damage to reputation. The second reason depends on the fact that in operations involving listed companies it is more difficult for the counterparties to capture and release value in their own favor by means of the greater contractual power held by the listed companies compared to the non-listed companies. Therefore, the acquisitions in which the target is also listed require greater skill and ability (Fuller, Netter, and Stegemoller, 2002) on the part of the advisors that assist the negotiation, in order to obtain maximum value from the transaction. For these reasons, the reputation of the investment banks can have a determining role in M&A operations between listed companies (Golubov et al., 2012).

Having said this, focusing on a sample which includes only transactions between listed companies, the purpose of the empirical analysis is to verify whether, there is any significant relationship between the creation of value for the shareholders and the reputation of the investment bank which assists the operation regarding M&A deals.

As such, we investigate if the value creation path, both for the acquirer (or bidder) and the target (or seller), is sustained or boosted by the ability of a top tier investment bank in selecting, arranging and structuring the deal – *i.e. Superior Deal Hypothesis* – or in the Certification Role that is played by the investment banks. Consequently, the major contribution of the paper is to fill the gap in the extant literature, which has not found yet unambiguous evidence about the value creating potential of M&A advisory relationships.

2. M&A DEALS IN THE ECONOMIC LITERATURE

The relationship between reputation, quality and price[13] is dealt with in the models of Klein and Leffler (1981), Shapiro (1983) and Allen (1984). These models are applied to situations in which a subject repeatedly sells its own products on the market. When the quality of the product could be ascertained only after the purchase, a premium price was taken as a symbol of high product quality. This premium price exists to compensate the seller for the resources used to create a better reputation for himself. The models linked to a generic market, have also been applied within other studies in the literature relating to the provision of investment banking services. In fact, investment banks need to sell their own services repeatedly and the quality of such services cannot be seen in advance. Since investment banks are remunerated for the services which they offer continuously on the financial market and their permanence on such markets depends on the quality of the services supplied and from the correct behaviour adopted, there is no doubt that in such a scenario the advisor's reputation assumes a major role. For example, Chemmanur and Fulghieri (1994) applied the model to equity underwriting services. In their model, investment banks with a high reputation gave better services and asked for higher fees. The literature has examined this theoretical model, and the considerable empirical evidence related to IPOs and SEOs, has confirmed the fundamental role of bank reputation in guaranteeing higher quality services and a more credible certification effect on the value of the securities issued.

Continuing with our literature review, it can be noted that the literature regarding corporate control also takes into consideration other viewpoints and other classifications of banks and financial intermediaries. For example, Allen, Jagtiani, Peristiani and Saunders (2004) have examined the role of commercial banks as financial consultants. The authors have shown that the returns on the buy-side are not linked to whether they use their own commercial bank as an advisor in an M&A operation. Recently, Song and Wei (2010) have concentrated instead on the role of the "boutiques[14]" and on the comparison of these banks against the performance of traditional investment banks, which offer complete investment banking services. The preceding studies found that the boutiques are more used in small transactions and that the acquirers who avail of boutiques in acquisitions of listed companies manage to pay lower fees. However, this does not mean greater abnormal returns and in spite of the popularity of such advisors in recent years, there is no concrete evidence that a company can obtain benefits by choosing boutiques rather than investment banks which cover a wider range of services. Furthermore, another conclusion of the study is the fact that the fees requested by boutiques are in general about the same as those charged by traditional investment banks (Song and Wei, 2010). Recently, McConnell and Sibilkov (2016) find evidence that, when choosing their advisors, acquiring companies consider their reputation, thus reducing to some extent the possibility for the advisor themselves to struggle for deal completions and success fees, regardless of the value creation consequences for the acquirers' stockholders.

3. THE ROLE OF INVESTMENT BANKING ADVISORY SERVICES IN M&A DEALS

There are many reasons why a company's management decides to undertake in M&A operations. One of the main reasons is expansion

[13] This work does not take into consideration the dynamics relative to the fees applied by the investment banks.

[14] The "boutiques" are independent companies, of relatively smaller size than traditional investment banks, and they focus on advisory services in specific sectors. They prefer operations of medium-small size and they are experienced and skilled in M&A. A particular feature of these companies is that "they do not sustain the financial management and risks of activities in their own name" (Forestieri, 2011). The most important names include Lazard (at least until 2005, the year of its listing), Rothschild and, of the Italian boutiques, Banca Leonardo.

(Gaughan, 2011). Company acquisitions therefore represent a way of pursuing growth, as an alternative to the strategic option of internal organic growth. In this regard, synergies are the main factors in the creation of value and they represent a decisive reason at the basis of M&A operations. The other determining factors for a company acquisition are the benefits that the buyers and sellers expect as the result of the M&A operation. Ravenscraft and Scherer (1987) describe how sellers sell when buyers make sufficiently attractive offers. The M&A activity is therefore often influenced by a number of factors. These include regulations, market dimensions, technological innovation, fluctuations in financial markets and financial innovations. Furthermore, stimuli, opportunities and risks which develop in the market can then become strategic options, sources of synergies, which determine the convenience of an operation (Capizzi, 2007).

For the companies directly controlled, M&A can be of particular strategic relevance (Capizzi[15], 2007). Considering the importance of such events, M&A activity is a critical element among the wide range of areas of competences touched by special underwriting operations and advisory services. As pointed out by Servaes and Zenner (1996), companies intending to acquire the control of another company usually take avail of an advisor when the transaction is perceived as complex and when the managers do not have the benefit of past experience gained from other acquisitions.

The hypothesis underlying the decision to employ an investment bank is that these institutions should be able to help their customers to identify the best targets and to arrange the appropriate deal structure to increase the return for their customers. However, as seen in the literature (Fernando *et al.*, 2012; Megginson *et al.*, 2014), some existing studies follow a different direction and do not point out any positive relationship between a bank's reputation and the buyer's performance (the most beaten track). Other results seem to support the hypothesis of a passive execution of operations, in which the banks do not supply real consultancy services with added value, but merely follow the instructions issued by the customer (Bao and Edmans, 2011). However, returning to the reasons for the demand for advisory services and leaving aside the arguments concerning the effective added value that may or may not be contributed by the activity of the investment banks – these questions will be answered further below – the general reasons for requesting an advisor can be classified under four main types (Capizzi, 2007a). The first type regards the financial broker's capacity to reduce the costs of a transaction within the corporate ownership and control reallocation market (Buongiorno and Conca, 2007). A second type relates to the existence of information asymmetries, which is a factor that increases the need for advice, given the superior ability and efficiency of financial brokers in obtaining, producing and managing information on relevant aspects related to which the interests of the counterparties engaged in a given transaction normally diverge. A third type of reason which justifies the need to employ an advisor pertains to the "certification effect" which the advisor can create. The last type of reason derives instead from the context of the bank-broker relationships that cover different periods. As shown by some mentioned contributions, the fees for the advisory service performed to assist in the M&A operations often include a sort of "relationship fee" that is transferred to the investment bank that has already acted as an advisor for a given company in previous M&A operations (Capizzi, 2007a; McConnell and Sibilkov, 2016)[16].

Therefore, why are investment banks often necessary in special financing operations? The banks in question deal with the technical aspects of the transactions: they collect and process the available information on the companies involved in the transaction, they suggest the best options in terms of how to structure the operation, they assist their customer companies in negotiating the terms of the deal, and they give an opinion (a fairness opinion, if requested) on the suitability of the price negotiated. It is a question of information asymmetries: if a company were capable of interacting independently with financial market participants so that they could certify the quality of their own products (shares, bonds, etc.), the investment banks would have no reason to exist. Taking into account all the considerations expressed above, one can argue that the fundamental role of investment banks in the sphere of special financing operations is that of obtaining and processing the available information in order to certify the quality of the operation on the basis of their own experience and reputation. The higher the advisor's reputation, the greater the so-called certification effect tends to be.

4. THE "LEAGUE TABLES" OF THE INVESTMENT BANKS

To get an idea of the actors present in the investment banking industry, one must look at the relevant "league tables". The "league tables" are investment bank classifications in a given business: classifications are available for M&A, IPO, bond issue operations, etc. The investment banks place great importance on league tables, since they are an important marketing and, therefore, origination tool. To obtain evidence of a bank's leadership in a certain sector/business, the only objective tool that can be used to verify whether the statements are correct or not are the league tables. One of the features of these tables is that they tend to be stable over the medium-long term, especially with regards to the top positions; in other words, the leading banks, i.e. those which have the highest reputations and market shares in the sector, are constantly placed in the top positions of the league tables. However, some changes have taken place as a result of the recent financial crisis, which made some large banks bankrupt (for example, Lehman Brothers) and which forced others to carry out deep reorganisations.

With regard to technical aspects, it must be

[15] Capizzi, V. (2007). Financial brokers and services in support of company acquisitions. In G. Forestieri (edited by) Corporate e investment banking, 4th edition, Milan, Egea, pp. 345–387.

[16] Allen et al. (2004) have examined in depth the aspects of the so-called certification effect and of the customer-consultant relationship, and they have extended them to the "role" of the investment banks in M&A operations.

noted that there are normally three possible criteria according to which a league table is constructed[17]: the value of the operations (or deal values), commissions (or fees) and the number of operations. The most used criterion is deal value, which does not seem to provide the same incentives to conflict of interest behaviours than the other criteria[18].

