ΟΙΚΟΝΟΜΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ

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ΣΧΟΛΗ ΔΙΟΙΚΗΣΗΣ ΕΠΙΧΕΙΡΗΣΕΩΝ
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The differential effect of M&As on corporate performance: Evidence from Eurozone

By

Gkikopoulos Spyridon: AM 1611025

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We approve the Thesis of

[GKIKOPOULOS SPYRIDON]

……

[GEORGIA SIOUGLE]	**[SIGNATURE]**
……	**……**
[DIMITRIOS GHICAS]	**[SIGNATURE]**
.....	…….....
[DIMOSTHENIS HEVAS]	**[SIGNATURE]**
.....	…….....

[31/10/2017]

CERTIFICATION OF THESIS PREPARATION

"I hereby declare that this particular thesis has been written by me, in order to obtain the Postgraduate Degree in Accounting and Finance, and has not been submitted to or approved by any other postgraduate or undergraduate program in Greece or abroad. This thesis presents my personal views on the subject. All the sources I have used for the preparation of this particular thesis are mentioned explicitly with references being made either to their authors, or to the URL's (if found on the internet)."

[GKIKOPOULOS SPYRIDON] **[SIGNATURE]**

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Abstract

This thesis examines the effect of mergers and acquisitions (M&As) on corporate performance, on a sample of 37 M&As in Eurozone between 2009 and 2013. The analysis is founded on comparisons of the corporate performance of merged firms versus a sample of non- merged firms between the pre- and post- acquisition period, using the quasi- experimental "Difference-in-Differences" methodology. I employ two earnings based and two cash flow based performance indicators, to examine how sensitive the estimated differential effect is to the type of performance metric and deflator. Moreover, i combine Difference-in-Differences with Propensity Score Matching, to control for the risk of selecting an unrepresentative sample of non- merged firms. I provide evidence that M&As improve the corporate performance of the combined firms and directly benefit the shareholders. Profitability measures, (a) return on equity and (b) return on assets, are found to increase significantly for merged firms relative to their non- merged industry counterparts in the post- acquisition period. Operating cash flow metrics, (c) operating cash flow return and (d) operating cash flow to total assets, also show that M&As have a positive differential effect on corporate performance, although weak. Further exploration of the increased efficiency of the combined companies in the post- acquisition period, shows that the improvements are due to increased accrual earnings rather than enhanced asset productivity. However, the market value of the combined entities increases significantly in the post- acquisition period, indicating that markets view M&As as value- adding transactions.

Keywords: M&As, corporate performance, Difference-in-Differences, Propensity Score Matching, Kernel matching

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Extensive Summary (in Greek)

Στην παρούσα εργασία, αναλύεται ένα δείγμα 37 Εξαγορών και Συγχωνεύσεων (αναφέρονται ως Ε&Σ από εδώ και έπειτα) που ολοκληρώθηκαν την περίοδο 2009- 2013 στην Ευρωζώνη. Κύριο ερευνητικό ερώτημα είναι εάν οι Ε&Σ βελτιώνουν της απόδοση των εταιρειών, και εξετάζεται σε όρους απόδοσης κερδών και λειτουργικών ταμιακών ροών.

Η έρευνα δομείται σε τέσσερις βασικές ενότητες:

1. Αναφορά προηγούμενης βιβλιογραφίας με κύριο ερευνητικό ερώτημα τις Εξαγορές και Συγχωνεύσεις
2. Περιγραφή του εμπειρικού σχεδιασμού της έρευνας, της διαδικασίας επιλογής του δείγματος και των δεικτών απόδοσης που επιλέχθηκαν
3. Ανάλυση των εμπειρικών αποτελεσμάτων
4. Συζήτηση σχετικά με τα αποτελέσματα της έρευνας και αναφορά στους περιορισμούς της

1. Προηγούμενη Βιβλιογραφία

Στην διεθνή βιβλιογραφία υπάρχει ένας τεράστιος αριθμός μελετών με κύριο ερευνητικό ερώτημα τα κίνητρα των Ε&Σ, τον αντίκτυπο τους στον ανταγωνισμό και τις επιδράσεις τους στην αποδοτικότητα των συγχωνευμένων εταιρειών. Για τον λόγο αυτό, γίνεται παράθεση παλαιότερων ερευνών που αναφέρονται στα παραπάνω ερευνητικά ερωτήματα με ιδιαίτερη έμφαση σε έρευνες που εστιάζουν στην αποδοτικότητα των εταιρειών. Αξιοσημείωτο βεβαίως, είναι το γεγονός ότι η διεθνής βιβλιογραφία δεν έχει καταλήξει σε μια ομόφωνη άποψη για τις επιδράσεις των Ε&Σ στην εταιρική απόδοση. Τα εμπειρικά αποτελέσματα των ερευνών ποικίλουν αναλόγως τους δείκτες απόδοσης και τα ερευνητικά σχέδια που επιλέγονται.

2. Ερευνητικό σχέδιο

Για την εκτίμηση της επίδρασης των Ε&Σ στην εταιρική απόδοση, εφαρμόζεται η ψευδοπειραματική μεθοδολογία Difference-in-Differences (αναφέρεται ως DID από εδώ και έπειτα). Η κατασκευή ενός οικονομετρικού μοντέλου DID απαιτεί την ύπαρξη (α) ενός «γεγονότος-θεραπείας», η ανάθεση του οποίου δεν εξαρτάται από τον ερευνητή, (β) ενός δείγματος που δέχεται την «θεραπεία» την χρονική στιγμή 0 (βασικό δείγμα) και (γ) ενός δείγματος που κατά την εξεταζόμενη περίοδο δεν έχει δεχθεί την «θεραπεία» (δείγμα ελέγχου). Στην παρούσα έρευνα ως «θεραπεία» ορίζεται η ολοκλήρωση μιας Ε&Σ εντός της Ευρωζώνης κατά την περίοδο 2009- 13, ως βασικό δείγμα ορίζεται το δείγμα των αποκτωσών εταιρειών και το δείγμα ελέγχου αποτελείται από εταιρείες που δραστηριοποιούνται στον ίδιο κλάδο και έτος με τις εταιρείες του βασικού δείγματος. Το συνολικό δείγμα αποτελείται από 37 αποκτώσες εταιρείες και 179 εταιρείες ελέγχου.

Η επιλογή της μεθοδολογίας DID έγινε για τους ακόλουθους δύο λόγους. Πρώτον, απομονώνει την επίδραση των Ε&Σ στην εταιρική απόδοση μέσω της σύγκρισης της απόδοσης των αποκτωσών εταιρειών έναντι της απόδοσης του δείγματος ελέγχου κατά τις περιόδους πριν και μετά την εξαγορά. Δεύτερον, η σύγκριση μεταξύ των δύο δειγμάτων αποκλείει από την ανάλυση οικονομικούς ή κλαδικούς παράγοντες που επηρεάζουν την κερδοφορία και συμπεριφορά των εταιρειών, και δεν σχετίζονται με την διεξαγωγή Ε&Σ. Ωστόσο, οι εκτιμητές των μοντέλων DID ενδέχεται να είναι μεροληπτικοί, λόγω του ότι η επιλογή του δείγματος ελέγχου δεν είναι τυχαία (selection bias). Για να διασφαλιστώ για την ευρωστία των εκτιμητών, συνδυάζω τη μεθοδολογία Difference-in-Differences με την μεθοδολογία Propensity score matching (αναφέρεται ως PSM από και έπειτα). Η εφαρμογή του PSM επιτρέπει την αντιστοίχηση των συγχωνευμένων εταιρειών με εταιρείες ελέγχου αντίστοιχου μεγέθους και κερδοφορίας. Επομένως η σύγκριση γίνεται μεταξύ παρόμοιων εταιρειών και μπορούν να αποδοθούν ακριβή αιτιώδη συμπεράσματα στις Ε&Σ.

Επιπροσθέτως, η υπάρχουσα βιβλιογραφία δεν έχει καταλήξει σε μια ομόφωνη άποψη σχετικά με τις βέλτιστες μετρικές απόδοσης. Πιο συγκεκριμένα, μελέτες που χρησιμοποιούν δείκτες απόδοσης κερδών δείχνουν ότι οι Ε&Σ μειώνουν σημαντικά την εταιρική απόδοση. Τα αντίθετα ακριβώς αποτελέσματα εμφανίζουν μελέτες που χρησιμοποιούν μετρικές βασισμένες σε

λειτουργικές ταμιακές ροές. Για να μπορέσω λοιπόν να αξιολογήσω πόσο ευαίσθητα είναι τα αποτελέσματα στον τύπο του δείκτη απόδοσης, εφαρμόζω δύο δείκτες από κάθε κατηγορία.

3. Εμπειρικά Αποτελέσματα

Τα αποτελέσματα από το μοντέλο παλινδρόμησης DID δείχνουν ότι οι Ε&Σ δεν έχουν σημαντική διαφορική επίδραση στην αποδοτικότητα των συγχωνευμένων εταιρειών έναντι του δείγματος ελέγχου. Ωστόσο, όταν η σύγκριση γίνεται μεταξύ εταιρειών με παρόμοια χαρακτηριστικά (κατά την περίοδο πριν την εξαγορά), οι Ε&Σ εμφανίζονται να έχουν μια θετική διαφορική επίδραση στην εταιρική απόδοση των συγχωνευμένων εταιρειών έναντι των ομολόγων τους. Ειδικότερα, οι δείκτες απόδοσης κερδών αποδίδουν σημαντικές βελτιώσεις της εταιρικής απόδοσης στις Ε&Σ, ενώ οι δείκτες απόδοσης λειτουργικών ταμιακών ροών μια αδύναμη βελτίωση.

4. Συζήτηση των αποτελεσμάτων

Στο τελευταίο μέρος της έρευνας εξετάζεται περεταίρω η συμβολή των Ε&Σ στην ικανότητας των εταιρειών να χρησιμοποιούν το ενεργητικό και τα κεφάλαια των μετόχων για να παράγουν κέρδη. Η αύξηση που παρατηρείται στους δείκτες απόδοσης κερδών ως αποτέλεσμα των Ε&Σ, δεν προέρχεται από μείωση των λειτουργικών εξόδων ή βελτίωση της παραγωγικότητας του ενεργητικού. Αντιθέτως προέρχεται από σημαντική αύξηση των δεδουλευμένων στην περίοδο μετά την εξαγορά. Ωστόσο, η εύλογη αξία των Ιδίων κεφαλαίων των συγχωνευμένων εταιρειών έναντι των εταιρειών ελέγχου, αυξάνεται σημαντικά στην περίοδο μετά την απόκτηση. Επομένως, λαμβάνοντας υπόψιν ότι οι αγορές είναι τουλάχιστον ημι- ισχυρής αποτελεσματικότητας, οι Ε&Σ θεωρούνται συναλλαγές που προσθέτουν αξία στην συνδυασμένη επιχείρηση, με αποτέλεσμα να επωφελούνται οι μέτοχοι της.

1. Introduction

The main research question of this thesis is whether M&As improve corporate performance. Prior literature has thoroughly examined M&As and their effect on firm performance (e.g. Healy et al., 1992; Powell and Stark, 2005; Sharma and How, 2002; Ghosh, 2001; Yeh and Hoshino, 2002). The first two studies provide evidence that M&As significantly improve corporate performance, Sharma and Ho (2002) and Ghosh (2001) find weak improvements, and Yeh and Hoshino (2002) find that corporate performance significantly deteriorates following an M&A. This is just a handful of studies that examine M&As but their empirical results point in one direction: existing literature has not reached a unanimous and precise view on the effect of M&As on corporate efficiency. Surprisingly, while there is abundance of research studies analyzing M&As, the vast majority focuses on US and UK takeovers during the fourth and fifth wave (period 1965-69 and 1993-2000 respectively). The limited number of studies analyzing takeovers in Continental Europe also focus on those completed prior to the 2000s (see Martynova et al., 2002; Gugler et al., 2001).

To address the research question, I select a sample of 37 M&As completed in Eurozone between 2009 and 2013 (referred to as merged firms hereafter) and employ a Difference-in-Differences research design (referred to as DID hereafter). The firm performance is monitored from three years prior (pre- acquisition period), to three years after (post- acquisition period) the completion of M&As. The control group (referred to as non- merged firms hereafter) consists of 179 listed firms in Eurozone countries. Care is taken so that the comparison firms have not conducted M&As during the six- year period of analysis, and come from the same industry and year as the respective merged firms.

