

An exploratory study of US acquirers' market performance: pre- versus post-Sarbanes-Oxley act of 2002

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**An Exploratory Study of US Acquirers' Market Performance:
Pre- versus Post- Sarbanes-Oxley Act of 2002**

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An Exploratory Study of US Acquirers' Market Performance: Pre-versus Post- Sarbanes-Oxley Act of 2002

Abstract

Purpose – Motivated by the findings of Bhabra and Hossain (2017) that highlight an improvement in US market performance in the post-SOX period, we investigate how this change varies with the methods of payment used for the deals.

Design/methodology/approach – Deductive in nature and using an event study approach, this paper uses a sample of 675 deals between 1999 and 2006 to test three research hypotheses in a pre-post setting.

Findings – Results show that at the aggregate level, there is a significant improvement in the market performance of US acquirers around the announcement day in the aftermath of the passage of SOX 2002. Considered separately, both US stock acquirers and cash acquirers did not experience any significant improvement in market performance in the post-SOX period. These results are robust to controlling for governance, firm and deal variables, as well as industry and year fixed effects.

Research limitations – Exploratory in nature, the results are to be interpreted in light of the sample size and the period under investigation.

Practical implications – The results provide evidence for regulators and legislators on the contribution of SOX 2002 to curbing managerial misconduct. Significant improvement in the market performance also signals more confidence in managerial decisions and a reduction in agency problems. The insignificant change in stock acquirers' market performance can be an indication that policymakers should exert more efforts to improve shareholders' confidence in the quality of disclosure.

Originality/value – This investigation provides unique insights on whether SOX has been effective in mitigating mispricing concerns associated with stock-financed acquisitions and whether it was effective in moderating the governance mechanism associated with cash-financed acquisitions.

Keywords US Acquirers' Market Performance, Sarbanes-Oxley Act, Agency Theory, Signaling Theory, Stock acquisitions, Cash acquisitions.

Paper type – Research paper.

An Exploratory Study of US Acquirers' Market Performance: Pre-versus Post- Sarbanes-Oxley Act of 2002

1. Introduction

Mergers and acquisitions (M&A) are powerful expansion strategies adopted by corporations. The related literature informs that these events happen in waves clustered after major macro-economic and political events, and are driven by various motives, in particular, surviving fierce market rivalry, diversification, and synergies (Sudarsanam et al., 1996; Bena and Li, 2014; Dos Santos et al., 2008). Despite these promised benefits, the US market reaction to these events around the announcement period has been negative, possibly indicating concerns about the true motives behind these acquisitions (Walker, 2000; Sudarsanam and Mahate, 2006; Masulis et al., 2007; Antoniou et al., 2007; Alexandridis et al., 2010; Jory and Ngo, 2011; Chronopoulos et al., 2013). Firth (1980) suggests that these negative returns reflect investors' perception that the bid is too expensive and that its costs outweigh its potential synergy benefits; they might as well reflect investors' fears that managers are engaging in M&A strategies for self-serving purposes (Baumol, 1959; Mueller, 1969; Penrose, 1959; and Williamson, 1964) or as a result of a paradigm conflict (Adra and Menassa, 2019). Such fears are accentuated by major M&A failures (for example the merger of America Online and Time Warner) and a record of corporate scandals (such as Enron and WorldCom) that cast major doubts on the ethicality of managerial conduct. Related concerns are not limited to M&A announcements per se, but rather extend to the means of financing these acquisitions. From this perspective, doubts are particularly manifested in investors' negative reaction to stock-financed acquisitions signaling fears of stock mispricing. According to the Signaling theory, investors can extract information (signals) from the financing method of the M&A; when corporations choose to finance acquisitions by stocks, they could be signaling that their stocks are overvalued (Yook, 2003). The evidence on shareholders' concerns about managerial misconduct and stock mispricing highlights possible threats to countries' financial and economic development. For instance, strong empirical evidence suggest that investor sentiment and trust increase aggregate investments in the market (Arif and Lee, 2014; Zak and Knack, 2001; Guiso et al., 2008); conversely, doubts about the fair valuation of stocks and the lack of trust underline the presence of information opacity, a major hurdle for an effective functioning of stock

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3 markets that can massively affect investors' confidence and lead to the migration of investments
4 (Gurun et al., 2018).