5. EMPIRICAL ANALYSIS

5.1. Research question

Studies focused on the role of investment banks in M&A have traditionally highlighted the effect of the reputation of investment banks in producing greater yields for their clients involved in the transaction. This aptitude has been referred to separately as the ability for the banks with better reputations to arrange and structure M&A deals to increase the potential creation of value embedded in the operation – *i.e. Superior Deal Hypothesis* – and the certification role provided to the market about the feasibility of the operation – *i.e. Certification Role.*

According to the Superior Deal theory, the banks with better reputations are able to offer to their clients services with higher added values (Ismail, 2011). Considering that the quality of the most important activities included in the investment banking services conducted depends critically on a bank's experience (Ma, 2006), the reason for the importance of the role of the league tables in measuring the value of the bank's reputation can be understood. In addition, the bankers of top investment banks ought to have greater negotiating capacity thanks to their greater experience, and consequently better results for their customers. According to the Certification Role instead, the most prestigious investment banks, or those well positioned in the league table, should reduce the uncertainty about the deal with their presence, and at the same time, act to assure the market about the affective company quality.

What we retain as worthy of investigation is to verify whether the role of the investment banks has changed, either for their clients or for the market, has changed and toward which direction before and after the Lehman collapse, a phenomenon generating a great deal of discontinuity in the capital markets and investment banking industry, as well as a valuable research opportunity (Fernando *et al.*, 2012; Morrison *et al.*, 2014). This research question comes from the different context in which the banks have been facing during these two time periods.

Before the turmoil that followed after the credit crunch and Lehman default, the combination of high liquidity and low returns lead the investors to be more risk taking.

It is plausible to affirm that in this context where investors are less risk adverse, the role of the investment banks was less crucial in certifying the quality of the operation or in selecting the counterparties and arranging the deal.

Contrastingly, after the Lehman collapse, when the market passed from a bullish to a bearish phase, the interests and the expectations about the role of investment banks should have been strongest considering the more risk adverse behaviour of investors.

In other words: in a context of increasing uncertainty and in which almost all the main players were involved in restructuring or rationalisation activities, the presence of a top tier investment bank would have confirmed the quality of the operation to the market, as well as of their participants, and in doing so have led to a better evaluation.

According to this hypothesis, the aim of this paper is verify whether and how the role of investment banks has changed before and after the Lehman collapse and, also if the ability to create value for their clients can be confirmed.

5.2. The dataset used

A M&A transactions sample has been collected over a period of 8 years, from 15th September 2004 to 15th September 2012. For the purposes of the analysis, the time frame has been divided into two symmetrical parts: the 4 years before and the 4 years after 15th September 2008[19]. The choice of these two periods was made to make the periods observed more similar and more comparable. The data were collected from a financial data provider Thomson One Investment Banking (Thomson Reuters) system with regard to M&A operations announced and completed among companies located in the following Western European countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Iceland, Italy, Luxembourg, Norway, Holland, Portugal, United Kingdom, Spain, Sweden, Switzerland (the same 18 countries considered by the STOXX Europe 600 Index, which is the market index which has been taken as a benchmark, as will be indicated further below).

The choice of focusing the analysis on the European market lies in the different evaluation about the role played by investment banks: the less the experience and tradition of M&A activity a market has, the more the importance and contribution offered by top tier investment banks appointed as advisor tends to be.

We believe that for these kinds of markets, except for the UK, the importance of a leading investment bank is more pronounced than in markets with a strong experience and history of M&A deals, such as the North American one. In fact, in a "market" that suffers for a lack of knowledge about this kind of operations, the Certification Role ensured by a top tier investment banks is perceived in a stronger way than in comparison to more experienced markets and, thus, significantly valued by corporate clients.

Investment bans' presence in such countries is relevant for both the target and the acquirer. The initial sample was expanded by applying additional selection criteria, in order to obtain a dataset with features appropriate for the analysis carried out. In

[17] Important financial information providers, like Bloomberg or Thomson Reuters, which register and file the events on the financial markets in databases, allow for obtaining ad hoc league tables for pre-determined time periods and specific geographic areas.

[18] Source: Thomson Reuters SDC.

[19] Date when Lehman Brothers was placed under bankruptcy protection.

particular, the following transactions were excluded: those with a deal value below €1 m; those in which the target and acquirer were both not listed; those which regarded shares representing less than 5% of the target's total equity. In addition, wishing to pay greater attention to transactions implying the transfer of control, the only operations considered were those in which the acquirer held less than 50% of the shares initially and more than 50% of the shares afterwards. Then in view of the fact that the purpose of the analysis was to study the relationship between the results of the operation and the advisor's reputation, all the transactions in which the provider did not give any indication of an advisor were also excluded. This information may have been concealed for the sake of confidentiality, where the terms of the operation and/or the consultants involved were not disclosed, or it may have been because the companies chose not to take avail of external consultants. Explicit reference is made in the literature to such operations, defining them as "in-house deals" (Servaes and Zenner, 1996). Lastly, to avoid distortions in the results due to the particular economic situation in the more recent of the two periods observed, all operations involving targets or acquirers belonging to the financial services sector were also eliminated from the sample.

5.2.1. Investment Bank Classification

The literature offers various indications for measuring the reputation of investment banks[20]. Consistently with the arguments previously developed, in this paper we select the market share held by investment banks as a good proxy for the reputation and quality. More in detail, we compute the accumulated counter value of the deals followed as a percentage of the total value of the deals in a given geographic area over a specific time frame.

To classify the investment banks for the purposes of this analysis, two methods have been followed, one of which was used as the control method. The first is based on the rankings which can be obtained directly from the financial data provider, Thomson Reuters, while the second method is more linked to the particular physiognomy of the transactions sample used for the empirical analysis. Since the research focused on Western Europe, the annual rankings were downloaded from the Thomson Reuters' M&A League Tables section, based on the accumulated deal values of the operations announced in each year within the sample time frame. Placing the positions in order of size, an absolute investment bank classification can be drawn up[21]. Table 1 shows the first twenty banks[22].

The first ten banks are identified as top investment banks. In the Table 2, each investment bank present in the sample of transactions has been accredited the deal value of every transaction in which it has participated in. If one of the companies (whether target or acquirer) involved in the operation has taken avail of several advisors simultaneously, the deal value of the transaction is attributed to all the advisors involved. The bank which has obtained the highest cumulative deal value has then been assigned first place, that with the second highest deal value has been placed second, and so forth on down to the bank which has given its assistance for the lowest cumulative value. This procedure has produced the following results in Table 2.

To avoid distortions due to the particular choices made during the selection phase and when constructing the transactions sample, and to obtain a more absolute and objective assessment of the reputation of the investment banks, the first method was chosen, which derives from a general consideration of the entire M&A market in Western Europe.

5.2.2. Descriptive analysis of the sample

Following the selection criteria outlined in section 5.2.1, a sample of sufficiently similar M&A operations was obtained. After a few small modifications which were made due to the particular needs of the empirical analysis (elimination of the observations corresponding to the maximum and minimum CARs (Kale et al., 2003)), the final sample was composed of 229 observations. In particular, these observations are divided into 68 transactions announced after the date of the Lehman Brothers bankruptcy and 161 transactions announced before the bankruptcy. The difference in terms of the number of transactions between one period and another gives an idea of the decrease in the activity which was typical immediately after the bankruptcy and in the period of the financial crisis in general.

Dividing targets and acquirers according to the macro sector (or macro industry[23]) to which they belong, it can be observed that the companies of our sample are distributed among various sectors and that the M&A activity in each sector differs between the two periods considered (Table 3). It can be noted, in particular, that in the four years before the Lehman Brothers Bankruptcy, transactions involving

[20] Megginson and Weiss (1991), in their work concerning IPO operations, considered the effective market share, while Bowers and Miller (1990) and Servaes and Zenner (1996), also on the basis of the market share, divided the banks into two groups: top tier (the first 5 banks[20]) and second tier (all the others) depending on the market share of the corporate control market in the period of the sample used. Rau (2000) instead considered three reputation levels. Alternatively, Carter and Manaster (1990), regarding IPO operations, deduced the reputation of the investment banks from their positions in the tombstones[20] shown in the financial daily newspapers. Carter, Dark, and Singh (1998) have shown that the market share (understood as a continuous variable), the three-level classification, and the classification deduced by the tombstones, are closely linked as far as the IPO market is concerned.

[21] The first-tier investment banks are those in the first ten positions, and the second-tier investment banks are all the other classified after the tenth position (Ismail, 2010). The terms first-tier and top-tier are used indistinctly in this paper work and have the same meaning.

[22] For informative purposes, the positions adopted by the various advisors in each year are shown, as reported by Thomson Reuters.

[23] The division according to the sector to which the companies belong has been based on the macro industry classification provided by Thomson Reuters. More specifically following the terminology of the financial data provider, the companies of our sample are divided among eleven sectors: Energy and Power (ENERGY); Industrial (IND); High Technology (HT); Telecommunications (TELECOM); Retail (RETAIL); Healthcare (HEALTH); Media and Entertainment (MEDIA); Real Estate (REALEST); Materials (MATERLS); Consumer Products and Services (CPS); Consumer Staples (STAPLES).