The selected research design provides a relaxed framework for analysis for the following reasons. First, the comparisons between merged and non- merged firms, isolate the differential effect of M&As on corporate performance. Second, it allows to account for economy- wide or industry- specific factors that impact firms and are irrelevant to the M&A event. Within this frame, the recession of 2008 had adverse effects on firms' prospects and investing behavior (Doukakis et al., 2016). Hence, this research design controls for the decline in profitability during the crisis period of 2008-13.

However, Bertrand and Zitouna (2005) state that the DID methodology will not produce accurate conclusions if the comparison group differs significantly from the treatment group, during the pre- acquisition period. To mitigate the bias on the coefficients of the model, deriving from the fact that the selected non- merged firms are not representative of the merged firms, I combine Difference-in-Differences with Kernel Matching. Propensity score matching (referred to as PSM hereafter) is used to assign one (many) control firm(s) to each treated firm, based on a vector of pre- acquisition characteristics. This integrating procedure gives me confidence that the Difference-in-Differences coefficient is robust and proper causal inference on the effect of M&As on corporate performance is produced.

Moreover, the accounting method used to recognize the business combination in the consolidated financial statements, has troubled researchers. Under Pooling of Interest method, the assets and liabilities are recognized in their book values. Under acquisition method, the M&A is viewed prospectively as a «purchase» and the assets and liabilities are recorded in their fair value. Any difference between the price paid and the fair value of net assets is recognized in the balance sheet as goodwill (Healy et al, 2013). Existing studies, to a large extent, employ operating performance metrics to negate the effect of the accounting method on the consolidated financial statements (e.g. Healy et al. (1992) use operating cash flows deflated by the sum of market value of equity and total liabilities; Ghosh (2001) and Powell and Stark (2005) use net sales to deflate their operating cash flows). However, in March 31, 2004, the International Accounting Standards Board (IASB) issued IFRS 3 «Business Combinations». This standard requires publicly listed European companies to recognize their M&As using the purchase method. Hence, the uniformity of the consolidated financial statements, provided by IFRS, allows me to use not only cash flow based indicators, but also profitability indicators. It also gives me the opportunity to test the sensitivity of the coefficients to the type of the performance metric. Prior empirical studies find that the estimated effect of M&As on firm performance is sensitive to the performance metrics employed (Sharma and Ho, 2002; Powell and Stark, 2001). On that account, this research employs both earnings based performance indicators, (a) Return on Equity and (b) Return on Assets, and operating cash flow based performance indicators, (c) Operating Cash Flow Return and (d) Operating Cash Flow to Total Assets.

My findings support the notion that M&As improve the corporate performance of the combined firm. Merged firms perform significantly higher than their non- merged industry counterparts in the pre- acquisition period. In the post- acquisition period, the corporate performance of non- merged firms deteriorates significantly, but M&As are found to mitigate this decline for merged firms. Regarding the sensitivity to the performance indicator, the differential effect of M&As is found positive and significant for earnings performance metrics but weak for operating cash flow metrics. Yet, the improvement in corporate performance of merged firms derives from increased accrual earnings and not from enhanced asset productivity. Nevertheless, the market value of merged versus non- merged firms increases significantly in the post-acquisition period, indicating that capital markets view M&As as value- creating transactions.

Overall, this thesis contributes as follows. First, this study focuses on a recent dataset and provides an update to the existing literature that has examined US and UK mergers (written in the beginning of/prior to the 21st century). Second, accrual and operating cash flow performance indicators are used to investigate whether the estimated effect of M&As on firm performance is sensitive to the selected performance metric. Third, in contrast with prior studies that use industry median values as benchmarks, I select industry counterparts that have not engaged in M&As. Finally, systematic differences between merged and non- merged firms can lead to inaccurate conclusions. Therefore, to enhance the robustness of the coefficients, I employ Propensity Score Matching.

The remaining paper is organized as follows. Section 2 describes prior literature. Section 3 presents the hypothesis of the study and describes the methodology and the performance indicators employed, while Section 4 describes the sample selection process. Sections 5 provides descriptive statistics on key variables, while Section 6 and 7 present the empirical results. Finally, Section 8 discusses the limitations of the empirical study and Section 9 provides the conclusions.

2. Existing literature

M&As initiated in the US when heavy industry firms sought to increase their market share, leading to the first wave of horizontal merges. Later, in 1920s, there was a shift in the strategic

goals of corporations. The effort to strengthen the value chain resulted in vertical mergers. Afterwards, in 1960s, the huge economic prosperity gave firms the opportunity to invest in unrelated industries. Two decades later, a series of hostile takeovers occurred, and during 1990s the pursuit of multinational presence drove enterprises to huge cross- border mergers. The sixth wave, at the beginning of the 21st century, was mainly driven by globalization. The complexity and multidimensionality of M&As has attracted a plethora of researchers that investigate their causes, impact on competition and consumer welfare and ultimately whether they are efficient or not. This section briefly discusses the prior literature on M&As.

2.1 Theories explaining M&A activity

A number of scholars have debated on the causes of M&A activity. One of the first studies providing a review of M&A theories, is that of Trautwein (1990). The writer divides these theories into three groups based on the available empirical evidence and their degree of plausibility. Valuation, empire- building and process theories are backed up by empirical evidence and are considered the most reasonable among the seven theories. Monopoly and efficiency gains theories are less plausible, and raider and disturbance theories are the least plausible. Because of the vast number of available empirical evidence, Valuation, Empire- building and Efficiency gains theory are further discussed.

- Valuation theory

Valuation theory asserts that managers make high- quality investments because they have detected under- valued firms or are better informed than the market. One of the first studies arguing that bidding firms' management is in possession of private information regarding the target firm is that of Holderness and Sheehan (1985). The writers examine the investing intentions of six prominent investors[1] and find that they consistently target undervalued firms.

By default, this theory questions the efficiency of stock markets and therefore some stocks deviate from the fundamental values of market efficiency. Shleifer and Vishny (2003) doubt that capital markets are efficient and provide a model of M&As that falls into the behavioral school of

[1] The six "corporate riders" are: Carl Icahn, Victor Posner, Irwin Jacobs, Charles Bluhdorn, Carl Lindner and David Murdock

thought. The writers argue that firms willing to make stock- based acquisitions have an incentive to increase their stock value. Furthermore, they provide evidence that bidding firms in stock acquisitions during the 1960s, 1980s and 1990s (third, fourth and fifth wave of mergers respectively), were overvalued by the market, compared to their targets. In particular, according to the authors, "targets in cash acquisitions are undervalued in absolute terms, but targets in stock acquisitions are undervalued relative to the bidders" (Shleifer and Vishny, 2003, p 23). The fundamental reason that overvalued bidding firms acquire under- valued targets is to arbitrage their negative abnormal returns.

Furthermore, Tobler (2006) examines 1108 tender offers in the 1990s and finds that both acquiring and target firms diverge from fundamental values of market efficiency in the pre-acquisition period. In accordance with Shleifer and Vishny (2003), the author finds that bidding firms show positive excess returns in the pre- acquisition period, whereas target firms are undervalued by the market. Lastly, the findings suggest that the abnormal returns of bidding firms far exceed the returns earned by their industry peers and targets.

- Empire- building theory

Under empire- building theory, managers engage in M&A deals to increase their wealth or (and) ego. This theory is in line with the agency theory, introduced by Jensen and Meckling (1976), which suggests that the separation of control and ownership leads to conflicts of interest. Amihud and Lev (1981) examine 309 conglomerate mergers carried out by large industrial US firms during 1961-70. The authors claim that managers face employment- related risks (e.g. the risk of failing to achieve business goals or the risk of bankruptcy), and one way to reduce these risks is to diversify through conglomerate mergers. The empirical findings suggest that when managers exert control on their firms, they tend to engage in more conglomerate mergers relative to firms controlled by stakeholders.

In addition, the behavioral school of thought suggests that managers, consumed by overconfidence, chase non- value adding transactions with subsequent repercussions to the wealth of the firm's stockholders. Krishnamurti et al. (2016) investigate the relationship between empire building and social corporate responsibility (CSR). The authors find that CEO overconfidence and narcissism trigger empire building activities, whereas adherence to Corporate Social Responsibility reduces takeover activity. They also provide evidence that CEOs of firms with

enhanced CSR rarely engage in M&As, and were they to engage in M&As, the transaction would increase the wealth of shareholders.

Empire building theory is also enhanced by the study of Grinstein and Hribar (2004). The writers employ a sample of 327 US M&As during 1993-99 to examine differences in CEOs compensation between the pre- and post- acquisition period. The reported results show that CEOs compensation is positively correlated to the size of the deal and the control they exert on the Board of Directors. Moreover, they find that in manager- controlled firms, the deals maximize the compensation of managers (agents) at the expense of shareholders' (principals) wealth. In UK, Girma et al. (2006) analyze 472 acquisitions during 1981-96 and report that CEOs compensation increases around 5- 7% in the post- acquisition period due to increases in firm sales and size. But, in hostile M&As that result in divestments, the increase in CEOs remuneration is nullified in the following years. They also find that when M&As do not generate shareholder gains, CEOs remuneration is negatively impacted. Therefore, compared to Grinstein and Hribar (2003), this finding suggests that the Board of Directors exercises control over the top management and protects the shareholder interests.

- Process theory

Process theory indicates that information limitations and wrongly processed information result in irrational and biased investing decisions. Duhaime and Schwenk (1985) describe several misconceptions management may make when evaluating acquisition targets. Firstly, after evaluating a range of potential targets, managers may insist on a particular target- firm that they eventually acquire, although its actual performance is far below expectations. Secondly, top executives may have illusions and believe that any problem arising in connection with the takeover can be easily controlled or fixed. Last and most importantly, management may simplify the decision making process. Finally, Rolls (1986) strengthens the process theory with the introduction of hubris theory. The writer argues that the management of the bidding firm may make a biased estimation of the target firm's value because they are consumed by overconfidence. Hubris results in the overestimation of the potential benefits that will accrue from the acquisition. Consequently, even though competitive advantages will never crystallize, management accepts the bid, huge amounts of takeover premiums are paid and shareholders lose value.

In contrast to Trautwein (1990), Motis (2007) separates the M&A motives into two broad categories, manager gains and shareholder gains. The former category, refers to increases in the wealth of managers with adverse effects on the fair value of the firm and the wealth of stakeholders. In this group of motives, empire- build and process theories, which were discussed above, have a prominent role. On the other hand, shareholder gains category consists of motives that increase the profitability and market value of the combined firm, thus benefiting the shareholders of the firm (e.g. efficiency gains, synergy gains, and strengthened market position). Shareholder gain motives will be discussed in the next section (Section 2.2- The effects of M&As).

Although scholars have developed many theories on the causes of M&As, these studies look on merger incentives with a one- dimensional and corporate- internal perspective. On the other hand, practice has shown that M&As are the result of many incentives that co- exist simultaneously. That being the case, Brouthers et al. (1998) divides merger incentives in three groups: economic, personal and strategic motives. Firms may engage in M&A activities to improve their performance through cost reductions, economies of scale and increases in profitability (economic motive). Additionally, management may have egotistical reasons to engage in M&As, such as increased pay due to increases in size, sales and profitability, or increased reputation (personal motive). Finally, corporations can engage in M&As to obtain competitive advantages, market power or global presence (strategic motive). By inquiring firm managers about the motives of M&A activity, the authors found that the causes of merger activities are a combination of these three groups and the leading motives are the pursuit of market power and sales increases.

2.2 The effects of M&As

There are two streams of literature that analyze the effect of M&As on firm performance: Stock market studies and Operating performance studies. The former category is based on the efficient market hypothesis (EMH) and seeks to determine if M&As are value- adding transactions. In an efficient market, a merger and acquisition announcement will change the stock price to reflect the expected future cash flows arising from the transaction. The second stream of literature employs accounting data to explore whether economic gains are incorporated in the combined firm.

