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**CONSEQUENCES OF THE CHOICES ON THE ACCOUNTING METHODS AND
THE PAYMENT METHODS FOR ACQUIRERS AND TARGETS.
A COMPARATIVE STUDY BETWEEN NYSE/AMEX AND
NASDAQ FOR THE NINETIES**

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A THESIS IN THE FACULTY OF COMMERCE AND ADMINISTRATION

**Presented in Partial Fulfilment of the Requirements for the
Master of Science in Administration at Concordia University
Montreal, Quebec, Canada**

December 1999

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ABSTRACT

CONSEQUENCES OF THE CHOICES ON THE ACCOUNTING METHODS AND THE PAYMENT METHODS FOR ACQUIRERS AND TARGETS. A COMPARATIVE STUDY BETWEEN NYSE/AMEX AND NASDAQ FOR THE NINETIES

In the nineties, the number of mergers has been increasing dramatically due to the emergence of the global economy and the research of the critical size and the optimal strategy. This thesis investigates the choice of accounting method (pooling versus purchasing) and the choice of the method of payment (cash versus stock) for mergers in the 90's. We identify significant differences in market response to mergers when the targets were listed on the NYSE/Amex or on the NASDAQ.

We found that mergers in the two markets tend to behave differently. When targets are listed on the NYSE, the bidder characteristics drive the choice. While, when targets are listed on the NASDAQ, the target characteristics tend to drive the choice. Finally, we found that targets listed on the NASDAQ get higher Abnormal Returns compared to targets listed on the NYSE/Amex.

Acknowledgements

I would like to thank my supervisor Dr Betton who guided me with her knowledge, her patience and for her support during this thesis.

I would like to thank Dr Warsamee and Dr Tirtiroglu for their guidance and their precious advice for the achievement of this thesis.

I would like also to thank David De Baudus for his support and his advice in Statistics.

Finally, I would like to thank my family in France for their support spiritual and material and I dedicate my thesis to my beloved mother.

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1 Introduction

The choice of method of accounting for mergers is currently the subject of a lively debate in the US. Especially as the Federal Accounting Standards Board (FASB) decided to eliminate the pooling method by the end of the year 2000. Some investment bankers consider the end of the pooling as the end of economic growth and a real slowdown of merger activity. According to a study by Merrill Lynch (June 1999) "Valuing the New Economy: How New Accounting Standards Will Inhibit Economically Sound Mergers and Hinder the Efficiency and Innovation of US Business", the end of pooling would significantly reduce the level of merger activity. However, the number of stock-for-stock deals did not increase significantly for the second quarter of 1999. Moreover, Lindenberg and Ross (1999) from Salomon Smith Barney demonstrate that the market reacts more favorably to the announcement of mergers under purchasing than the mergers under pooling. The choice of accounting issue has always been a controversial topic; Wasserstein (1998) considers accounting treatment as one issue at the heart of the merger business. Furthermore, he perfectly summarizes the question by writing that "The choice of purchase versus pooling has absolutely no impact on a company's underlying health or performance. However, from a financial accounting perspective, the survivor's earnings can differ dramatically depending on which approach is taken."

Under US GAAP, firms have the choice between two accounting methods when they merge, i.e. pooling-of-interest and purchasing. Under the pooling-of-interest method, the acquired firm and the acquiring firm are pooled; in other words the balance sheet of the acquiring firm is added to the balance sheet of the acquired

firm, creating the balance sheet of the new entity as if the new entity has always existed.

In contrast, under the purchasing method, the fair market value of the target's assets and liabilities are added to the balance sheet of the acquirer. The difference between the price paid and the fair market value is explicitly recognized as goodwill on the balance sheet of the acquirer. Goodwill is then amortized over a 20 year period.

These two accounting methods have different consequences for income and earnings. Under the pooling-of-interest, the two firms are combined as if they had always been together. This makes the income of the new entity the sum of the income of the bidder and the income of the target but restated from the beginning of the acquisition year. Furthermore, as there is no goodwill, therefore no amortization, the earnings of the new entity are higher than the earnings of the same entity under the purchasing method. The third difference is regarding the value of the entity, since the entity is considered as if it had always existed. Its assets are recorded at their book value and not at the market value. In purchase, the new entity's balance sheet contains a mix of book and market values.

The real debate starts from here: if the two accounting methods give different figures and different ratios, are analysts misled and might they place a higher value on firms using the pooling-of-interests than those using the purchase accounting method? In an efficient market, of course, one would not expect to observe analysts making systematic errors.

This has become one of the most controversial debates since the 1950s. This thesis will consider the two accounting methods and their consequences on stock returns over the period 1990-1997. We will briefly examine the consequences of the introduction of section 197 in the Omnibus Budget Reconciliation Act (OBRA) of 1993, allowing a tax-deductibility of the goodwill under certain circumstances, and any differential reactions between the Nasdaq and the NYSE/Amex listed targets.

In the second section, a literature review will be carried out in order to have a clear overview of the different studies conducted over the last two decades, starting with Hong, Kaplan and Mandelker (1978) and ending with the working paper of Ayers, Lefanowicz and Robinson (1998).

In the third section, the sample, methodology and hypotheses will be introduced.

In the fourth section, the empirical results will be presented and discussed according to the hypotheses introduced in the previous section.

In the final section, a summary of the research findings and topics for further research will be presented.

2. Literature Review

Our literature review is structured under four main topics affecting this thesis. The first section deals with the observed differences in the effects of purchasing and pooling. In the second section, we review the potential consequences of the Tax Reform Act of 1993 on the market response to the choice between pooling-of-interest and purchasing. The third section concerns the method of payment and its

consequences on the premiums. Finally, the last part of our literature review points out the differences between the Nasdaq and the NYSE/Amex.

2.1 Purchase versus pooling

When a firm is carrying out a merger, it has a choice between two main accounting methods: pooling-of-interest and purchasing. Nurnberg and Sweeney (1998) propose four models of accounting methods: purchase, pooling, Catlett-Olson goodwill write-off and Wyatt fair value pooling. The Catlett-Olson goodwill write-off method suggests that the acquiring company should write-off immediately the purchased goodwill against stockholders' equity. This accounting method is only accepted in the UK. The Wyatt fair value method implies that "all the net assets of the two entities are reported at fair value and no retained earnings are carried forward, because the combination is viewed as a new entity without an earning history". Although the two last methods are quite "attractive", but they are not accepted under US GAAP. This thesis will, therefore, examine the impact of pooling-of-interest and purchasing, which are acceptable under US GAAP.

Anderson and Louderback (1975) examine the consequences of the APB 16, using a sample of 178 mergers over the period 1967-1974. This study is one of the first dealing with the effects of pooling-of-interest and purchasing methods of accounting. They conclude that, even with the new restrictive criterion of the APB 16, the management of the acquiring companies still consider the pooling-of-interest method as the best method to maximize their future income and earnings.

Hong, Kaplan and Mandelker (1978) try to establish whether the market is able to make a distinction between higher earnings due to a sound economic event

and those caused by the using of the pooling-of-interest method. Their hypothesis is that there should not be differences due to market efficiency. In order to carry out their research, they perform an event study with a sample covering the period 1954-1964 and different size windows. The authors perform abnormal returns for the period $[-60,-13]$ and the period after the merger $[13,60]$. By using these windows, they eliminate the period surrounding the event date, because this period can cause statistical problems such as non-random behavior like inside information. They find that there is no evidence to support the hypothesis that the pooling-of-interest method raises the stock prices. The authors conclude that the market is efficient and can not be fooled by an accounting convention. However, they admit the possibility that the results might be different if they used portfolios based on qualitative variables like the percentage effect on income of using one of the accounting methods.

Nathan (1988), in contrast, suggests that firms may pay a premium in order to pool. He points out that APB 16 & 17 have restricted the conditions to use pooling-of-interest, so that the acquiring firms have to pay a premium to the target management to obtain their cooperation. Moreover these APB cause a rise in the goodwill amount so that the firm is keener to use pooling-of-interest vs. purchase. The sample covers the period from 1963 to 1978 and contains 461 companies dealing with the purchase or pooling method. His findings reveal that most of the acquiring firms choose the accounting method, which maximizes their income, i.e. pooling-of-interest. An interesting finding is that the goodwill coefficient is negative, suggesting that as goodwill increases, the probability of the acquiring firm to use the pooling method increases. Nathan advocates two explanations: that target firms with low

book values are more attractive and that a large difference between the market and the book value suggests poor target firm management.

Robinson and Shane (1990) use an event-study in order to determine if there is a link between the accounting method and the bid premia for target firms. Contrary to the previous study of Hong, Kaplan and Mandelker (1978), they use smaller windows such as [-40 days, end date], [-300 days, -100 days] and [-40 days, +40 days] and their sample is based on the period 1972-1982. Their results suggest that bidders use pooling-of-interest due to the positive consequences of this method on the earnings, and the bid premia appear to be larger for the pooling-of-interest sample than the purchasing sample. Furthermore, they support the same idea as Nathan (1988) which is that bidders pay a premium to use the pooling method. However, Hong et al posit that the higher bid premia causes the firms to use the pooling method. The causal relationship between a high bid premia and the pooling method does not appear to be “clear-cut”.

Davis (1990) extends the previous study of Hong, Kaplan and Mandelker (1978) by examining 169 firms over the period from 1971 to 1982, which is after the introduction of APB 16&17. The methodology used by Davis follows the Hong et al methodology except that the windows are smaller compared to the previous study. The windows are the following [-26 weeks, Announcement date], [-11 weeks, Announcement date], [-4 weeks, Announcement date], [Announcement date, Merger effective date] and [Merger effective date, 26 weeks]. Davis's study also includes regressions with different variables such as P/E ratio, size, α and β , leverage and earnings surprise. Surprisingly, he finds that the Cumulative Abnormal Returns

(CAR) are higher in the purchase sample than the CAR in the pooling sample for all the windows. Furthermore, he supports the idea that highly leveraged firms are more likely to use the purchase accounting method than the pooling method. Davis' finding that the larger the potential goodwill, the higher the probability of using the pooling method is consistent with previous studies.

The study of Nathan and Dunne (1991) concerns the different consequences of the APB 16&17 on the management choice between the Pooling-of-interest and the Purchasing method as well as the different variables, which can influence this choice. Their study is subdivided into two parts. The first measures the impact of the introduction of the APB and while the second deals with the influences of the different explanatory variables. Their sample represents 361 firms, with 158 before the introduction of APB 16 and the rest after the introduction of APB 16 the total period is 1963-1985. The results of the study indicate that the choice between the two accounting methods in a stock-for-stock transaction depends on the size of the potential goodwill with acquirers tending to prefer pooling as goodwill increases. Moreover, one of the consequences of the adapting APB 16 convention is that acquirers are more likely to use the purchase method than before. Highly levered acquiring firms tend to prefer the purchasing method compared to the pooling method.

The study of Jennings, Robinson, Thompson and Duvall (1996) examines the link between the equity value and the goodwill. They focus on 432 US firms for the period 1982-1987. They use a linear regression model to explain market value of common stock as a function of: the book value of total assets exclusive of goodwill

and property, plant and equipment of the firm. book value of net goodwill. book value of net property, plant and equipment. sum of the book value of liabilities and the preferred stock component of stockholders' equity. The results of the study indicate that the link between the goodwill and the equity value is hard to define. One of the study's conclusions is that goodwill is viewed as an asset, whose value can decline over time, with no "clear cut" trace on earnings and equity value.

The article of Vincent (1997) considers the link between the equity value and the two accounting methods. The author uses a sample of US firms over the period from 1979 to 1986, that is before the tax reform of 1986 and the Omnibus Budget Reconciliation Act (OBRA) of 1993. She reports that firms using pooling have a better stock valuation compared to others using the purchasing method. The acquiring firms using the pooling receive a premium from the market but this premium is not due to the higher reported earnings of the firm under the pooling method; this is because the market seems to be able to convert the earnings of firms using pooling under an "as if" purchase basis. Vincent does not have consistent evidence on which variables cause a higher premium for firms using the pooling method.

