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Reverse Takeover: an alternative mechanism to go public

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Abstract

This study examines a sample of 222 private firms that opted for going public through a reverse takeover transaction. Reverse takeover is a process in which a private firm is acquired by a public one in order to obtain its public listing. When the transaction is completed, the new enlarged company usually operates under the management and the name of the target (private firm). The public company is generally a poor performer and expects that with this merger, its performance will be improved. However, apart from the significant wealth gains that the shareholders receive during a short period of time surrounding the event, negligible improvement in its post-reverse takeover long-term financial performance is observed. Hence, while reverse takeover is a less expensive and less time-consuming mechanism to go public compared to an IPO, it should be considered as a more risky process, concerning the long-term performance of the new company.

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To my family and Aris

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Chapter 1

Introduction

At some point of their business activity, the owners of a firm have to take a decision of whether their company should go public or remain private. The traditional mechanism for a firm to go public is by conducting an Initial Public Offering (IPO). However, this process is considered to be quite expensive, due to the high registration and underwriting fees and the time consuming to be completed. In later decades, some alternative methods were introduced in order to overcome some of these costs and are quite fast. One of these mechanisms is analyzed in this study and is called reverse takeover (or reverse merger).

Reverse takeover (RT thereafter) is the process that a private company negotiates with a public firm, usually a shell one, to be acquired by the latter and on this way to obtain its public listing. This type of merger is called reverse because the new entity formed is based on the private company, in other words, on the target. Usually, this back-door listing is preferred by small capitalization firms that either do not fulfill the requirements to go public through an IPO, or they look for a cheaper way to go public. On the other hand, the public entity is a shell company that its shares are thinly traded and it usually has not assets or operations and is mainly financially distressed. Although, the public company seems to be used as a vehicle for the private company to obtain a public listing, it has two main motives to participate in this deal. First, it expects that through the new entity, it will have the opportunity to recover and develop its operations again. Second, it is a good opportunity for the shareholders to recover some losses from their investments. The payment of this transaction is usually made in stock or in combination of cash and stock. Since both companies have motivations for this type of merger, the deal attitude is considered to be friendly

RT is a technique that grows in popularity year after year. Almost 3,255 private companies have been involved in a RT transaction worldwide¹. Thus, a number of questions are raised through the RT process:

What factors drive these companies to choose a RT to go public instead of an IPO or an alternative mechanism.

¹ Source: Data from Thomson one, in 10/09/2012

What is the prevailing regulation of RTs.

What makes RT deals to create wealth effects for the shareholders of the public entity.

What is the post-merger performance of the new entity.

In order to answer these questions, a sample of 222 reverse takeovers that took place in Europe from 1991 to 2011 is created. Hence, this study describes the reverse takeover process, the characteristics and the motivations of the firms that participate in a RT. Moreover, its main purpose is to explore the wealth effects of RTs. Finally, it investigates post-RT operating and stock performance.

Reverse takeovers is a topic that is relatively unexplored worldwide. In fact, there is no study so far that investigates the value relevance of RTs in Europe and we believe that the current study fills this gap. We believe that the results of the study might be of interest to shareholders of firms that participate in RTs, analysts, researchers and policy makers.

This study is organized as follows. Chapter 2 reviews the literature on reverse takeovers until today. Chapter 3 describes the process of reverse takeover, the characteristics and the motivations of the firms that participate and the regulatory framework. Chapter 4 describes the data and provides descriptive statistics. Chapter 5 presents the methodology used. Chapter 6 discusses the empirical results and Chapter 7 concludes the study.

Chapter 2

Literature Review

2.1 The process of going public

When a company starts its operations, it usually raises equity capital from a small number of investors. However, if it needs additional equity capital, it sells shares in a larger number of investors by going public. Having a public status, firms gain access to capital markets, increase their liquidity and the owners have the possibility to diversify their holdings (Gleason et al., 2005). Despite the significant benefits of going public, some costs are associated with this process. The legal, auditing and underwriting costs are considered to be the direct costs of the procedure, while the effort of the management to conduct this offering and the increased disclosure requirements are referred as indirect costs (Ritter, 1998). These benefits and costs are closely related to the common mechanism of going public, the Initial Public Offering.

2.2 The characteristics of the firms that prefer alternative methods to IPO to go public

Apart from the IPO process, the pertinent literature refers to some other ways of going public such as merging with or selling-out to an existing public firm (Aydoglou et al., 2007). According to Brau et al. (2003), it is an attractive opportunity for a private firm to be acquired by a public company and it is usually used as a means of going public by companies in high market-to-book industries, financial service sectors and highly leveraged industries. In addition, concerning the question for which reasons owners of a firm prefer IPO to a merger and vice versa, it was found that an IPO is a preferable means of going public by owners that sell shares, but are willing to maintain some control. On the other hand, owners that wish to quit of all of their ownership and control, prefer the merger process. Moreover, Poulsen and Stegemoller (2008), in a comparison of outright sell-outs to IPOs, find that another characteristic of the firms that is more possibly to sellout instead of conducting an IPO is the high information asymmetry. Since the level of information asymmetry is negatively related to the firm size (Aydoglou et al., 2007), it can be concluded that a small firm is more likely to reject the IPO route and prefer an alternative one.

Brown et al. (2005) compare the IPO process to a roll-up². They compare one sample of companies that preferred the traditional IPO to go public with another sample of companies that used the roll-up mechanism instead. The results show that roll-ups firms offer poorer stock returns than the comparable IPO firms, while the operating performance is similar. Comparable results are also provided by Hogan et al. (2001) who indicate that the returns of Reverse Leveraged Buyouts (RLBOs) are lower than those of IPO firms.

2.3 Reverse Takeovers versus IPOs

Concerning reverse takeovers, the academic literature is quite limited. Gleason et al., (2005a) hold out an exploratory analysis of reverse takeovers by examining a sample of 121 U.S. reverse takeovers occurred in the NASDAQ, NYSE and AMEX. Their findings show that public entities (shell companies) are unprofitable prior to the takeover and the main reason that participated in a RT is the good financial performance of the private firm. The motivations for private companies are the willingness for growth, the expansion of their operations in related or different industry sectors and the opportunity to go public. The authors find significantly positive abnormal returns on the RT announcement period, however, the post-merger performance of the new entity seems not to be improved. Moreover, the survival rates of the RTs are quite low, with only 46% of the sample firms survived two years after the event.

In Gleason's et al. (2005b) study, the characteristics of firms that prefer reverse takeovers or self-underwritten (SU) IPOs vis-à-vis traditional IPOs are examined. The findings reveal that in the year of listing, these firms have significantly lower ROA, lower balance sheet liquidity, higher probability of financial distress and higher financial leverage than firms that have selected the IPO path to obtain public listing. Two years after the event, RTs and SU firms have even lower profitability, less balance sheet liquidity and lower price to sales ratio than the IPO firms. Regarding the stock market performance after the event, RTs and SU firms seem to outperform their matched IPO counterparts IPO in the short term.

The research of Aydoglou et al., (2007) is primarily focused on the characteristics of the public partner of the transaction, especially when this is a shell company. As it is explained, these companies are usually connected to stock price manipulation and

² Roll up is an event where small companies of the same industry are merged in order to take advantage of economies of scale and to go public.

persistent insider trading and that's the reason why, in recent years, RTs have attracted regulator's attention. Thus, shell companies are examined as IPO alternatives and it is found no evidence of persistent insider trading or stock price manipulation despite the high information asymmetry of these firms. Moreover, Aydoglou et al., (2007) find increased trading activity, statistical positive returns surrounding the announcement of RTs and statistically insignificant positive returns after the announcement.

Adjei et al. (2008) use a sample of 286 RTs and 2,860 IPOs and examine the survival of the new entities 3 years after the event. IPOs survival rate is 73%, while that of RTs is 58.3%. The study provides additional characteristics of the sample firms, with the most significant to be the fact that the reverse merger process is not used only by the firms that fail to meet the listing requirements to go public via IPO. It is found that only 1.4% of the sample could not be listed in a stock exchange through the traditional IPO method.

Floros and Sapp (2009) study the shell company that participate in a reverse takeover and find that an 11-day abnormal return of 35.7% surrounding the announcement of RT. They mention that, on average, investors of shells still lose money, despite the significant returns obtained by the RT announcement. Regarding the type of private company that chooses to go public via a reverse merger with a shell, the study finds some common characteristics such as the very low profitability and liquidity, minimal assets and few capital expenditures.

Sjostrom (2008) and Floros and Shastri (2010) argue that RTs are not really comparable to traditional IPOs as the former are smaller. For this reason, Floros and Shastri, (2010) compare RTs to penny stock Initial Public Offerings (PSIPOS), as PSIPOS are claimed to be more comparable than IPOs. Their results show that reverse takeover is used as an alternative mechanism to go public by highly information asymmetric firms that have low profitability, low liquidity, are in a primary stage of development and want to invest more in R&D. The factor that affects these firms not to choose the PSIPO path is probably, the large discount of their stock price encounter due to the high information asymmetry that characterize them and consequently, the misevaluation from outside investors.