As for stock market studies, a common notion is that the target firm stockholders gain abnormal returns over the short- run, whereas the returns for the stockholders of the acquiring firm are almost zero. Capron and Pistre (2002) examine the cumulative abnormal returns (referred to as CAR hereafter) of the acquiring firm around the announcement day, in a sample of 101 horizontal mergers. Their event window expands from 20 days before the merger announcement to the day after the announcement. The authors provide evidence that the acquirer is expected to earn positive CAR when he transfers resources to the target or there is joint transfer of resources. On the other hand, when only the target firm transfers resources to the acquirer, then the synergistic gains of the M&A are absorbed by the stockholders of the target. Asquith (1983) examines the market reaction on M&As, over the entire merging process. He separates the merging process in two distinct events, the announcement date and the completion (abandonment) date. Firstly, in the pre- announcement period target firms show a negative cumulative excess return (CER) of -14.1% and bidders show a positive CER of 14.3%. Secondly, during the announcement period both target and bidding firms show positive two- day CER of 6.2% and only 0.2% respectively. Thirdly, in the period that expands between the announcement and merger date, target firms have a +8% CER and bidding firms are found to have negative but insignificant CER of -0.46%. Finally, during the completion period the acquiring firms present a significant daily abnormal return of 0.2%. Asquith (1983) provides evidence that the probability of a successful merger affects the stock price of the target firm, but the effect is insignificant for stockholders of the bidding firm. The findings indicate that target firms are in possession of resources that are transferred to the acquiring firms and for that reason the synergistic gains are absorbed in their stock price. Moreover, Bradley et al. (1988) investigate a sample of 236 tender offers and find that on the announcement date, the abnormal returns of the single- bidder and multi- bidder target firms reached 15% and 14% respectively. Their sample of 236 acquiring firms presents positive but not statistically different from zero CAR of 0. 79% for the 10 days surrounding the announcement date. However, when the authors split this sample to single- and multi- bidder acquirers, the former portfolio shows a significant CAR of 2. 8%. Furthermore, Ma et al. (2009) examined the abnormal returns of 1477 bidding firms between 2000 and 2005, in ten Asian markets. In contrast to US studies, they use two- day, three-day and five- day windows surrounding the announcement date and find that bidding firms show significant positive CAR of 0.96%, 1.28% and 1.70% respectively.

The second stream of literature argues that capital market studies lack the ability "to determine whether takeovers create real economic gains and to identify their sources" (Healy et al., 1992, p 1). The analysis is founded on regressions of the post- acquisition industry- adjusted corporate performance of the combined firm, to the pre- acquisition industry- adjusted performance of the acquirer. In the US, Healy et al. (1992) investigate 50 mega- mergers during 1979-83. The writers provide evidence that M&As bring about an improvement in corporate performance of 2.8% per annum for the combined firm relative to industry median values. The empirical evidence suggest that M&As create efficiency gains that are mainly attributed to increased asset productivity. Similarly, Linn and Switzer (2001) examine a samples of 413 US combinations and find significant improvements of 1.81% in their industry- adjusted operating performance metric. In UK, Powell and Stark (2005) examine how the estimated impact of M&As on firm performance changes when different indicators of operating performance and different estimation models are employed. The reported results indicate that even though corporate performance increases in the post- takeover period, this improvement is higher when an accrual performance metric and the regression model of Healy et al. (1992) are employed. In Malaysia, Rahman and Limmack (2004) examine the corporate performance of mergers with private target firms. The performance measurement chosen by the writers is similar to the one proposed by Healy et al. (1992), but they adjust for working capital changes. In accordance with Healy et al. (1992), they find that in the post- acquisition period enhanced asset productivity results in operating cash flow return improvements.

On the contrary, Ghosh (2001) argues that regressions of the post- acquisition industry-adjusted performance, to the pre- acquisition industry- adjusted performance produce inaccurate results. According to the writer, acquiring firms perform markedly higher that their industry peers during the pre- acquisition period. When the model of Healy et al. (1992) is employed, the author finds significant improvements of 2.4% per annum in the operating cash flows of the combined firm. However, when acquiring firms are matched with industry counterparts of similar size and performance in the pre- acquisition period, he discovers insignificant improvements in operating cash flow performance. Sharma and Ho (2002) also argue that the empirical findings of prior literature is prone to bias because the accounting method used to recognize the business combination affect the employed operating metrics. For that reason, they use four accrual and four operating cash flow performance metrics. Their empirical evidence suggest that M&As do not improve the corporate performance of the combined firm. Kruse et al. (2002) examine 46 Japanese

mergers between 1969 and 1992 and select industry counterparts of similar size as a control group. In accordance with Ghosh (2001), they provide evidence that the effect of M&As on the corporate performance is positive but weak.

Finally, several studies associate M&As with declines in the post- acquisition corporate performance. In particular, Yeh and Hoshino (2002) select four accrual performance indicators and total-factor-productivity to investigate a sample of 86 Japanese M&As. They find that the productivity of merged firms versus industry medians declines significantly in the post- acquisition period. Furthermore, in terms of profitability and corporate growth, the merged firms continue to perform higher than industry medians in the post- acquisition period, but the effect of M&As is significantly negative. Martynova et al. (2006) also employ accrual performance indicators to examine European mergers prior to 2000s. The reported results show that M & As are not able to generate efficiencies for the combined entities. On the contrary, their effect is negative, although insignificant.

2.3 Do the characteristics of M&As affect corporate performance?

Several studies also examine how the financing method, deal atmosphere and type of M&A impact the performance of the merged firm. Andrade et al. (2001) find that for mergers that were conducted fully or partially with stock offers, acquiring firms show negative abnormal returns of -1.5% during the three- days window around the announcement date. The abnormal return reaches -6.3% when a longer- window (20 days prior to the announcement until the close) is examined. Moreover, target firms that were offered stock showed 7% less abnormal return compared to cash offered target firms. Linn and Switzer (2001) also support this conclusion as they find that cash acquisitions have significantly higher change in corporate performance. However, empirical evidence suggests that the method of payments has an insignificant impact on the post- acquisition corporate performance (Powell and Stark, 2005; Sharma and How, 2002; Martynova et al., 2006). Moreover, Martynova et al. (2006) find that in the post- acquisition period hostile mergers have lower firm performance relative to the friendly mergers, while Powell and Stark (2005) find insignificant differences between hostile and friendly mergers. Kruse et al. (2002) in their analysis of Japanese mergers, conclude that mergers between diversified enterprises result in higher corporate performance. Yeh and Hoshino (2002), conclude that intra- Keiretsu mergers had a

negative impact on corporate performance, whereas the corporate performance of independent mergers remained stable. Finally, Bertrand and Zitouna (2005) use a different approach to examine French horizontal mergers. The writers implement a difference-in-differences model and match the control group to the treatment group on a set of pre- acquisition period characteristics. They discover that mergers have a positive differential effect on the productivity of target versus control firms. This increase is also higher for cross- border M&As relative to domestic M&As. However, the profitability does not increase significantly.

2.4 Modern studies examining the effects of M&As

More recent studies focus on product price fluctuations in the post- acquisition period to investigate M&As. In the Oil & Gas industry, Choinard and Perloff (2002) employ a reduced form model[2] to examine how gasoline wholesale and retail prices react to mergers. The authors conclude that retail (27 merger cases) and wholesale (8 merger cases) mergers can have an effect on retail and wholesale gasoline prices. Nine retail mergers (and three wholesale mergers) are found to have a significant effect on retail (wholesale) gasoline prices respectively. In the same sector, Taylor and Hosken (2004) use a Difference-in-Differences research design and focus their analysis on a joint venture, that of Marathon and Ashland corporations. They examine whether the joint venture led to changes in retail and wholesale gasoline prices in Louisville. The writers select three comparison markets to control for economic factors that affect gasoline prices and are not related to the joint venture: Chicago (main control market), Houston and Northern Virginia/Washington D.C. In contrast to Choinard and Perloff (2002), their reported results show that the differential effect of the joint venture on the retail prices of gasoline in Louisville versus the control States is insignificant. However, wholesale prices increased substantially for Louisville gasoline market versus comparison States in the post- joint venture period and continued to rise until the end of the period examined. Taylor and Hosken (2004) argue that this increase is attributable to an overall increase in demand for reformulated gasoline. Furthermore, Jimenez and Perdiguero (2012) examine whether the acquisition of Shell by DISA led to higher market equilibrium gasoline prices in Spain. The selected research design is similar to that of Taylor and Hosken (2004) and find that

[2] In reduced form models the left side of the equation includes endogenous variables whereas the right side includes exogenous variables. In M&As, these models are employed to regress the product price (or the natural logarithm of price) with factors that affect prices exogenously, e.g. cost- shifters, demand- shifters and seasonality.

the differential effect of the merger on retail gasoline prices of Spain against the control markets is weak. Although, it is argued that the high market concentration of the particular market may have caused monopolistic prices and therefore the DID methodology cannot capture the differential effect of the merger. McCabe (2002) also employs a Difference-in-Differences regression model to examine seven mergers of biomedical journal publishers that occurred in two distinct periods during 1990s, 1990-91 and 1997-98. The empirical evidence provided suggest that mergers between 1990 and 1991 had a positive differential effect of 5 to 10% on prices relative to control journal prices. Similarly mergers between 1997 and 1998 resulted in price increases of 2 to 6 % relative to control journal prices. Ashenfelter and Hosken (2008) examine five horizontal US mergers in the consumer products industry. They select private label products as comparison group and find that in the post- acquisition period, four out of the five mergers increased their prices between 3% and 7%. Although the estimated differential effect is small, consumer products industry is heavily traded, so the wealth transfers from consumers to firms can be enormous. Similar results are also found in the Airline industry, by Kim and Singal (1993). The authors conclude that airline M&As during 1985-88 resulted in increased market power which subsequently led to increased fare prices**.** During the full merger period, the merged firms increased their prices by 9.44%, whereas only in the announcement period prices increased by 5.54%. The respective industry counterparts show price increases of 12.17% and 5.06% during the full and announcement period respectively.

3. Research Design

In this section, the hypothesis development process, and the methodology and performance metrics employed to estimate the effect of M&As on firm performance are presented.

3.1 Hypothesis Development

Up to now, existing literature has not reached on a consensual view on the effect of M&As on corporate performance. The empirical evidence vary from a strong negative to a strong positive effect. Even after controlling for significant size and performance differences between the

acquiring firms and their industry counterparts in the pre- acquisition period, the empirical evidence remain mixed (e.g. Ghosh, 2001, finds an insignificant positive effect; Powell and Stark, 2005, find a significant positive effect; Martynova et al., 2006, find an insignificant negative effect). As there is no solid ground on which I can base my expectations for the empirical results, I follow the broad notion that M&As do not lead to efficiency gains, or otherwise the effect is positive but weak. Hence, I form the following hypothesis:

Hypothesis 1: M&As, ceteris paribus, do not have a differential effect on the corporate performance of merged firms versus industry counterparts.

3.2 Methodology

The hypothesis developed in Section 3.1- Hypothesis Development is tested with a Difference-in-Differences methodology. DID regression analysis is used in observational studies to show how an event (e.g. IFRS adoption, M&As) has changed a variable (e.g. ROA, investing decision, price level) for a group exposed to the event against an unexposed control group. Consequently, DID models require: (a) a treatment, the assignment of which cannot be controlled by the researcher, (b) a treatment group and (c) a control group. In this thesis, I classify as treatment the completion of an M&A (denoted as year 0). In addition, the treatment group is a sample of firms, operating in Eurozone, that have completed M&As between 2009 and 2013, and the control group are firms that come from the same year and industry with the acquiring firms and during the period examined have not engaged in M&As.

Simple comparisons of the corporate performance of merged firms between pre- and post-acquisition period will certainly influence the coefficients of the model. Significant economy- wide or industry- related factors must be taken into account, or else the researcher will reach on inaccurate conclusions. For that reason, prior studies employ control firms (e.g. see Sharma and Ho, 2002; Kruse et al., 2002) or adjust the performance indicators for industry median/ mean values (e.g. see Healy et al., 1992; Powell and Stark, 2005; Martynova et al., 2006). Correspondingly, the recession of 2008 had adverse effects on firm prospects and investing behavior. However, I select the DID research design because: (1) it omits the negative impact of the financial crisis on firms' profitability, and (2) isolates the effect of M&As on firm performance,

as it compares the profitability of merged firms and the industry counterparts between the pre- and post- acquisition period.