Ayers, Lefanowicz and Robinson (working paper 1998) agree with Vincent (1997) and Robinson and Shane (1990) and show that the pooling method is associated with higher premium. Ayers et. Al. find that 15% of the targets using the pooling method have abnormal returns due directly to the use of pooling. But, contrary to the previous studies, they report that one of the explanations of using pooling is that firms want to protect their future earnings. They support Nathan's

(1988) and Robinson and Shane's (1990) positions that firms are ready to pay a premium in order to use pooling. As their sample covers a recent period 1990-1996, they have to use a dummy variable for the introduction of the OBRA of 1993, but it appears that there is no consistent evidence regarding the consequences of the introduction of the tax deductibility of goodwill.

Hennings and Stock (working paper 1998) extensively study the consequences of goodwill write-offs on equity values. They assume three different types of goodwill contrary to the previous studies in which only one version of goodwill was examined. Hennings and Stock (1998) consider market goodwill (market value of the intangible assets), hubris goodwill (price of the target is much higher than the asset valuation) and tax-related goodwill (amount paid by the acquiring firm for the target firm's operating loss carry-forwards and other tax attributes). They conclude that the write-offs of the different goodwills have different results on the market value of the acquiring firm. While the write-offs of the tax-related goodwill seem to have a positive consequence on the market value of the acquiring firm, it appears that the other goodwills' write-offs have mixed consequences.

2.2 The Omnibus Budget Reconciliation Act of 1993

A review will be done of the tax consequences of the OBRA of 1993, especially on the tax deductibility of the intangible assets and the amortization of the goodwill. This review will be more tax-oriented than finance-oriented, and is necessary for a thorough understanding of the potential impact on the choice of purchase versus pooling.

In 1993, the Clinton administration introduced several changes in the US tax system which had a potential impact on the merger and acquisition activity. The OBRA of 1993 touched particularly the amortization of the intangible assets. In this section, a summary of the different changes caused by the introduction of the sections 197 and 167 will be provided. Prior to this act, the tax treatment of goodwill was extremely vague and used to favour foreign competition since some countries allow the amortization of the goodwill for tax purposes.

Until the OBRA of 1993, there were major differences between the tax treatment and the financial accounting treatment of goodwill. Under the GAAP, according to APB 17, goodwill should be amortized over its estimated useful life with a maximum of 40 years. Whereas for a tax purpose, the amortization of the goodwill was strictly forbidden.

According to Kurtz and Rocheleau (1993), the acquirer and the target could have the choice between considering the transaction as a purchase of the partner's interest by the remaining partner interest or as a liquidating distribution under §736(b). Under this §736(b), "...liquidating payments made in exchange for partnership are treated as distributions by the partnership and generally result in gain to the retiring partner but to a certain extent." But the main difference with the new Revenue Reconciliation Act (RRA) is that payment for goodwill was treated as a guaranteed payment or distributive share so that a part of the goodwill was tax deductible but not considered as a capital expenditure.

Under §197 of the RRA of 1993, the capitalized costs of intangible assets such as goodwill have to be amortized over a period of 15 years by using a straight-line basis.

Section 197 considers the following types of assets as purely intangible and by consequence amortizable:

- _ Goodwill and going concern value.
- _ Workforce in place.
- _ Information base and know-how (including patents and copyrights),
- _ Customer based intangibles.
- _ Supplier based intangibles.
- _ Licenses and permits granted by governmental units,
- _ Covenants not to compete, but only if entered into in connection with the acquisition of a business or a substantial proportion.
- _ Franchises, trademarks and trade names.

The consequences of goodwill amortization are multiple. For example, the distinction between goodwill and other intangible assets is now totally irrelevant. The determination of the useful life for every intangible asset is no longer a problem for the acquirer, since the useful life is the same for any kind of intangible assets. As goodwill or intangible value is less of a burden now than before the act, since the acquirers are more likely to allocate more to the intangible goodwill, because they can maximize the tax savings and protect the earnings. In other words, goodwill amortization now has “real” or cash flow consequences due to tax deductibility.

Consequently, firms using the purchase method should benefit from the OBRA of 1993 since they can amortize their goodwill expenses and present the goodwill as a particular asset, leading to higher premiums compared to the period

prior to RRA. In fact, by amortizing goodwill, firms can reduce the burden of the goodwill and its negative consequences on the earnings.

A hypothesis could be that if there is a positive gap between the returns of transactions using pooling of interest and purchasing, this gap should decrease during the period after the introduction of the tax deductibility of goodwill expenses amortization. Our hypothesis is that the pooling-of-interest should be less appealing after 1993 since the goodwill amortization is definitely a benefit for the firms using the purchasing method.

2.3 The Method of Payment

The choice between purchase and pooling is related to the choice of the method of payment or between cash and stock. In our thesis, we will consider only the mergers with 100 percent stock or 100 percent cash mergers.

According to Wansley, Lane and Yang (1983), the differences in abnormal returns are principally due to the type of mergers (nonconglomerate, other conglomerate, and pure conglomerate) and the different media of payments. Their findings show that pure conglomerate acquisitions have larger, but not significantly and that abnormal returns are higher when it is a cash-acquisition than with another method of payment such as securities. Their explanation was that tax systems favored cash as a method of payment.

Travlos (1987) supports the finding that pure stock exchange acquisitions have negative rates of returns for bidding firms whereas bidding firms using pure cash acquisitions face normal rates of returns. The underlying hypothesis is that when the bidder uses stock to acquire the target, it conveys the signal that the bidding

firm is overvalued. The study states also the hypothesis that mergers tend to use stock exchange offers as medium whereas takeovers tend to use cash.

Huang and Walkling (1987) confirm that the abnormal returns of the targets in tender offers are higher than the mergers' returns. They show that cash offers have significantly higher returns compared to stock exchange offers; their conclusion is that shareholders ask for a higher premium in the case of cash offers since they have to pay a tax on their realized capital gains.

Amihud, Lev and Travlos (1990) demonstrate that stock financing is not always associated with negative returns: they show that firms with high managerial ownership show no significant negative abnormal returns in such transactions. However, firms with low managerial ownership are associated with negative returns, since the management of these firms might be less interested in maximizing the shareholders' wealth.

Mayer and Walker (1996) confirm that not only do types of ownership and types of acquisition (hostile or friendly) matter, but also variables such as free cash flow, net debt ratio, even though variables like asymmetric information and taxation have little consequence on the returns.

Martin (1996) hypothesizes that firms with a high Tobin's q ratio will tend to use more stock financing compared to firms with a low Tobin's q ratio. Moreover, he finds those institutional shareholders and blockholdings tend to favor stock financing, but, contrary to previous studies, he points out that there is "a nonlinear relation between acquiring firm management ownership and the probability of stock financing."

Suk and Sung (1997) in contrast advocate that institutional ownership of the target firm has no consequences on the target's abnormal returns in cash offers but more surprisingly they affirm that cash offers and stock exchange offers have the same abnormal returns. They consider that only the transaction type mergers vs. tender offers tend to affect the abnormal returns of the target firms.

Finally, Switzer and Nayar (1998) report that the method of payment should be mixed since the combination of stocks and debt appears to produce higher abnormal returns for the bidder compared to a pure stock exchange offer. The introduction of debt tends to create a tax benefit but also reduce to the negative consequence of a 100% stock exchange offer.

2.4 Markets comparison

In this study, we compare mergers occurring between Nasdaq targets and NYSE/Amex acquirers with those occurring between NYSE/Amex firms. Most prior examinations of mergers and acquisitions activity have either combined the two markets or have focussed on only one. We wish to test the common perception that firms on the Nasdaq are "different".

Briefly, the Nasdaq moved from a "quote system for the over-the-counter penny stocks into a mainstream electronic market with international aspirations ". In 20 years, the Nasdaq has achieved a 53.1% share of the total US equity trading compared to the 45% of the NYSE. Moreover, it appears that the Nasdaq is the place for the IPO if you consider that in August 1999, the number of Initial Public Offerings reached 36 versus 5 for the NYSE.

In this section, a short review of the major differences between Nasdaq and NYSE is presented and the consequences for our analysis are summarized.

Bessembinder and Kaufman (1997) report that the returns on the Nasdaq are more volatile than the returns on the two other markets. They posit that the higher volatility might be linked to the higher trading costs in the Nasdaq market. Furthermore, they show that the Nasdaq does not provide any advantage in executing trades for smaller firms although Chan and Lakonishok (1997) demonstrated the opposite in their paper. Finally, according to Bessembinder and Kaufman (1997) descriptive data on the differences between the markets, the liquidity distribution is more homogeneous on the NYSE than on the Nasdaq. Since 88.2% of Nasdaq trades are for large companies while 74.4% of NYSE trades are for large companies.

Considering the paper of Bessembinder and Kaufman (1998), it appears that the returns on Nasdaq technology stocks are more volatile than returns on the NYSE technology stocks. They point out that the higher volatility of the quote-driven dealer market can not be completely explained by the larger bid-ask spreads for Nasdaq listed companies. While the Nasdaq technology companies are on average smaller than the NYSE technology firms, this difference in size does not completely explain the volatility gap between the two markets. Actually, when Bessembinder and Kaufman (1998) control for both the size effect (small companies tend to have more volatile returns than the large companies) and the bid-ask bounce, the difference in volatility still remains. The median standard deviation of daily returns was 51 percent larger for Nasdaq-traded companies than for the NYSE companies.

Kothare and Laux (1995) also point out the higher volatility of the Nasdaq compared to the NYSE. They tend to support the hypothesis that the volatility is caused by the high volume of trading, because of the presence of institutions and short-term traders. Kothare and Laux (1995) stress the impact of the bid-ask spread as Bessembinder and Kaufman did in their papers; they even consider that the institutional activity is positively correlated with the wide bid-ask spread. As they wrote, we should be aware and cautious of the level of volatility on the Nasdaq. Since the higher volatility of the Nasdaq stocks could have some consequences on the abnormal returns measure and a comparison between the returns or the premiums in the Nasdaq and the NYSE must take this volatility gap into consideration. To illustrate some of the general characteristics, NYSE and Nasdaq are compared on a monthly basis.

Table 1: Profile of the Nasdaq companies (April 99)

	Total (M)	Average (M)
Assets	\$2,924,771	\$601.30
Revenues	\$1,544,022	\$317.40
Equity	\$792,198	\$162.90
Net Income	\$41,855	\$8.60
Shares Outstanding	99,627	20
Market Value	\$3,028,243	\$615.60
Number of Companies	4864	N/A
Number of Issues	4919	N/A
Average Share Price	N/A	30.4
P/E Ratio	N/A	120.1

In comparison, the average P/E ratio on the NYSE was 23.87 in October 98, the P/E ratio of the SP500 in August 99 was 32.13. So the connection between the

earnings and the market value of the companies is thus larger in the Nasdaq compared to the NYSE. It appears that the market value or the share price of the company in the Nasdaq is more related to the future value of the earnings, particularly if the companies are in the new technologies sectors like Internet stocks or the software industry.

Table 2: Comparison between the NYSE and the Nasdaq on a monthly basis

	Nasdaq	NYSE
Share Volume (' 000)	15,975.297	15,099,452
Dollar Volume (' 000)	\$494,696,509	\$610,297,800
Market Value (' 000)	\$1,777,229,472	\$9,006,400.000
Number of Companies	5,315	3,095
Number of Issues	5,927	3,749
Number of IPO	16	4
Average Share Price	30.97	40.42

From the above table, we see that another specific difference is the size of the listed companies. It is observed that the average company, defined as total market value divided by the number of companies, in the new technology market is \$334,380,000 compared to \$2,909,984,000 for the NYSE. The size difference might contribute to the volatility gap between the two markets.

To conclude, the Nasdaq appears to be very different from the NYSE, in terms of volatility, trading volume, cost and specificity of the firms. Thus the acquirers might not have the same goals when they choose the type of accounting method. Our intuition is that the firms on the Nasdaq have higher intangible assets compared to the NYSE firms, meaning that the goodwill would be higher for the Nasdaq target companies, thereby, affecting the choice of accounting method.

3. Data, Methodology and Hypotheses

The literature review supports the view that the method of accounting should not matter since it is only an accounting method giving the illusion that the earnings are better. It appears from the literature review that the markets differ from each other and that for our work it seems relevant to make a distinction between the two types of market.

3.1 Hypotheses

_H1 = If markets are efficient, a differential market reaction should be observed between the two accounting method (Pooling-of-interests and Purchasing). Since the OBRA of 1993, goodwill has become tax deductible, so that it should favor the firms using the purchasing method compared to the firms using pooling.