Table 1. Investment Banks: ranking (league table)

Advisor	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*	*2006*	*2005*	*2004*	*Average position*	*Rank #*
Goldman Sachs	1	1	1	7	5	1	2	1	2	2,3	1
Morgan Stanley	2	2	2	3	3	4	1	4	5	2,9	2
Deutsche Bank	3	3	3	2	8	6	10	6	7	5,3	3
JP Morgan	6	8	7	6	1	7	6	2	6	5,4	4
Citi	9	10	10	4	4	2	4	7	3	5,9	5
Rothschild	10	4	5	8	11	8	5	5	1	6,3	6
UBS	14	6	12	1	2	5	8	9	13	7,8	7
Bank of America Merrill Lynch	15	13	14	11	6	3	3	3	4	8,0	8
Credit Suisse	7	11	4	5	7	9	11	12	12	8,7	9
BNP Paribas	5	16	8	12	10	11	7	8	9	9,6	10
Lazard	12	9	6	9	9	15	9	15	10	10,4	11
Nomura	8	15	15	23	15	10	12	10	16	13,8	12
HSBC	19	7	11	18	20	21	13	14	19	15,8	13
Societe Generale	17	5	9	15	12	26	15	22	29	16,7	14
Credit Agricole	13	12	17	21	19	24	14	13	30	18,1	15
Mediobanca	21	21	26	16	16	14	20	18	14	18,4	16
RBS	37	31	20	13	23	12	16	16	8	19,6	17
UniCredit	42	19	19	24	25	23	37	21	15	25,0	18
Santander	39	34	37	25	18	13	22	35	24	27,4	19
Leonardo & Co	35	22	33	26	26	25	17	19	46	27,7	20

Source: Thomson Reuters (2004-2012)

Table 2. Investment Banks: deal value

Advisor	*Deal value (€m)*	*Rank #*
Morgan Stanley	149.172	1
Goldman Sachs	129.131	2
JP Morgan	128.928	3
Bank of America Merrill Lynch	107.782	4
Citi	104.063	5
UBS	97.319	6
Credit Suisse	86.064	7
Deutsche Bank	79.422	8
BNP Paribas	61.722	9
Lazard	56.506	10
HSBC	39.757	11
ABN-AMRO	39.647	12
Rothschild	36.958	13
Societe Generale	36.847	14
Santander	25.772	15
Greenhill&Co	20.707	16
Dresdner Kleinwort Wasserstein	18.897	17
Lehman Brothers Internetional	14.410	18
Perella Weinberg Partners	13.722	19
Credit Agricole	12.194	20

Source: Thomson Reuters

targets in the high technology (HT) sector were predominant, while in the successive four years this type of transaction decreased sharply (87.5% fewer), going from 40 (pre Lehman) to 5 (post Lehman) acquisitions of high-tech companies. Comparing the two periods, a particular fall can also be seen in transactions aimed at acquiring consumer goods (CPS and STAPLES). The fall in activity is greater in the case of companies which produce the so-called 'consumer staples', i.e. consumer goods which are not cyclical, which are primary, like food and beverages. In this case, the analysis of our sample shows a change from 13 to 2 acquisitions of companies belonging to this sector (a fall of about 85%). An explanation for this tendency can be found in the general reduction of consumptions at the macro level which may have slowed down the growth of the sectors connected, in particular, to the income available and to individuals' tendency to consume. On the contrary, a certain equilibrium can be seen in the M&A operations for the acquisition of companies in the Energy and Power sector or the Health Care sector (Table 3).

Table 3. Macro Industry

Macro Industry	*Pre-Lehman*		*Post-Lehman*		*Full-Period*	
	Targets	**Acquirers**	**Targets**	**Acquirers**	**Targets**	**Acquirers**
Energy	11	12	9	9	20	21
IND	18	21	13	14	31	35
HT	40	28	5	6	45	34
Telecom	7	18	4	3	11	21
Retail	9	11	4	4	13	15
Health	11	9	9	7	20	16
Media	10	12	3	6	13	18
Realest	9	8	5	5	14	13
Materls	16	16	9	9	25	25
CPS	17	16	5	2	22	18
Staples	13	10	2	3	15	13

Analysing Table 4, it can be seen that, on average, there are more companies which do not avail of a first tier advisor than those which do. However, since we have classified only ten investment banks as first tier advisors, it is in any case surprising to note that, during the entire time frame, these are taken into consideration by targets in 41% of cases and by acquirers in 46% of cases. Observing Table 4 in detail, it is also curious to notice that while the request for first tier banks on the part of buyer companies has remained stable in both the pre-Lehman and the post-Lehman periods, the request on the part of target companies for advisors with a high reputation decreased considerably after the bankruptcy (when the financial crisis was spreading uncontrollably). In particular, compared to an average of 41% over the entire time frame of eight years, only 29% of the 68 target companies of the sample in the post Lehman period sought support from a top advisor. One explanation for this phenomenon could be the need, due to the particular economic situation, to employ consultants who required relatively much lower fees (this is the hypothesis underlying the theory of Saunders and Srinivan (2001), according to whom the top advisors generally ask for much higher fees than the second tier advisors). However, this motive does not explain why the same phenomenon does not also appear in the case of bidders (Table 4).

Table 4. Sample distribution

	Pre-Lehman	***Post-Lehman***	***Entire period***
Targets with a top-tier advisor	75	20	95
%	*47%*	*29%*	*41%*
Targets without a top-tier advisor	86	48	134
%	*53%*	*71%*	*59%*
Acquirers with a top-tier advisor	76	29	105
%	*47%*	*43%*	*46%*
Acquirers without a top-tier advisor	85	39	124
%	*53%*	*57%*	*54%*

To conclude, the features of the sample in terms of operations size, using the deal values of the same as proxy, can now be observed. It can be seen from Table 5, that in the four years after the Lehman crash, the dimensions of the transactions of our sample were considerably smaller than those of the "pre-crisis" period. The average deal value fell from €1,606m before the crash to €466m after the crash. This enormous difference can be explained by the fact that after the crash (in the period of the global financial crisis) the maximum sizes of transactions throughout the whole world decreased considerably. It can be seen from the "Maximum" column in "Table 5" that the sample considered for the purpose of the research shows this trend inversion. The largest transaction before the Lehman Brothers bankruptcy (and before panic spread through financial markets), had a deal value of €26,225 m against a deal value of €3,416m for the largest transaction of the sample from after 15 September 2008.

Table 5. Sample data: descriptive statistics

Period	***N***	***Descriptive statistics*** **(€m)**				
		Mean	Median	Minimum	Maximum	Range
Pre Lehman	161	1,606	228	2	26,225	26,223
Post Lehman	68	466	134	2	3,416	3,414
Entire period	229	1,267	189	2	26,225	26,223

Furthermore, considering the dimensions of the deals and the presence or absence of top tier advisors, it can be seen that first tier investment banks are more engaged in relatively larger transactions on both the sell-side and the buy-side. Consider the following Table 6 and Table 7, for target and bidder companies respectively. The tables show that this pattern, according to which the top-tier banks are used in transactions of greater dimensions, holds firm in all the time frames considered. For the target companies in general (without considering the division between the two periods), a top advisor has given consultancy services in transactions with an average deal value of €2,756m while it was not engaged (or did not agree to offer its services) in the relatively smaller transactions, at an average deal value of €212m. The table also confirms the conclusions on the diversity of the transactions in the two symmetrical time periods. The average value of the operations that were assisted by a top investment bank decreases from €3,198m in the pre-crash period to €1,095m in the post-crash period. A similar phenomenon can also be seen with respect of the bidders. In general, they also employ top investment banks for transactions of relatively greater size. In detail with reference to the entire time frame covered by the sample, it can be seen that the average value of the deals assisted by at least one top-tier investment bank is €2,366m against an average deal value of €337m for transactions carried out without the services of a top investment bank.