The differential effect of a treatment (referred to as the DID parameter/ estimator) is calculated as follows:

$$\Delta = E([Y_{i,t,g}| P=1,T=1] - E[Y_{i,t,g} |P=0,T=1]) - (E[Y_{i,t,g} |P=1,T=0] - E[Y_{i,t,g}| P=0,T=0])$$

Where,

the terms T= 1 and T= 0 designate the treatment and control observations respectively, terms P= 0 and P= 1 designate the pre- and post- treatment periods respectively, i is the observation indicator, t denotes the year indicator, g denotes the group indicator and Y is the outcome of interest.

This study employs pooled cross- sectional data and the effect of M&As on corporate performance is estimated with a regression model of the following form:

$$Y_i = b_0 + b_1 * POSTi + b_2 * TREAT_i + b_3 * TREAT_i * POST_i + \varepsilon_i$$

Where,

TREAT is a categorical variable that equals 1 for merged firms, and 0 otherwise. POST is a temporal binary variable that equals 1 for the three years after the completion of an M&As, and 0 otherwise. The product of temporal and categorical variables is the Difference-in-Differences dummy variable and takes the value 1 for merged firms in the post- acquisition period, and 0 otherwise. Thus, there are four interpretations of the coefficients of the model:

(1) b_0: the average outcome for non- merged firms in the pre- acquisition period

(2) b_0+b_2: the average outcome for acquiring firms in the pre- acquisition period

(3) b_0+b_1: the average outcome for non- merged firms in the post- acquisition period

(4) $b_0+b_1+b_2+b_3$: the average outcome for merged firms in the post- acquisition period

The differential effect of M&As on the corporate performance of merged versus non- merged firms is the coefficient of DID dummy variable (b_3). Table 1 presents the two-by-two matrix analysis of the effect of M&As on corporate performance of merged versus non- merged firms:

Table 1

Two-by-two analysis of the DID Estimator

Outcome of Interest Yst	**Baseline period (POST= 0)**	**Follow-up period (POST= 1)**	**DID**
Treated Firms (TREAT= 1)	$b_0 + b_2$	$b_0 + b_1 + b_2 + b_3$	$b_1 + b_3$
Control Firms (TREAT= 0)	b_0	$b_0 + b_1$	b_1
Difference (T-C)	b_2	$b_2 + b_3$	**b_3**

However, the estimated DID coefficient is prone to bias for two reason. First, the reliability and efficiency of the DID parameter highly depends on whether common trends assumption holds (referred to as CTA hereafter). CTA implies that in the absence of the treatment, the two groups (merged firms and industry counterparts) would have the same trend over time in the relevant variables. Any event that generates changes in the trend of one group, must also cause changes in the trend of the other. Subsequently, when the treatment group is exposed to the treatment, any systematic difference in its trend is regarded as the causal effect of the treatment. Second, the extent to which the DID coefficient is estimated impartially, is directly related to the robustness and relevance of the control group. The selected non- merged firms may differ markedly from the merged firms in firm specific factors (selection bias).

Ideally, I would want to compare a sample of firms that have engaged in M&As against the same sample in an alternative universe where they have not conducted any M&As. According to Rosenbaum and Rubin (1983, p 41), «estimating the causal effects of treatments is a missing data problem» because analysts can only observe either the treatment or the no- treatment status in one observation. To address this limitation, I combine DID regression analysis with Propensity Score

Matching (referred to as PSM hereafter). Rosenbaum and Rubin (1983) define propensity score as the conditional probability of an observation receiving the treatment based on a vector of pre-treatment period observable characteristics. In the same notion, I use PSM to obtain the predicted probability of a non- merged firm completing an M&A in year 0. Matching can then be viewed as choosing from a bucket of non- merged firms only the ones that are strictly alike to the merged firms. Thus, PSM mitigates (but does not eliminate) the selection bias due to the fact that the selection process is not random (Arnold and Javorcik, 2009). This predicted probability is estimated with a probit (or logit) model of the following form:

$$\Pr (TREAT_{i,\, s,\, t=1}) = \Phi (X)$$

Where,

TREAT is the categorical variable taking the value 1 for observations exposed to the treatment, and 0 otherwise. Φ (X) is a vector of baseline period observable characteristics that may affect the likelihood of being treated in the future.

Becker and Ichino (2002) argue that the reduction of confounding factors bias is hugely dependent on the quality of the covariates selected for the logit algorithm. Existing literature has proposed several covariates to estimate the propensity score, e.g. Weichselbaumer (2008) use the logarithm of total assets, the lag of Return on Assets, the percentage of equity owned by the biggest stakeholder and leverage; Bertrand and Zitouna (2005) use the lags of profit margin, market share of the firm, the average wage per employee and total factor productivity; Arnold and Javorcik (2009) use a list of covariates including the lag of total factor productivity, average wage per employee and age of the firm on year 0. Furthermore, Lyon et al. (1999) argue that combined firms should be compared with benchmarks of similar size and performance over the pre- acquisition period. Therefore, the probit model used in this paper has the following form:

$$\Pr (TREAT_{i,\, s,\, t=1}) = \Phi (IND, YEAR, BTM, LOG.TA, MARGIN)$$

Where,

(1) IND: is a set of dummy variables that indicate the industry of firm i
(2) YEAR: is a set of dummy variables that indicate the year in which acquiring firm i completed its M&A.
(3) BTM: Book value of equity (Datastream Worldscope: WC03501) / Market value of equity (Datastream Worldscope :WC08002)
(4) LOG.TA: Natural logarithm of total Assets (Datastream Worldscope: WC02999)
(5) MARGIN: Net income (Datastream Worldscope: WC01651) / Net sales (Datastream Worldscope: WC01001)

The obtained predicted probability is then used to match merged firms with their industry counterparts. The two factors that must be taken into account for choosing between the matching methods[3] are the efficiency and bias of the coefficients. According to Garrido et al. (2014), one-to-one matching has the benefit of the least biased estimates, but the potential decrease in the number of observations may impact the coefficient. On the other hand, one-to-many matching results in a bigger sample than one-to-one matching, but it is likely that the coefficients will be biased. Ultimately, I choose Kernel matching (one-to-many matching) mainly due to the fact that the sample of merged and non- merged firms is small (37 and 179 firms respectively). Kernel matching, match every acquiring firm with a number of industry counterparts with weights that are inversely related to their predicted probability of engaging in M&A. This weight is calculated as follows:

$$w(j,i) = \frac{\frac{K(Pj - Pi)}{h}}{\sum_{j=1}^{No} \frac{K(Pj - Pi)}{h}}$$

Where,

K is the kernel function, P_j is the propensity score for the control observation, P_i is the propensity score for the treated observation and h is the bandwidth parameter of the kernel function.

[3] The five commonly used matching techniques are: Nearest- Neighbor matching, Radius or Caliper matching, Kernel matching, Stratification or Interval matching, and Weighting

3.3 Performance Indicators

Existing literature has not reached a consensual view on the performance indicator (s) that correctly capture the effect of M&As on corporate performance. For instance, Yeh and Hoshino (2002) employ total-factor-productivity and four accounting metrics (ROE, SALES GROWTH and ROA), Weichselbaumer (2008) employs Return on Assets, Martynova et al. (2006) use four EBITDA- based metrics, and several other studies employ operating cash flow returns (Linn and Switzer, 2001; Ghosh, 2001; Rahman and Limmack, 2004; Powell and Stark, 2005; Healy et al., 1992). Although both accrual and operating cash flow performance indicators have been occasionally used, the latter category is preferred mainly because earnings are prone to manipulation from management. Healy et al. (1992, p 5) argue that their operating cash flow return, defined as "sales, minus cost of goods sold and administrative expenses, plus depreciation and goodwill expenses deflated by the market value of assets" is superior as it controls for accounting practices, business combination accounting and the financing method.

Nonetheless, Powell and Stark (2005) and Sharma and Ho (2002) examine how sensitive the empirical results are on the performance metric and deflator choice. Both papers argue that the operating cash flows suggested by Healy et al. (1992) are nothing more than pre- depreciation profits and adjustments for changes in working capital are required. Furthermore, according to Sharma and Ho (2002, page 156): «studies showing losses employ earnings based measures while studies showing gains use cash flow based performance measures». That being the case, this thesis employs both earnings and cash flow performance metrics.

With regards to the operating cash flow metrics, I employ Net Operating Cash Flows (Datastream Worldscope: WC04860) and construct the following two operating cash flow metrics:

(1) Operating Cash Flow Return (OCFR hereafter): $$OCFR = \frac{Operating\ Cash\ Flows}{Book\ Value\ of\ Equity}$$

(2) Operating Cash Flow to Total Assets (OCFT hereafter): $$OCFT = \frac{Operating\ Cash\ Flows}{Total\ Assets}$$

Where OCFR (OCFT), respectively, illustrates the ability of an enterprise to utilize the shareholders' capital (total assets) to generate operating cash flows.

As for the earnings performance metrics I employ:

(3) Return on Assets (ROA hereafter): $ROA = \frac{Net\ Income}{Total\ Assets}$

(4) Return on Equity (ROE hereafter): $ROE = \frac{Net\ Income}{Book\ Value\ of\ Equity}$

Where ROA captures how efficient a company is in employing its assets to create profits and ROE translates into the capability of the firm to use the invested stockholders' money to create profits.

The four performance measures are calculated for every firm in the control and treatment group for the three years before (referred to as year -3, -2, -1 respectively) and the three years after the acquisition (referred to as year +1, +2, +3 respectively). Year 0, which denotes the year of acquisition, is omitted from the analysis.

4. Sample

This thesis analyzes M&A deals that were completed during 2009-13 in Eurozone. I choose mergers in Eurozone because the prevailing literature mainly focuses on US and UK mergers. Only a small amount of studies examine European M&As (see Martynova et al, 2006; Gugler et al., 2001). Furthermore, European listed firms use IFRS for financial reporting purposes during the period of interest (2006-16), thus providing a more relaxed framework for the analysis. Information on the M&As was collected from Thomson Reuters Eikon Database. The total number of completed M&As during the period examined is 54.523. From this total, I select those that meet the following criteria: the acquiring firm has bought more than 50% of the target firm, no parent-subsidiary M&As are included, both the acquirer and target firms are publicly listed in Countries that are member states of Eurozone, neither of the firms operate in the financial sector[4], and the

[4] Financial sector firms are excluded because their financial statements structure is significantly different.

form of the transaction is either acquisition or merger[5]. The criteria of the selection process reduced the sample to 64 acquiring firms. Subsequently, WorldScope- Datastream database was used to obtain information on the financial data required to calculate the performance indicators of the study. Firms included in the final sample must have DataStream Ticker code, available financial data in years t- 1, t, t+ 1, positive book value of equity, the financial statements are presented in euro, and apply IFRS (International Financial Reporting Standards) for the preparation of their financial statements. The above requirements reduced the sample to 39 acquiring firms. Table 2 presents the sample selection process and Table 3 provides the distribution of M&As in the five-year period examined.

With regard to the control group, the selected firms must come from the same industry and year with the acquiring firms. Information on the comparison firms is also collected from Thomson Reuters Eikon Database. The control firms must have not engaged in M&As between years -3 to +3, where year 0 indicates the year in which the respective merged firm completed its M&A. Nonetheless, it is rare to find comparison firms that come from the same industry, year and country with the acquiring firms and during the period of interest to have not engaged in M&As. Therefore, for merged firms that have no «direct» industry counterparts (namely from the same country), the comparison firms were selected from other countries in Eurozone with similar economic conditions. Finally, the chosen firms must meet the same criteria with the merged firms, i.e., to operate in the same industry, apply IFRS for the preparation of their financial statements and present them in euro, have available financial data for years t- 1, t, t+ 1 and positive book value of equity. Eventually, two acquiring firms were not included in the treatment sample because no industry peers were found in Eurozone. Thus, the total sample consists of 216 firms, separated into 37 merged and 179 non- merged firms. The number of M&As under examination is consistent with samples examined in prior literature [e.g. Healy et al. (1992) number of firms= 50; Sharma and Ho (2002) number of firms= 36; Kruse et al. (2002) number of firms= 46]. Table 4 presents the merged and non- merged firms by industry.