Carpentier et al., (2009) select a sample of 1,455 Canadian IPOs and RTs between 1993 and 2003. Their purpose is to test whether regulation and disclosure have an important economic impact. Indeed, they find that the level of regulation and disclosure affect the

value and the long-term performance of the firms that go public and that shareholders' wealth declines due to low listing requirements. Thus, it is preferable for an investor to invest in firms with full disclosure, as RT-listed firms perform poorer than IPO-listed firms.

Chapter 3

The Reverse Takeover process

3.1 Description of the reverse takeover process

After reviewing the pertinent literature for RTs, we provide some characteristics of RTs. Reverse takeover is considered to be the transaction where a private company is acquired by a public (usually a shell company) and it is the mechanism for the private partner to become publicly traded.

This is a different type of merger due to the fact that the target is searching for the appropriate vehicle -a shell company- to go public. In a RT process, a consulting firm may provide additional information for the suitable shell company. In some cases, small investments banking outfits or clearinghouses are hired to handle the transaction completely (Gleason et al., 2005). When the appropriate shell company is found and a financial strategy is planned, the private firm contacts the shareholders of the shell company to detect whether they are willing to participate in this takeover or not and determine the post-event ownership structure of the new entity (Brenner and Schroff, 2004). Then, the initial agreement is signed by the two parties and the auditors of both firms conduct due diligence to certify the exact ownership percentage that is agreed to obtain each company in the new entity (Floros and Shastri, 2010). Certainly, the new entity is mainly owned by the private firm, since in most RTs the public company uses a large number of shares in order to 'buy' the private one and hence, the private firm gains interest in the shell. Thus, after the completion of the event, the new entity usually operates under the management of former private company. In most cases, the new firm takes the name of the private company or entirely new name (Dasilas et al., 2009).

3.2 The motivation for Reverse Takeovers

The motivation for a firm to conduct a reverse takeover is not only connected to benefits provided by the process itself, but also to other, general advantages. More specifically, a private firm may be motivated for a RT because of the benefits of the going-public process, the advantages of undertaking a merger and the avoidance of the disadvantages of IPOs.

3.2.1 Going public

A number of motives for RTs is associated with the going public process. Thus, a firm conducts a RT in order to obtain a public listing, have access in capital markets, pay its employees and managers in stock, obtain a more diversified shareholder base and enhance liquidity (Gleason et al., 2005). Valuation is another important factor that can influence the decision of a RT. It seems that a private firm has lower valuation in comparison with a public one and thus, a public listing becomes desirable. Some of the characteristics of the public firm that contribute to this higher valuation are higher liquidity, transparency and publicity (Seabury, 2008).

3.2.2 M&As

As a corporate event, a RT is considered to be a merger. Mergers and acquisitions are undertaken by a firm usually, in order to grow and profit from synergy effects (Dasilas et al., 2009). If a firm wants to expand its operations in other countries, or in other sectors of the same industry or even in other industries, a RT is considered the ideal vehicle.

Regarding the synergy effects, it is alleged that if two firms of the same industry merge, they can take advantage of the economies of scale. In other words, the combined firm's cost per unit is lower than if the two companies operated separately and thus, the new entity 'enjoys' cost efficiency.

3.2.3 RTs versus IPOs

In this sub-chapter, we present the motives that are referred as the most important RT drivers. First and foremost, a firm conducts a RT because a public listing is desirable without the obligation of raising capital at the same time. Thus, since in most cases, RT firms access the capital markets at a later stage of their lifecycle (Gleason et al., 2005), this is considered to be a serious motive of a firm to undertake a RT in contrast with an IPO. Secondly, a private firm is motivated to conduct a RT, when the IPO process is not much accessible, as for example, the case of small firms. Moreover, a lot of firms prefer a RT to an IPO because the former is a quicker mechanism to obtain the desirable listing. Brenner and Schroff (2004) argue that normally an IPO needs time that reaches one calendar year to be completed. A RT, on the other hand, needs approximately 2 to 9 months, or 87 days according to the sample of this study, to be completed. Brenner and Schroff (2004) also refer to the costs around the RTs and IPOs. An IPO needs over

\$400,000 to be completed while an RT process requires approximately from \$75,000 to \$100,000. Finally, a private firm has motivation to choose a RT for its public listing because this is less likely to be cancelled out. If the two parties, the target and the acquirer, reach an agreement, the deal is completed. Following the IPO route, an offer may be not admitted due to the poor performance of the market.

3.4 Regulation

As it has already been mentioned, the public entity that participates in a reverse takeover transaction is usually a shell company. This is a type of company that usually has not assets or operations, probably following a bankruptcy or just because it was established only for the purpose of merging with another company (Aydoglou, et al., 2007). In many cases, despite the fact that they are legal entities, these companies are connected to fraud and more particularly to stock price manipulation and persistent insider trading. Therefore, RT mechanism quite often attracts the regulatory authorities' interest by starting new conversations for tightened rules around it.

The majority of RT across Europe is concentrated in the UK market. Specifically, 145 private firms and 153 public firms of our sample are from the United Kingdom. Therefore, it would be useful to examine what rules are imposed for the reverse takeover transaction by the UK Listing authority (UKLA). It is worth mentioning that UKLA is a division of Financial Service Authority (FSA) and it is the body responsible for regulating all securities listed in the UK financial markets.

Under the Listing Rules (LR) that the FSA poses, investors are assumed to be protected. LR 5.1.1 R(1) states that in order the investors to be protected or the smooth operation of the market not to be jeopardized, the FSA may suspend the listing of any securities. Also, LR 10.6.3G proposes that an issuer's equity shares will be suspended upon announcement if FSA judges that there is no sufficient information in the market about the proposed transaction. The necessary pieces of information to be available in the market are, whether the target is admitted elsewhere, the quality of information available and whether the issuer fills any information gap at the time of announcing (FSA, n.d.). Since the private company is the dominant after the transaction and the available information for its performance is very limited, it is very logical for FSA to be more suspicious about the new entity and the information that will provide. The commitment of fraud as persistent insider trading is very possible when there is lack of

the necessary information, since managers of the combined firm (insiders) have more information than the outside investors about the future plans of the firm.

On January 2012, FSA published a consultation paper (CP12/2) in order to propose changes, among others, to the existing reverse takeover rules (FSA, 2012). These changes are updates of the previous rules in order to take into account the market development (Law, 2012). The proposed changes ensure that RT process is used only by eligible companies. Also, they determine the role of sponsor as the one that ensures that the RT companies understand the regulatory framework and provides assurance to the UKLA that these companies fulfill the requirements. Moreover, the role of external managed companies is determined and the criteria for premium listing are revised. Clearly enough, it looks like that the FSA tries to keep pace with market development and proposes updates of the existing rules, when it is necessary, in order to protect the investors.

3.5 An RT Example

After analyzing some significant aspects of RTs and the process itself, it would be beneficial to give an example of a completed reverse takeover transaction, in order to find out all these aspects practically.

On 7th September, 2011, it was announced that Vallares PLC, a ‘blank check’ company founded by Tony Hayward, Nathaniel Rothschild and Julian Metherell based on the United Kingdom, was about to acquire the Turkish Genel Enerji AS, the largest oil producer in the Kurdistan region of Iraq. As Doug Youngson, an analyst at Arbutnot Securities Ltd. in London, says, “Genel has good assets and their fields were some of the first on stream in Kurdistan The deal is good for sentiment in the region”, and this seems to be the main motive of Vallares to agree with this deal. While earlier in June, Vallares had raised \$2.2 billion in a London IPO so as to fund taking over companies with upstream assets, it can be easily concluded that Vallares, as a blank check company, was established only with the purpose of merging with other companies.

The newly enlarged company, that was renamed to Genel Energy PLC, was obliged to publish a prospectus in October to get the consideration shares admitted to the standard listing segment of the Official List and to trading on the London Stock Exchange’ main market for listed securities. In the meantime, Vallares shares were suspended from trading. The transaction was completed on 21st November, 2011. In other words, 74 days after the announcement, as an all-share reverse takeover. This means that Vallares

did not pay any money, but instead issued new shares worthing \$2.1 billion at a price of £10 per share in order to acquire 100% of Genel. Moreover, equal stakes of the combined business were given to the owners of the two previously separated entities.