_H2 = As the markets' characteristics are quite different, the targets' premiums as well as the acquirers' abnormal returns will differ from one market to another market.

The markets are totally different, we know that the PE and the volatility are higher on the Nasdaq and that this market contains more technological companies than the NYSE. We believe that as the markets are different, they should react differently from each other.

_H3 = The choice of the accounting method by the acquirers depends on different financial and accounting figures.

From the literature review, it appears that there is a positive correlation between the potential goodwill and the probability of using the pooling, while there is a negative correlation between the level of leverage of the acquirers and the likelihood of using pooling.

_H4 = The choice of the method of accounting by the acquirers depends on their own income statement as well as the income statement and financial structure of their potential targets.

For this hypothesis, there is little literature review on the relation between the accounting figures and the choice of accounting method for the acquirers. We think that the choice of the types of accounting method by the acquirer is not only related to the characteristics of its own characteristics but also to the characteristics of the target. Most of the research tends to focus on the book value and the market value but not on variables as cash per share or deferred tax per share.

_H5 = The likelihood that the acquisition will be done under the pooling-of-interest method is positively related to the size ratio. (The size ratio definition is the following market value of the target/market value of the acquirer).

Our opinion is that in a deal with a size ratio close or above to 1, the acquirers might prefer the pooling method compared to the purchasing method.

3.2 Sample

Our sample is derived from the Securities Data Corporation's M&A Database for the period from 1990 to 1997. The sample is composed of acquiring firms listed

on NYSE or Amex, who use either all cash or all stock to merge with a target listed on Nasdaq, NYSE or Amex. Firms using all stock are then classified by SDC using either purchasing or pooling. To be included in the sample, the offer must receive a friendly or neutral response from the target management and the offer must be successful. Only considering successful offers may induce a bias. However, we do not believe that the bias is substantial in our case. We examined the total number of mergers announced on SDC, of those receiving an initial friendly response, only 16 percent were subsequently withdrawn. This remark supports the hypothesis that friendly merger has a high probability of ultimate success.

The acquisitions of financial institutions and insurance companies are not removed from our sample, so that our sample contains a wide range of industries (see Robinson 1998 for a study excluding these sectors).

We use two samples, the first is a large sample concerning all the companies who met the criteria; and the second (small sample) is comprised of firms in the large sample who had all explanatory variables required available in the Compustat Database.

Table 3: Distributions of the target firms for the entire period for the NYSE/Amex and Nasdaq samples

Year of acquisition	NYSE/Amex			Nasdaq			Overall Total
	Purchase	Pooling	Total	Purchase	Pooling	Total	
1990	10	1	11	9	0	9	20
1991	6	1	7	12	4	16	23
1992	2	2	4	5	2	7	11
1993	11	3	14	21	9	30	44
1994	17	7	24	28	8	36	60
1995	22	11	33	26	18	44	77
1996	24	12	36	13	17	30	66
1997	27	12	39	25	15	40	79
Totals	119	48	168	139	73	212	380

Table 4: Mergers and acquisitions completions for the entire period

	1990	1991	1992	1993	1994	1995	1996	1997
No. of deals	2445	2540	2807	3096	3748	4742	5453	6030
Value (\$ bil)	\$101.07	\$97.51	\$95.00	\$131.00	\$205.00	\$285.00	\$515.60	\$626.40

From the table 4, it appears that our samples' distributions are consistent with the distribution of the mergers and acquisitions during this period, with a doubling number of the deals in less than 6 years and a sharp increase in the total value (6 times in 7 years).

All our acquisitions were distributed throughout the economy and it is interesting to remark that the financial institutions and insurance companies are involved in approximately 35 percent of the total mergers and acquisitions activity. This percentage is approximately the same as in the *Mergers & Acquisitions Almanac* for the same period.

Table 5: Distribution of the target firms by industry affiliation and accounting method for the NYSE/Amex and Nasdaq samples

Industry Affiliation	NYSE/Amex			Nasdaq			Overall Total
	Purchase	Pooling	Total	Purchase	Pooling	Total	
SIC 1000	9	1	10	5	3	8	18
SIC 2000	13	3	16	10	3	13	29
SIC 3000	27	10	37	32	15	47	84
SIC 4000	15	4	19	12	4	16	34
SIC 5000	6	2	8	6	4	10	18
SIC 6000	34	21	55	53	28	81	136
SIC 7000	6	4	10	13	8	21	31
SIC 8000	9	4	13	8	8	16	29
Totals	119	48	168	139	73	212	380

The distribution by industry affiliation is approximately the same for the two samples; the financial institutions and insurance industry and rubber, metal and

machine products industry represent more than 50 percent of the acquisitions in the two markets. The distribution by accounting method is comparable for the two markets; the pooling deals represent 30 percent of the total. The two markets do not differ in industry distribution as well as the accounting method distribution. For the SIC code, please see the appendix 1 where there is a definition of each SIC.

In the following tables, the samples used for the logistics and the weighted-least square regressions are described. The quality of the samples is tested and we check whether the abnormal returns measurement of the large sample differs significantly from those of the small sample used for the regressions.

Table 6: Distribution of the target firms by industry affiliation and accounting method for the NYSE/Amex and for the Nasdaq samples

Industry Affiliation	NYSE/Amex			Nasdaq			Overall Total
	Purchase	Pooling	Total	Purchase	Pooling	Total	
SIC 1000	4	1	5	2	2	4	9
SIC 2000	4	1	5	4	1	5	10
SIC 3000	5	2	7	12	8	20	27
SIC 4000	3	0	3	3	3	6	9
SIC 5000	4	1	5	3	2	5	10
SIC 6000	8	3	11	1	2	3	14
SIC 7000	2	2	4	1	4	5	9
SIC 8000	2	2	4	1	4	5	9
Totals	32	12	44	27	26	53	97

Contrary to the large sample, the financial institutions and insurance industry does not account for more than 16.5 percent of the sample. The rubber, metal and machine product industry accounts for 29.75 percent, which is similar with the 23 percent of the sample used in the large event study. However, the largest difference between the two samples (large sample versus small sample) is the annual distribution

since all the mergers of the small sample are distributed between 1994 and 1997 with a majority in 1996 and 1997.

Table 7: Distribution of the acquirers firms by industry affiliation and accounting method for the NYSE/Amex sample

Industry Affiliation	NYSE/Amex			Nasdaq			Overall Total
	Purchase	Pooling	Total	Purchase	Pooling	Total	
SIC 1000	2	0	2	3	0	3	5
SIC 2000	3	1	4	2	3	5	9
SIC 3000	4	1	5	13	9	21	26
SIC 4000	3	1	4	2	1	3	7
SIC 5000	5	3	8	3	1	4	12
SIC 6000	7	2	9	2	2	4	13
SIC 7000	3	1	4	2	1	3	7
SIC 8000	3	0	3	3	1	4	7
Totals	30	9	39	30	18	47	86

The pooling tends to be more used for the targets listed on the Nasdaq than for the targets listed on the NYSE/Amex. The industry distribution is not identical with more targets from the rubber, metal and machine products in the Nasdaq sample. In fact, rubber, metal and machine products represents 49 percent of the Nasdaq sample whereas it represents only 12.5 percent in the NYSE/Amex sample.

In this section, we summarize the characteristics of acquirers controlling for the two market types in order to evaluate if there are differences between the markets in terms of target fundamentals.

But before to go further, we define the variables used in our regressions. Most of our variables are extracted from the Compustat database for the entire period.

Table 8: Description of the different variables

CAR= Cumulative Abnormal Return is the dependent variable for the window (-2,+2)
$W = \text{Weight of each Cumulative Abnormal Return or } W = (1/\sigma^2)$
Size = ratio of the market value of the Target divided by the market value of the bidder beginning of the announcement year is used.
Leverage = "ROAE/ROAA, this concept is Return on Average Equity divided by Return on Average Assets." (Compustat extract)
P/E ratio = Price to earnings ratio at the end of the year prior to the announcement year
MOP = method of payment cash or stock, dummy variable where 1 is for cash and 0 otherwise
FCF = Free Cash Flow Per Share "This concept is Operating Activities - Net Cash Flow minus Cash Dividends minus Capital Expenditures. This is divided by Common Shares Outstanding - Company." (Compustat extract)
NIPS = Net Income Per Share stands, so it is the total net income divided by the number of the common shares.
BPS = Book Value Per Share
CPS = Cash Per Share This variable stands for Cash and equivalent divided by the number of common shares.
TPS = Deferred Tax and Investment credit per share: "This item represents the accumulated tax deferrals due to timing differences between the reporting of revenues and expenses for financial statements and tax forms and investment tax credit. This item excludes deferred taxes reported as current liabilities (included in Current Liabilities - Other)." (Compustat extract)
MOA = Method of Accounting, dummy variable where 1 is for pooling and 0 otherwise
Market =Dummy variable to make a distinction between the markets NYSE/Amex versus Nasdaq, 1 is for the firms listed in the NYSE/Amex 0 otherwise.

Table 9: Descriptive statistics for the target firms in the entire sample

Variables	Average	Median	Min	Max	Std dv
AR	0.232	0.184	-0.116	1.694	0.293
Market	0.454	0.000	0.000	1.000	0.500
Method Of Payment	0.392	0.000	0.000	1.000	0.491
Method Of Accounting	0.381	0.000	0.000	1.000	0.488
Size ratio	0.262	0.175	0.002	1.784	0.272
Financial Leverage Index	3.889	2.251	-6.835	70.979	8.031
Free Cash Flow per Share	0.198	0.053	-30.860	33.593	5.299
Tax Per Share	0.821	0.056	0.000	13.998	2.204
Cash Per Share	1.909	0.775	0.010	21.863	2.937
Book Value per Share	7.794	6.493	-19.560	35.546	7.129
MKT value (M)	551.239	345.41	13.962	6432.68	838.320
Net Income Per Share	6.606	1.279	-27.930	249.184	29.670
Price/Earnings	18.483	17.143	-28.920	91.667	17.799

The total number of observation is 97.

Table 10: Descriptive statistics for the target firms in the NYSE/Amex sample

Variables	Average	Median	Min	Max	Std dv
AR	0.150	0.129	-0.110	0.818	0.169
Market	1.000	1.000	1.000	1.000	0.000
Method Of Payment	0.372	0.000	0.000	1.000	0.489
Method Of Accounting	0.279	0.000	0.000	1.000	0.454
Size ratio	0.327	0.223	0.010	1.784	0.304
Financial Leverage Index	4.973	2.477	-6.835	70.979	10.905
Free Cash Flow per Share	0.525	0.241	-5.223	7.923	3.289
Tax Per Share	1.147	0.084	0.000	12.898	2.442
Cash Per Share	2.208	0.764	0.025	21.863	3.771
Book Value per Share	9.788	8.215	-4.828	35.546	7.439
MKT value (M)	828.731	544.250	13.962	6432.675	1142.050
Net Income Per Share	1.206	1.197	-0.548	2.894	0.876
Price/Earnings	19.511	19.000	8.000	38.000	7.881

The total number of observation is 43.

Table 11: Descriptive statistics for the target firms in the Nasdaq sample

Variables	Average	Median	Min	Max	Std dv
AR	0.301	0.225	-0.116	1.694	0.352
Market	0.000	0.000	0.000	0.000	0.000
Method Of Payment	0.396	0.000	0.000	1.000	0.494
MOA	0.472	0.000	0.000	1.000	0.504
Size ratio	0.201	0.113	0.002	0.709	0.227
Financial Leverage Index	3.017	2.143	-2.591	28.475	4.610
Free Cash Flow per Share	-0.091	-0.069	-30.860	33.593	6.573
Tax Per Share	0.569	0.027	0.000	13.998	1.998
Cash Per Share	1.634	0.775	0.010	10.562	2.057
Book Value per Share	5.975	5.802	-19.560	26.794	6.347
MKT value (M)	333.817	208.410	17.967	2048.840	359.050
NIPS	11.060	1.380	-27.930	249.184	39.749
Price/Earnings	17.903	17.000	-28.920	91.667	23.021

Number of observations is 54.