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6 Motivated by the importance of restoring investors' confidence in financial markets and
7 mitigating agency concerns, the US Congress enacted the Sarbanes-Oxley Act of 2002 (hereafter
8 SOX 2002 or SOX). Considered as one of the strictest acts in the history of USA since the
9 implementation of the Securities Act of 1933-1934, this major regulatory intervention aims at
10 regulating the auditing profession and enforcing laws against managerial fraud, thus curbing
11 managerial misconduct and improving the transparency of financial markets. In this context, SOX
12 requires managers to provide assurance that financial reports do not include any omissions or
13 misleading materials (Lobo and Zhou, 2010), and holds the chief executive and financial officers
14 responsible for any non-compliance with the Act's guidelines. Such stipulations intend to improve
15 corporate governance and are considered a precedent in the history of federal legislation (Romano,
16 2005). SOX also grants particular emphasis to the transparency of financial reporting and requires
17 auditors to give formal advice on the quality of financial reports in an attempt to provide early
18 alerts on possible misreporting of financial information.

19
20 The economic consequences of the implementation of SOX 2002 were investigated by many
21 scholars. By examining the market reaction to related legislative events before and after the
22 passage of the Act, Zhang (2007) finds that investors have reacted negatively to such
23 announcements. He suggests that restrictions imposed on non-auditing services are costly and that
24 SOX has not achieved its objectives. Similarly, Rice et al. (2015) note that restatements under
25 section 404¹ are unreliable and mislead investment decisions. Conversely, Aghimien (2010)
26 suggests that, although SOX has created additional costs, it has proven to have a favorable effect
27 on investors' confidence, while Andrade et al. (2014) observe a reduction in opacity following its
28 adoption. From a related angle, Bartov and Cohen (2009) observe a statistically significant
29 decrease in expectation management - a means of earnings management - in the post-SOX period
30 in comparison with the period of the 1990s.

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32 Therefore, years after its adoption, the effectiveness of SOX remains debatable. In the context
33 of M&A, a recent study by Mughal et al. (2021) provides evidence of real activity management in
34 the pre- and post-SOX periods of the target firms, which is negatively associated with the short-

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¹ Section 404 requires firms to publish a report mentioning that the management insures an adequate level of internal control supported by an effective control structure.

term performance of targets and the long-term performance of acquirers. In a related context, Bhabra and Hossain (2017) find that due to the improved transparency, increased governance, and the reduction in managerial risk, the US acquirers' market performance has improved in the post-SOX period. Franks et al. (1991), Yook (2003), Oler (2008), and Alexandridis et al. (2010) consider the effect of means of financing M&A and note a positive market reaction to cash financed acquisitions.

Our paper contributes to several aspects of the literature. At the outset, we contribute to the literature on SOX by providing evidence on whether this reform is effective at boosting investors' confidence in managerial decision making in the context of M&A announcements. If SOX has been effective in achieving its aims of curbing managerial misconduct (Bartov and Cohen, 2009), it is expected that investors are more confident that concerns related to managerial conduct are dealt with. Accordingly, if SOX is effective in improving the quality of financial reports, the negative performance of US acquirers is expected to be lessened. Moreover, we expand this literature by extending Bhabra and Hossain (2017) analysis to investigate the change in stock and cash acquirers' market performance after the adoption of SOX. We argue that if shareholders' concerns about stock overvaluation is mitigated by the SOX-induced enhanced transparency of corporate information, the adverse market reaction to stock financed acquisitions should also be lessened. We also contribute to the growing evidence on the favorable market reaction to cash financed acquisitions; in this line, we argue that this favorable reaction is mainly due to the favorable governance role that cash acquisitions play in reducing the amount of cash available to be spent on managerial utility maximization activities. In this context, we investigate the change in cash acquirers' market performance following the adoption of SOX. It would be intuitive to study how such a governance intervention affects a self-governing mechanism of cash financed acquisitions. If SOX has been effective, we would expect the market performance of US cash acquirers to decrease in the post-SOX period in light of the overall improved governance imposed by SOX. In other words, if SOX improves the overall governance of the market, investors would not perceive, or perceive to a lower extent, cash-financed acquisitions as favorable activities that compensate the lack of governance.