[5] 77 firms where dropped from the sample because the form of the transaction was exchange offer or buyback.

5. Univariate Analysis

The analysis begins with sample descriptive statistics[6]. When accrual performance indicators are tested (Table 5), the total sample (216 firms) exhibit significant declines in corporate performance in the post- acquisition period (POST= 1) relative to the pre- acquisition period (POST= 0). The mean value of ROE and ROA has reduced significantly (ROE: mean value of 0.053 relative to mean value of 0.036; ROA: mean value of 0.027 relative to mean value of 0.0194; difference in means significant at the 1% level), but the univariate analysis provides evidence that M&As mitigate this decline for acquiring firms. For the acquiring firms (TREAT= 1), both accrual metrics have insignificant differences in means between the pre- and post- acquisition period (Table 6), whereas the differences in means are significant at the 5% level for the comparison firms (TREAT= 0).

Regarding operating cash flow performance indicators (Table 5), the change in performance between pre- and post- acquisition period is insignificant (OCFR: mean value of 0.1305 relative to mean value of 0.13; OCFT: mean value of 0.592 relative to mean value of 0.597; insignificant differences in means). The descriptive statistics presented in Table 6, support the notion that M&As have a negative, although weak, effect on the operating cash flow performance of acquiring firms. In particular, the performance of non- merged firms improves in the post- acquisition period (the difference in means is insignificant for both OCFR and OCFT), whereas the performance of acquiring firms deteriorates (again the difference in means is insignificant).

Furthermore, by comparing the two groups in the pre- acquisition period I provide evidence (Table 7) that acquiring firms are bigger in size, earn more per euro of sales, have significantly higher market value relative to book value, and grow faster than their control competitors (the difference in means between acquiring and comparison firms in the pre- acquisition period is significant at the 1% level for every variable). These results are similar to the findings of Weichselbaumer (2008), and are consistent with Lyon et al. (1999) and Ghosh (2001) who argue that acquiring firms differ markedly from their industry peers in terms of size and corporate performance.

[6] To avoid inaccurate interpretation of the descriptive statistics due to huge outliers, the variables have been winsorized with STATA command winsor2 at the left 3% and right 97% of the distribution.

In addition, Table 8 presents the mean yearly performance of merged and non- merged firms in the pre- and post- acquisition period. Table 9 presents the graphs of average yearly corporate performance per performance metric for each group. Visual inspection of the graphs reveals that the two groups have similar corporate performance changes over time during the pre-acquisition period.

6. Multivariate Analysis

The empirical results from the simple DID regression model are presented first, followed by the results of the probit model and the weighted DID regression model.

6.1 Simple Difference-in-Differences regression analysis

Table 10 presents the results from the simple Diff-in-Diff regression and Table 11 presents the two-by-two matrix analysis of the coefficients. The results for the accrual performance indicators are discusses first, followed by the operating cash flow performance metrics.

Panels A and B in Table 11 refer to the earnings performance metrics. The empirical findings of the simple Difference-in-Differences regression suggest that there is a significant difference in firm performance between acquiring and control firms in the pre- acquisition period. More specifically, I find significant coefficients α_1 (α_1= 0.066, significant at the 1 % level) and β_1 (β_1= 0.0219, significant at the 1% level) for metrics ROE and ROA respectively, indicating that acquiring firms perform higher than their industry counterparts in the three years prior to the acquisition. The coefficients α_2 (a_2= -0.017, 5% level of significance) and β_2 (β_2= -0.0077, 5% level of significance) on temporal binary POST are found negative, suggestive of a decline in the corporate performance of non- merged firms during the post- acquisition period. The sum of coefficients $\alpha_2 + \alpha_3$ (= -0.013, insignificant) for ROE, and $\beta_2 + \beta_3$ (= -0.007, insignificant)) for ROA, imply that the time effect is weak for merged firms. Moreover, during the post- acquisition period, merged firms continue to perform significantly higher than their non- merged industry peers for both ROE ($\alpha_1 + \alpha_3 = 0.07$, 1% level of significance) and ROA ($\beta_1 + \beta_3 = 0.0226$, 1% level of significant). Finally, the positive DID estimators α_3 (= 0.003, insignificant) and β_3 (= 0.0006,

insignificant) denote that the differential effect of M&As on the profitability of merged versus non- merged firms is weak.

The analysis of the operating cash flow performance indicators is presented on Panels C and D of Table 11. I find a significant difference in the operating cash flow performance of acquiring versus non- merged firms during the pre- acquisition period (OCFR: γ_1= 0.072, 1% level of significance; OCFT: δ_1= 0.018, 1% level of significance). This difference remains apparent in the post- acquisition period, but only with OCFR (OCFR: $\gamma_1 + \gamma_3$= 0.0323, 5% level of significance; OCFT: $\delta_1 + \delta_3$= 0.0027, insignificant). Moreover, non- merged firms slightly improve their performance in the post- acquisition period (coefficients γ_2 and δ_2 are positive but insignificant), but the sum of coefficients $\gamma_2 + \gamma_3$ (= -0.0296, insignificant) and $\delta_2 + \delta_3$ (= -0.0106, insignificant) prove the exact opposite for merged firms. The significant negative DID coefficient γ_3 (= -0.04, 10 % level of significance) on OCFR implies that M&As have a negative differential effect on the operating performance of merged versus non- merged firms. Finally, the DID coefficient δ_3 on OCFS is insignificant.

6.2 Predicting M&As

Nonetheless, the findings from the simple DID model can be misleading due to possible systematic differences between the two groups that were not taken into account. These differences may introduce bias in the coefficients of the model, thereby affecting the interpretation of the causal effect of M&As on the corporate performance of acquiring firms. Using propensity score matching will help to clarify whether M&As improve the corporate performance of the combined firm. To do so, I estimate the predicted probability of industry counterparts engaging in M&As, on the basis of observable pre- acquisition period characteristics. The results from the probit model (Table 12[7]) indicate what has already been discusses in Section 5- Univariate analysis, i.e. acquiring firms compared to their industry peers, have significantly lower book-to-market value, earn more per euro of sales and are bigger in size. The predicted probability that non- merged companies will complete M&As, obtained from the probit model, will be used to match them with

[7] I exclude from the table 23 sector dummy variables and 4 dummy variables indicating the year the M&As were completed.

the acquiring firms. I use Kernel matching (one-to-many matching) and restrict the matching to firms operating in the same industry and year.

To assess the effectiveness of propensity score matching, the balancing hypothesis is tested. Rosenbaum and Rubin (1983) argue that an essential part of propensity matching is the balancing of covariates in the pre- treatment period. Without balancing, the matching of treated and control observations is inaccurate and the comparison is biased. The balancing hypothesis requires that the difference in the mean of every covariate between the treatment and the comparison group during the baseline period, is insignificant. Only when the balancing hypothesis is confirmed can the researcher be assured that the matching procedure is effective. Prior to Kernel matching, the difference in means, for every covariate, is significant at the 1% level (Table 7). But, I do not find statistically significant differences in the mean of the natural logarithm of total assets, book-to-market ratio and profit margin after Kernel matching. Table 13 presents the results from the balancing test of the covariates. For instance, variable LOG.TA that indicates the size of each firm has an average of 12.465 (12.473) for acquiring firms (non- merged firms) respectively. Furthermore, visual inspection of the kernel densities before (Table 14, Panel A) and after Kernel matching (Table 14 Panel B) verifies that the two groups have balanced distributions on the covariates. Finally, care is taken so that the common support assumption[8] holds, and observations violating it are excluded from the matching process. Table 15 presents the overlapping between merged and non- merged firms.

6.3 Weighted Difference-in-Differences regression analysis

After Kernel matching, the number of observations is reduced by 38.5%, 38.2%, 37.8% and 37% for performance indicator ROE, RNOA, OCFR and OCFT respectively. Table 16 provides the results from the weighted Difference-in-Differences regression model, and Table 17 analyse in a two-by-two matrix the coefficients. Panels A and B in Table 17 refer to earnings performance metrics. Specifically, I find that acquiring and non- merged firms perform similarly in terms of ROE (a_1= 0.017, insignificant) and ROA (β_1= 0.004, insignificant) during the pre- acquisition period. The time effect is significantly negative for non- merged firms (ROE: α_2= -0.058, 1% level

[8] Matching acquiring and non- merged firms on common support ensures that only observations with similar propensity scores are paired. Observations with significantly different propensity scores are dropped.

of significance; ROA: β_2= -0.019, 1% level of significance), but weak for acquiring firms (ROE: $\alpha_2 + \alpha_3$= -0.000, insignificant; ROA: $\beta_2 + \beta_3$= -0.001, insignificant). Furthermore, merged firms perform significantly higher than their respective non- merged pairs from years +1 to +3. This is noticeable from the significant sum of coefficients $\alpha_1 + \alpha_3$ (= 0.0747, 1% level of significance) and $\beta_1 + \beta_3$ (= 0.021, 1% level of significance) for accrual performance indicators ROE and ROA respectively. This difference in firm performance during the post- acquisition period is attributed to M&As. The significant DID estimators α_3 (= 0.0577, 1% level of significance, ROE) and β_3 (= 0.0175, 5% level of significance, ROA) indicate that M&As have a strong differential effect on the profitability of merged versus non- merged firms.

With regards to operating cash flow performance indicators, by interpreting the empirical evidence in Table 17 (Panels C and D), I find a significant difference in the corporate performance of merged versus non- merged firms during the post- acquisition period (OCFR: $\gamma_1 + \gamma_3$= 0.048, 1% level of significance; OCFT: $\delta_1 + \delta_3$= 0.0157, 1% level of significance). I also notice that this difference in performance is apparent and during the pre- acquisition period (OCFR: γ_1= 0.035, 5% level of significance; OCFT: δ_1= 0.0122, 10% level of significance). The time effect caused the performance of non- merged firms to deteriorate, which is proven by coefficients γ_2 (= -0.041, 1% level of significance) and δ_2 (= -0.014, 5% level of significance) for metric OCFR and OCFT respectively. Moreover, the sum of coefficients $\gamma_2 + \gamma_3$ (= -0.0283, 10% level of significance) for OCFR and $\delta_2 + \delta_3$ (= -0.0107, 10% level of significance) for OCFS suggest that the time effect is also negative for acquiring firms. Finally, for OCFR and OCFT, I find insignificant DID parameters γ_3 (= 0.0129, insignificant) and δ_3 (= 0.0034, insignificant) respectively. Therefore, with respect to operating cash flow performance indicators, the differential effect of M&As on the corporate performance of combined firms relative to their non- merged pairs is positive but weak. Thus, the evidence obtained from the weighted Difference-in-Differences regression analysis are enough to reject Hypothesis H_1.

7. Additional Analysis

The empirical evidence provided from operating cash flow metrics are consistent with prior studies that account for differences in size and performance between acquiring firms and their benchmarks (e.g. Ghosh, 2001; Martynova et al., 2006; Kruse et al., 2002). On the other hand, the

results from earnings metrics contradict with prior studies (e.g. Sharma and Ho, 2002, find insignificant increases; Yeh and Hoshino, 2002, find significant decreases; Martynova et al., 2006, find insignificant decreases). Therefore, to verify that the corporate performance improvements derive from efficiency gains accrued from the M&As, I investigate the earnings quality, asset productivity (A.TURN[9]), as well as the operating efficiency (OP.EFF[10]) of the 216 sample firms.

Analysis of total accruals (E.QUAL[11]) (Panel A, Table 18) shows that acquiring and non-merged firms have on average the same level of earnings quality in the pre- acquisition period (insignificant ε_1 coefficient). Non- merged firms increase their earnings quality in the post-acquisition period (ε_2 coefficient is significant at 1% level), but the sum of coefficients $\varepsilon_2 + \varepsilon_3$ (= -0.003, insignificant) proves the opposite for merged firms. The positive DID coefficient ε_3 (= 0.0378, 1% level of significance) means that merged firms relative to their industry counterparts, increase their accrual earnings from years +1 to +3. This finding suggests that the acquiring firms' management might be flexible in influencing earnings. Therefore, I further examine discretionary accruals (referred to as DACC hereafter). I estimate DACC as the error term of the Jones model[12] (see Jones, 1991). Table 19 presents the results from the analysis of DACC. The average change in DACC of merged firms between the pre- and post- acquisition period is small (Table 19, Panel B) and the effect of M&As is also weak (κ_3 insignificant, Table 19, Panel A). Overall, the increase in accrual earnings during the post- acquisition period does not derive from increased accruals that are in the discretion of management.