When the stock of Genel started trading in 21st November, 2011, it faced significant losses of 7% from the first day. Many analysts believed that this was an impact of corporate governance. Two of the major shareholders of the new entity that hold almost 50% of its shares and were also partners of the previously Genel Enerjii, Mehmet Sepil and Mehmet Karamehmet had been accused in the past for insider trading and for uttering to a website death threats to a former business partner, respectively. (Lundgren and Swint, 2011; CNF, 2011)

The conclusion that can be extracted from this example is that in a RT process, the public company is usually a shell company, the transaction is completed in less time than that needed by an IPO and the payment is usually made in stock. Among the most important is that the FSA rule, which says that the stock has to be suspended before the appropriate information is given to the public, helps in reducing the information asymmetry so as the stock price to reflect as much as possibly of the available information. Moreover tightened rules should be imposed by FSA concerning the requirements of the RTs firms to get listed.

Chapter 4

Data and Descriptive Statistics

4.1 Data Sources

The purpose of this study is to examine the wealth effects of reverse takeovers that took place in Europe between 1992 and 2011. The criteria applied to form the sample of RTs are the following. a) Both acquirer and target should be located in Europe, b) The transaction of RTs is completed. By imposing these criteria, the Thomson One database, gave us an initial sample of 339 reverse takeovers. After eliminating all RT transactions with missing data, we ended up in a final sample of 222 RT deals. Fundamentals and stock prices were derived from Bloomberg.

4.2 Descriptive statistics

4.2.1 Summary of sample characteristics

Table 1 presents the frequency of the sample RTs over the period 1992-2011.

Table 1 Distribution of reverse takeovers announcements in Europe 1992-2011

Year of announcement	Number of announcements	Percent of sample
1992	1	0.45
1993	4	1.8
1994	2	0.9
1995	6	2.7
1996	5	2.25
1997	12	5.41
1998	6	2.7
1999	14	6.31
2000	17	7.66
2001	21	9.46
2002	10	4.5
2003	9	4.05
2004	8	3.6
2005	25	11.26
2006	20	9.01
2007	17	7.66
2008	14	6.31
2009	9	4.05
2010	17	7.66
2011	5	2.25
Total	222	100

From 1992 to 2001, the reverse takeover mechanism grows in popularity while more firms later choose RTs as a means of going public. Between 2002 and 2004, the number of RTs decline and then increases again until the outbreak of the global financial crisis (2008). The tech/dotcom bubble burst in 2001 that affected the IPO market looks like to be the reason behind the decline in RTs after 2001. While 8 private companies in 2000 and 9 private companies in 2001 from the High technology and Telecommunications industry have chosen the RT process to go public, only 1 from Telecommunications involved in a RT in 2002. Thus, RTs pattern seems to be similar to that of IPOs and this refutes the misconception that RT process is useful only when the IPO market is not receptive.

In Figure 1, it can be observed the similar pattern of European and global RT market.

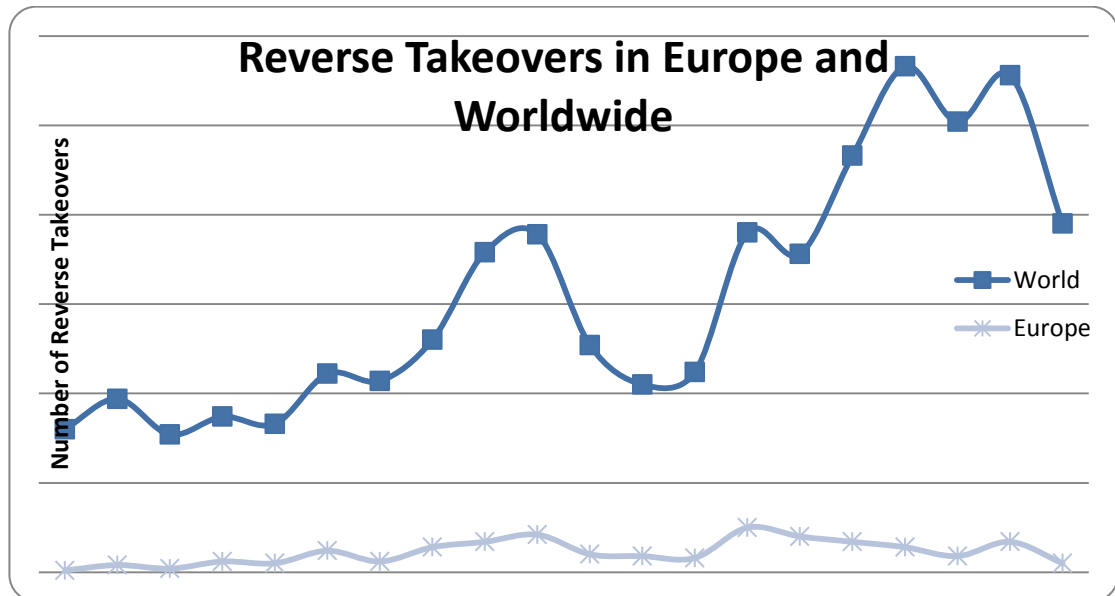


Figure 1 Reverse Takeovers in Europe and Worldwide

Table 2 Distribution in the same industry and in the same/different sectors

	Industry	Sector	
	Same	Same	Different
Consumer Products and Services	-	-	-
Consumer Staples	8	8	-
Energy and Power	11	9	2
Financials	22	12	10
Healthcare	5	4	1
High Technology	14	4	10
Industrials	6	3	3
Materials	11	10	1
Media and Entertainment	9	9	0
Real Estate	10	6	4
Retail	5	5	0
Telecommunications	5	4	1
Total	106	74	32

Table 2 demonstrates the distribution of RTs across industries. 106 firms involved in a RT, or approximately 47.75% of the sample, choose to merge with a company that operates in the same industry. Moreover, 74 firms operate in the same sector or in the same mid-industry and 32 operate in the same industry but in different sectors. This result proves that the motive of almost half of the RTs of the sample is to expand their operations within the same sector or to a complementary one and thus increase their market share.

At this point, it is important to mention that most of the firms, public and private, that participate in the RT process come from a wide range of industries where some of them display good growth opportunities. This is in contrast with the popular misconception that the market of RTs is made up of small private firms in speculative sectors merging with failing public firms in low growth opportunity industries (Gleason et al., 2005). Table 3 indicates, among others, that 16.22% and 28.38% of the sample are private and public firms, respectively that are from the financial industry. Moreover, 14.41% and 13.51% of the sample are public and private firms, respectively that belong to high technology industry.

Table 3 Distribution of the private and public firms in the various industries

	Private firm		Public firm	
	Number of RTs	% of Sample	Number of RTs	% of Sample
Consumer Products and Services	14	6.31	11	4.95
Consumer Staples	11	4.95	13	5.86
Energy and Power	18	8.11	14	6.31
Financials	36	16.22	63	28.38
Healthcare	12	5.41	7	3.15
High Technology	32	14.41	30	13.51
Industrials	21	9.46	22	9.91
Materials	19	8.56	19	8.56
Media and Entertainment	22	9.91	15	6.76
Real Estate	13	5.86	15	6.76
Retail	8	3.6	6	2.7
Telecommunications	16	7.21	7	3.15
Total	222	100	222	100

Table 4 presents the sample distribution of RTs across countries of origin. 145 private firms and 153 public firms of the RTs under examination are UK companies and, generally, it seems that RT process is preferred more by West-European countries as alternative mechanism to go public than by East-European.

Finally, considering the motive of expansion in other countries, our results depict that 33 out of 222 firms merge with a company from different country. This cross-border RT implies that the private company's motives to merge with a company from another country could be the expansion of its operations to that country or its access to a different capital market. Specifically, 13 out of these 33 cross-border RTs are non-UK companies that got access in the London Stock Exchange, the largest stock exchange of Europe.

Table 4 Distribution of private and public firms by country of origin

	Private Firm	Public Firm
Austria	3	2
Belgium	3	3
Czech Republic	1	-
Denmark	2	1
Finland	5	5
France	11	13
Germany	5	3
Gibraltar	-	1
Ireland-Rep	3	3
Isle of Man	2	2
Italy	1	1
Jersey	-	2
Luxembourg	2	1
Netherlands	3	1
Norway	6	4
Poland	3	4
Russian Fed	1	-
Spain	5	4
Sweden	13	12
Switzerland	5	6
Turkey	2	1
Ukraine	1	-
United Kingdom	145	153
Total	222	222

4.2.2 The characteristics of the Public Firms

In order to find out whether the good financial position of the private company is a motive for the public firm to be involved in an RT transaction, it is important to investigate the performance of the public entity before the event. If the performance is poor, then, the RT is obviously an ideal process to improve it.

Table 5 depicts some fundamentals for the sample firms one year prior to the RT transaction. The results indicate that the public firm is a small capitalized firm whose total assets approximate 1.51 million Euros. Moreover, the negative prices of return on assets (ROA), return on equity (ROE) and net profit margin imply that the management of the public firm is completely inefficient to generate earnings by using its assets and thus the company is unprofitable. In addition, the average cash to total assets ratio is 21.47% revealing the low liquidity of the firms, while the debt to total assets ratio is 18.74%.

To sum up, the public entity's financial position one year prior to the event is extremely poor. To recover from these losses, the strong financial position of the private company is considered to be the most powerful motive for the public firm to be involved in a RT.