Table 6. Sell-side deal value descriptive statistics (€m)

Sell-side deal value descriptive statistics (€m)			
Pre-Lehman	No top-tier advisor	Mean	217
		Median	88
		Minimum	2
		Maximum	2.711
		Range	2.709
	With top-tier advisor	Mean	3.198
		Median	837
		Minimum	18
		Maximum	26.225
		Range	26.207
Post-Lehman	No top-tier advisor	Mean	204
		Median	64
		Minimum	2
		Maximum	2.822
		Range	2.820
	With top-tier advisor	Mean	1.095
		Median	644
		Minimum	25
		Maximum	3.416
		Range	3.392
Entire period	No top-tier advisor	Mean	212
		Median	76
		Minimum	2
		Maximum	2.822
		Range	2.820
	With top-tier advisor	Mean	2.756
		Median	809
		Minimum	18
		Maximum	26.225
		Range	26.207

Table 7. Buy side deal value descriptive statistics (€m)

Buy side deal value descriptive statistics (€m)			
Pre-Lehman	No top-tier advisor	Mean	410
		Median	104
		Minimum	2
		Maximum	16,910
		Range	16,908
	With top-tier advisor	Mean	2,944
		Median	802
		Minimum	14
		Maximum	26,225
		Range	26,211
Post-Lehman	No top-tier advisor	Mean	178
		Median	62
		Minimum	2
		Maximum	2,012
		Range	2,010
	With top-tier advisor	Mean	853
		Median	357
		Minimum	6
		Maximum	3,416
		Range	3,411
Entire period	No top-tier advisor	Mean	337
		Median	88
		Minimum	2
		Maximum	16,910
		Range	16,908
	With top-tier advisor	Mean	2,366
		Median	671
		Minimum	6
		Maximum	26,225
		Range	26,220

In addition, it can be seen that the re-sizing of the deal values between the pre-Lehman crash period and the post-Lehman crash period is also confirmed by the analysis of the buyer companies. However, it is curious to note that this difference in average deal size is not so evident for those carried out without the services of a top advisor. This confirms the hypothesis according to which companies are more inclined to request the assistance of a top investment bank in complex M&A operations of relatively higher sizes (Servaes and Zenner, 1996).

5.3. The event study methodology

This section focuses on the description of the event study approach. This is an analysis method which, by examining the changes in share prices, allows for estimating the impact generated by a specific corporate event. In this context, the term "event" refers to a fact or piece of information which if made public can significantly alter the value of a listed company. The use of this method is based on the fact that the occurrence of an abnormal share price performance, measured around the time of a certain company event, can help us to assess the impact that this certain event will have on the wealth of the shareholders of the company involved (Kothari and Warner, 2007). According to the efficient markets hypothesis, prices reflect all the information publicly available on a particular asset (Fama, 1970). As far as this analysis is concerned, all the observations considered regarding the sample correspond to events (M&A announcements) that take place at different moments: the first public announcement of a certain M&A operation is the most suitable moment to measure the impact (Halpern, 1983). It is worth remembering that abnormal returns exist and that they can be measured even before the effective announcement, usually because of leaks of confidential information and/or because the market itself gives advance notice of the event (Keown and Pinkerton, 1981). However, since the market cannot entirely predict an event, an abnormal share price trend can be observed and can therefore be ascribed to the event itself.

The standard method followed is divided into several steps: a) definition of the event of interest and identification of the time period (the so-called event window) over which to examine the impact that the event has had on the share prices; estimate of the expected return; b) calculation of the abnormal return; c) verification of the zero hypothesis and d) interpretation of results.

Before describing the method which will lead to the final result, it is necessary to clarify two basic concepts:

- *estimation window:* the period of time over which to estimate the normal market return. This period is prior to the event, to avoid the announcement influencing the estimate of the parameters;
- *event window:* the period of time, including at least the day of the event, over which to examine the impact that the said event has had on the share price.

To check the existence of abnormal returns, a benchmark[24] for normal returns (not influenced by a particular event) is necessary and it must be defined correctly. In fact, many models for estimating expected returns can be found in the literature associated with event study methodology. The precision of the abnormal returns has been found to differ according to the alternative methods. However, an extensive study of the literature on the different methods has allowed for underlining the properties and the advantages and disadvantages of each method. The literature concentrates in particular on two models: the *constant mean return model* and the *market model*. The first presumes that the average return on the security is constant over time; the second associates the return on the financial instrument with the return on the relative market portfolio and it is based on the assumption of the normality of the returns. Several authors (Panayides and Gong, 2002; Davidson, Dutia and Cheng, 1989) have demonstrated that the market model gives the more accurate measurement of abnormal returns. Considering that the event of interest in our analysis is the announcement of a corporate merger or takeover that takes place on a specific identifiable day, the event study is based on a daily data frequency (Brown and Warner, 1985)[25]. With regard to the estimation[26] of the parameters α (alpha) and β (beta) for the company in question, an estimation window prior to the event (the announcement of the operation) was used in order to avoid excessive contamination deriving from the effects of possible rumours on the event. Beta - which expresses the behaviour of a security in respect of the market of reference - in statistical terms is the angular coefficient of the straight line of the regression of the return on the equity instrument, compared to the return of the market index used as the benchmark. A beta of 1 indicates that the security moves perfectly in line with the market of reference, whereas a beta of more than 1 indicates an aggressive security that tends to move more than the market, and a beta of less than 1 indicates a more conservative security that is particularly insensitive to market movements and has less marked volatility than the market (Allen, Brealey, Myers and Sandri, 2007). The beta coefficient (β) measures the aptitude of a security to vary according to the market (systematic risk) while the alpha (α), which intercepts the straight line of the regression, expresses the aptitude of a security to vary independently of the market (specific risk). In order to calculate the parameters, an estimation window of 150 days was used, from 170 to 20 days before the event date (date of the announcement) except in some special cases in which the period was reduced by a few days because of the lack of financial data. This occurred because the companies involved in certain M&A deals were still not listed when the financial data were taken. In addition, careful attention was paid to check that during the estimation window, the companies in question had not undertaken or had not been subjected to other extraordinary operations. In fact, those which presented this flaw were eliminated from the sample.

[24] The STOXX Europe 600 Index was chosen as the benchmark, a sub-group of the STOXX Global 1800 Index. With a fixed number of 600 components, the STOXX Europe 600 Index represents a series of companies with small, medium and large equities, located within the following 18 European countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Iceland, Italy, Luxembourg, Norway, Holland, Portugal, United Kingdom, Spain, Sweden and Switzerland (Source: www.stoxx.com). Furthermore, the choice of benchmark which includes all the sectors was based upon the descriptive analysis on the mixed nature of the data sample..

[25] The objection generally raised, when one decides to opt for this choice, is that the daily returns are not normal. The fact that the returns are distributed in a Gaussian manner is in fact at the basis of the event study methodology.

[26] For the application of this methodology, it is necessary to estimate the parameters by using ordinary least squares (OLS) method.

The first step in the execution of the analysis was to construct a regression between the returns on a specific security *i* and the returns of the market index *m* (the STOXX Europe 600 Index). The angular coefficient, $\hat{\beta}_i$, is the value of the beta while $\hat{\alpha}_i$ is the interception point, on the ordinates axis of the regression straight line. Assuming a constant beta for a given security *i*, we calculate the expected return on the security *i* for every day of the event window according to the following equation:

$$\bar{E}_{it} = \hat{\alpha}_i + \hat{\beta}_i R_{mt} \quad (1)$$

where, $\bar{E}_{it}$ is the expected return[27] at time t, R_{mt} is the daily return of the market index *m* at time *t*, $\hat{\alpha}_i$ and $\hat{\beta}_i$ are the regression parameters.

The effective yield of a security *i* is defined as:

$$R_{it} = \hat{\alpha}_i + \hat{\beta}_i R_{mt} + \varepsilon_{it} \text{ with } E(\varepsilon_{it}) = 0, E(\varepsilon_{it})^2 = \sigma_\varepsilon^2 \quad (2)$$

Therefore, abnormal return is defined as the difference between the effective return on a security *i* (R_{it}), observed on the market at a particular time *t* (and conditioned by the particular event), and its expected return $\bar{E}_{it}$ at time *t* (not influenced by the event). Therefore, the abnormal return on a security *i* at time *t* is given by the equation:

$$AR_{it} = R_{it} - \bar{E}_{it} = \varepsilon_{it} \quad (3)$$

where, R_{it} is the actual return on the security *i* at time *t*.

The abnormal return can be considered as the direct occurrence of the unexpected difference in the shareholders' wealth associated with the event. The cumulative abnormal return on a security *i* results from the sum of the daily abnormal returns observed over a given period (*event window)* $[t_0, t_1]$:

$$CAR_i\ (t_0, t_1) = \sum_{t=t_0}^{t_1} AR_{it} = \sum_{t=t_0}^{t_1} \varepsilon_{it} \quad (4)$$

The average abnormal return is the average of the abnormal returns calculated for each observation, for every day *t* of the event window:

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \quad (5)$$

The average of the CARS, however, is defined as cumulative average abnormal returns:

$$CAAR_i\ (t_0, t_1) = \frac{1}{N}\sum_{i=1}^{N} CAR_{i,t_0,t_1} = \sum_{t=t_0}^{t_1} AAR_t \quad (6)$$

In this study, the calculation of CARs is based on an event window of five days (Ismail, 2010; Golubov et al., 2012). These five days include: the two days before the announcement, the day of the announcement (time zero) and the two days after the announcement (-2; +2). The need to include data prior to the announcement is linked to the possibility of rumours which can influence the returns on the shares[28]. The data after the announcement instead, are justified by the possible presence of a time lag between the announcement and the market reaction.

Moreover, as proposed in other research conducted using the event study methodology (Note 19), we opted for an enlarged Estimation Window (-5; +5). This choice comes from two different reasons: on one hand a (-2; +2) Estimation Window is more suitable for the American market rather than for the European one. Maintaining this period even for the European Market would have obliged us to verify the efficiency level of both markets. This kind of research falls outside the aim of this research. On the other hand, an enlarged Estimation Window allows us to verify the robustness of the test conducted.