Furthermore, analysis of asset productivity and operating efficiency generate similar results. Regarding A.TURN (Panel B, Table 18), there is a significant difference in the asset productivity of merged versus non- merged firms during the post- acquisition period ($\zeta_1 + \zeta_3$: 0.2999, 1% level of significance). This difference is apparent and during the pre- acquisition period (ζ_1: 0.2356, 1%

[9] I define asset productivity as follows: A.TURN = Net Revenue (Datastream Worldscope: WC01001) / Total Assets (Datastream Worldscope: WC02999)

[10] I define operating efficiency as follows: OP.EFF = Operating Expenses (Datastream Worldscope: WC01249) / Total Assets (Datastream Worldscope: WC02999)

[11] To test earnings quality I employ total accruals scaled by the lag of total assets: Earnings quality = (Net Income - Operating Cash Flows) / lag of Total Assets => [(Datastream Worldscope: WC01651) – (Datastream Worldscope: WC04860)] / lag of (Datastream Worldscope: WC02999)

[12] I obtain DACC from the Jones model: $\mathbf{E.QUAL_{it} = a_0 + a_1 * 1 / lagLOG.TA + a_2 * (\Delta sales - \Delta Receiv) / lagLOG.TA + a_3 * GPPE / lagLOG.TA + \varepsilon}$

Where: Δsales= Δ (Datastream Worldscope: WC01001), ΔReceiv= Δ (Datastream Worldscope: WC02051), GPPE= (Datastream Worldscope: WC02301)

level of significance). However, the time effect has not caused significant declines in the asset productivity of non- merged firms (ζ_2: -0.07, insignificant) and merged firms ($\zeta_2 + \zeta_3$: -0.008, insignificant). Finally, the insignificant DID parameter on A.TURN (ζ_3: 0.063, insignificant) denotes that M&As have no differential effect on the asset productivity of the combined firms versus matched industry counterparts.

As for OP.EFF (Panel C, Table 18), I find that the acquiring firms versus industry counterparts are less efficient in operating their assets during the pre- acquisition period, (η_1: 0.2018, 5% level of significance), and this difference remains apparent in the post- acquisition period ($\eta_1 + \eta_3$: 0.1595, 1% level of significance). The time effect is insignificant for both groups as the coefficient on POST variable and the sum of coefficients on POST and DID variables are insignificant. Lastly, the coefficient η_3 (= -0.042, insignificant) implies that the differential effect of M&As on the operating efficiency of merged versus non- merged firms is positive but weak.

The empirical evidence collected so far suggest that M&As do not produce efficiency gains for the combined firms. The source of corporate performance improvements is the increased accrual earnings in the post- acquisition period. For that reason, i take the analysis one step further and examine the change in market value of equity of the merged versus non- merged firms from years -3 to +3. The metric employed is the natural logarithm of market value of equity, referred to as SIZE hereafter (Panel D, Table 18). The difference in SIZE of merged versus non- merged firms is significant for both the pre- (θ_1: 0.378, 1% level of significance) and post- acquisition period ($\theta_1 + \theta_3$: 0.8339, 1% level of significance). The market value of non- merged firms declines in the post-acquisition period (θ_2: -0.177, insignificant), but the opposite applies to the merged firms ($\theta_2 + \theta_3$: 0.2781, 10% level of significance). Lastly, the significant DID estimator θ_3 (= 0.455, 5% level of significance) suggests that the M&A resulted in market value increases for the combined firms. Therefore, taking into consideration that markets are at least semi- efficient, I provide evidence that M&As create shareholder gains (the broader definition given by Mottis, 2007).

8. Limitations and Future Research

The study however faces several limitations that must be taken into consideration before interpreting the empirical evidence. Firstly, in order to assess the differential effect of M&As on

the corporate performance of the combined entity, it is essential to construct a robust control group. Yet, it is unlikely to find control firms that come from the same country and year with their respective merged firms. Therefore, the non- merged firms employed in the study are selected not only from the country that the merged firms operate in, but also from other Eurozone countries. Thus, it is probable that differences in economic, political and regulatory environments between the countries were not taken into account when constructing the Diff-in-Diff model. Secondly, firms' growth opportunities and profitability have declined during the crisis period of 2008-10. However, I have not controlled for the fact that the duration of the adverse effects of the recession is different among the companies selected for the analysis. Thirdly, Kernel matching vastly reduced the sample size and as a consequence the efficiency of the coefficients has been impacted. Fourthly, the number of covariates employed to match the merged and non- merged firms was limited. Adding more covariates would increase the probability of successful matching but would also result in further reductions in the sample size. Finally, the selected performance metrics may not be able to capture the realized economic gains deriving from M&As. As Brouthers et al. (1998) argue, studies examining M&As use metrics that focus only on the profitability aspects of the transaction.

9. Summary

Prior studies provide mixed evidence on whether corporate performance improves following an M&A. The results vary on the performance metrics and methodology employed. This thesis, sought to investigate the differential effect of M&As on firm performance using the quasi-experimental methodology Difference-in-Differences combined with Propensity Score Matching. Firm performance is measured in terms of two accrual and two operating cash flow metrics. The sample consists of 216 firms, separated into a sample of 37 merging firms and a sample of 179 industry counterparts. The empirical study finds that merged versus non- merged firms exhibit significant differences in corporate performance. For merged firms, the completion of M&As improved the corporate performance from the pre- to the post- acquisition period. This differential effect is strong under accrual performance indicators but weak under operating cash flow performance indicators. Additional analysis provides evidence that profitability improvements do not derive from efficiency gains, but from increased accrual earnings in the post- acquisition

period. The market value of the combined firm increases significantly in the post- acquisition period, implying that M&As increase the wealth of the stakeholders.

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Appendices

Table 2

Sample Selection Process

	Number of Firms
All M&As completed in Eurozone during the period 2009-13	54.523
Dropped because the Acquirer is private company	49.516
Dropped because the Acquirer is not public	3.716
Dropped because less than 50% is acquired	978
Dropped because either the acquirer or the target operate in the Financial Sector	141
Dropped because the form of transaction was other than merger or acquisition	77
Usable Sample	**64**
Dropped because Balance Sheet currency is other than EURO	19
Dropped because of insufficient data in consecutive years t-1, t, t+1	6
Dropped because no comparison firms are available in Eurozone	2
Final sample of merging firms	**37**
Final Sample:	
Merging firms	**37**
Selected non-merging industry peers	**179**
Total sample size	**216**

Table 3

Distribution of Mergers and Acquisitions by year

Year	**No. M&As**	**Percentage**
2009	9	24.32%
2010	4	10.81%
2011	12	32.43%
2012	7	18.92%
2013	5	13.52%
Total	37	100.00%

Table 4

Distribution of Treated and Control firms by industry

A/A	Industries	Merging Firms per Industry	Control Firms per Industry
1	Advertising & Marketing	1	2
2	Airlines	1	3
3	Biotechnology	2	4
4	Building/Construction	2	5
5	Chemicals	3	15
6	Computers & Peripherals	2	5
7	Consumer Publishing	2	8
8	Deep Sea Freight	1	6
9	Diversified Chemicals	1	3
10	Electronics	1	4
11	Food & Beverage Retailing	2	9
12	Food and Beverage	1	9
13	Food Processing	1	20
14	Healthcare Equipment	1	3
15	Internet Software	1	3
16	Iron. Steel Mills & Foundries	1	5
17	IT Consulting & Services	2	10
18	Oil & Gas	2	3
19	Other Energy & Power	3	8
20	Pharmaceuticals	1	5
21	Software	2	32
22	Textiles & Apparel	1	5
23	Toys and Children Products	1	4
24	Transportation & Infrastructure	2	8
	Total Firms	**37**	**179**

Table 5

Descriptive Statistics of key variables in the pre- and post- acquisition period

Total Sample Descriptive Statistics by Period			
	POST= 0	**POST= 1**	
	[pre- acquisition period]	**[post- acquisition period]**	
Variable	**Mean**	**Mean**	**t- test of difference in means**
ROE	.05344	.0367	(2.386)**
ROA	.0270	.0194	(2.23)**
OCFR	.1305	.133	(-0.33)
OCFT	.0592	.0597	(-0.131)
MARGIN	.0321	.0209	(2.424)**
LOG.TA	11.460	11.592	(-1.3270
BTM	.9813	1.1179	(-3.295)***

***Significant at the 1% level of significance. **Significant at the 5% level of significance.*Significant at the 10% level of significance.

Table 6

Descriptive Statistics on key variables for merged and non- merged firms by period

Descriptive statistics on key variables for merged (= 1) and non-merged firms (= 0) by period			
	POST= 0	**POST= 1**	
	[pre- acquisition period]	**[post- acquisition period]**	
Variable	**Mean**	**Mean**	**t- test of difference in means**
Variables for observations that completed mergers in year 0 (TREAT= 1)			
ROE	.10831	.0946	(0.935)
ROA	.0452	.0381	(0.994)
OCFR	.1897	.1600	(1.405)
OCFT	.0726	0630	(1.27)
MARGIN	.0569	.0495	0.764
LOG.TA	13.421	13.772	(-1.90)*
BTM	.642	.721	(-1.428)
SALES.G	.0828	.0650	(0.838)
Variables for observations that have not engaged in M&As (TREAT= 0)			
ROE	.04198	.0245	(2.25)**
ROA	.0232	.0155	(2.030)**
OCFR	.1170	.1277	(-0.99)
OCFT	.0561	.0589	(-0.66)
MARGIN	.0269	.0148	(2.331)**
LOG.TA	11.051	11.137	(-0.905)
BTM	1.0540	1.202	(-3.11)***
SALES.G	.0499	.0243	(2.54)**

***Significant at the 1% level of significance. **Significant at the 5% level of significance.*Significant at the 10% level of significance.

Table 7

Descriptive statistics of variables for merged (=1) and non-merged (=0) firms in the pre- acquisition period

Descriptive statistics by group in the pre-acquisition period			
	TREAT= 1 [merged firms]	**TREAT= 0 [non- merged firms]**	
Variable	**Mean**	**Mean**	**t- test of difference in means**
MARGIN	.0569	.02694	(-3.48)***
LOG.TA	13.42	11.05	(-14.9)***
BTM	.6421	1.054	(5.77)***
SALES.G	.0828	.0499	(-1.76)*

***Significant at the 1% level of significance. **Significant at the 5% level of significance.*Significant at the 10% level of significance.