Table 5 Summary of the characteristics of the public firms

Panel A: Major financial characteristics of the public firms one year prior to the announcement						
	No	Mean	Median	Maximum	Minimum	St. Deviation
Total assets (in thousands of Euros)	162	1,511.839	25.109	457406	0.003	36,860.423
Market value of equity (in thousands of Euros)	144	974.947	14.749	50,995.471	-52.712	6,055.714
Return on Assets (%)	143	-8.83	0.038	40.247	-231.825	41.306
Return on Equity (%)	127	-11.6	2.183	111.975	-629.268	87.496
Net Profit Margin (%)	135	-126.363	0.968	51,796.057	-463100	43,896.938
Cash to Total Assets (%)	159	21.468	9.371	100	0	29.877
Debt to Total Assets (%)	162	18.742	14.517	140.63	0	22.339
Panel B: Various ratios of the public firms one year prior to the announcement						
	No	Mean	Median	Maximum	Minimum	St. Deviation
Total capitalization (in thousands of Euros)	91	1,244.109	12.838	29396	-10.395	4,674.045
Total equity (in thousands of Euros)	92	446.189	10.235	22086	-10.395	3,222.953
Book value of current liabilities (in thousands of Euros)	88	202.168	4.749	11832	0.001	1,847.962
Book value of shares outstanding (in thousands of Euros)	88	126.494	40.2	1,200.436	0	252.731
Current ratio	88	4.636	1.451	92.716	0.052	16.383
Quick ratio	88	3.361	0.936	92.151	0.004	15.313
Cash ratio	87	3.017	0.397	92.151	0.001	15.475
DPS	83	0.212	0	80	-0.076	8.942
Payout ratio (%)	39	28.35	11.671	116.11	0	30.447
Common Equity/ total assets	93	43.82	51.466	98.921	-1,833.328	199.49
Asset turnover ratio	85	0.753	0.598	3.881	0	0.853
Financial leverage	84	3.04	1.755	196.116	-43.259	22.177
Sales / total assets	90	0.705	0.45	178.333	0	18.742
EBIT (in thousands of Euros)	90	42.26	-0.058	4454	-25.248	561.274
EBITDA (in thousands of Euros)	91	83.01	0.329	5914	-7.01	770.376
EPS	93	0.47	-0.003	451	-235.813	56.008
EBIT margin (%)	73	-76.851	0.331	42.865	-470000	5,5875.151
P/E ratio	38	43.89	13.4	1,127.199	0.254	181.12

Note: The number of observations fluctuates from ratio to ratio due to data unavailability

4.2.3 Summary of transaction characteristics

Table 6 presents some characteristics of the reverse takeover transactions. The average deal value to sales ratio is 26.45. This ratio indicates the deal value divided by the product of the percentage of the target's shares acquired and the target's net sales for the last 12 months prior to the announcement of the event³. The average (median) of the shares acquired through the reverse takeover transaction is 97.45% (100%), and the average (median) of shares owned after the transaction is 99.72% (100%). The interpretation of these results is that the acquirer usually did not have any ownership of the target prior to the reverse takeover. Moreover, the average enterprise value and the average equity value at the announcement are 1.647 million Euros and 958,800 Euros, respectively.

Panel B of Table 6 presents information about the number of firms involved in an RT that request consultation from a financial advisor. It can be seen that the public firm of the transaction seeks for a consultation more often than the private firm does. Additionally, there are cases where the same firm receives consultation from more than one advisor.

Table 6 also includes some names of financial advisors that participated in the reverse takeover transaction from the private partner's side or/and from the public one. Large and well-known investment banks such as, Deutsche Bank, Goldman Sacks and, JP Morgan seem to be the most popular financial advisors in RT transactions.

³ Definition is provided by Thomson One

Table 6 Transaction characteristics

Panel A: Description of the transaction characteristics						
	Number	Mean	Median	Maximum	Minimum	St. Dev
Ratio of Deal Value to Sales	118	26.45	1.322	4500	0	438.868
% of Shares Acquired	217	97.455	100	100	0.548	15.976
% Owned After Transaction	217	99.723	100	100	3.53	9.236
Enterprise value at Announcement (€thousands)	193	1,640.669	45.271	27,4759.5	-2,403	27,707.349
Equity Value at Announcement(€thousands)	192	958.801	441.055	95,824.581	0.384	9,956.995
Panel B: Financial Advisors						
	Private Fir	Public Firm				
Financial Advisor	97	139				
No Financial Advisor	125	83				
Panel C: Participating Financial Advisors' Names (No of RTs)						
Financial Advisors			Financial Advisors			
Deloitte & Touche Corp Finance (2)			Alfred Berg A/S (2)			
Deutsche Bank (4)			Altium Capital Limited (2)			
Ernst & Young LLP (2)			Apax Partners & Co Ltd (2)			
Goldman Sachs & Co (7)			Arthur Andersen Corp. Fin. (2)			
JP Morgan (9)			Baker Tilly & Co (3)			
KBC Peel Hunt Ltd (4)			Brewin Dolphin Securities (3)			
KPMG (3)			Collins Stewart Ltd (4)			
Lazard (4)			Grant Thornton (7)			
Lehman Brothers International (1)			Evolution Beeson Gregory (2)			
Morgan Stanley (4)			NM Rothschild & Sons Ltd (2)			
NM Rothschild & Sons Limited (2)			Ermgassen & Co. (2)			
Rowan Dartington & Co Ltd (2)						

Chapter 5

Methodology

5.1 Event study methodology

To measure the stock price reaction to the announcement of a reverse takeover we use the classical event study methodology. This is the most common method that researchers use in order to examine market efficiency and to uncover wealth effects surrounding announcements of corporate events. To be more specific, the current study examines whether the announcement of a RT, affects stock prices and consequently creates value for the company's shareholders.

As return-generating models, market model and market adjusted model are used. The market-adjusted model states that the ex-ante expected return on a stock is constant across stocks and can differ across time. The expected return for stock i in time t is given by (Sudarsanam, 2010):

$$E(R_{it}) = E(R_{Mt}) \quad (1)$$

The Market model is given by:

$$E(R_{it}) = a_i + b_i R_{Mt} \quad (2)$$

The parameters a_i and b_i are estimated using the Scholes and Williams (1977) technique which takes into account thin trading problem, a commonly observed problem in shell companies. Market model parameters are estimated by regressing the stock returns on the market return for the estimation period that ranges from $t-250$ to $t-11$ where $t=0$ is the announcement date.

Therefore, abnormal return is the difference between the actual return and the expected return on the security and it should be taken as follows:

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

where AR_{it} is the abnormal return, R_{it} is the realized return and, $E(R_{it})$ is the expected return on security i for period t .

By combining equation (1) and (3), we conclude that the abnormal returns based on the market-adjusted model are calculated as follows:

$$AR_{it} = R_{it} - R_{Mt} \quad (4)$$

While, by combining equations (2) and (3), the abnormal returns based on the market model are calculated as:

$$AR_{it} = R_{it} - (a_i + b_i R_{Mt}) \quad (5)$$

However, using equations (4) and (5), we calculate the abnormal returns of one security.

In order to calculate the abnormal returns of the sample, we use the formula of Average Abnormal Return (AAR) that is provided below:

$$AAR_t = \sum_{i=1}^N \frac{AR_{it}}{N} \quad (6)$$

Where N is the number of stocks announcing a RT.

After the calculation of the abnormal returns based on the two models, the cumulative abnormal returns are calculated as the sum of the abnormal returns for a specific period T . The formula is presented as:

$$CAR_{iT} = \sum_{t=1}^T AR_{it} \quad (7)$$

Cumulative abnormal returns (CARs) are computed for the following event windows: (-10,10), (-10,-1), (+1,+10), (-5,+5), (-5,-1), (+1,+5), (-1,+1) and (-1,0). The reason to compute CARs prior and post-RTs is to capture possible information leakages or sluggish market reaction and this check for market efficiency.

Based on the market model, we also calculate abnormal volatility. Following Landsman and Maydew (2002), abnormal volatility (AVAR) is estimated as follows:

$$AVAR_{it} = \frac{AR_{it}^2}{\sigma_i^2} \quad (8)$$

where AR_{it}^2 are the squared abnormal returns that the market model gives and σ_i^2 is the variance of the firm's i market model returns that are calculated during the estimation period from $t-250$ to $t-11$. Abnormal volatility can take only positive values. When this value is below the unity, it implies a reduction in volatility, while an abnormal volatility that is above unity, implies an increase during the specific period.