According to the three tables, it is observed that the abnormal returns are higher when the targets are listed on the Nasdaq than on the NYSE/Amex. The Size ratio is higher for the targets listed on the NYSE/Amex than for the targets listed on the Nasdaq. This difference makes sense since the Nasdaq firms are smaller than the NYSE/Amex companies; while the difference between minimum and maximum size ratios of NYSE/Amex is smaller than the targets listed on the Nasdaq. Surprisingly, the P/E ratio of the targets from the Nasdaq sample is lower than the P/E ratio of the targets listed on the NYSE. Another major difference is the gap between the level of the leverage index for the two types of markets; this finding can be related to the likelihood of using the purchasing method. Finally, it is interesting to note that the net income per share is higher for Nasdaq companies compared to the net income per share for NYSE/Amex listed target companies.

Table 12: Descriptive statistics for the target firms in the pooling sample

Variables	Average	Median	Min	Max	Std dv
AR	0.266	0.230	-0.116	1.300	0.249
Market	0.324	0.000	0.000	1.000	0.475
Method Of Payment	0.000	0.000	0.000	0.000	0.000
Method Of Accounting	1.000	1.000	1.000	1.000	0.000
Size ratio	0.236	0.157	0.013	0.693	0.221
Financial Leverage Index	3.257	1.880	1.139	21.497	3.920
Free Cash Flow per Share	-0.080	0.112	-30.860	7.923	5.614
Tax Per Share	0.831	0.152	0.000	7.875	1.524
Cash Per Share	2.463	0.836	0.105	21.863	3.944
Book Value per Share	9.169	6.676	1.428	35.546	7.185
MKT value (M)	576.127	214.260	13.962	6432.680	1122.490
Net Income Per Share	15.760	2.541	-27.930	249.184	46.896
Price/Earnings	19.120	17.000	0.056	75.000	13.590

Number of observations is 38.

Table 13: Descriptive statistics for the target firms in the purchasing sample

Variables	Average	Median	Min	Max	Std dv
AR	0.211	0.122	-0.110	1.694	0.317
Market	0.533	1.000	0.000	1.000	0.503
Method Of Payment	0.633	1.000	0.000	1.000	0.486
Method Of Accounting	0.000	0.000	0.000	0.000	0.000
Size ratio	0.278	0.203	0.002	1.784	0.301
Financial Leverage Index	4.278	2.509	-6.835	70.979	9.755
Free Cash Flow per Share	0.373	-0.025	-11.820	33.593	5.133
Tax Per Share	0.816	0.000	0.000	13.998	2.547
Cash Per Share	1.568	0.769	0.010	10.562	2.057
Book Value per Share	6.946	6.324	-19.560	30.964	7.020
MKT value (M)	535.892	345.610	14.930	2980.170	611.620
Net Income Per Share	0.961	0.774	-3.009	16.138	2.346
Price/Earnings	18.091	17.165	-28.92	91.667	20.059

Number of observations is 59.

Table 14: Descriptive statistics for the acquiring firms in the entire sample

Variables	Average	Median	Min	Max	Stdv
AR	-0.009	-0.005	-0.150	0.180	0.062
Market	0.448	0.000	0.000	1.000	0.500
Method Of Accounting	0.333	0.000	0.000	1.000	0.474
Method Of Payment	0.448	0.000	0.000	1.000	0.500
Size ratio	0.226	0.149	0.000	1.784	0.261
Financial Leverage Index	3.297	2.320	0.978	25.396	3.633
Free Cash Flow Per Share	1.050	0.311	-5.540	64.613	7.175
Tax Per Share	0.667	0.031	-0.581	12.904	1.815
Cash Per Share	1.210	0.560	0.015	12.174	1.778
Book Value per Share	12.760	8.986	-10.254	296.367	31.473
MKT value (M)	6652.783	2201.244	47.527	162791.512	18521.775
Net Income Per Share	1.252	1.016	-0.642	4.612	1.062
Price/Earnings	12.064	18.815	-311.40	140.625	53.341

Number of observations is 86.

Table 15: Descriptive statistics for the acquiring firms in the NYSE/Amex sample

Variables	Average	Median	Min	Max	Stdv
AR	0.000	-0.005	-0.096	0.180	0.060
Market	1.000	0.000	1.000	1.000	1.000
Method Of Accounting	0.250	0.000	0.000	1.000	0.440
Method Of Payment	0.438	0.000	0.000	1.000	0.504
Size ratio	0.289	0.206	0.010	1.784	0.311
Financial Leverage Index	3.600	2.658	1.469	25.396	4.347
Free Cash Flow Per Share	0.402	0.317	-3.979	8.745	2.217
Tax Per Share	1.197	0.080	-0.209	12.904	2.818
Cash Per Share	0.921	0.368	0.015	4.422	1.202
Book Value per Share	12.417	10.380	1.400	28.638	8.059
MKT value (M)	4110.821	2597.865	74.520	27363.585	5216.231
Net Income Per Share	1.523	1.184	0.052	3.721	1.037
Price/Earnings	5.249	19.260	-311.410	71.053	64.529

Number of observations is 39.

Table 16: Descriptive statistics for the acquiring firms in the Nasdaq sample

Variables	Average	Median	Min	Max	Stdv
AR	-0.016	-0.009	-0.150	0.162	0.068
Market	0.000	0.000	0.000	0.000	0.000
Method Of Accounting	0.417	0.000	0.000	1.000	0.498
Method Of Payment	0.458	0.000	0.000	1.000	0.504
Size ratio	0.171	0.092	0.000	0.709	0.212
Financial Leverage Index	2.817	2.155	0.978	10.443	2.005
Free Cash Flow Per Share	1.610	0.407	-5.540	64.613	9.428
Tax Per Share	0.379	0.037	0.000	2.515	0.656
Cash Per Share	1.403	0.701	0.019	12.174	2.126
Book Value per Share	14.110	7.780	1.237	296.367	41.839
MKT value (M)	8488.624	1823.280	47.527	162791.500	24154.500
Net Income Per Share	1.225	1.063	-0.326	4.612	0.978
Price/Earnings	17.475	18.773	-178.125	140.625	41.362

Number of observations is 47.

From the two tables (15&16), there is not a dramatic difference between the abnormal returns of the acquirers buying on the NYSE/Amex or on the Nasdaq. For the P/E ratio, we also consider the medians as the P/E averages can be affected dramatically by outliers by firms with earnings of approximately 0. The P/E of the acquirers buying firms in the NYSE/Amex is similar to the P/E from the acquirers buying their targets on the Nasdaq. But the average cash per share for the acquirers for the Nasdaq sample is higher than the one for the acquirers of the NYSE/Amex sample. The Leverage index is higher for the NYSE/Amex sample, which is consistent with the lower probability of using the pooling method. The differences in the average for the acquirers between the two markets do not stand, as soon as the median is considered. Our conclusion is that the acquirers for both markets are not significantly different.

Table 17: Descriptive statistics for the acquiring firms in the pooling sample

Variables	Average	Median	Min	Max	Stdv
AR	-0.008	-0.009	-0.150	0.180	0.067
Market	0.310	0.000	0.000	1.000	0.471
Method Of Accounting	1.000	1.000	1.000	1.000	0.000
Method Of Payment	0.000	0.000	0.000	0.000	0.000
Size ratio	0.192	0.146	0.013	0.693	0.183
Financial Leverage Index	2.781	2.415	0.978	11.238	1.811
Free Cash Flow Per Share	3.055	0.448	-1.200	64.613	11.989
Tax Per Share	1.063	0.079	0.000	12.904	2.545
Cash Per Share	0.987	0.594	0.053	4.422	1.310
Book Value per Share	19.561	8.150	-10.254	296.367	53.954
MKT value (M)	4291.348	2110.140	47.527	25519.010	5691.190
Net Income Per Share	1.340	1.003	-0.642	4.037	1.241
Price/Earnings	18.876	19.260	-121.774	71.053	31.993

The number of observations is 27.

Table 18: Descriptive statistics for the acquiring firms in the purchasing sample

Variables	Average	Median	Min	Max	Stdv
AR	-0.010	-0.005	-0.140	0.131	0.061
Market	0.517	1.000	0.000	1.000	0.504
Method Of Accounting	0.000	0.000	0.000	0.000	0.000
Method Of Payment	0.672	1.000	0.000	1.000	0.473
Size ratio	0.243	0.152	0.000	1.784	0.292
Financial Leverage Index	3.555	2.225	1.267	25.396	4.255
Free Cash Flow Per Share	0.048	0.120	-5.540	6.219	2.002
Tax Per Share	0.469	0.010	-0.581	8.700	1.291
Cash Per Share	1.322	0.492	0.015	12.174	1.971
Book Value Per Share	9.359	9.474	1.269	24.915	5.409
MKT value (M)	7833.501	2330.550	74.520	162791.500	22303.080
Net Income Per Share	1.207	1.035	-0.601	4.612	0.970
Price/Earnings	8.554	18.755	-311.400	140.625	60.862

Number of observations is 59.

Consistent with the findings of Nathan and Dunne (1991), we find in tables 17&18 that the firms with a higher leverage tend to prefer purchasing to pooling.

Furthermore, we find that bidding firms using pooling method exhibit higher free cash flow compared to the bidding firms using purchase acquisitions. The median free cash flow per share for the acquirers using pooling is 0.448 while that median for the bidding firms using purchasing is 0.246. Free cash flow variable is linked to the operating activities and finally to the earnings. These apparent differences will be examined more rigorously in the later sections of the thesis.

We would like to point out that the small samples derived from the large samples differ (for descriptive statistics see tables in the appendices). Actually, the samples we used in our linear and logistics regressions have larger market values; the differences are significant at 5 percent for the targets and one percent for the acquirers. However, for the acquirers, the MOA percentage does not differ significantly for the two samples.

To conclude, we have to be careful with the results of the linear and logistic regressions since we are dealing only with large and medium companies. This difference is largely due to the Compustat bias. Due to this bias, our conclusions might be relevant only for the large and medium companies but not for the small firms.

3.3 Methodology

The objective of this thesis is to examine the impact of the purchase/pooling choice on the markets' reaction to the merger announcement. Therefore, we begin with a classic event study.

3.31 Methodology to Compute the CAR for the Two Samples (Pooling and Purchasing).

In order to estimate abnormal returns, we first need an estimate of “normal” returns. We begin by estimating the market model over the pre event period; the market model is:

$$r_{it} = a_i + b_i r_{mt} + \varepsilon_{it} \quad t = -250, -50$$

The abnormal return on event date t is then:

$$r_{it} - E(r_{it}) = r_{it} - (a_i + b_i r_{mt})$$

$$r_{it} - E(r_{it}) = e_{it}$$

The average AR over the M firms in the sample on event date t is:

$$AR_t = (1/M) \sum_{i=1}^M e_{it}$$

For the cumulative average residuals, we take the sum of the AR over the period we want to study.

$$CAR = \sum_{t=-2}^2 AR_t$$

Here we have a sum from -2 to $+2$, because we decided to study the window $[-2,2]$ around the announcement date. We want to focus around the announcement date to see the direct consequences of the announcement of the accounting method and the announcement date of the merger.

Standardized residual and standardized cumulative residual is used in order to test if the observed CAR is significantly different from 0. The test statistics are derived as follows:

Standardized residual for firm i in week $t = Se{it}$

$Se_{it} = e_{it}/S_{it}$ where S_{it} is the estimated standard deviation of e_{it} .

Standardized cumulative residual, SCR{it} for different time interval is computed as follow:

$$SCR_{it} = \sum (Se_{it} / \sqrt{T_{2t} - T_{1t} + 1})$$

The Z-test is defined as follows:

$$Z = \sum SCR_{it} / \sqrt{M}$$

The event date is the announcement date of the merger, contrary to the study of Hong, Kaplan and Mandelker (1978), we check the effects of the announcement date on a very short period. The largest window is $[-15,+15]$ and the shortest is $[-1,0]$ or $[0,+1]$.

The total test period was 250 trading days and the market model was estimated during a period ending 50 days before the announcement date. Our abnormal returns were estimated during a period beginning 15 trading days before the announcement date and ending 15 days after the announcement date. Longer periods were examined and there was little difference in results.

3.32 Methodology for the Weighted Least Squares Regressions

A multivariate linear regression is done in order to determine if different variables can explain the premiums for the targets and the “premiums” of the acquirers. The WLS was chosen to lessen the influence of abnormal returns with high measurement errors and lessen any heteroscedasticity problems. In a WLS regression, each of the variables is weighted by $(1/\sigma_i^2)$ of the CAR_i . We carry out the regression for both targets as well as acquirers.