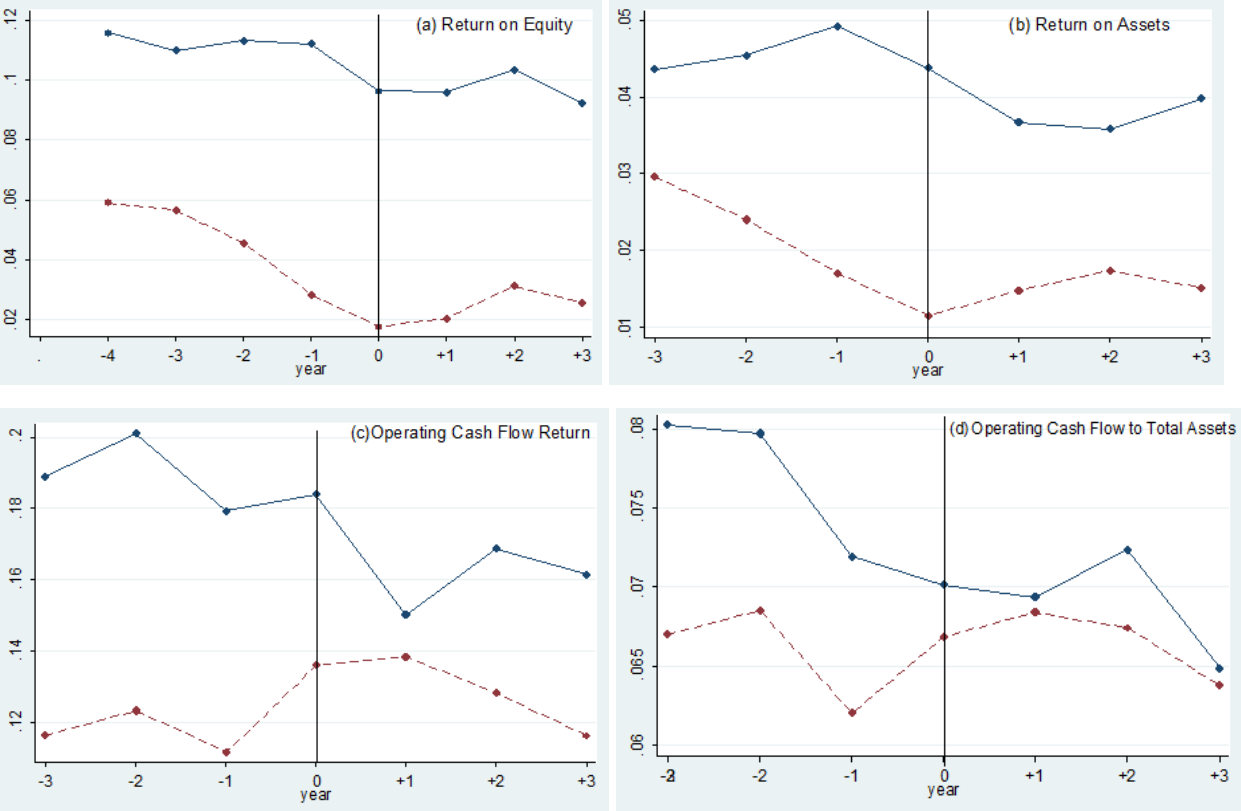
Table 8

Mean yearly performance for merged (= 1) and non- merged (= 0) firms for pre- and post- acquisition period

Average yearly firm performance for merged and non- merged firms for the pre- and post- acquisition periods								
	TREAT= 1 [merged firms]				**TREAT= 0 [non- merged firms]**			
Year relative to the acquisition	**ROE**	**ROA**	**OCFR**	**OCFT**	**ROE**	**ROA**	**OCFR**	**OCFT**
-3	.1092	.04324	.189	.0730	.0561	.0299	.1162	.0570
-2	.112	.0453	.201	.0741	.0438	.0234	.123	.0594
-1	.1033	.0470	.1792	.0709	.0260	.0164	.112	.0520
Mean for pre-acquisition period	.1083	.0452	.1897	.0726	.0420	.0232	.1170	.0561
+1	.0995	.0390	.1500	.0618	.0194	.0148	.1383	.0626
+2	.0884	.0346	.1687	.0674	.0302	.0172	.1282	.0597
+3	.0961	.04067	.1613	.0598	.0241	.01447	.1161	.0542
Mean for post-acquisition period	.0946	.0381	.1600	.0630	.0246	.0155	.1275	.05888

Table 9

Mean corporate performance of merged and non- merged firms during the pre- and post-acquisition period (years -3 to -1, and years +1 to +3 respectively)



Note: the dashed lines refer to the control group (non- merged firms), whereas the solid lines refer to the treatment group (merged firms).

Table 10

The effect of M&As on Return on Equity (ROE), Return on Assets (ROA), Operating Cash Flow return (OCFR), Operating Cash Flow to Total Assets (OCFT) of merged versus non- merged firms:

$ROE_{t=} \alpha_0 + \alpha_1 * TREAT_t + \alpha_2 * POST_t + \alpha_3 * TREAT_t * POST_t + \varepsilon_t$

$ROA_{t=} \beta_0 + \beta_1 * TREAT_t + \beta_2 * POST_t + \beta_3 * TREAT_t * POST_t + \varepsilon_t$

$OCFR_{t=} \gamma_0 + \gamma_1 * TREAT_t + \gamma_2 * POST_t + \gamma_3 * TREAT_t * POST_t + \varepsilon_t$

$OCFT_{t=} \delta_0 + \delta_1 * TREAT_t + \delta_2 * POST_t + \delta_3 * TREAT_t * POST_t + \varepsilon_t$

	constant	TREAT	POST	DID	R^2	F- statistic	No. Obs
ROE	.0419 (.005)***	.066 (.0114)***	-.0174 (.0077)***	.0037 (.0164)	0.0465	25.67***	1,280
ROA	.0232 (.0028)***	.0219 (.0056)***	-.0077 (.0038)**	.0006 (.0080)	0.0227	12.33***	1,280
OCFR	.1170 (.0078)***	.0726 (.0175)***	.0106 (.0108)	-.040 (.0236)*	0.0173	7.13**	1,187
OCFT	.0527 (.0035)***	.0183 (.007)**	.005 (.0049)	-.0156 (.0100)	0.0049	2.20	1,187

(1) ***Significant at the 1% level of significance. **Significant at the 5% level of significance.*Significant at the 10% level of significance.
(2) Standard errors in parentheses.

Table 11

Analysis of the effect of M&As on Return on Equity (ROE), Return on Assets (ROA), Operating Cash Flow return (OCFR), Operating Cash Flow to Total Assets (OCFT) of merged versus non- merged firms:

Panel A: Two-by-two table analysis of merged versus non- merged firms by period (**ROE**)

			POST= 0 Pre- Acquisition Period (a)	POST= 1 Post- Acquisition Period (b)	(b)-(a)
TREAT=1	Merged Firms	(i)	.1083*** $\alpha_0 + \alpha_1$	.0946*** $\alpha_0 + \alpha_1 + \alpha_2 + \alpha_3$	-.0136 $\alpha_2 + \alpha_3$
TREAT=0	Non- Merged Firms	(ii)	.0419** α_0	.0245*** $\alpha_0 + \alpha_2$	-.0174** α_2
		(i)-(ii)	.0663*** α_1	.0700*** $\alpha_1 + \alpha_3$	**.003** **α_3**

Panel B: Two-by-two table analysis of merged versus non- merged firms by period (**ROA**)

			POST= 0 Pre- Acquisition Period (a)	POST= 1 Post- Acquisition Period (b)	(b)-(a)
TREAT=1	Merged Firms	(i)	.0452*** $\beta_0 + \beta_1$	.0381*** $\beta_0 + \beta_1 + \beta_2 + \beta_3$	-.0071 $\beta_2 + \beta_3$
TREAT=0	Non- Merged Firms	(ii)	.0232*** β_0	.0155** $\beta_0 + \beta_2$	-.0077** β_2
		(i)-(ii)	.0219*** β_1	.0226*** $\beta_1 + \beta_3$	**.00067** **β_3**

Panel C: Two-by-two table analysis of merged versus non- merged firms by period (**OCFR**)

			POST= 0 Pre- Acquisition Period (a)	POST= 1 Post- Acquisition Period (b)	(b)-(a)
TREAT=1	Merged Firms	(i)	.1897*** $\gamma_0 + \gamma_1$	.1600*** $\gamma_0 + \gamma_1 + \gamma_2 + \gamma_3$	-.0296 $\gamma_2 + \gamma_3$
TREAT=0	Non- Merged Firms	(ii)	.1170*** γ_0	.1277*** $\gamma_0 + \gamma_2$	.0106 γ_2
		(i)-(ii)	.0726*** γ_1	.0323** $\gamma_1 + \gamma_3$	**-.040*** **γ_3**

Panel D: Two-by-two table analysis of merged versus non- merged firms by period (**OCFT**)

			POST= 0 Pre- Acquisition Period (a)	POST= 1 Post- Acquisition Period (b)	(b)-(a)
TREAT=1	Merged Firms	(i)	.071*** $\delta_0 + \delta_1$	.0605*** $\delta_0 + \delta_1 + \delta_2 + \delta_3$	-.0106 $\delta_2 + \delta_3$
TREAT=0	Non- Merged Firms	(ii)	.0527*** δ_0	.0578*** $\delta_0 + \delta_2$	.005 δ_2
		(i)-(ii)	.0183*** δ_1	.0027 $\delta_1 + \delta_3$	**-.0156** **δ_3**

1) ***Significant at the 1% level of significance. **Significant at the 5% level of significance.*Significant at the 10% level of significance.

(2) Standard errors in parentheses.

Table 12

Probit model: Obtaining the predicted probability of non-merged firms engaging in M&As based on a set of pre- acquisition period characteristics.

Pr ($TREAT_{i, s, T=1}$) = Φ (IND, YEAR, BTM, LOG.TA, MARGIN)

	CONST.	BTM	LOG.TA	MARGIN	Pseudo R^2	LR Chi^2	No. Obs
Coeff.	-6.68	-.497	.4353	.4055	0.4800	576.60	1,220
Std. Error	(.780)***	(.118)***	(.0685)***	.8763			

***Significant at the 1% level of significance. **Significant at the 5% level of significance.*Significant at the 10% level of significance.

Table 13

Baseline period balancing test of the covariates employed in the probit model

Covariate Mean differences after Propensity matching

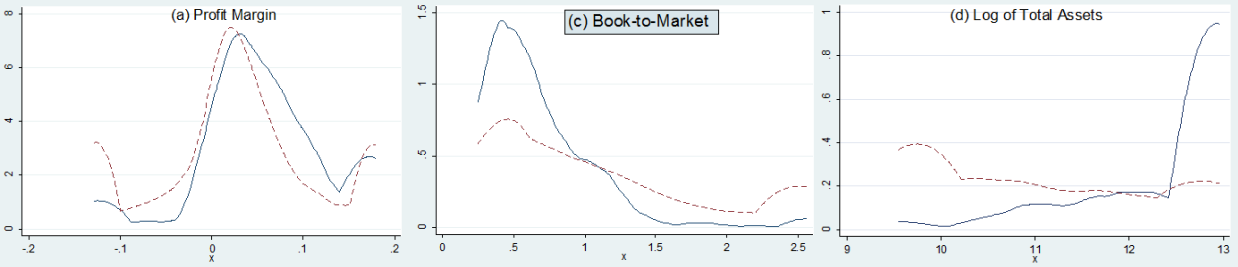
	Treated	**Control**	**Mean Difference**
BTM	0.642	0.664	-0.022
			(0.68)
LN(TA)	12.465	12.473	-0.008
			(0.13)
MARGIN	0.057	0.060	-0.003
			(0.53)

(1) ***Significant at the 1% level of significance. **Significant at the 5% level of significance.*Significant at the 10% level of significance.
(2) t-tests in parentheses.

Table 14

Kernel Densities of the covariates

Panel A: Kernel Densities of key variables before Kernel matching



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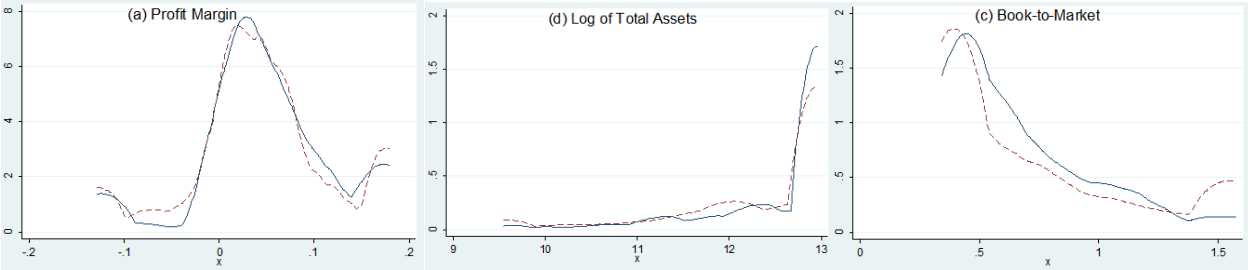
Panel B- Kernel Densities of key variables after Kernel matching



Note: the dashed lines refer to the control group (non- merged firms), whereas the solid lines refer to the treatment group (merged firms).