To check that the resulting CARs are statistically different to zero (i.e. significant from a statistical viewpoint), the statistical *t-test* and its *p-value* are used. The study intends to verify, i.e. the case of zero H_0 (the Null Hypothesis) is:

$H_0 : CAAR_{t_0,t_1} = 0$

$H_1 : CAAR_{t_0,t_1} \neq 0$

By the identification of the p-value, it is then established whether the null hypothesis can be rejected or not. In the case in question, it was decided to refuse the null hypothesis if the p-value was below 5%, accepting the risk of committing a *prima specie* error (refusing the zero hypothesis when it is true) with a probability of 5%. When the p-value is below that threshold, it can be said that the average of the CARs is not statically different from zero.

5.4. Results

We will now go on to analyse the results of the event study and statistical tests[29]. First of all, in accordance with Kale et al. (2003), in order to limit the influence of particular outliers, the observations corresponding to the extreme values (maximum and minimum) in terms of CARs, were eliminated from the sample. In general within the previous literature, a positive effect was found for the target, while the market reaction for the acquirer was negative or insignificant. According to the literature, positive and significant average CARs were observed for the targets, while CARs observed for the bidder companies were in general not significantly different from zero. In the case in point however, it is curious to notice what happens when we test the zero hypothesis considering different time frames (respectively pre and post Lehman). First of all, if one considers the entire time frame of our sample (all of the 229 observations), a strong positive and statistically significant return can be seen for the targets, while the result for the buyer companies is not statistically significant (Table 8). We can see in particular that for the event window (-2; +2) the targets exhibit on average, a cumulative return of 14.90% with a p-value equal to 0.000. The average return for the acquirers instead does not differ from zero and the p-value (equal to 0.251) conforms to the zero hypothesis, namely that the CARs do not differ statistically from zero (Table 8).

[27] It is important to note that the expected return on the shares has been estimated starting from the time frame of reference, used for the estimate of the parameters, which goes from 170 to 20 days before the event. A common mistake in studies of this type is to estimate the parameters through a regression including the date of the event and to then calculate the abnormal returns on the basis of those estimates. This non-rigorous method would underestimate the abnormal returns.

[28] This evidence derives from previous literature. Bradley (1980) shows that the market reaction can be perceived up to ten days before the communication to the public.

[29] The test was carried out using SPSS software.

Table 8. Cumulative Abnormal Return statistics

Full Period		
Window (-2; +2)	*t*	*p value*
Car Target	14,898	0,000
Car Acquirer	(0,297)	0,405
Window (-5; +5)	*t*	*p value*
Car Target	15,532	0,002
Car Acquirer	(0,120)	0,450
Pre-Lehman default		
Window (-2; +2)	*t*	*p value*
Car Target	14,186	0,000
Car Acquirer	0,000	0,979
Window (-5; +5)	*t*	*p value*
Car Target	14,812	0,456
Car Acquirer	0,013	0,040
Post-Lehman default		
Window (-2; +2)	*t*	*p value*
Car Target	16,580	0,000
Car Acquirer	(1,418)	0,037
Window (-5; +5)	*t*	*p value*
Car Target	17,562	0,478

However, if we consider the sample of observations divided into the two time frames we obtain different results. It must be remembered that the 229 observations were divided into 161 pre-crash observations and 68 post-crash observations. With regard to the targets however, the results are not very different. The CARs are strongly positive on average and significant for both time frames. In spite of this, it can be noted that the average returns are slightly higher in the post-crash period (Table 8) and slightly lower in the pre-crash period (Table 8). This could be interpreted by supposing that greater prudence was exercised in the period of the crisis when undertaking M&A operations, when greater prudence would have led to more in-depth assessments and a greater selection in favour of deals that guaranteed greater synergies. However, such conclusions cannot be drawn in respect of buyer companies. It can be seen that the p-values prior to the crash are extremely high for this group, and then fall considerably after the crash, ending up below the 5% level (p-value equal to 0.037). In this case, the resulting average CAR is negative, equal to 1.42%, and statistically significant (Table 8).

The results of the model can also be analysed from another viewpoint. In particular, the average CARs and the respective significances are shown below, after segmenting the sample according to whether the observations correspond to deals with the assistance of first-tier banks or not (Table 9). On average, the targets assisted by first-tier investment banks show a better performance. More specifically, the abnormal cumulative average return for the targets goes from 13.56%, without a top advisor, to 16.79% when there is at least one top advisor (always with a p-value equal to 0.000). On the buy-side instead, the p-values obtained are always above the significance threshold of 5%. However, we can consider the CARs of the bidders which are not assisted by a top advisor within the limits, where the p-value is only slightly above the 5% threshold. In this case, the cumulative abnormal return is negative and equal to -0.93% (with a p-value of 0.051). Lastly, it can only be noted indicatively that the CAR is on average positive in the case of the presence of a first tier investment bank, although without significance statistically, and negative and statistically significant otherwise. The result according to which the cumulative abnormal returns are on average negative for acquirers which do not employ a top advisor is in contrast with Srinivasan (1999), who finds the opposite , although this is in agreement with many other studies present in the literature. On the other hand, unfortunately the p-value does not enable us to make significant conclusions for the opposite scenario.

Table 9. Cumulative Abnormal Return with or without the presence of a Top Tier Investment Bank

Without a Top Tier Investment Bank			***With a Top Tier Investment Bank***		
Window (-2; +2)	*T*	*p value*	*Window (-2; +2)*	*t*	*p value*
Car Target	13,558	0,000	Car Target	16,787	0,000
Car Acquirer	(0,933)	0,051	Car Acquirer	0,456	0,390

However, these single-varied comparisons can be misleading since they do not take into consideration any other variable except advisor reputation. As can be seen in the section on the description of the sample for example, it comes to light that top tier advisors tend to be used for the larger sized transactions. Therefore, both firm-specific and deal-specific variables must be taken into consideration in order to check the effective influence of the "reputation" variable on the dependent variable of our interest (the abnormal return). In this regard, multivariate standard regression models have been developed (see the next section).

5.5. Regression models

The relationships between the advisor's reputation, the bidders' CARs and the acquirers' CARs, are examined below using multivariate regression models[30].

The equation used for this analysis is reported below.

[30] Multi-varied OLS.

$$Car = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \beta_{10} x_{10} + \epsilon \quad (7)$$

A central point of the analysis consists in comparing the models obtained for targets and for acquirers. With regard to the dependent variable, CARs were utilised, expressed in percentage form and calculated over a time horizon of five days corresponding to the event window (-2;+2) (Ismail, 2010; Golubov et al., 2012). With regard to the independent variables, it may be noted that in all regression models the same independent variables have been included, both for the analysis concerning the targets and for the analysis regarding the acquirer companies. This choice was made to make the analysis more homogeneous and to test the bank's/advisor's reputation variable specifically, which is hypothesised as significant regardless of whether the analysis is made on the targets or on the acquirers. The independent variables considered are illustrated below:

- *Top-Tier*: this is the variable of greatest interest in this study. It is a dummy variable which assumes a value of one when an investment bank, that has assisted a company in a transaction included in the sample, is placed within the first ten positions of the investment bank classification. It can be noted that when more than one bank participates in the same transaction, the variable assumes a value equal to one unit if at least one of the banks falls within the definition of a first tier investment bank;
- *Same Industry*: this is a dummy variable which takes on the value of one when the target and bidder are involved in a particular special financing operation and when they both operate in the same macro sector (Morck, Shleifer, and Vishny, 1990; Berger and Ofek, 1995);
- *Cross-Border*: this is a dummy variable which takes on a value of one when the target and bidder are not located in the same country (Allen et al., 2004; Doukas and Travlos,1988; Kang, 1993);
- *Tot Advisors*: variable which corresponds to the total number of investment banks which are involved in the deal assisting either the target or acquirer (Iannotta, 2010);
- *Deal Value*: the value of the transaction. This is a continuous variable. Like the preceding variable, the deal value can also indicate the complexity of the operation. Transactions of relatively greater size are considered within the literature as more complex;
- *Toehold*: this variable is a dummy which assumes a value of one when the acquirer already holds at least 5% of the target before the acquisition of a controlling stake (Ismail, 2010);
- *Top vs Not*: this variable, the only one which assumes different values according to whether the model refers to the behaviour of the target rather than the acquirer, is a dummy variable which is given the value of one when one of the counterparties has at least one top tier advisor while the other has only second tier advisors. When both counterparties have at least one first tier advisor, the variable is given the value of zero.
- *Relative Size*: this is the ratio of the total assets of the target against the total assets of the bidder (Rajan, Servaes, and Zingales, 2000);
- *Cash*: this is a dummy variable given the value of one when the payment does not include shares (Travlos, 1987; Ismail, 2010). The reaction of the market is therefore considered better in the case of payments in cash. One explanation is that cash deals are usually associated with the issue of debt, which is an incentive for the management to be more disciplined;
- *Stock*: a variable dummy which takes on the value of one when the acquisition is carried out by means of a share swap (Ismail, 2010; Iannotta 2010).