This regression analysis will allow us to test hypotheses H1 and H2, we are expecting a positive coefficient for the purchase method since our hypothesis is that the markets will favor the purchase method compared to the pooling method, because of the tax deductibility of the goodwill.

For the coefficient of the variable market, we are expecting a positive relationship between the Nasdaq and the abnormal returns of the targets since the targets have better earnings than the targets listed on the NYSE/Amex.

We can consider the following WLS regression:

$$CAR_i = \alpha + \beta_1 P/E + \beta_2 Size + \beta_3 Leverage + \beta_4 MOP + \beta_5 FCF + \beta_6 NIPS + \beta_7 BPS + \beta_8 CPS + \beta_9 TPS + \beta_{10} MOA + \beta_{11} Market + \varepsilon_i$$

3.33 Logit Model and Multinomial Logit Model

In our regression models below, we have 2 choice variables, Method of Accounting and Method of Payment. The bidder faces choices between two alternatives at each time, choosing between pooling versus purchasing and between cash and stock offer. However, these two choices are linked since the pooling

method forces the bidder to use stock as a method of payment: but with the purchasing method, the bidder can choose between a stock vs. cash offer.

The objective here is to determine which variables explain a higher or a lower probability of purchase/pooling and stock/cash. We assume here that the bidder will make a simultaneous choice between the method of payment and the accounting method. In order to analyze the decision process of the bidder, we propose a multinomial logit model.

Two models are particularly dedicated for the binary-choice issues, the logit and the probit. In this paper, we used the logit model and the multinomial logit.

The Logit model

The logit model does not utilize a normal distribution, but rather a logistics distribution, since the acquirer or the bidder is facing binary choices.

As Y is a Bernoulli random variable with parameter p_i , so the probability of $P(Y=1)$ follows a logistics regression and the probability of $P(Y=0)$ is $1-P(Y=1)$.

So, our set of explanatory variables such as Book Value Per Share, Deferred Tax Per Share, Cash Per Share etc are represented in a vector X , so that the logit model can be simplified to the following equations:

$$\beta'X = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_{p-1} X_{p-1}$$

$$\text{Prob}(Y=1) = \frac{e^{\beta'X}}{1 + e^{\beta'X}}$$

$$\text{Prob}(Y=0) = 1/(1 + e^{\beta'X})$$

To simplify the formula, we can write the following equation $\text{Prob}(Y=1) = \Lambda(\beta'X)$, where the probability follows the logistic cumulative distribution function.

The Multinomial Logit Model

The multinomial logit model is an extension of the binary logit model to more than two outcomes. According to Greene (1993), we can estimate the equations providing a set of probabilities for the $n+1$ choices of a decision-maker with the characteristics inside the vector X .

$$\text{Prob} (Y=j) = \exp (\beta'_j X_i) / \left(\sum_{k=0}^n \exp(\beta'_k X_i) \right)$$

For $k, j = 0, 1, 2, 3, \dots, n$.

As this system is unidentified, we impose the restriction that $p(y = 0) = 1 - \sum_{k=1}^n p(y = k)$. In other words, we assume that $\beta_0 = 0$, so that the probabilities are the following:

$$\text{Prob} (y = j) = \exp(\beta'_j X_i) / \left(1 + \sum_{k=1}^n \exp(\beta'_k X_i) \right)$$

$$\text{Prob} (y = 0) = 1 / \left(1 + \sum_{k=1}^n \exp(\beta'_k X_i) \right)$$

For $k, j = 1, 2, 3, \dots, n$.

These models will provide insights on how the acquirers make their choices between the two accounting methods and between the two mediums of payment. Nathan and Dunne (1991) use a logit model in order to understand how the acquirers make their choice, but with different variables. It will be interesting to compare our results against theirs.

4. Empirical Results and Analysis

4.1 Empirical Results

The following tables present the event study results, using the software Eventus for targets and acquirers. The samples are divided into sub-samples in order to determine if there are differences between the two methods of accounting or if there are some differences between the targets listed on the NYSE/Amex vs. Nasdaq.

Table 19: Cumulative abnormal returns of the target firms using pooling for the total sample

Days	CAAR	Median CAR	T	Positive Negative	Sign Z
(-10,+10)	24.26%	21.79%	16.95***	108 14	9.63***
(-5,+5)	22.94%	17.96%	22.14***	109 13	9.81***
(-2,+2)	21.18%	18.28%	30.33***	111 11	10.18***
(-2,0)	17.04%	12.89%	31.50***	104 18	8.90***
(0,+2)	18.54%	15.05%	34.27***	107 14	9.57***
(-1,+1)	20.15%	18.17%	37.25***	108 14	9.63***
(-1,0)	15.69%	12.41%	35.52***	102 20	8.54***
(0,+1)	18.86%	16.03%	42.70***	106 15	9.39***
(-15,+15)	24.18%	21.74%	13.90***	108 14	9.63***

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent.

The total number of observations is 122.

Table 20: Cumulative abnormal returns of the target firms using purchasing for the total sample

Days	CAAR	Median CAR	T	Positive Negative	Sign Z
(-10,+10)	23.88%	20.28%	25.85***	214 44	11.89***
(-5,+5)	22.98%	18.20%	34.36***	221 37	12.77***
(-2,+2)	21.87%	15.49%	48.52***	221 37	12.77***
(-2,0)	16.89%	10.71%	48.37***	211 47	11.52***
(0,+2)	19.26%	12.49%	55.15***	215 43	12.02***
(-1,+1)	21.22%	15.72%	60.77***	214 44	11.89***
(-1,0)	16.02%	9.48%	56.19***	200 58	10.14***
(0,+1)	19.47%	13.26%	68.30***	215 43	12.02***
(-15,+15)	25.02%	21.40%	22.29***	212 46	11.64***

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent.

The total number of observations is 258.

From tables 19 and 20, it appears that there are no major differences for the cumulative abnormal returns of the targets using one or another accounting method.

However, if we consider the Median CAR, it appears that the targets using the pooling method have higher cumulative abnormal returns than the targets using purchasing. The differences between the Median CAR for the two samples for various windows are approximately 2 percent. This finding suggests that the accounting choice matters to the target shareholders and might explain a difference between two companies with the same financial structure but not the same accounting methods for the merger.

Table 21: Cumulative abnormal results of the target firms using pooling for the Nasdaq

Days	CAAR	Median CAAR	T	Positive:Negative	Sign Z
(-10,+10)	26.82%	24.45%	12.02***	66 7	7.90***
(-5,+5)	26.26%	22.87%	16.26***	66 7	7.90***
(-2,+2)	23.81%	21.53%	21.87***	66 7	7.90***
(-2,0)	19.36%	14.28%	22.95***	61 12	6.72***
(0,+2)	21.15%	16.32%	25.07***	63 10	7.19***
(-1,+1)	22.40%	20.56%	26.55***	62 11	6.95***
(-1,0)	17.64%	12.45%	25.61***	58 15	6.01***
(0,+1)	21.45%	17.88%	31.15***	62 11	6.95***
(-15,+15)	26.01%	22.68%	9.59***	66 7	7.90***

*** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

The total number of observations is 73.

Table 22: Cumulative abnormal returns of the target firms using purchasing for the Nasdaq

Days	CAAR	Median CAR	T	Positive:Negative	Sign Z
(-10,+10)	26.85%	20.84%	17.49***	117 22	9.01***
(-5,+5)	26.27%	20.93%	23.65***	124 15	10.20***
(-2,+2)	25.25%	18.10%	33.72***	121 18	9.69***
(-2,0)	17.58%	11.07%	30.31***	113 26	8.33***
(0,+2)	22.47%	15.66%	38.74***	111 28	7.99***
(-1,+1)	24.63%	18.25%	42.45***	115 24	8.67***
(-1,0)	16.68%	9.64%	35.21***	106 33	7.14***
(0,+1)	22.75%	16.02%	48.03***	113 26	8.33***
(-15,+15)	28.62%	25.71%	15.35***	114 25	8.50***

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent

The total number of observations is 258

If we make a distinction by markets, it appears that the CAR of the pooling method does not differ from the purchasing method. furthermore the CAR to the purchasing method might perform better than the pooling method for some event windows like the (-15,+15). However, if we consider the Median CAR, the target firms using pooling appear to perform better than those using purchasing. For the Nasdaq, we can not really conclude that one accounting method performs better than the other from the targets' perspective.

Table 23: Cumulative abnormal returns of the target firms using pooling for the NYSE/Amex.

Days	CAAR	Median CAAR	T	Positive:Negative	Sign Z
(-10,+10)	20.35%	17.70%	13.81***	42 7	5.56***
(-5,+5)	17.87%	16.01%	16.76***	43 6	5.85***
(-2,+2)	17.18%	16.23%	23.90***	45 4	6.42***
(-2,0)	13.52%	11.59%	24.28***	43 6	5.85***
(0,+2)	14.57%	12.69%	26.17***	44 4	6.33***
(-1,+1)	16.73%	15.18%	30.04***	46 3	6.71***
(-1,0)	12.72%	12.38%	27.98***	44 5	6.14***
(0,+1)	14.92%	12.86%	32.82***	44 4	6.33***
(-15,+15)	21.38%	16.54%	11.94***	42 7	5.56***

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent.
The total number of observations is 49.

Table 24: Cumulative abnormal returns of the target firms using purchasing for the NYSE/Amex.

Days	CAAR	Median CAAR	T	Positive:Negative	Sign Z
(-10,+10)	19.99%	17.52%	17.83***	98 21	8.01***
(-5,+5)	18.94%	13.91%	23.35***	99 20	8.19***
(-2,+2)	17.88%	12.42%	32.70***	100 19	8.38***
(-2,0)	16.05%	9.68%	37.90***	96 23	7.64***
(0,+2)	15.46%	9.06%	36.51***	102 17	8.75***
(-1,+1)	17.19%	13.50%	40.59***	98 21	8.01***
(-1,0)	15.20%	9.38%	43.96***	96 23	7.64***
(0,+1)	15.62%	9.25%	45.17***	102 17	8.75***
(-15,+15)	20.26%	17.01%	14.88***	96 23	7.64***

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent.
The total number of observations is 119.

Tables 21 to 24 present the event study results from Eventus, once again analyzing the average does not give strong results that the two accounting methods give different results. According to the CAAR, the firms using the pooling method do not perform better than the firms using the purchasing method. By considering only the average, we are not able to conclude that an accounting method is better than the other one. It is interesting to note that for the longer windows $(-10,+10)$, $(-5,+5)$ and $(-15,+15)$, there are no significant differences between the two samples. For the smaller windows, the median CARs are higher for the pooling companies than for the purchasing companies.

From these four tables, we have to consider that firms using pooling may receive higher premiums than the firms using purchasing. Furthermore, it is worth noticing that the median CARs are higher for the pooling targets than for the targets merged under the purchasing method for the two markets. If we just consider the median CAR, firms using the pooling method appear to receive a valuation premium relative to those using the purchase method. However, overall the results do not seem to differ significantly from one method of accounting to another one. The most interesting finding is that the targets listed on the Nasdaq enjoy a higher premium than the targets listed on the NYSE/Amex. If we remember that the financial ratios of the targets from the Nasdaq do not differ significantly from those of the targets listed on the NYSE/Amex (see tables 7&8), then we can conclude that the acquirers listed on NYSE/Amex are willing to pay a premium for the targets listed on the Nasdaq.

Table 25: Cumulative abnormal returns of the acquirers using pooling for the total sample.