Table 15

Overlapping of control and treated sample firms - Common support assumption

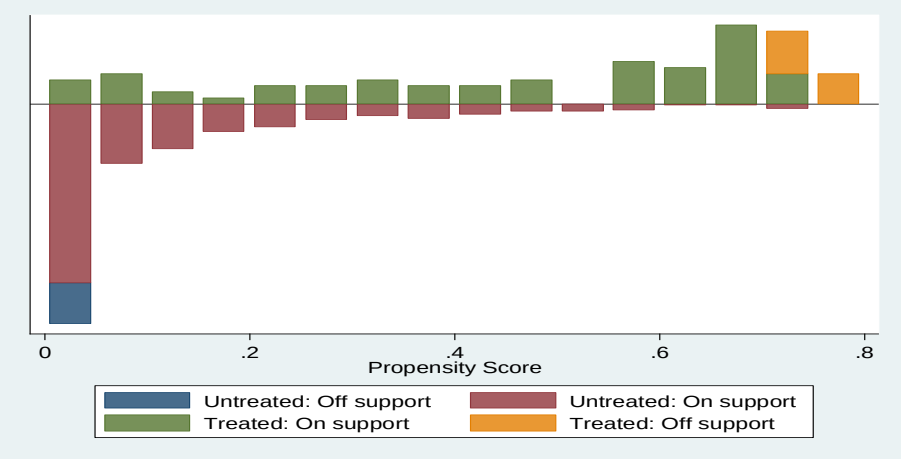


Table 16

The effect of M&As on Return on Equity (ROE), Return on Assets (ROA), Operating Cash Flow Return (OCFR) and Operating Cash Flow to Total Assets (OCFT) of merged versus non- merged firms after Kernel Matching:

$$ROE_t = \alpha_0 + \alpha_1 * TREAT_t + \alpha_2 * POST_t + \alpha_3 * TREAT_t * POST_t + \varepsilon_t$$

$$ROA_t = \beta_0 + \beta_1 * TREAT_t + \beta_2 * POST_t + \beta_3 * TREAT_t * POST_t + \varepsilon_t$$

$$OCFR_t = \gamma_0 + \gamma_1 * TREAT_t + \gamma_2 * POST_t + \gamma_3 * TREAT_t * POST_t + \varepsilon_t$$

$$OCFT_t = \delta_0 + \delta_1 * TREAT_t + \delta_2 * POST_t + \delta_3 * TREAT_t * POST_t + \varepsilon_t$$

	constant	TREAT	POST	DID	R^2	F- statistic	No. Obs
ROE	.0818	.017	-.0585***	.0577**	0.0634	17.68***	787
	(.0082)***	.0116	(.0118)***	(.0165)**			
ROA	.0381	.004	-.01908	.0175	0.0253	6.81***	791
	(.0038)***	(.005)	(.0055)***	.0079**			
OCFR	.145	.035	-.0412	.0129	0.0290	7.31***	738
	(.0115)***	(.0163)**	(.016)**	.0232			
OCFT	.0569	.0122	-.0141	.003	0.0215	5.46***	748
	(.0048)***	(.0068)*	(.0065)**	.0095			

(1) ***Significant at the 1% level of significance. **Significant at the 5% level of significance.*Significant at the 10% level of significance.
(2) Standard errors in parentheses

Table 17

Analysis of the effect of M&As on Return on Equity (ROE), Return on Assets (ROA), Operating Cash Flow Return (OCFR) and Operating Cash Flow to Total Assets (OCFT) of merged versus non- merged firms after Kernel Matching:

Panel A: Two-by-two table analysis of merged versus non- merged firms by period (**ROE**)

			POST= 0 Pre- Acquisition Period (a)	POST= 1 Post- Acquisition Period (b)	(b)-(a)
TREAT=1	Merged Firms	(i)	.0988*** $\alpha_0 + \alpha_1$	.0980*** $\alpha_0 + \alpha_1 + \alpha_2 + \alpha_3$	-.0008 $\alpha_2 + \alpha_3$
TREAT=0	Non- Merged Firms	(ii)	.0818*** α_0	.0233*** $\alpha_0 + \alpha_2$	-.058*** α_2
		(i)-(ii)	.0169 α_1	.0747*** $\alpha_1 + \alpha_3$	.0577*** **α_3**

Panel B: Two-by-two table analysis of merged versus non- merged firms by period (**ROA**)

			POST= 0 Pre- Acquisition Period (a)	POST= 1 Post- Acquisition Period (b)	(b)-(a)
TREAT=1	Merged Firms	(i)	.0422*** $\beta_0 + \beta_1$	.0407*** $\beta_0 + \beta_1 + \beta_2 + \beta_3$	-.0015 $\beta_2 + \beta_3$
TREAT=0	Non- Merged Firms	(ii)	.0381*** β_0	.0190*** $\beta_0 + \beta_2$	-.019*** β_2
		(i)-(ii)	.004 β_1	.021*** $\beta_1 + \beta_3$	.0175** **β_3**

Panel C: Two-by-two table analysis of merged versus non- merged firms by period (**OCFR**)

			POST= 0 Pre- Acquisition Period (a)	POST= 1 Post- Acquisition Period (b)	(b)-(a)
TREAT=1	Merged Firms	(i)	.1803*** $\gamma_0 + \gamma_1$	.1520*** $\gamma_0 + \gamma_1 + \gamma_2 + \gamma_3$	-.0283* $\gamma_2 + \gamma_3$
TREAT=0	Non- Merged Firms	(ii)	.1453*** γ_0	.1040*** $\gamma_0 + \gamma_2$	-.041*** γ_2
		(i)-(ii)	.035** γ_1	.048*** $\gamma_1 + \gamma_3$	.0129 **γ_3**

Panel D: Two-by-two table analysis of merged versus non- merged firms by period (**OCFT**)

			POST= 0 Pre- Acquisition Period (a)	POST= 1 Post- Acquisition Period (b)	(b)-(a)
TREAT=1	Merged Firms	(i)	.06929 *** $\delta_0 + \delta_1$	.0586*** $\delta_0 + \delta_1 + \delta_2 + \delta_3$	-.0107* $\delta_2 + \delta_3$
TREAT=0	Non- Merged Firms	(ii)	.05699*** δ_0	.0429*** $\delta_0 + \delta_2$	-.014** δ_2
		(i)-(ii)	.0122* δ_1	.0157*** $\delta_1 + \delta_3$	.0034 **δ_3**

***Significant at the 1% level of significance. **Significant at the 5% level of significance.*Significant at the 10% level of significance.

Table 18

Analysis of earnings quality (E.QUAL), asset turnover (A.TURN), operating efficiency (O.EFF) and market value movement (SIZE) of merged (=1) versus non- merged (=0) firms between pre-acquisition and post-acquisition period, after Kernel matching:

$E.QUAL_t = \varepsilon_0 + \varepsilon_1 * TREAT_t + \varepsilon_2 * POST_t + \varepsilon_3 * TREAT_t * POST_t + \varepsilon_t$

$A.TURN_t = \zeta_0 + \zeta_1 * TREAT_t + \zeta_2 * POST_t + \zeta_3 * TREAT_t * POST_t + \varepsilon_t$

$O.EFF_t = \eta_0 + \eta_1 * TREAT_t + \eta_2 * POST_t + \eta_3 * TREAT_t * POST_t + \varepsilon_t$

$SIZE_t = \theta_0 + \theta_1 * TREAT_t + \theta_2 * POST_t + \theta_3 * TREAT_t * POST_t + \varepsilon_t$

Panel A: Two-by-two table analysis of merged versus non- merged firms by period (**E.QUAL**)

			POST= 0 Pre- Acquisition Period (a)	POST= 1 Post- Acquisition Period (b)	(b)-(a)
TREAT=1	Merged Firms	(i)	.1103*** $\varepsilon_0 + \varepsilon_1$	.1069*** $\varepsilon_0 + \varepsilon_1 + \varepsilon_2 + \varepsilon_3$	-.0034 $\varepsilon_2 + \varepsilon_3$
TREAT=0	Non- Merged Firms	(ii)	.0994*** ε_0	.05829*** $\varepsilon_0 + \varepsilon_2$	-.041*** ε_2
		(i)-(ii)	.01088 ε_1	.04866*** $\varepsilon_1 + \varepsilon_3$	.0378*** **ε_3**

Panel B: Two-by-two table analysis of merged versus non- merged firms by period (**A.TURN**)

			POST= 0 Pre- Acquisition Period (a)	POST= 1 Post- Acquisition Period (b)	(b)-(a)
TREAT=1	Merged Firms	(i)	.9426*** $\zeta_0 + \zeta_1$	.9344*** $\zeta_0 + \zeta_1 + \zeta_2 + \zeta_3$	-.00826 $\zeta_2 + \zeta_3$
TREAT=0	Non- Merged Firms	(ii)	.707*** ζ_0	.6353*** $\zeta_0 + \zeta_2$	-.0717 ζ_2
		(i)-(ii)	.2356*** ζ_1	.299*** $\zeta_1 + \zeta_3$	.0634 **ζ_3**

Panel C: Two-by-two table analysis of merged versus non- merged firms by period (**O.EFF**)

			POST= 0 Pre- Acquisition Period (a)	POST= 1 Post- Acquisition Period (b)	(b)-(a)
TREAT=1	Merged Firms	(i)	.7908*** $\eta_0 + \eta_1$	.7988*** $\eta_0 + \eta_1 + \eta_2 + \eta_3$	.008 $\eta_2 + \eta_3$
TREAT=0	Non- Merged Firms	(ii)	.5890*** η_0	.6393*** $\eta_0 + \eta_2$	.0502 η_2
		(i)-(ii)	.2018** η_1	.1595*** $\eta_1 + \eta_3$	-.0422 **η_3**

Panel D: Two-by-two table analysis of merged versus non- merged firms by period (**SIZE**)

			POST= 0 Pre- Acquisition Period (a)	POST= 1 Post- Acquisition Period (b)	(b)-(a)
TREAT=1	Merged Firms	(i)	13.092*** $\theta_0 + \theta_1$	13.37*** $\theta_0 + \theta_1 + \theta_2 + \theta_3$	.2781* $\theta_2 + \theta_3$
TREAT=0	Non- Merged Firms	(ii)	12.71*** θ_0	12.53*** $\theta_0 + \theta_2$	-.177 θ_2
		(i)-(ii)	.378** θ_1	.8339*** $\theta_1 + \theta_3$	.455** **θ_3**

***Significant at the 1% level of significance. **Significant at the 5% level of significance.*Significant at the 10% level of significance.

Table 19

Panel A: The effect of M&As on discretionary accruals (DACC) of merged versus non- merged firms after Kernel Matching:

$$DACC_t = \kappa_0 + \kappa_1 * TREAT_t + \kappa_2 * POST_t + \kappa_3 * TREAT_t * POST_t + \varepsilon_t$$

	constant	TREAT	POST	DID	R^2	F-statistic	No. Obs
DACC	.0087	.0004	-.0154	.0278	0.0067	1.52	800
	(1.14)***	(0.02)	(-1.78)*	(1.03)			

Panel B: Descriptive Statistics of DACC (Discretionary Accruals) in the pre- and post-acquisition period by group

Average DACC of merged (= 1) and non-merged firms (= 0) by pre- and post- acquisition period			
	POST= 0 [pre- acquisition period]	**POST= 1 [post- acquisition period]**	
Variable	**Mean**	**Mean**	**t- test of difference in means**
Variables for observations that completed mergers in year 0 (TREAT= 1)			
DACC	.0091349	.0215561	-.0124212 (-0.4364)
Variables for observations that have not engaged in M&As (TREAT= 0)			
DACC	.0087347	-.00672	.0154614 (1.74*)

Panel C: Average DACC (Discretionary Accruals) of merging (= 1) and non-merging (= 0) firms by period

Descriptive statistics by group in the pre- acquisition period			
	TREAT= 1 [merged firms]	**TREAT= 0 [non-merged firms]**	
Variable	**Mean**	**Mean**	**t- test of difference in means**
Variables for observations in the pre- acquisition period (POST= 0)			
DACC	.0091349	.0087347	-.0004002 (-0.0238)
Variables for observations in the post- acquisition period (POST= 1)			
DACC	.0215561	-.0067267	-.0282828 (-1.9837***)

(1) ***Significant at the 1% level of significance. **Significant at the 5% level of significance.*Significant at the 10% level of significance.
(2) t- test in the parentheses