5.5.1. Results

For both types of companies involved in a merger or a takeover, verification was carried out as to whether the creation of value at the announcement of the M&A deal, was linked to the reputation of the investment bank acting as advisor for the deal and how this phenomenon varies between the period before[31] and after[32] the Lehman Brothers bankruptcy. The proxy of the considered creation of value, the dependent variable, corresponds to cumulative abnormal returns (CARs), calculated according to the market model methodology, over a time window of five days (Ismail, 2010; Golubov et al., 2012).

5.5.2. Results for the target

The regression model corresponding to the pre-Lehman crash period (Table 10) is composed of 161 observations and 10 independent variables. The R2 of 15.7% and the model as a whole is highly significant. The F test, which measures the relationship between all the variables selected and the dependent variable has an associated p-value of almost zero (0.003). Analysing the significance of the variables, it can be observed that only three of the ten variables considered are significant, *Stock*, *Toehold* and *Cross-Border*, respectively significant at the 1%, 5% and, within the limits of acceptability, at the 10% levels. The negative coefficient of the *Stock* variable, in line with Ismail (2010), indicates that acquisitions financed by shares result in lower returns for the shareholders of the company acquired. The negative coefficient of the dummy variable *Toehold* indicates that the presence of a toehold, i.e. already owning some of the equity of the target company, reinforces the buyer company's position in the negotiating phase. This can depend on the fact that the toehold, favouring a greater availability of information, reduces possible problems of information asymmetries and allows the buyer to reach a better and more correct evaluation of the target.

[31] The four-year period goes from 15/09/2004 to 15/09/2008, the day on which the Lehman Brothers bankruptcy procedure was opened.

[32] This time frame of 4 years again, goes from 15/09/2008, the day on which the Lehman Brothers bankruptcy procedure was opened, until 15/09/2012.

Table 10. Target CAR: the regression model corresponding to the pre-Lehman crash period

R^2		0.157
Significativity		0.003*
R^2 adjusted		0.157
Parameter	***β***	***Significativity***
(Constant)	0.177	0
Top-Tier	(0.002)	0.953
Same Industry	0.001	0.963
Cross-Border	0.049	0.078**
Toehold	(0.075)	0.046*
Deal Value	(0.000)	0.938
Tot Advisors	(0.002)	0.827
Relative Size	0.006	0.602
Stock	(0.109)	0.007*
Cash	0.002	0.967
Top vs Not	0.002	0.97

** Level of significativity from 1 to 5%*
*** Level of significativity up to 10%*

Table 11. Target CAR: the regression model corresponding to the post-Lehman crash period

R^2		0.281
Significativity		0.028
R^2 adjusted		0.155
Parameter	***β***	***Significativity***
(Constant)	0.388	0.001
Top-Tier	0.227	0.004*
Same Industry	(0.087)	0.143
Cross-Border	0.057	0.343
Toehold	(0.031)	0.618
Deal Value	(0.000)	0.099**
Tot Advisors	(0.041)	0.055
Relative Size	(0.016)	0.031
Stock	(0.015)	0.847
Cash	(0.107)	0.193
Top vs Not	(0.002)	0.987

** Level of significativity from 1 to 5%*
*** Level of significativity up to 10%*

Lastly, it must also be pointed out that the multivariate regression relative to the time frame prior to the Lehman collapse shows no evidence indicating that the identity and reputation of the investment bank is an important variable in determining the market reaction and the consequent creation of value for the target on the announcement of M&A deals. However, the results of the post-Lehman regression model (Table 11)[33] are different, and in fact show an inverse scenario. Above all it is to be noted that the R2 considerably improves, reaching 28.1%. With the increase in R2, the adjusted R2 has also increase, albeit to a lesser extent, from 10.1% to 15.5%. Considering that the number of variables does not change, the less than proportional increase of the R2 could derive from the fewer observations on which the new model is based upon (the sample relative to the post-bankruptcy period is, in fact, composed of only 68 observations). The p-value associated with the F test increases slightly but it nevertheless remains below the 5% threshold. Having said this, it is important to underline that in this new scenario the model indicates a strongly positive and significant effect of the investment bank's reputation (the advisor's reputation) on the cumulative abnormal returns (CARs) of the target. More specifically, with an error probability of 0.4% (p-value associated to the t-test equal to 0.004), the coefficient of the *Top-Tier* variable indicates that the presence of at least one top tier bank among the target's advisors contributes to increasing the wealth of the latter's shareholders by about 22.7%[34]. With reference to the same time window as that considered in the regression model, the targets assisted by a top investment bank obtain average cumulative returns of 25.47% (about 12.6% more than the average CARs without at least one top advisor).

Top banks often push their customers towards acquisitions that may even be far from what would be considered rational grounds (on which decisions regarding M&A should be based), just to earn fees.

The analysis shows that the certification effect guaranteed by the investment banks (especially by those with an extremely high reputation) was not effective in the case of the more recent wave of M&As.

Reviewing the other variables, it can be observed that the relative size coefficient concerning the relative dimensions of the target is at a significant minus 5%: the operations for the acquisition of control and/or the integration of a target which is relatively large compared to the acquirer are more complex and lead to the creation of less value. Similarly, the negative coefficient of the variable linked to the total number of advisors involved in the operation, although barely above the significance threshold of 5%, indicates that the more advisors there are around the negotiating table, the less value will be created. The presence of a high number of investment banks can depend on a greater complexity of the deal, which results in a greater difficulty to release value through the operation. Lastly, although border line in respect to a significance value of 10%, it can be noted that the *Deal Value* variable has a zero coefficient. This means that the size of an operation has been found to have no impact on the creation of value for the shareholders.

5.5.3. Acquirer Results

As in the case of the analysis of target companies, it can also be noted for the buyer companies that there are two very different results depending on whether the model refers to the pre or post Lehman crash period. More specifically, the model relative to the pre-bankruptcy period (Table 12), as a whole, is not significant. The F test on the joint significance of the coefficients of the regression is equal to 1.832, with an associated p-value equal to 0.06[35]. Similarly to the scenario observed for the targets, the multi-varied regression model in the case of the acquirer, suggests that the advisor's reputation is an extremely important factor influencing the creation of value for the shareholders.

[33] The result confirms the analysis carried out on the CARs (Appendix "A": Table A–3 and Table A–4) relative to the post–bankruptcy time frame.

[34] The tables (Table A–3 and Table A–4) in the Appendix show that this phenomenon is also confirmed by the analysis of the CARs.

[35] It is not possible to link this phenomenon to a problem of the size of the sample compared to the relatively high number of predictors considered, since in the case of the targets, the historically accepted general rule is satisfied, according to which at least 10 subjects per predictor are required (Harris, 1985).

Table 12. Acquirer CAR: the regression model corresponding to the pre-Lehman crash period

R^2		0.109
Significativity		0.060
R^2 adjusted		0.049
Parameter	***β***	***Significativity***
(Constant)	(0.020)	0.206
Top-Tier	(0.012)	0.285
Same Industry	(0.002)	0.866
Cross-Border	(0.000)	0.996
Toehold	0.020	0.096
Deal Value	0.000	0.713
Tot Advisors	0.005	0.084
Relative Size	(0.001)	0.713
Stock	0.016	0.197
Cash	(0.010)	0.454
Top vs Not	0.020	0.149

** Level of significativity from 1 to 5%*
*** Level of significativity up to 10%*

Table 13. Acquirer CAR: the regression model corresponding to the post-Lehman crash period

R^2		0.380
Significativity		0.001
R^2 adjusted		0.272
Parameter	***β***	***Significativity***
(Constant)	0.008	0.77
Top-Tier	0.044	0.032
Same Industry	(0.035)	0.014
Cross-Border	0.012	0.42
Toehold	(0.009)	0.532
Deal Value	0.000	0.676
Tot Advisors	(0.009)	0.104
Relative Size	(0.006)	0.001*
Stock	0.027	0.167
Cash	0.032	0.092
Top vs Not	(0.026)	0.17

** Level of significativity from 1 to 5%*
*** Level of significativity up to 10%*

In the case of acquirers pre-Lehman, as seen for the model relative to the targets, no empirical evidence can be found to indicate that the reputation of advisors plays an important role in determining the creation of value for the shareholders. For that matter, the result is also confirmed by the t-test carried out on the CARs involving the segmentation of the sample in respect to both the period and the presence or absence of an advisor[36]. Returning to the model, it is possible to note the positive sign of the coefficient of the *Toehold* variable that is within the limits of significance. Contrary to what happens for the targets, buyer companies benefit from a toehold in the equity of the companies that they wish to takeover. The existence of a toehold of at least 5% in the equity of the target, results in a CAR for the acquirer's shares of more than two percentage points. The output relative to the post-crash period (Table 13) however, takes on particular importance. Compared to the previous model both the R2 and the adjusted R2 increase considerably and take on important values. In particular, R2 increases from 10.9% to 38.0% while the adjusted R2 increases from 4.9% to 27.2%. Furthermore, the model as a whole is associated with a p-value below the 1% threshold. In addition, the positive and significant coefficient (with an associated p-value of 0.032) of the *Top-Tier* variable, which is the variable with the greatest weight in the model, indicates that advisors with a higher reputation (a greater market share) bring a benefit to the shareholders in terms of CAR of 4.4%. Consistently with the literature that attributes the major part of the deal benefits to target companies, it is not surprising that the creation of value for the bidder that avails of a primary investment bank is considerably lower than that of the target. As pointed out for the targets, shareholders' wealth is positively influenced by the engagement of a top investment bank also in the case of bidders for the post-Lehman period[37].