5.2 Multivariate Regression

Probing deeper into the valuation effects of RTs, we employ cross-sectional regression analysis using CARs of three days (-1,1) as dependent variable. And a number of independent variables such as Total Assets, Return on Assets, Cash to Total Assets and a dummy variable that takes 1 for private and public firms belonging to different industries, and 0 otherwise. The selection of control variables is based on prior studies investigating RTs (see, for example, Gleason et al, 2005a). The main purpose of the

regression analysis is to figure out whether CARs are related to some characteristics of the acquirer. More specifically, total assets indicate the size of the bidder, while ROA and Cash to Total Assets measure profitability and liquidity, respectively. The dummy variable tests for differential price effects that exist in cases that targets and acquirers operate in the same industry.

5.3 Long term performance

Moreover, we assess the long-term performance of RTs following the deal. In particular, we employ a number of financial ratios for the year in which the event occurred and the following two years. The basic goal of this technique is to test whether there is improvement in the financial performance of the RTs firms after the event. In order to have a general view of the sample, we calculate, mean, median, maximum, minimum and standard deviation of the ratios. We take into account for the existence of outliers by winsorizing our data by 1.5%

We use tests of equality to identify if there is a statistically significant change in the mean and median ratios surrounding the event. The comparison is made between the periods (-1,0), (0,1), (-1,+1) and (-1,2). The two-tailed t-statistic and the Wilcoxon signed rank test are used to test for differences in means and medians, respectively.

Chapter 6

Empirical results

6.1 Stock price reaction to RTs

Panel A of Table 7 reports the average abnormal returns of the stocks of the sample for each of the 20 days surrounding the event. Based on the market model, we observe abnormal returns of 0.842, 1.822%, 3.087% and 4.646% for days -2, -1, 0 and +1, respectively. All these abnormal returns are statistically significant indicating that RT announcements bring about significant price appreciations to public firms' shareholders. The market-adjusted model, on the other hand, indicates that there are statistically significant abnormal returns in two days prior to the announcement and the day of the announcement (day 0). The mean abnormal returns for each of these days are 0.684%, 1.799% and 2.902%, respectively. The results from both models show that the investors' reaction to the announcement of a reverse takeover is very quick since there is no excess returns following the event date.

Panel B of Table 7 presents the cumulative abnormal returns (CARs) for several event windows based on both models. Market model CARs range from 3.023% to 10.629% for the various event windows. More particularly, for the (-1, +1) event window, the average CAR is 9.555%. Moreover, the lowest price of 3.023% refers to the (+1,+10) event window, implying that after the first days of the announcement, the returns tend to be more normal. It is also important to mention that all these results are statistically significant at the 1% level. The CARs based on market-adjusted provide quite similar results. They are all statistically significant except for the (+1, +10) event window and they range from 2.081% to 9.345%. Undoubtedly, the above results confirm that a reverse takeover is an event that increases the wealth of the shareholders of the public firm.

Table 7 Abnormal and Cumulative abnormal returns around reverse takeovers

Panel A: Abnormal Returns around RTs				
Days	Market Model		Market-adjusted	
	AAR%	t-statistic	AAR%	t-statistic
-10	0.22	0.537	0.133	0.28
-9	0.302	0.737	0.126	0.45
-8	0.221	0.539	-0.005	-0.017
-7	0.45	1.097	0.359	1.343
-6	-0.204	-0.497	-0.096	-0.339
-5	0.267	0.65	0.285	1.186
-4	0.047	0.116	-0.113	-0.396
-3	0.383	0.933	0.324	1.416
-2	0.842**	2.052	0.684***	2.247
-1	1.822***	4.442	1.799***	2.868
0	3.087***	7.523	2.902*	1.828
1	4.646***	11.324	4.148	1.364
2	-0.331	-0.806	-0.423	-0.711
3	-0.385	-0.939	-0.452	-1.009
4	0.039	0.095	0.006	0.021
5	0.213	0.519	0.186	0.263
6	-0.166	-0.405	-0.123	-0.373
7	-0.373	-0.908	-0.3	-1.11
8	-0.019	-0.047	-0.077	-0.255
9	-0.238	-0.58	-0.407	-1.43
10	-0.362	-0.882	-0.478	-1.18

Panel B: Cumulative Abnormal returns around RTs				
Event Window	Market Model		Market-adjusted	
	CAAR %	t-statistic	CAAR %	t-statistic
(-10 +10)	10.461***	5.564	8.478***	4.509
(-10 -1)	4.351***	3.354	3.495**	2.694
(+1 +10)	3.023**	2.33	2.081	1.604
(-5 +5)	10.629***	7.812	9.345***	6.867
(-5 -1)	3.361***	3.664	2.978***	3.246
(+1 +5)	4.182***	4.558	3.465***	3.777
(-1 +1)	9.555***	13.446	8.849***	12.452
(-1 0)	4.909***	8.461	4.701***	8.101

Note: * indicates a significant difference from zero at the 10% level. ** indicates a significant difference from zero at the 5% level and *** indicates a significant difference from zero at the 1% level

Table 8 Abnormal Volatility around RTs

Days	AAV%	t-statistic
-10	0.568***	-3.536
-9	0.611***	-2.455
-8	0.644**	-2.262
-7	0.491**	-2.13
-6	0.502***	-4.846
-5	0.485***	-3.058
-4	0.398***	-5.469
-3	0.368***	-6.299
-2	0.563*	-1.854
-1	1.04	0.177
0	10.178***	4.21
1	6.196***	4.443
2	1.857*	1.717
3	1.437	1.302
4	0.592***	-4.219
5	1.266	0.496
6	0.909	-0.329
7	0.848	-0.779
8	0.734	-1.188
9	0.617*	-1.891
10	0.795	-0.788

Note: * indicates a significant difference from zero at the 10% level. ** indicates a significant difference from zero at the 5% level and *** indicates a significant difference from zero at the 1% level.

Table 8 provides results from the abnormal volatility (AV) surrounding RTs. For the ten-day period prior to the event, abnormal volatility is lower than unity implying a reduction in volatility. The significant volatility of 10.178% is generated on the day of the announcement and indicates the increased volatility due to the event. In the following two days, the abnormal volatility is 6.196% and 1.857%, respectively. A possible explanation of this increased volatility is given by Ritter (1987) who states that the stock price volatility post-going public is related to the uncertainty about the market value of the firm prior to going public. For the reverse takeover transaction, specifically, this means that the volatility is so high because there is little information provided for the private firm prior to the acquisition. Also, since it is not required to conduct prospectus and registration statements and there is no price stabilization activity by an underwriter as in the case of IPO, there is great uncertainty and post going public volatility of reverse takeover firms (Gleason, et al., 2005b).

6.2 Multivariate Regression

Table 9 presents the results from the regression analysis. As it can be observed, apart from the intercept, the only statistically significant variable is the logarithm of Total Assets (logTA) that refers to the firm size. Analytically, the coefficient of firm size is -0.0717 and -0.0673, respectively in the two models. This means that the higher firm size is, the lower cumulative abnormal returns are generated due to the announcement of an RT. Inversely, small firms are characterized by large cumulative abnormal returns.

As it has already been mentioned, most of the public firms of the sample that participated in a reverse takeover transaction are small capitalization firms mostly known as penny stocks or shell companies. Aydoglou et al., (2007) state that the firm size is negatively related to information asymmetry and thus, small firms are also highly information asymmetric. In the presence of information asymmetry, however, small companies cannot provide the public with available information about future prospects of the company, since they are usually not followed by analysts. Hence, this information is not reflected in the share price, that is probably undervalued. Andres et al., (2007), in a similar research for Leveraged Buyouts (LBOs) say that 'it is not until the publication of the LBO announcement, and thus an increasing public interest that the stock becomes more liquid and all relevant information is incorporated in the stock price.' Also, their empirical results depict this negative relationship between firm size and abnormal returns.

In this study, the results of the regression analysis that is presented in Table 9, can be explained in a similar manner to Andres' et al., (2007) findings. It seems that the large abnormal returns of the shell company's stock are generated because the announcement of the reverse merger transaction attracts public's interest and consequently, the stock price reflects the available information and is valued fairly.

In another regression analysis for RTs, Gleason et al, (2005a) find that the cash to total assets ratio is a statistically significant variable that is positively related to the abnormal returns. This is interpreted as that the more liquid firms generate higher abnormal returns. From the same analysis, it can also be extracted, similarly to our results, that the smaller firms are characterized by larger CARs, but in this case, total assets is not a statistically significant variable.

Table 9 Multivariate Regression of 3-day (-1,+1) cumulative abnormal returns

Model	Cash/Tot					R-squared	No of Obs.
	Intercept	al Assets	ROA	LogTA	Dummy		
1	0.2168**	-0.0005	0.0005	0.0717***	-0.026	0.069	139
	-25.699	-0.4042	-0.5773	(-2.6104)	(-0.3895)		
2	0.2007**	0.0007	0.0005	-0.0673**	-0.0341	0.064	139
	-2.373	-0.5073	-0.5529	(-2.4453)	-0.61128		

Note: Model 1 regresses CARs (-1,+1) taken from the market model, while Model 2, CARs from market-adjusted. * indicates a significant difference from zero at the 10% level. ** indicates a significant difference from zero at the 5% level and *** indicates a significant difference from zero at the 1% level. T-values are in the parenthesis.