Days	CAAR	Median CAAR	T	Positive:Negative	Sign Z
(-10,+10)	0.72%	-0.21%	0.97	60 64	0.42
(-5,+5)	-0.53%	-0.03%	-0.98	62 62	0.78
(-2,+2)	-0.66%	-0.52%	-1.8	57 67	-0.12
(-2,0)	-0.42%	-0.27%	-1.5	52 72	-1.02
(0,+2)	-0.70%	-0.29%	-2.48*	57 67	-0.12
(-1,+1)	-0.68%	-0.65%	-2.40*	56 68	-0.3
(-1,0)	-0.53%	-1.10%	-2.32*	49 75	-1.56
(0,+1)	-0.61%	-0.28%	-2.64**	54 70	-0.66
(-15,+15)	0.00%	-0.78%	0	56 68	-0.3

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent
The total number of observations is 124

Table 26: Cumulative abnormal returns of the acquirers using purchasing for the total sample

Days	CAAR	Median CAAR	T	Positive:Negative	Sign Z
(-10,+10)	-1.98%	-1.89%	-3.60***	110 144	-1.4
(-5,+5)	-1.55%	-1.73%	-3.91***	104 150	-2.16*
(-2,+2)	-1.50%	-1.48%	-5.63***	93 161	-3.54***
(-2,0)	-1.12%	-0.89%	-5.42***	100 154	-2.66**
(0,+2)	-1.29%	-1.36%	-6.23***	101 153	-2.53*
(-1,+1)	-1.15%	-0.83%	-5.56***	103 151	-2.28*
(-1,0)	-0.95%	-0.52%	-5.60***	108 146	-1.65
(0,+1)	-1.11%	-0.85%	-6.57***	101 153	-2.53*
(-15,+15)	-1.82%	-1.55%	-2.73**	109 145	-1.53

*** Significant at 1 percent, ** significant at 5 percent and * significant at 10 percent
The total number of observations is 254

From the two tables, we see that acquirers using the pooling method perform better than the acquirers using purchasing. Nevertheless, the 3 percent difference observed between the targets of the pooling sample and the targets of the purchasing sample is not reflected in bidder Abnormal Returns. This supports the idea that markets pay little attention to the accounting method for the acquirers. Furthermore, if there were a wealth transfer from the acquirers to the targets for the pooling sample, we would see lower abnormal returns for the acquirers using pooling.

Table 27: Cumulative abnormal returns of the acquirers with targets listed on the NYSE/Amex

Days	CAAR	Median CAAR	T	Positive:Negative	Sign Z
(-10,+10)	-0.67%	-0.38%	-1.13	77 89	-0.28
(-5,+5)	-1.04%	-0.83%	-2.44*	73 93	-0.91
(-2,+2)	-0.97%	-0.94%	-3.38***	70 96	-1.37
(-2,0)	-1.10%	-0.84%	-4.94***	63 103	-2.46
(0,+2)	-0.79%	-0.97%	-3.56***	72 94	-1.06
(-1,+1)	-0.59%	-0.43%	-2.66**	78 88	-0.13
(-1,0)	-0.75%	-0.79%	-4.15***	66 100	-1.99
(0,+1)	-0.76%	-0.66%	-4.17***	73 93	-0.91
(-15,+15)	-0.09%	-1.02%	-0.13	76 90	-0.44

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent
The total number of observations is 166

Table 28: Cumulative abnormal returns of the acquirers with targets listed on the Nasdaq

Days	CAAR	Median CAAR	T	Positive:Negative	Sign Z
(-10,+10)	-1.41%	-1.46%	-2.08*	93 119	-0.96
(-5,+5)	-1.35%	-1.52%	-2.75**	93 119	-0.96
(-2,+2)	-1.42%	-1.24%	-4.30***	80 132	-2.75**
(-2,0)	-0.72%	-0.51%	-2.84**	89 123	-1.51
(0,+2)	-1.33%	-0.93%	-5.20***	86 126	-1.93
(-1,+1)	-1.31%	-0.87%	-5.11***	81 131	-2.61**
(-1,0)	-0.85%	-0.53%	-4.09***	91 121	-1.24
(0,+1)	-1.09%	-0.65%	-5.22***	82 130	-2.48*
(-15,+15)	-2.09%	-1.54%	-2.54*	89 123	-1.51

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent
The total number of observations is 212

Tables 27 and 28 present the Abnormal Returns of the acquirers when their targets are listed on the NYSE/Amex or on the Nasdaq. When we consider the longer windows such as (-10,+10), (-5,+5), (-15,+15), our hypothesis that market type matters is supported. Our tables suggest that acquirers bidding for targets listed on the Nasdaq earn lower abnormal returns compared to the acquirers bidding on the NYSE/Amex, indicating that the Market perceives a wealth transfer from the acquirer to the NASDAQ target.

4.2 Consequences of the Goodwill Tax Deductibility

Concerning the consequences of the Tax reform act of 1993 on the acquirers, we examine the abnormal returns of the acquirers over two periods, one pre-OBRA and the other post-OBRA in order to see if there are some differences. The major consequence of the OBRA was to introduce a goodwill amortization over a period of 20 years and tax-deductibility of this goodwill. Our hypothesis was that this goodwill tax-deductible would increase the abnormal returns of the acquirers using purchasing, because this tax deductibility would have positive cash flow consequences.

From the four tables in the appendix, it appears that the OBRA did not have the expected consequences on the acquirers. According to the tables (see the appendix), the abnormal returns of the acquirers are even lower for the period post-OBRA for both markets.

In order to determine if the lower abnormal returns of the acquirers were due to increase in the targets' premiums, we computed the premiums. From the tables in the appendix, it appears that the premiums are lower for the period post-OBRA in both markets compared to the period pre-OBRA. So basically, we would conclude that the OBRA did not have a positive impact on firms using purchasing or at least that the OBRA effect might have been offset by other events.

Unfortunately, the lack of sufficient financial data on Compustat for the pre-OBRA prevents further analysis.

4.3 Results of the Linear Regressions for Bidders and Targets and the Analysis

In this sub-section, we will present the results of our linear regressions for the both players of the deal. The dependent variable is the abnormal return of the target

or of the acquirer in the window (-2, 2) and the explanatory variables have been defined previously in the table 18.

Table 29: WLS regression results for the targets

Variables	Coef.	t-test	Sign.	p-value
Constant	0.159	2.639	***	0.0099
P/E	1.21E-03	0.760		0.4494
Size	2.09E-02	3.347	***	0.0012
Leverage	-7.21E-04	-0.478		0.6337
Method Of Payment	3.73E-02	0.786		0.4338
Free Cash Flow Per Share	9.72E-04	0.203		0.8400
Net Income Per Share	-2.51E-04	-0.386		0.7003
Book value Per Share	-3.64E-03	-1.367		0.1752
Cash Per Share	7.03E-03	1.018		0.3118
Tax Per Share	1.11E-02	1.759	*	0.0865
Method Of Accounting	8.23E-02	1.685	*	0.0959
Market	-7.93E-02	-1.690	*	0.0947

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent.

The number of observation is 97.

The Adjusted R-squared is .15523

Table 29 presents the results from the weighted least square regression of the target premium on the explanatory variables. Consistent with our hypothesis H2, the estimated coefficient for the variable market is negative and statistically significant at a 10 percent level. This finding suggests that the market variable is negatively associated with the level of premium; the negative coefficient indicates that if the market is the NYSE or the Amex, the target will have a lower premium compared to a target listed on the Nasdaq.

The estimated coefficient for the size ratio is positive and highly significant at a 1 percent level. The positive sign of the coefficient supports the hypothesis that the target uses its bargaining power in order to drive up the premium. A target with a market capitalization roughly equal to the acquirer's market capitalization has high potential bargaining power. The positive coefficient is not consistent with the finding

of Robinson (1998). As Robinson (1998). Robinson and Shane (1990), Nathan (1988) and Vincent (1997). we find that the pooling-of-interest is positively associated with the target premium level. So our hypothesis H1 that the method of accounting should not affect the premiums is not supported.

If we perform a linear regression of the method of accounting (MOA) on the abnormal returns (AR), we find that there is no significant relationship between the two variables. The same regression has been performed on the acquirers' abnormal returns, in order to determine if the explanatory variables were the same as the targets.

Table 30: WLS regression results for the acquirers

Variables	Coef	t-test	Sign.	p-value
Constant	-5.34E-03	-0.269		0.7890
P/E	5.97E-05	0.367		0.7149
Size	-7.51E-02	-2.578	**	0.0119
Leverage	-5.67E-04	-0.278		0.7815
Method Of Payment	2.74E-03	0.147		0.8835
Free Cash Flow Per Share	2.99E-03	0.829		0.4098
Net Income Per Share	-6.61E-03	-0.903		0.3695
Book value Per Share	-6.29E-04	-0.676		0.5015
Cash Per Share	1.93E-03	0.539		0.5916
Tax Per Share	-5.88E-04	-0.210		0.8344
Method Of Accounting	7.65E-03	0.397		0.6923
Market	3.54E-02	2.536	**	0.0133

*** Significant at 1 percent, ** significant at 5 percent and * significant at 10 percent.

The number of observations is 86.

The adjusted R-squared is .04626.

For the acquirers, our results are consistent with hypotheses 2 and 5 that market and size ratio were highly significant at a 2 percent level. We find that the size ratio is negatively related to the abnormal returns of the acquirers. This finding is consistent with the results for the targets. The higher the ratio (market value of target/market value of the acquirer), the lower will be the abnormal returns of the

acquirer. This result can be explained by two different ways. the first is to consider this ratio as a measure of the bargaining power of the target. the closer it is to 1. the higher is the bargaining power of the target. The second is that an acquisition of a target with approximately the same size as the acquirer increases potential difficulties to the integration process. The coefficient of the market variable supports our hypothesis that the issue of where the merger takes place is a really important question. The positive coefficient means that a merger between two firms listed on the NYSE or the Amex will not negatively affect the acquirer. While a merger between a target listed on the Nasdaq and an acquirer on the NYSE or the Amex will have a negative impact on the acquirer. We find that the method of payment does not affect significantly the acquirer.

As we have pointed out in the previous section, it seems that the method of accounting does not affect the acquirers' returns; contrary to Lindenberg and Ross (1999), we find that the method of accounting has a neutral effect on the acquirers. However, it appears that the markets give more importance at the method of accounting when the both players are listed on the NYSE/Amex than when the target is listed on the Nasdaq. (see tables in the appendices). Unlike previous studies such as Vincent (1997), we do not find that the pooling method drives up the returns of the acquirers. In order to be consistent, we performed some WLS regressions with the abnormal returns as dependent variable and the following explanatory variables: MOP, MOA and the Nasdaq on the large samples. We found for the acquirers that when the targets were listed on the Nasdaq, they had significant lower abnormal returns than for acquirers with targets listed on the NYSE/Amex.

For the targets, we did the same WLS regression and we found that the targets listed on the Nasdaq have significant higher abnormal returns compared to targets listed on the NYSE/Amex. We did the WLS regression with only one explanatory variable and we found that the MOA and MOP were not significant. (See the tables in the appendices)

4.4 Results of the Logistic Regressions for Bidders and Targets and the Analysis

In this section, using a logistic regression we explain the choice of the accounting method.

Table 31: Logistic regression for the accounting choice (pooling vs. purchasing) on the acquirers sample

Variables	Coef.	b/st. Er.	Sign.	p-value
Book value Per Share	-3.96E-02	-0.664		0.5065
Cash Per Share	-0.144	-0.802		0.4225
Tax Per Share	0.330	1.745	*	0.0801
Leverage	-0.204	-1.583		0.1134
Free Cash Flow Per Share	0.462	2.305	**	0.0212
Size	0.659	0.597		0.5506
Net Income Per Share	4.69E-02	0.110		0.9127
PE	6.43E-03	0.957		0.3387
Market	-0.921	-1.600		0.1095

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent

The number of observations is 86 and the degrees of freedom is 9

The chi-square is 18.405 and the p-value is 0.0184

From table 31, we find that the free cash flow variable of the acquirer is positively and significantly related to the pooling method. The free cash flow represents the cash after tax, depreciation, and less investment. So a higher free cash flow means a higher probability of using the pooling method. The deferred tax variable is positively correlated to the choice of the accounting method, but the level of significance is relatively low at 10 percent. For the other variables, it is interesting to note that the level of leverage is negatively correlated with the choice of the

pooling method but insignificant. This finding is consistent with Nathan and Dunne (1991), who found that the highly levered acquirers are more likely to choose the purchasing method. Another interesting point is the negative sign of the market variable; it seems that when the target is listed on the NYSE/Amex, the likelihood of using the pooling method for the acquirer is decreasing, however the coefficient is only marginally significant.