However, looking at the coefficients of the other variables which are significant, the negative coefficient of the *Same Industry* variable is quite surprising. In preceding literature (Morck et al., 1990; Berger and Ofek, 1995) it was shown that the creation of value for the buyer company is greater in cases where the target operates in a business connected to that of the said buyer. However in the model outlined above, an acquisition carried out within the same sector would lead to a reduction of value for the shareholders equal to 3.5%. This evidence supports the hypothesis of the creation of value by corporate diversification. Furthermore with regard to the *Stock* variable, although it exhibits a high p-value of almost 10%, the positive coefficient of this variable indicates that buyer companies, unlike seller companies, benefit from payment in the form of shares. This result is understandable, if one considers that bidders usually offer payment in the form of shares when they believe that their own shares are over-valued by the market (it is to be noted that this subject is discussed in the literature with regard to information asymmetries)[38].

6. CONCLUSIONS

This study, building upon existing empirical evidence in the literature has questioned and analysed the role of investment banks in M&A operations, specifically with regard to the capacity of investment banks with the best reputations to offer their customers services of a superior quality and a corresponding creation of greater value for shareholders. The research focused on the transactions carried out among listed companies inside two time frames which were symmetrical to each other with respect to the Lehman Brothers bankruptcy. The analysis highlighted that the presence of a top tier investment banks post-Lehman is associated with higher shareholder returns of both target and buyer companies, thus supporting the "superior deal hypothesis". However, this evidence can be found only in the "post financial crisis" period (post-Lehman). Prior to the Lehman collapse, there is no specific evidence of a

[36] Observing the tables in Appendix "A" (Table A-2 and Table A-3), it can be seen that in spite of the change of sign in the average of the CARs in the presence of a top advisor, it is not possible to draw significant conclusions (in view of the very high p-value).

[37] This evidence is also supported by what emerges from the t-test on the CARs (Appendix "A", Table A-3 and Table A-4). The CARs of the bidders which take avail of a top investment banker in fact achieve better performance.

[38] In Appendix B, the correlation matrices between the variables can be consulted. To give further significance to the models, it is observed that the scatter plots of the residuals of the regressions in Appendix "C" (Figure C-3 and Figure C4) show that there is no particular evidence of heteroscedasticity. The figures trace good behaviour of the residuals: they are alternatively above and below zero and they are distributed in a non-systematic manner.

correlation between the presence of top tier investment bank and the creation of higher value for shareholders. The term "financial crisis" is used to refer to a concept which is difficult to define accurately; the research wished to express the idea of a different economic/financial context, identifying the Lehman Brothers bankruptcy as the key signal which started off a period featuring deep changes of a structural nature within the investment banking sector. The certification effect of investment banks relating to M&A operations has been found to have no significance in the pre-Lehman crash period. This result can be justified if one considers the irrationality which prevailed at the time of the more recent wave of M&A operations and the context in which these deals have taken place (huge availability of cash and low yields). The number of deals processed and the positive sentiment which featured in the capital markets in the years prior to the explosion of the crisis, supports the idea that in such a context the advisor's reputation and the assurance to the market about these deals emanating from the certification effect, were actually of little importance. The irrational attitude of the pre-crash period is confirmed by the change of market behaviour after the start of the financial crisis. The more careful and rational market has given greater importance to and has placed greater confidence in the banking institutions which have demonstrated before and after the crisis that they have maintained strong reputations based upon success in managing the corporate control market. Therefore, in a time of crisis, the ability of top tier investment banks to construct and manage better M&A operations has enabled the generation of greater synergies and benefits for their customer companies, with a consequent growth in value for shareholders. Furthermore, the results of the research model, especially post Lehman bankruptcy, confirm the thesis (Chemmanur and Fulghieri, 1994) that states that top tier banks are superior in processing and producing information which can reduce information asymmetries between the diverse players in the market. Thus, the higher the banks reputation and credibility is perceived to be the greater the certification and validation effect will be in the M&A deals that they are involved in.

Such a result contrasts with what emerging in other contributions focusing on different business areas of the investment banking industry, namely securities issuances, where reputation seems showing a decreasing role when compared to other key success factors more consistent with technological changes occurred in financial markets (Morrison *et al.*, 2014). Undoubtedly, the investment banking industry is still an opaque – if not black – box requiring further research as well as empirical analyses with great deal of possible implications for policy makers and regulators.

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APPENDICES

Appendix A. CARs e t-test

Table A-1. One-Sample Test

	Test Value=0					
	t	*df*	*Sig. (2-tailed)*	*Mean Difference*	*95% Confidence Interval of the Difference*	
					Lower	*Upper*
CAR TARGET (-2, +2)	7,871	85	,000	,13937105	,10416368	,17457841
CAR ACQUIRER (-2, +2)	-,548	84	,585	-,00315742	-,01461018	,00829535

PERIODO PRE (0) POST (1) LEHMAN = 0, RANKING FIRST TIER (1) SECOND TIER (0) ADVISOR = 0

Table A-2. One-Sample Test

	Test Value=0					
	t	*df*	*Sig. (2-tailed)*	*Mean Difference*	*95% Confidence Interval of the Difference*	
					Lower	*Upper*
CAR TARGET (-2, +2)	7,285	74	,000	,14471660	,10513366	,18429954
CAR ACQUIRER (-2, +2)	,602	75	,549	,00376588	-,00869805	,01622981

PERIODO PRE (0) POST (1) LEHMAN = 0, RANKING FIRST TIER (1) SECOND TIER (0) ADVISOR = 1

Table A-3. One-Sample Test

	Test Value=0					
	t	*df*	*Sig. (2-tailed)*	*Mean Difference*	*95% Confidence Interval of the Difference*	
					Lower	*Upper*
CAR TARGET (-2, +2)	4,602	47	,000	,12878323	,07248531	,18508115
CAR ACQUIRER (-2, +2)	-2,833	38	,007	-,02279384	-,03908364	-,00650404

PERIODO PRE (0) POST (1) LEHMAN = 1, RANKING FIRST TIER (1) SECOND TIER (0) ADVISOR = 0

Table A-4. One-Sample Test

	Test Value=0					
	t	*df*	*Sig. (2-tailed)*	*Mean Difference*	*95% Confidence Interval of the Difference*	
					Lower	*Upper*
CAR TARGET (-2, +2)	5,180	19	,000	,25470290	,15177807	,35762773
CAR ACQUIRER (-2, +2)	0,662	28	,513	,006625272	,01386418	,02711473

PERIODO PRE (0) POST (1) LEHMAN = 1, RANKING FIRST TIER (1) SECOND TIER (0) ADVISOR = 1

Appendix B. Correlation Matrices between the Variables

Table B-1. Correlation Coefficients

Model	*Top vs Not*	*Stock*	*Same Industry*	*Deal Value*	*Toehold*	*Cross-Border*	*Relative Size*	*Tot Advisors*	*Top-Tier*	*Cash*
Top vs Not	1,000	-,108	,100	,139	,184	,035	-,013	,179	-,540	-,133
Stock	-,108	1,000	,015	,032	-,212	,034	-,168	,075	,106	,714
Same Industry	,100	,015	1,000	,067	,103	,035	-,083	-,104	-,118	-,008
Deal Value	,139	,032	,067	1,000	,196	-,138	-,039	-,441	-,275	,029
Toehold	,184	-,212	,103	,196	1,000	-,049	,046	-,134	-,216	-,196
Cross-Border	,035	,034	,035	-,138	-,049	1,000	,111	-,001	-,117	-,059
Relative Size	-,013	-,168	-,083	-,039	,046	,111	1,000	-,082	,028	,046
Tot Advisors	,179	,075	-,104	-,441	-,134	-,001	-,082	1,000	-,174	,071
Top-Tier	-,540	,106	-,118	-,275	-,216	-,117	,028	-,174	1,000	,117
Cash	-,133	,714	-,008	,029	-,196	-,059	,046	,071	,117	1,000

PERIODO PRE (0) POST (1) LEHMAN = 0 / DEPENDENT VARIABLE: CAR TARGET (-2,+2)

Table B-2. Correlation Coefficients

Model	*Top vs Not*	*Stock*	*Toehold*	*Deal Value*	*Same Industry*	*Cross-Border*	*Relative Size*	*Tot Advisors*	*Top-Tier*	*Cash*
Top vs Not	1,000	-,097	,070	,196	-,102	,114	,016	,254	-,540	-,073
Stock	-,097	1,000	-,155	-,014	-,023	-,107	-,027	,101	,057	,779
Toehold	,070	-,155	1,000	,047	-,210	-,025	-,316	-,135	-,069	-,257
Deal Value	,196	-,014	,047	1,000	-,058	-,070	-,001	-,031	-,441	-,038
Same Industry	-,102	-,023	-,210	-,058	1,000	,021	,254	,074	-,047	,112
Cross-Border	,114	-,107	-,025	-,070	,021	1,000	,037	-,188	-,156	-,144
Relative Size	,016	-,027	-,316	-,001	,254	,037	1,000	,124	,005	,144
Tot Advisors	,179	,075	-,104	-,441	-,134	-,001	-,082	1,000	-,174	,071
Top-Tier	-,540	,106	-,118	-,275	-,216	-,117	,028	-,174	1,000	,117
Cash	-,133	,714	-,008	,029	-,196	-,059	,046	,071	,117	1,000