6.3 Long-term performance

6.3.1 Accounting Performance

In this section, we examine the financial performance of the new enlarged entities for the year in which the reverse takeover occurs and the subsequent two years.

Looking at the firm size as measured by total assets from the year prior to the event with that of the year event, we observe an increase of 56.2%. In the following year, there is a small decline in firm size. However, in the second year, there is a similar increase to the first one indicating that the size of the firm has been doubled in 2 years after the reverse takeover. Additionally, market value of Equity is also getting larger year after year. Consequently, in terms of total assets and market value of equity, the firm size increases steadily after the reverse merger.

Return on Equity, Return on Asset and Net Profit Margin, however, still indicate that these firms do not generate profits. The results of these ratios remain negative for the period under examination and prove the bad financial performance of these entities. Analytically, the negative values of Return on Asset indicate the inefficiency of these new entities' management to generate earnings after the event by using their total assets. Return on Equity as another profitability ratio, measures how much efficient are these firms to generate profits from every unit of shareholders' equity. During the whole period under examination, ROE takes negative values and this is not a good figure for the growth of the RTs, since it results in low share price and makes it difficult for the firms to attract new funds. Net Profit Margin, as the last profitability indicator used in this study, remains negative for the period under examination and verifies once again the bad financial performance of these entities.

Table 10 Summary of financial characteristics of the sample firms in the post-RT period

	No	Mean	Median	Maximum	Minimum	Standard Deviation
<i>Panel A : Public entities at the end of the year in which the reverse takeover occurs</i>						
Total assets (in thousands of Euros)	173	2,361.697	54.7	576393	0.217	46,853.594
Market value of equity (in thousands of Euros)	173	1,213.470	44.267	10,7378.96	-40.468	9,818.33
Return on Assets (%)	148	-15.513	0.4613	63.614	-499.015	71.279
Return on Equity (%)	132	-15.351	1.883	109.860	-464.84	76,879
Net Profit Margin (%)	166	-127.128	-0.891	655.634	-27,735.48	2,676.191
Cash to Total Assets (%)	171	14.354	8.032	97.235	0	20.073
Debt to Total Assets (%)	173	18.863	14.668	84.8	0	20.218
<i>Panel B: Public entities one year after reverse takeover</i>						
Total assets (in thousands of Euros)	175	2,270.448	68.481	320004	0.003	29,602.1407
Market value of equity (in thousands of Euros)	175	1,938.161	63.821	335,286.22	-2.518	29,684.387
Return on Assets (%)	161	-5.578	1.014	44.945	-135.249	25.566
Return on Equity (%)	149	-5.618	4.436	58.065	-270.3	45.820
Net Profit Margin (%)	175	-49.132	1.833	104.931	-3,260.641	394.521
Cash to Total Assets (%)	173	12.192	6.815	100	0	17.599
Debt to Total Assets (%)	175	19.602	16.146	138.867	0	21.695
<i>Panel C: Public entities two years after reverse takeover</i>						
Total assets (in thousands of Euros)	155	3,351.747	82.882	368859	1.435	37,129.311
Market value of equity (in thousands of Euros)	163	2,681.365	74.468	382,056.185	-0,429	38,134.146
Return on Assets (%)	147	-4.865	0.907	39.328	-157.064	25,039
Return on Equity (%)	138	-6.445	3.348	50	-196.344	41.901
Net Profit Margin (%)	157	-17.569	1.61	183.140	-2,053.96	200.423
Cash to Total Assets (%)	154	10.313	6.133	68.663	0	13.388
Debt to Total Assets (%)	155	20.839	19.025	123.306	0	21.113

The liquidity of these firms is captured by the cash to total assets ratio which deteriorates year by year, while debt to total assets remains relatively stable in all years. Some other, more general characteristics of the sample can also be extracted from Table 10. Standard deviation column shows that there is high variation in the characteristics of the sample firms. Moreover, maximum and minimum columns present the existence of extreme values that do not represent the average reverse takeover firm. In this analysis, in order to extract a more generalized outcome, these values have not been taken into

consideration. Finally, the reduced number of observations column in panel C shows that two years after the event, some companies didn't survive.

Table 11 Various Ratios in the post-RT period

	No	Mean	Median	Maximum	Minimum	Standard Deviation
<i>Panel A : Public entities at the end of the year in which the reverse takeover occurs</i>						
Total capitalization (in thousands of Euros)	162	1551.461	37.376	306242.000	-2.065	25329.100
Total equity (in thousands of Euros)	173	584.469	24.916	29747.000	-9.874	3735.752
Book value of current liabilities (in thousands of Euros)	161	247.650	13.950	26536.000	0.011	2491.477
Book value of shares outstanding(in thousands of Euros)	169	192.646	95.220	5160.000	0.691	503.337
Current ratio	161	1.861	1.213	42.487	0.023	4.562
Quick ratio	161	1.414	0.786	28.636	0	3.859
Cash ratio	161	1.024	0.282	28.636	0	3.873
DPS	145	0.082	0	7	0	0.871
Payout ratio (%)	76	35.012	10.581	1958.958	0	228.051
Common Equity/ total assets	173	43.161	41.731	98.662	-331.982	45.678
Asset turnover ratio	148	0.733	0.589	4.108	0.000	0.819
Financial leverage	148	3.367	2.383	33.957	-16.491	5.331
Sales / total assets	173	0.593	0.394	16.371	0.000	1.366
EBIT(in thousands of Euros)	164	34.804	0.397	5113.000	-750.900	506.625
EBITDA(in thousands of Euros)	166	63.401	1.270	9918.000	-522.900	887.327
EPS	176	0.081	-0.003	84.854	-11.271	6.684
EBIT margin (%)	155	-57.641	2.091	84.424	29683.870	2397.632
P/E ratio	101	29.942	14.004	1744.026	0.350	211.274

Panel B: Public entities one year after reverse takeover

Total capitalization (in thousands of Euros)	168	1538.873	49.959	115409.000	-2.252	12376.323
Total equity (in thousands of Euros)	175	617.475	33.544	33693.000	-13.948	4282.983

Book value of current liabilities (in thousands of Euros)	163	250.036	19.402	27064.800	0.011	2981.956
Book value of shares outstanding(in thousands of Euros)	171	235.577	130.262	5432.000	0.882	630.181
Current ratio	163	1.596	1.198	43.715	0.052	4.178
Quick ratio	163	1.129	0.732	43.176	0.007	4.102
Cash ratio	163	0.719	0.223	43.176	0	4.117
DPS	156	0.116	0.000	7.500	0	0.805
Payout ratio (%)	93	24.594	12.474	496.774	0	74.089
Common Equity/ total assets	175	44.867	46.668	98.049	-1833.328	146.545
Asset turnover ratio	160	0.869	0.774	7.755	-0.019	0.971
Financial leverage	161	2.982	1.907	196.121	-15.638	15.962
Sales / total assets	173	0.819	0.707	178.333	-0.023	13.529
EBIT(in thousands of Euros)	166	51.343	2.269	13910.000	-395.700	1164.246
EBITDA(in thousands of Euros)	167	84.591	4.564	19072.000	-249.200	1596.734
EPS	178	0.239	0.006	16.755	-13.640	2.363
EBIT margin (%)	165	-15.531	4.199	141.759	-1333.852	181.277
P/E ratio	116	32.144	13.731	2967.780	0.003	283.968

Panel C: Public entities two years after reverse takeover

Total capitalization (in thousands of Euros)	151	2045.919	56.025	137797.000	-3.141	16799.456
Total equity (in thousands of Euros)	155	842.695	38.531	62818.300	-37.256	6869.226
Book value of current liabilities (in thousands of Euros)	144	300.460	22.719	52009.600	0.294	4895.175
Book value of shares outstanding(in thousands of Euros)	150	227.174	114.520	5476.000	3.800	627.765
Current ratio	144	1.434	1.190	24.524	0.120	2.513
Quick ratio	144	0.987	0.789	24.416	0.009	2.370
Cash ratio	144	0.551	0.233	23.805	0	2.357
DPS	143	0.155	0.000	8.000	0	0.909
Payout ratio (%)	87	31.550	27.065	356.425	0	56.993
Common Equity/ total assets	155	44.679	45.310	95.569	-88.634	30.008
Asset turnover ratio	146	0.856	0.824	3.610	0.000	0.724
Financial leverage	147	2.954	2.027	38.790	-40.203	6.662
Sales / total assets	154	0.831	0.714	3.079	0.000	0.692

EBIT(in thousands of Euros)	147	66.946	3.591	12550.000	-274.953	1176.156
EBITDA(in thousands of Euros)	148	107.917	5.902	17650.000	-111.835	1680.864
EPS	157	0.218	0.012	43.787	-17.140	4.288
EBIT margin (%)	147	-7.342	3.940	87.468	-1142.424	113.964
P/E ratio	115	28.452	13.595	6159.291	0.515	580.099

Table 11 presents a detailed description of the post-RT operating performance of the RTs firms. Panels A, B and C provide various ratios for the year of the event, and the subsequent two years (year +1 and year +2). This table's results are comparable to those of Panel B of Table 4, where the same ratios are presented for the year prior to the reverse takeover.