Table 32: Logistic regression for the accounting choice (pooling vs. purchasing) on the targets sample

Variables	Coef.	b/st. Er.	Sign.	p-value
Book value Per Share	2.64E-02	0.738		0.4603
Cash Per Share	8.55E-02	1.098		0.2723
Tax Per Share	-0.105	-0.835		0.4034
Leverage	-3.44E-02	-0.685		0.4934
Free Cash Flow Per Share	3.25E-03	0.539		0.5901
Size	-1.445	-1.482		0.1385
Net Income Per Share	1.12E-01	2.017	**	0.0437
PE	-2.17E-03	-0.170		0.865
Market	-0.876	-1.685	*	0.092

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent

The number of observations is 97 and the degrees of freedom is 8

The chi-square is 20.65233 and the p-value is .813E-02

Consistent with Robinson (1998), we find that net income per share is positively and significant related to the likelihood of using pooling. Basically, we can accept the idea that there is a positive association between the earnings of the target and the use of the pooling method. Contrary to Robinson, we do not use the earnings per share but the net income per share, however our conclusions are the same. The second significant variable is the market variable. Once again, it seems that there is a negative correlation between the target listing in the NYSE and the likelihood of using the pooling method. This finding is consistent with what we found in the previous section. The other variables are not significant, but it is still interesting to

point out the puzzling sign of the coefficient of the size variable. According to this sign, it would mean that the closer the market values of the target and the acquirer are, the lower the probability of using pooling.

For the pooling, we find that only net income per share was positively correlated to pooling and highly significant at a 2 percent level.

We decided to check if the results were similar by markets. We find that if the targets are listed on the Nasdaq; the likelihood of using the purchasing method is negatively correlated with book value per share at a 2 percent level of significance and that cash per share is positively correlated and significant at 6 percent. Still for the Nasdaq, we find that net income per share is positively correlated and significant at 4 percent. Surprisingly for the NYSE/Amex sub-sample, we find that all the variables are insignificant, it could mean that the targets listed on the Nasdaq have more power than the targets listed on the NYSE/Amex to influence the accounting decision.

For the acquirers, we find that overall (the two types of market included); the likelihood of using the purchasing method is negatively correlated to the level of book value per share. For pooling, the likelihood of using pooling is positively correlated to the level of free cash flow per share. If we split by markets, we find for the NYSE/Amex that likelihood of using the purchasing is negatively correlated with the level of cash per share. For pooling, a negative and statistically significant coefficient is found for the book value per share and furthermore the variable free cash flow per share is positively and significantly correlated with the pooling choice.

For the sample with the targets listed on the Nasdaq, it is found that none of the variables are significantly correlated with the choice. These findings support our suggestion that the acquirers make the accounting choice for the merger when the target is listed on the NYSE. When the target is listed on the Nasdaq, the choice is not longer depending on the acquirer but on the target, the target has the power to influence the decision, that is not the case for the targets listed on the NYSE/Amex. To conclude, if the target is listed on the Nasdaq, its characteristics will drive the acquirer's choice of the method of accounting. But when the target is listed on the NYSE/Amex, the acquirer makes the choice regarding its own characteristics.

Finally, we want to understand how the different financial variables of both players explain the choice of the accounting method. We believe that choice is made by the acquirer taking into account the fit of both firms.

Hereafter, the table 33 presents the results of the logistic regression for MOA as the dependent variables and the characteristics of the targets and the acquirers as the explanatory variables. In this regression, we try to understand what drive the choice of pooling. We consider that the acquirers are making this choice by regarding their financial statements as well as the financial statements of their targets. Here, the research in how the acquirers make their choice is very little and we haven't found yet relevant articles and models dealing with the characteristics of the two players.

Table 33: Logistic regression for the accounting choice (pooling vs. purchasing) on the variables of the targets and acquirers

	Variables	Coef	b/St Er.	Sign.	p-value
Target	Size	-5.62E-02	-0.035		0.9722
	NIPS	4.10E-02	0.709		0.4785
	PE	-2.02E-03	-0.113		0.9100
	Market	-2.812	-2.845	***	0.0044
	Leverage	-8.39E-02	-.551		0.5815
	Free CFPS	0.110	0.915		0.3601
	TPS	-0.184	-0.773		0.4393
	CPS	0.190	0.870		0.3843
Bidder	BPS	0.148	0.417		0.6765
	NIPS	0.216	1.856	*	0.0634
	PE	-1.04E-02	-2.318	**	0.0313
	leverage	-0.142	-0.769		0.4419
	TPS	4.91E-02	0.203		0.8395
	CPS	-0.362	-1.402		0.1610
	BPS	-1.34E-03	-0.127		0.8993

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent

The total number of observations is 72 and the degree of freedom is 14

The Chi-square is 35.31974 and the p-value is 0.1318E-02

We found some significant relationships between a couple of explanatory variables and the likelihood of using pooling. We found a negative relationship between the market of the targets and the likelihood of using pooling. So if the target is listed on the NYSE, the likelihood of using pooling is lower than if the target is listed on the Nasdaq.

We have a significant positive relationship between the likelihood of using pooling and the level of net income per share of the bidder. This finding is confusing since a higher level of the bidder net income per share means a higher level of cash per share and basically a higher probability of using purchasing with cash.

The third significant relationship is quite puzzling too, since according to the regression there is negative relationship between the level of bidder PE and the likelihood of using the pooling method. This relationship was not expected since a higher PE should be linked to a higher probability of using pooling.

Table 34: Logistic regression for the choice of method of payment on the variables of the targets and the acquirers

	Variables	Coef	b/St Er.	Sign.	p-value
Target	Size	1.625	0.983		0.3256
	NIPS	-0.151	-1.979	**	0.0478
	PE	-2.64E-02	-1.343		0.1793
	market	1.608	1.889	*	0.0588
	leverage	-0.116	-1.700	*	0.0891
	FCFPS	-0.116	-1.075		0.2826
	TPS	-4.65E-02	-0.197		0.8440
	CPS	-0.500	-1.898	*	0.0577
Bidder	BPS	-0.158	-1.822	*	0.0684
	NIPS	9.09E-02	0.220		0.8257
	PE	2.46E-02	2.725	***	0.0064
	leverage	0.182	1.162		0.2452
	TPS	-6.48E-02	-0.262		0.7933
	CPS	0.220	0.940		0.3474
	BPS	3.87E-03	0.290		0.7716

*** Significant at 1 percent, ** significant at 5 percent and * significant at 10 percent.

The number of observations is 72 and degrees of freedom is 14.

The chi-square is 33.66367 and p-value: 0.2308973E-02.

According to our analysis, we find that the acquiring firms consider multiple financial issues of both the targets and themselves before making their choice of the method of payment. The target net income per share and the target cash per share variables are negatively and significantly related with the probability of using cash as a medium of payment. Implicitly a profitable company will have a higher stock price; after a certain price the acquirers will probably prefer to use stock as a medium of payment. From the table, we find that the Bidder PE and the likelihood of using the cash is positive, this finding is consistent with what Travlos (1987) found on the

method of payment. Actually, the bidder does not want to use stock as a method of payment because it would mean that the bidder considers its stock as overvalued.

Table 35: Multinomial Logistic regression for the choice of method of accounting (pooling vs. purchasing stock) on the variables of the targets and the acquirers

	Variables	Purchasing+ stocks			Pooling + stocks		
		Coefficients	B/St. Er.	Sign. p-value	Coefficients	B/St. Er.	Sign. p-value
Target	Size	-2.983	-1.304	0.1923	-1.251	-0.678	0.4975
	NIPS	0.141	1.614	0.1066	0.145	1.727	* 0.0842
	PE	1.22E-02	0.499	0.6179	2.21E-02	1.049	0.2942
	market	-0.217	-0.201	0.8404	-2.642	-2.364	* 0.0181
	leverage	0.101	1.419	0.156	-3.54E-02	0.196	0.8449
	FCFPS	8.67E-02	0.7	0.4842	0.207	1.395	0.1629
	TPS	0.158	0.606	0.5443	-0.137	-0.48	0.631
Bidder	CPS	0.557	1.657	* 0.0975	0.475	1.66	* 0.097
	BPS	6.02E-02	0.604	0.5456	0.201	2.027	** 0.0426
	NIPS	-1.133	-1.673	* 0.0944	0.35	0.697	0.4857
	PE	-2.53E-02	-2.592	*** 0.0095	-2.82E-02	-2.9	*** 0.0037
	leverage	-9.11E-02	-0.543	0.587	-0.161	-0.857	0.3912
	TPS	0.167	0.498	0.6186	0.133	0.478	0.6327
	CPS	-0.255	-0.773	0.4397	-0.338	-1.229	0.219
	BPS	-1.04E-02	-0.411	0.6809	-4.01E-03	-0.306	0.7596

*** Significant at 1 percent, ** significant at 5 percent and * significant at 10 percent.

The number of observations is 72 and the degrees of freedom is 28.

The chi-square is 57.99297 and the p-value is .730192E-03.

Before going further, we would like to remind the reader that the reference state for our multinomial logistic regression is the purchasing method + cash. So that all our estimations are relative to this reference state and not absolute. Table 35 presents the coefficients of the variables in order to determine how the acquirers make their choice between the pooling and the purchasing using the stock as a medium of payment. From this table, it appears that acquirers are making their choice depending on some of their financial issues as well as some financial issues of the targets.

The target net income per share variable is positively and significantly correlated with the choice of pooling. This finding is consistent with Robinson, that higher earnings for target are related to a higher probability of using pooling.

The significantly negative relationship between the market variable and the likelihood of using pooling, suggests that if the target is listed on the NYSE, the likelihood of using pooling as method of accounting is lower. This finding supports our hypothesis that the targets listed on the two markets differ. We also support the view that the firms on the Nasdaq might have a larger goodwill than the firms listed on the NYSE/Amex.

The positive and significant coefficient of the cash per share for the target implies that the higher the target cash per share, the higher is the probability of the acquirer using stock as a method of payment. But the relationship between cash per share and choosing pooling is consistent and can be linked to the relationship between earnings and pooling.

The higher the level of the bidder net income per share, the lower the probability of choosing the purchasing method with stock as a method of payment. Although the coefficient is not significant for pooling, it is still interesting to note that the coefficient is reversed compared to the coefficient for purchasing + stock. It appears that the higher the net income of the bidder, the higher probability that they use cash.

The negative relation between the bidder PE ratio and the likelihood of paying with stock is still puzzling, unless the bidder considers that its stock is correctly priced and therefore have little incentive to use stock as a method of payment.

For the targets, we find that there is a positive correlation between the likelihood of using pooling and the level of book value per share. We suggest that the level of book value per share can be considered as a measurement of the potential size

of the target: therefore it would mean that the larger is the target, the higher the probability the acquirer uses pooling.

Contrary to Nathan and Dunne (1991), we do not find a significantly negative relationship between pooling and leverage. However, their finding is quite puzzling since the higher the firm's leverage, the lower probability the bidder will use pooling or purchasing with stock. Intuitively, we would expect the opposite, because a high leverage means a high level of debt and consequently less possibility for using cash.

5 Summary and Conclusions

5.1 Summary of findings

The purpose of this study is to determine if there were major differences for firms using purchasing or pooling. Our findings reject the hypothesis that the purchasing method should give higher abnormal results, targets merged under the pooling method do not receive larger premiums than do targets under the purchasing method. However, we would like to highlight that the difference between the two methods of accounting is larger when the targets are listed on the Nasdaq. For the target sample, there is a negative relationship between the fact that the target is listed on the NYSE/Amex and the likelihood of using pooling.

For the NYSE/Amex targets, the difference between the premiums for the two methods is small, supporting the idea that the NYSE does not perceive the purchasing method as "better" than the pooling method. Another explanation is that the acquirers of NYSE firms do not pay to pool when the targets are listed on the NYSE/Amex but that they would prefer to use the purchasing method when the targets are traded on the Nasdaq. For the consequences of the tax deductibility of the goodwill, it is

difficult to conclude since the purchasing method does not perform better than the pooling method. Furthermore, the results between the period pre-OBRA and post-OBRA are puzzling since the premiums appear to be larger for the period pre-OBRA.

We then examined the choice between the purchasing and pooling. For the targets, we found that the level of net income per share was positively and significantly correlated to the probability of using the pooling method. Furthermore the market type was negatively correlated to the pooling method, supporting the idea that there is a positive relation between Nasdaq targets and pooling.

For the acquirers, free cash flow and deferred tax per share were positively and significantly correlated and it was found that the market variable was negatively but not significantly correlated with the probability of using pooling.