PERIODO PRE (0) POST (1) LEHMAN = 1 / DEPENDENT VARIABLE: CAR TARGET (-2,+2)

Table B-3. Correlation Coefficients

Model	*Top vs Not*	*Toehold*	*Cross-Border*	*Same Industry*	*Cash*	*Tot Advisors*	*Relative Size*	*Deal Value*	*Top-Tier*	*Stock*
Top vs Not	1,000	,105	,103	,149	-,062	,119	,027	,214	-,539	,019
Toehold	,105	1,000	-,049	,099	-,194	-,139	,046	,190	-,209	-,218
Cross-Border	,103	-,049	1,000	,041	-,062	,004	,113	-,140	-,108	,033
Same Industry	,149	,099	,041	1,000	-,005	-,103	-,078	,075	-,121	,022
Cash	-,062	-,194	-,062	-,005	1,000	,073	,048	,028	,138	,712
Tot Advisors	,119	-,139	,004	-,103	,073	1,000	-,082	-,439	-,198	,067
Relative Size	,027	,046	,113	-,078	,048	-,082	1,000	-,033	,031	-,156
Deal Value	,214	,190	-,140	,075	,028	-,439	-,033	1,000	-,248	,031
Top-Tier	-,539	-,209	-,108	-,121	,138	-,198	,031	-,248	1,000	,168
Stock	,019	-,218	,033	,022	,712	,067	-,156	,031	,168	1,000

PERIODO PRE (0) POST (1) LEHMAN = 0 / DEPENDENT VARIABLE: CAR ACQUIRER (-2,+2)

Table B-4. Correlation Coefficients

Model	*Top vs Not*	*Toehold*	*Stock*	*Deal Value*	*Same Industry*	*Tot Advisors*	*Cross-Border*	*Relative Size*	*Cash*	*Top-Tier*
Top vs Not	1,000	,060	-,033	,357	,035	,242	,043	,019	,025	-,666
Toehold	,060	1,000	-,155	,055	-,210	-,121	-,016	-,318	-,256	-,080
Stock	-,033	-,155	1,000	-,034	-,029	,069	-,129	-,020	,777	,107
Deal Value	,357	,055	-,034	1,000	-,086	,002	-,032	-,004	-,058	-,430
Same Industry	,035	-,210	-,029	-,086	1,000	,055	,005	,263	,097	,010
Tot Advisors	,242	-,121	,069	,002	,055	1,000	-,091	,103	,189	-,452
Cross-Border	,043	-,016	-,129	-,032	,005	-,091	1,000	,019	-,148	-,272
Relative Size	,019	-,318	-,020	-,004	,263	,103	,019	1,000	,149	,027
Cash	,025	-,256	,777	-,058	,097	,189	-,148	,149	1,000	,003
Top-Tier	-,666	-,080	,107	-,430	,010	-,452	-,272	,027	,003	1,000

PERIODO PRE (0) POST (1) LEHMAN = 1 / DEPENDENT VARIABLE: CAR ACQUIRER (-2,+2)

Appendix C. Scatterplots of Residuals

Figure C-1. Scatterplot of Residuals: Target

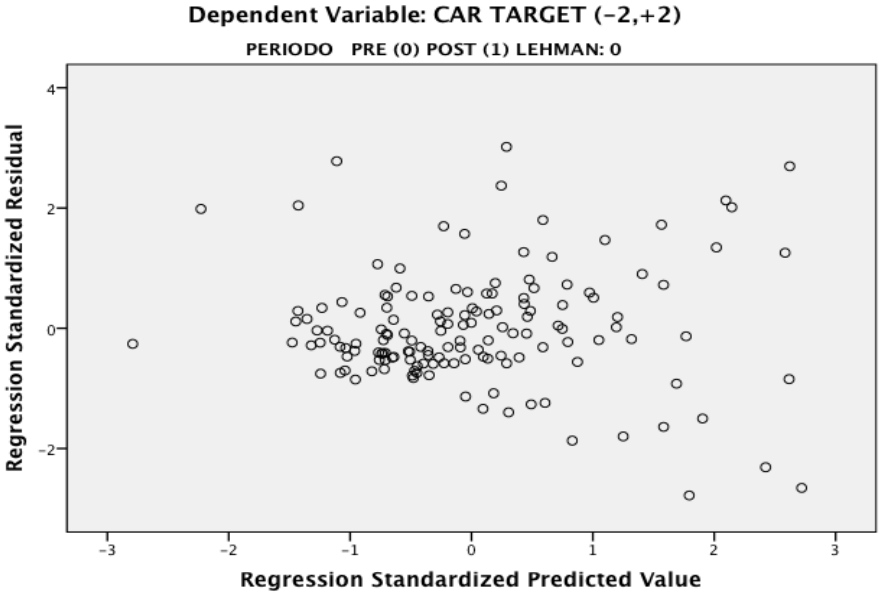

Figure C-2. Scatterplot of Residuals: Target

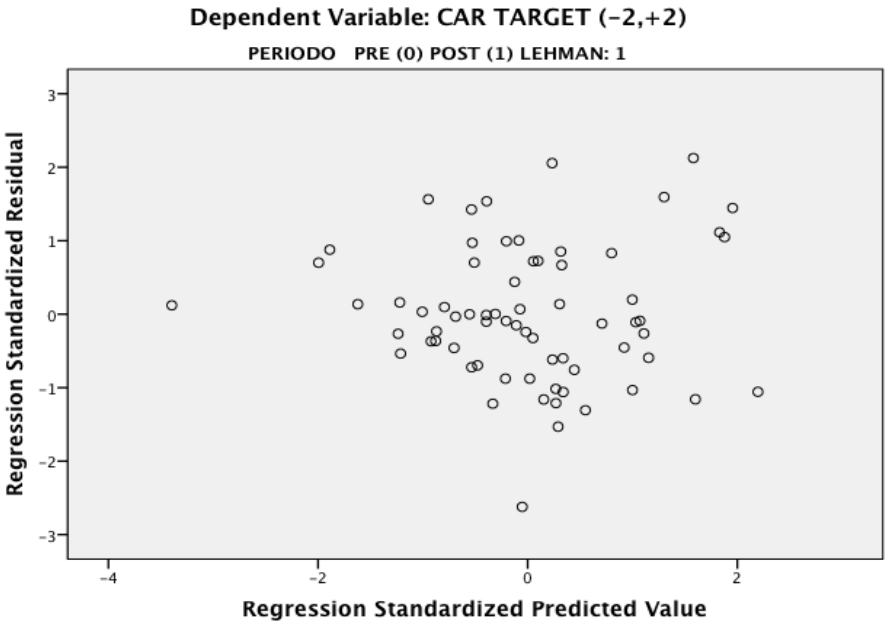

Figure C-3. Scatterplot of Residuals: Acquirer

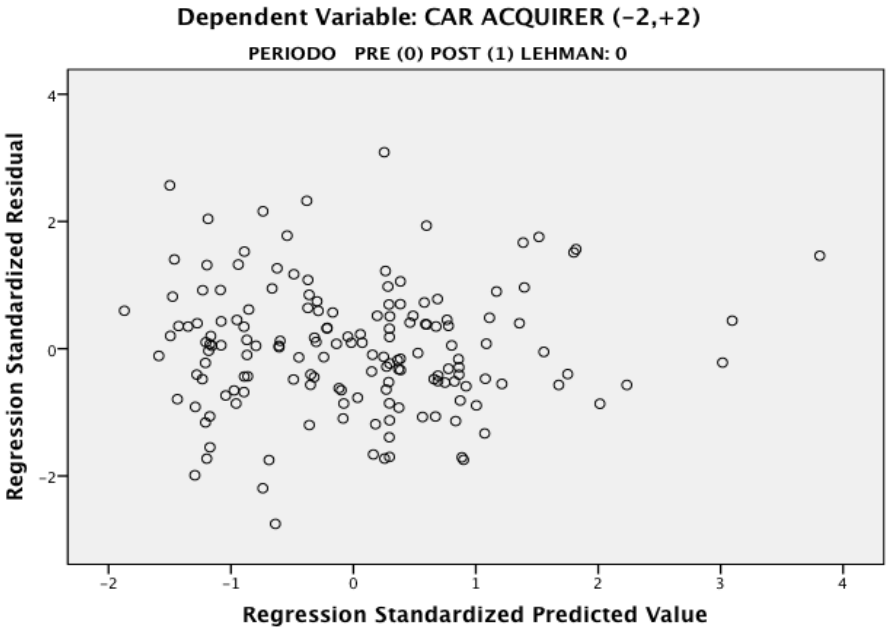

Figure C-4. Scatterplot of Residuals: Acquirer