Total capitalization and capital structure seem to increase slightly in year 0 and decrease in year +1. This verifies once again that private firms' primary motive to conduct a reverse takeover is not to access the capital markets immediately, but to get a public listing.

Total equity increases steadily year by year, but still remains a small portion of the total capitalization. This indicates that RTs firms, in order to finance their operations, use primarily short-term and long-term debt as a source of fund, and thus being highly levered. The behavior of the financial leverage ratio verifies this conclusion. Debt is more than double from equity capital, since its value is above 2. Moreover, book value of current liabilities and book value of shares outstanding increase gradually year by year.

In order to identify whether the RTs firm have the liquidity to pay their short-term obligations, current ratio is used. It is calculated by dividing current assets to current liabilities. It seems that its value decreases the year 0 and the following year as well. There is a small increase in the second year after the event, but still seems that there are liquidity problems. Quick ratio is another measure of liquidity which presents a downward trend. More specifically, two years after the reverse takeover, its value is below unity implying that the RTs firms are unable to pay off their obligations.

Dividend per share (DPS) is 0.212 Euros the year prior to the event and falls to 0.081 Euros the year in which the reverse takeover took place. In subsequent two years, DPS increases again. Payout ratio fluctuates around 30% for the periods under examination

that is quite low and implying a very conservative dividend policy. In any case, only mature companies appear to offer a higher payout ratio.

The value of asset turnover ratio is 0.733 for the year 0 implying that investing 1 Euro in assets, it generates 0.733 Euros in revenues. It is undoubtedly an element of inefficiency observed in the following years as well. The inefficiency is additionally verified by the sales to total assets ratio that follows similar pattern.

Summarizing, the RT firms continue having poor financial performance after the reverse takeover and only in few cases a slight improvement is observed. Our results are consistent with the results of Gleason et al, (2005a). Their study reveals that the new entities the year in which the event occurs and for 1 and 2 years after the event are getting larger, continue having negative values in various profitability ratios and are characterized by decreasing cash liquidity and increasing debt ratios.

6.3.2 Test of equality

To have a clear view of whether the performance of a ratio substantially changes, test of equality is also performed in mean and median. Results from equality testing are shown in Tables 12 and 13.

Table 12 indicates that there is statistically significant difference in means in the period (0, +1) for Return on Asset, Return on Equity and Profit Margin. As it was stated before, these 3 ratios have negative values before and after the reverse takeover. However, the test of equality shows that there is a change after the event, that despite the fact that they are still negative, they are slightly improved. The cash to total assets ratio worsens in year 0 and the following years. It is observed that the mean of the cash ratio of the year prior to the event (year -1), is not the same with the means of each of the following two years. Regarding to debt to total assets ratio, p-value indicates that the null hypothesis of no change cannot be rejected.

Table 13 presents results from three liquidity ratios, that are, current, quick and cash. Tests of equality in medians for the three ratios indicate that there are statistically significant changes when we compare their results from the period prior to the event to the results of the first and the second year after the merger. This verifies that the new entities face decreasing liquidity year after year. Panels D and E shows that sales to total assets and earnings per share decrease after the event since there is a statistically significant difference in the medians from year 0 to year +1.

Table 12 Mean and Median of fundamentals surrounding the announcement of RT

<i>Panel A: Return on Asset surrounding the announcement of RT year</i>									
Years	-1	0	1	2	Period	(-1.0)	(0,+1)	(-1,+1)	(-1,+2)
Mean	-12.044	-22.549	-7.452	-6.816	Change	10.505	-15.097	-4.592	-5.228
Median	0.038	0.461	1.014	0.907	P-value	0.127	0.012**	0.239	0.192
positive	72	76	95	86	Wilcoxon p-value	0.6693	0.2661	0.4386	0.5368
N	143	148	161	147					

<i>Panel B: Return on Equity surrounding the announcement of RT year</i>									
Years	-1	0	1	2	Period	(-1.0)	(0,+1)	(-1,+1)	(-1,+2)
Mean	-19.514	-21.360	-9.037	-9.097	Change	1.845	-12.322	-10.477	-10.417
Median	2183	1883	4.436	3348	P-value	0.857	0.099*	0.205	0.212
positive	67	70	92	84	Wilcoxon p-value	0.6825	0.4688	0.6862	0.9482
N	127	132	149	138					

<i>Panel C: Profit Margin surrounding the announcement of RT year</i>									
Years	-1	0	1	2	Period	(-1.0)	(0,+1)	(-1,+1)	(-1,+2)
Mean	-5214.2	-468.7	-98.1	-37.3	Change	-4745.5	-370.6	-5116.1	-5176.9
Median	0.968	-0.891	1.833	1610	P-value	0.1655	0.071*	0.124	0.1405
positive	75	82	100	94	Wilcoxon p-value	0.1262	0.0926	0.9883	0.831
N	135	166	175	157					

<i>Panel D: Cash to Total Assets surrounding the announcement of RT year</i>									
Years	-1	0	1	2	Period	(-1.0)	(0,+1)	(-1,+1)	(-1,+2)
Mean	22.541	15.805	13.598	11.107	Change	6.736	2.208	8.944	11.435
Median	9371	8032	6.815	6133	P-value	0.016**	0.279	0.001***	0***
positive	155	169	172	151	Wilcoxon p-value	0.4374	0.1984	0.071*	0.015**
N	159	171	173	154					

<i>Panel E: Debt to Total Assets surrounding the announcement of RT year</i>									
Years	-1	0	1	2	Period	(-1.0)	(0,+1)	(-1,+1)	(-1,+2)
Mean	202.107	19.855	20.977	22.090	Change	0.35573	-1.122	-0.766	-1.879
Median	145169	14668	16.146	19025	P-value	0.8785	0.618	0.750	0.443
positive	123	147	156	140	Wilcoxon p-value	0.6055	0.5824	0.3027	0.108
N	162	173	175	155					

Note: * indicates a significant difference from zero at the 10% level. ** indicates a significant difference from zero at the 5% level and *** indicates a significant difference from zero at the 1% level.

Table 13 Mean and Median of other various ratios surrounding the RT

<i>Panel A: Current Ratio surrounding the announcement of RT year</i>									
Years	-1	0	1	2	Period	(-1.0)	(0.+1)	(-1. +1)	(-1. +2)
Mean	9.192	2.412	2.101	1.709	Change	6.781	0.310	7.091	7.483
Median	1313	1213	1.198	1190	P-value	0.063*	0.523	0.05**	0.051*
positive	149	161	163	144	Wilcoxon p-value	0.079*	0.8999	0.054*	0.012***
N	149	161	163	144					

<i>Panel B: Quick Ratio surrounding the announcement of RT year</i>									
Years	-1	0	1	2	Period	(-1.0)	(0.+1)	(-1. +1)	(-1. +2)
Mean	479.103	1.889	1.637	1.246	Change	290.229	0.251	3.154	3.545
Median	0.8298	0.786	0.732	0.789	P-value	0.007***	0.571	0.003***	0.001***
positive	149	160	163	144	Wilcoxon p-value	0.2077	0.6138	0.068*	0.051*
N	149	161	163	144					

<i>Panel C: Cash Ratio surrounding the announcement of RT year</i>									
Years	-1	0	1	2	Period	(-1.0)	(0.+1)	(-1. +1)	(-1. +2)
Mean	446.015	1.508	1.233	0.821	Change	295.215	0.275	3.227	3.640
Median	0.359	0.282	0.223	0.233	P-value	0.0006***	0.536	0.003***	0.001***
positive	145	159	162	142	Wilcoxon p-value	0.2833	0.1238	0.017**	0.007***
N	149	161	163	144					

<i>Panel D: Sales to Total Assets surrounding the announcement of RT year</i>									
Years	-1	0	1	2	Period	(-1.0)	(0.+1)	(-1. +1)	(-1. +2)
Mean	187.422	0.709	1.924	0.859	Change	116.498	-1.215	-0.050	1.016
Median	0.5271	0.394	0.707	0.714	P-value	0.2838	0.241	0.974	0.376
positive	133	161	169	151	Wilcoxon p-value	0.9719	0.0007***	0.009***	0.004***
N	157	173	173	154					

<i>Panel E: Earnings per share surrounding the announcement of RT year</i>									
Years	-1	0	1	2	Period	(-1.0)	(0.+1)	(-1. +1)	(-1. +2)
Mean	1.977	0.525	0.331	0.366	Change	1.452	0.194	1.646	1.611
Median	-0.002	-0.003	0.006	0.012	P-value	0.220	0.716	0.125	0.170
positive	72	80	100	91	Wilcoxon p-value	0.3894	0.045**	0.2537	0.2138
N	163	176	178	157					

Note: * indicates a significant difference from zero at the 10% level. ** indicates a significant difference from zero at the 5% level and *** indicates a significant difference from zero at the 1% level.