On one hand, we find a positive relationship between the probability of using cash and bidder net income per share, bidder PE and the target market. On the other hand, we find a negative relationship between the target cash per share, the target net income per share and the bidder level of leverage.

As bidders do not consider targets in isolation, we examined the bidders' choice while controlling for both bidders and targets characteristics. We found puzzling but interesting results; the probability of pooling is positively correlated with the bidder net income per share. However, there is a negative relationship between the likelihood of pooling and both the target market (NYSE/Amex) and the bidder PE. These results are puzzling particularly the negative relation between the bidder PE and the likelihood of pooling.

We then extended the study by explicitly modeling the fact that the choice of method of payment and accounting are made simultaneously. We found that the probability of using purchasing with stock was positively correlated to the level of target cash per share and that it was negatively correlated with the bidder net income per share and the bidder PE.

For the pooling, we found that the likelihood of using pooling was negatively correlated to targets listed on the NYSE/Amex, the target book value per share and the bidder PE ratio. However the likelihood of using pooling is positively correlated to target cash per share.

Some of these findings are puzzling such as the negative relationship between the bidder PE and the likelihood of using purchasing, or even the relationship between the target book value per share and the probability of using pooling.

5.2 Conclusion and Further Research

The results of this study suggest several avenues for future research. The first is the puzzling difference between Nasdaq and NYSE/Amex listed targets. The critical question remains: what is market-listing proxying for? What is it about a Nasdaq listed target that makes an acquirer pay a higher premium?

At present, there is little research on the differences between mergers and acquisitions activity on the NYSE and Nasdaq. We would like also to extend the study on a longer period in order to have a larger sample. In the future, it would be interesting to study deeply the mergers and acquisitions activity on the Nasdaq to find out whether this market has some typical patterns.

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Appendices

Appendix 1

Tables of SIC codes related to the industry affiliation

SIC 1000: Metal and mining

SIC 2000: Food, textile, and chemicals

SIC 3000: Rubber, metal, and machine products

SIC 4000: Transportation and utilities

SIC 5000: Wholesale and retail trade

SIC 6000: Financial institutions and insurance

SIC 7000: Hotel and other services

SIC 8000: Health and engineering

Appendix 2

Descriptive statistics for the targets for the large sample

Variable	Mean	Min	Max	Std. Dev
AR	0.221	-0.179	1.694	0.248
Method Of Accounting	0.132	0.000	1.000	0.339
Method Of Payment	0.438	0.000	1.000	0.497
Nasdaq	0.556	0.000	1.000	0.498
Market Value	440.921	3.548	5292.912	857.682

Number of observations of 363, the number of missing value is 17.

NB: in this table, the dummy variable for NASDAQ has been changed, NASDAQ = 1 and NYSE/Amex = 0. The market value maximum differs from the one in the small sample, since it is computed 12 months prior to the acquisition, while the data from Compustat is computed at the end of the previous fiscal year.

Descriptive statistics for the acquirers for the large sample

Variable	Mean	Min	Max	Std. Dev
AR	-0.014	-0.241	0.211	0.059
Method Of Accounting	0.334	0.000	1.000	0.472
Method Of Payment	0.436	0.000	1.000	0.497
Nasdaq	0.570	0.000	1.000	0.496
Market value	3663.361	12.954	126105.763	8517.673

Number of observations of 365.

NB: in this table, the dummy variable for market has been changed, Nasdaq = 1 and NYSE/Amex = 0. The market value maximum differs from the one in the small sample, since it is computed 12 months prior to the acquisition, while the data from Compustat is computed at the end of the previous fiscal year.

Appendix 3

Acquirers for the period pre-OBRA¹

Acquirers using purchasing with targets listed on the Nasdaq

Days	CAAR	Median CAR	T	Positive Negative	Gen Sign Z
(-10,+10)	-2.03%	-1.54%	-1.25	21 26	-0.53
(-5,+5)	-1.88%	-2.24%	-1.59	17 30	-1.7
(-2,+2)	-1.36%	-1.49%	-1.72	14 33	-2.57*
(-2,0)	-1.10%	-0.78%	-1.79	20 27	-0.82
(0,+2)	-1.23%	-0.63%	-2.01*	22 25	-0.24
(-1,+1)	-1.28%	-0.96%	-2.09*	16 31	-1.99*
(-1,0)	-1.18%	-0.28%	-2.36*	22 25	-0.24
(0,+1)	-1.08%	-0.82%	-2.15*	17 30	-1.7
(-15,+15)	-3.39%	-2.82%	-1.71	18 29	-1.41

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent

The total number of observations is 47

Acquirers using purchasing with targets listed on the NYSE/Amex

Days	CAAR	Median CAR	T	Positive Negative	Gen Sign Z
(-10,+10)	1.45%	1.51%	0.75	18 11	1.53
(-5,+5)	0.60%	0.05%	0.43	15 14	0.42
(-2,+2)	-1.35%	-1.20%	-1.42	12 17	-0.7
(-2,0)	-1.14%	-1.81%	-1.56	11 18	-1.07
(0,+2)	-1.12%	-0.86%	-1.53	13 16	-0.33
(-1,+1)	-0.45%	0.63%	-0.62	15 14	0.42
(-1,0)	-0.61%	-0.59%	-1.03	13 16	-0.33
(0,+1)	-0.75%	0.06%	-1.26	15 14	0.42
(-15,+15)	3.47%	3.07%	1.47	19 10	1.91

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent

The total number of observations is 29

¹ Prior to the OBRA, goodwill was not tax deductible. After OBRA, under some circumstances, goodwill is tax deductible.

Appendix 4

Acquirers for the period post-OBRA¹

Acquirers using purchasing with targets listed on the Nasdaq

Days	CAAR	Median CAR	T	Positive Negative	Gen Sign Z
(-10,+10)	-1.95%	-1.90%	-2.36*	39 52	-0.86
(-5,+5)	-0.94%	-1.41%	-1.57	41 50	-0.44
(-2,+2)	-1.22%	-1.24%	-3.04**	37 54	-1.28
(-2,0)	-0.57%	-0.44%	-1.84\$	38 53	-1.07
(0,+2)	-1.31%	-0.95%	-4.21***	36 55	-1.49
(-1,+1)	-0.91%	-0.69%	-2.93**	38 53	-1.07
(-1,0)	-0.69%	-0.12%	-2.70**	43 48	-0.02
(0,+1)	-0.89%	-0.59%	-3.50***	38 53	-1.07
(-15,+15)	-2.03%	-1.45%	-2.02*	39 52	-0.86

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent

The total number of observations is 91

Acquirers using purchasing with targets listed on the NYSE/Amex

Days	CAAR	Median CAR	T	Positive Negative	Gen Sign Z
(-10,+10)	-3.13%	-4.14%	-3.90***	32 55	-2.01*
(-5,+5)	-2.74%	-1.98%	-4.71***	31 56	-2.23*
(-2,+2)	-1.93%	-1.71%	-4.93***	30 57	-2.44*
(-2,0)	-1.70%	-1.67%	-5.61***	31 56	-2.23*
(0,+2)	-1.35%	-1.62%	-4.45***	30 57	-2.44*
(-1,+1)	-1.56%	-1.32%	-5.14***	34 53	-1.58
(-1,0)	-1.20%	-0.96%	-4.86***	30 57	-2.44*
(0,+1)	-1.48%	-1.30%	-5.97***	31 56	-2.23*
(-15,+15)	-2.53%	-2.42%	-2.60**	33 54	-1.8

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent

The total number of observations is 87

¹ Prior to the OBRA, goodwill was not tax deductible. After OBRA, under some circumstances, goodwill is tax deductible.

Appendix 5

Targets for the period pre-OBRA¹

Target premiums on the Nasdaq market for the period pre-OBRA

Days	CAAR	Median CAAR	T	Positive:Negative	Sign Z
(-10,+10)	31.31%	20.92%	13.51***	38 9	4.57***
(-5,+5)	32.06%	25.21%	19.12***	42 5	5.74***
(-2,+2)	31.80%	22.10%	28.12***	43 4	6.03***
(-2,0)	18.84%	9.24%	21.52***	36 11	3.98***
(0,+2)	28.86%	20.07%	32.95***	39 8	4.86***
(-1,+1)	32.58%	24.02%	37.20***	40 7	5.15***
(-1,0)	19.05%	5.84%	26.65***	36 11	3.98***
(0,+1)	29.43%	20.81%	41.15***	40 7	5.15***
(-15,+15)	32.57%	30.41%	11.57***	37 10	4.28***

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent

The total number of observations is 47

Target premiums on the NYSE/Amex market for the period pre-OBRA

Days	CAAR	Median CAAR	T	Positive:Negative	Sign Z
(-10,+10)	22.60%	23.53%	9.07***	26 3	4.58***
(-5,+5)	21.64%	19.89%	12.00***	26 3	4.58***
(-2,+2)	19.87%	17.34%	16.35***	27 2	4.95***
(-2,0)	17.11%	16.00%	18.18***	25 4	4.21***
(0,+2)	18.13%	16.25%	19.26***	27 2	4.95***
(-1,+1)	19.28%	17.43%	20.48***	27 2	4.95***
(-1,0)	16.04%	13.76%	20.87***	25 4	4.21***
(0,+1)	18.61%	15.45%	24.21***	28 1	5.32***
(-15,+15)	21.61%	23.16%	7.14***	26 3	4.58***

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent

The total number of observations is 29

¹ Prior to the OBRA, goodwill was not tax deductible. After OBRA, under some circumstances, goodwill is tax deductible

Appendix 6

Targets for the period post-OBRA¹

Target premiums on the Nasdaq for the period post-OBRA

Days	CAAR	Median CAAR	T	Positive:Negative	Sign Z
(-10,+10)	24.57%	20.84%	13.00***	79 13	4.57***
(-5,+5)	23.32%	18.82%	17.04***	82 10	5.74***
(-2,+2)	21.91%	17.82%	23.75***	78 14	6.03***
(-2,0)	16.94%	13.11%	23.71***	77 15	3.98***
(0,+2)	19.21%	15.18%	26.89***	72 20	4.86***
(-1,+1)	20.56%	16.19%	28.78***	75 17	5.15***
(-1,0)	15.46%	11.02%	26.51***	70 22	3.98***
(0,+1)	19.34%	15.37%	33.15***	73 19	5.15***
(-15,+15)	26.59%	23.76%	11.58***	77 15	4.28***

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent

The total number of observations is 92

Target premiums on the NYSE/Amex for the period post-OBRA

Days	CAAR	Median CAAR	T	Positive:Negative	Sign Z
(-10,+10)	19.14%	14.61%	15.45***	72 18	6.61***
(-5,+5)	18.07%	12.22%	20.15***	73 17	6.82***
(-2,+2)	17.23%	11.40%	28.51***	73 17	6.82***
(-2,0)	15.70%	9.16%	33.53***	71 19	6.40***
(0,+2)	14.60%	8.19%	31.19***	75 15	7.25***
(-1,+1)	16.51%	12.22%	35.26***	71 19	6.40***
(-1,0)	14.92%	9.00%	39.03***	71 19	6.40***
(0,+1)	14.66%	8.86%	38.34***	74 16	7.04***
(-15,+15)	19.82%	15.57%	13.17***	70 20	6.19***

*** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent

The total number of observations is 90

¹ Prior to the OBRA, goodwill was not tax deductible. After OBRA, under some circumstances, goodwill is tax deductible

Appendix 7

WLS regressions on the large samples

WLS regression on the acquirers abnormal returns on different explanatory variables

Variable	Coefficient	t-ratio	p-value
Constant	-1.09E-02	-1.602	0.1101
Method Of Accounting	1.13E-02	1.498	0.1350
Method Of Payment	4.28E-03	0.579	0.5631
Nasdaq	-1.03E-02	-1.957*	0.0511

The total number of observations is 365
Adjusted R-squared is .00890 and p-value of .12487

In this regression, 1 represents Nasdaq when 0 represents the NYSE/Amex.

WLS regression on the targets abnormal returns on different explanatory variables

Variable	Coefficient	t-ratio	p-value
Constant	1.27E-01	5.889***	0.0000
Method Of Accounting	2.05E-02	0.704	0.1350
Method Of Payment	3.07E-02	1.316	0.5631
Nasdaq	5.33E-02	2.289**	0.0226

The number of observations is 363
Adjusted R-squared is .01038 and p-value of .0860