Chapter 7

Conclusions and Recommendations

During the last decades, many firms have chosen to go public through alternative mechanisms to IPOs such as reverse takeovers. A reverse takeover refers to the event where a private firm is acquired by a public one, in order to obtain its public status. Although, it seems that the public firm is the bidder, in fact the private firm is the aggressor that starts the negotiations for the merger and that's the reason why this process is called reverse.

Despite of the growing popularity of reverse takeover in the last years, the majority of companies still prefer to go public via an IPO. However, the research on reverse takeovers remains largely under-researched. The current study contributes to the ongoing debate on the wealth effects of RTs by providing evidence from Europe, a market totally so far unexplored. The results are expected to provide answers regarding the value relevance of RTs and uncover the drivers of such corporate actions.

Our results demonstrate that the reverse takeover is not a mechanism of going public for firms when the IPO market sours, but both markets follow similar patterns and are affected by the same events as the dotcom bubble. By analyzing more closely some other characteristics of the participating firms, many useful results were extracted. We argue that the major motive of both firms participating in the transaction is growth since, in most of the cases, the private and the public firm operated in the same industry. For the public entity, particularly, this seems to be an opportunity to improve its financial performance since the public firms displays a very poor performance prior to the event.

The empirical results of the research indicate that the reverse takeover process is a value-creation event, producing statistically significant abnormal returns surrounding the announcement. For a firm with market value of 1.51 million Euros, as the average public firm of the sample, a cumulative abnormal return of 10.629% for (-5, +5) event window increases its market value for almost 161,000 Euros and this signifies the increase in the wealth of shareholders. Moreover, RTs provoke significant abnormal volatility of 10.178% on the day of announcement.

The results from the cross-sectional regression analysis show that firm size is negatively related with abnormal returns of the public firm. This means that the smaller the

company, the higher the cumulative abnormal returns on RTs announcements. A possible explanation of this relationship is based on the information asymmetry. Since small companies are also highly information asymmetric, investors may not be provided with the appropriate information about the private firm and thus the stock is undervalued prior to the event.

In addition, we examine the long pre- and post-RT operating performance surrounding the year of event (year 0). The results show little post-merger improvement. This is also verified by the tests of equality.

This study could be further expanded by investigating some crucial matters that have been raised. It is stated above that the cumulative abnormal returns increase the wealth of the shell company's shareholders. However, it is not answered whether an investor should buy shares of a firm that was established with the purpose of merging with another firm, so as to take advantage of these high cumulative abnormal returns, or not. In other words, whether these abnormal returns are significant gains for the shareholders or just recover some of the shareholders' losses. Also, some other characteristics of the long term performance of the new entities, such as the stock price performance and the survival rates of them in the long run, would give a full picture of the reverse takeover results. Finally, it would be very interesting to study the wealth effects of reverse takeovers with those of IPOs.

List of References

- Adjei, F., Cyree, K. B. and Walker, M. M., 2008. The determinants and survival of reverse mergers vs IPOs. *Journal of Economics and Finance*, Vol. 32, pp. 176-194.
- Andres, C, Betzer, A. and Weir, C., 2007, Shareholder wealth gains through better corporate governance – The case of European LBO-transactions, *Financial Markets and Portfolio Management*, Vol. 21, No. 4, pp. 403-424
- Aydoglou, M., Shekhar, C. and Torbey, V., 2007. Shell companies as IPO alternatives: an analysis of trading activity around reverse mergers. *Applied Financial Economics*, Vol. 17, No 16, pp. 1335-1347.
- Brau, J., Francis, W. and Kohers, N., 2003. The choice between IPO versus takeover: an empirical analysis. *Journal of Business*, Vol. 76, pp. 583-612.
- Brenner, V. C. and Schroff, W. K., 2004. Reverse merger or IPO. *Strategic Finance*, Vol. 85, pp. 46-52.
- Brown, K. C., Dittmar, A. and Servaes, H., 2005. Corporate governance, incentives and industry consolidations. *Review of Financial studies*, Vol. 18, pp. 241-270.
- Carpentier, C., Cumming, D. and Suret, J.-M., 2009. *The value of capital market regulation: IPO versus Reverse Merger*, s.l.: Working Paper, Laval University.
- CNF, A., 2011. *Vallares PLC - Vallares merges with Genel Energy*. [Online] Available at: <http://uk.finance.yahoo.com/news/Vallares-PLC-Vallares-merges-afxcnf-2013482137.html>
- [Accessed 19 September 2012].
- Dasilas, A., Koulakiotis, A. and Vutirakis, P., 2009. Reverse takeovers: an alternative to IPO. *International Journal of Financial Services Management*, Vol 4, No 1, pp. 11-20.
- Floros, I. V. and Sapp, R. T., 2009. Shell games: On the Value of Shell Companies , Working Paper: Iowa State University.
- Floros, I. V. and Shastri, K., 2010. A Comparison of Penny Stock Initial Public Offerings and Reverse Mergers as Alternative mechanisms for Going public, Working Paper, Iowa State University.

FSA, 2012. Amendments to the Listing Rules, Prospectus Rules, Disclosure Rules and Transparency Rules. [Online]

Available at:

http://www.fsa.gov.uk/static/FsaWeb/Shared/Documents/pubs/cp/cp12_02.pdf

[Accessed 18 September 2012].

FSA, n.d. *UKLA Publications - Technical Note - Reverse Takeovers*. [Online]

Available at: http://www.fsa.gov.uk/pubs/ukla/reverse_takeovers.pdf

[Accessed 18 September 2012].

Gleason, K. C., Jain, R. and Rosenthal, L., 2005b. Alternatives for going public: Evidence from Reverse Takeovers, Self-underwritten IPOs and Traditional IPOs, Working Paper, Indian School of Business.

Gleason, K. C., Rosenthal, L. and Wiggins, R. A., 2005. Backing into being public: an exploratory analysis of reverse takeovers. *Journal of Corporate Finance*, Vol. 12, pp. 54-79.

Hogan, K. M., Olson, G. T. and Kiss, R. J., 2001. A comparison of reverse leveraged buyouts and original initial public offers: factors impacting the issuance in the IPO market. *Financial Review*, Vol 38, pp. 1-18.

Landsman, W. and Maydew, E., 2002. Has the Information Content of Quarterly Earnings Announcements Declined in the Past three Decades?. *Journal of Accounting Research*, Vol. 40, pp. 797-808.

Law, C. a. F., 2012. Changes to the Listing Rules: Tightening reverse takeover rules and enhancing the premium listing standard. [Online]

Available at: <http://companyandfinanciallaw.co.uk/2012/01/26/fsa-consults-on-changes-to-the-listing-rules-tightening-reverse-takeover-rules-and-enhancing-the-premium-listing-standard/>

[Accessed 18 September 2012].

Lundgren, K. and Swint, B., 2011. Hayward's Vallares to Acquire Iraq Fields in \$2.1 Billion Genel Merger. [Online]

Available at: <http://www.bloomberg.com/news/2011-09-07/vallares-agrees-to-merge-with-genel-in-2-1-billion-share-deal.html>

[Accessed 18 September 2012].

Nagle, F. and Pilbeam, K., 2009. High-Tech IPOs in the US, UK and Europe after the Dot-Com Bubble, *International Journal of Financial Services Management*, Vol. 4, No 1, pp. 64-75.

Poulsen, A. and Stegemoller, M., 2008. Moving from private to public ownership: selling out to public firms vs initial public offerings. *Financial Management*, Vol. 37, pp. 81-101.

Ritter, J. R., 1987. The costs of going public. *Journal of Financial Economics*, Vol. 19, pp. 269-281.

Ritter, J. R., 1998. Initial Public Offerings. *Contemporary Finance Digest*, Vol.2, No 1, pp. 5-30.

Scholes, M. and Williams, J., 1977. Estimating betas from nonsynchronous data. *Journal of Financial Economics*, Vol. 5, pp. 309-327.

Seabury, C., 2008. A Guide To Spotting A Reverse Merger. [Online]

Available at: <http://www.investopedia.com/articles/stocks/08/reverse-merger.asp#axzz263WPY9al>

[Accessed 17 September 2012].

Sjostrom, W. K., 2008. The truth about reverse mergers. *Entrepreneurial Business Law Journal*, Vol. 2, pp. 743-759.

Sudarsanam, S., 2010. Abnormal returns methodology to study the impact of mergers on shareholder value. In: *Creating Value from Mergers and Acquisitions: The challenges*. London: Prentice Hall, pp. 113-117.