Consistent with Bhabra and Hossain (2017), we find that the market performance has improved in the post-SOX period, possibly due to increased investors' confidence in managerial conduct brought about by the adoption of SOX. However, when we limit our focus to stock-financed

acquisitions, we find an insignificant improvement in performance. These insignificant changes can be interpreted in the light of Rice et al. (2015) observation of the unreliability of SOX reports resulting in creating additional confusion for investors. Specifically, we provide unique evidence on whether SOX is effective in mitigating shareholders' concerns about stock overvaluation associated with stock-financed acquisitions, in the light of SOX sections aiming at improving the transparency of financial reports. We show that SOX is more effective in mitigating agency problems by imposing harsh penalties on managerial misconduct than in alleviating mispricing concerns where unintended confusion among investors might have been caused by section 404 (Rice et al., 2015). Moreover, we find no change in the cash acquirers' market performance which can indicate that investors did not perceive agency concerns associated with this type of acquisition to be mitigated by SOX. These results are robust to a series of robustness tests such as year and industry fixed effects and controlling for governance and bid related variables. On the practical/policy level, our results provide consequential evidence for policy makers on the effectiveness of regulatory efforts in handling market imperfections and sheds the light on possible market confusion due to vagueness of some SOX requirements or lack of compliance.

The rest of this paper is structured as follows. Section 2 outlines the theoretical underpinnings of the study. Section 3 reviews the literature and explains how the hypotheses are developed. Section 4 discusses the methodology used including the sample selection and market performance models and measures. Section 5 presents the univariate and multivariate results. Section 6 presents the robustness tests and investigates the major sources of endogeneity. Section 7 concludes.

2. Theoretical Framework

The neoclassical theories suggest the existence of rational reasons for firms to undertake M&A activities. From this angle, firms that own rare and scarce assets attempt to exploit these assets by acquiring other firms. It follows that these firms become more valuable than firms that do not engage in such activities (Arikan and Stulz, 2016). The same neoclassical models suggest that acquisitions increase the value of shareholders. For instance, diversification creates internal capital sources that allow better allocation of capital than if the divisions were standalone firms. These internal capital connections give the firm access to information which is not available to outsiders and help in the management of cash flow across different divisions (Kuppuswamy and Villalonga, 2015; Matvos and Seru, 2014). Nevertheless, and from an Agency perspective, when the owner

(principal) delegates a decision-making role to one or more persons (agents), an agency issue might arise. In other terms, assuming that both parties are utility maximizers, this theory suggests that managers might not act in the best interest of owners. In the context of mergers and acquisitions, the Agency theory is represented by the possibility that managers might engage in acquisitions for self-serving purposes (Shleifer and Vishny, 1989). Conversely, if the firm does not diversify, it would not grow or might even decrease in size (Denis et al., 1997) thus affecting managers' benefits adversely. Empirically, these agency concerns are demonstrated by a negative market reaction to acquisition announcements by acquirers' shareholders (Smith and Kim, 1994; Walker 2000; Fuller et al., 2002; Masulis et al., 2007).

Empirical studies have also shown significant differences in the market reaction between stock-financed and cash-financed M&A activities (Yook, 2003; Louis, 2004; Adra and Barbopoulos, 2018 and Adra and Barbopoulos, 2019). This differential is usually explained by the possible presence of information asymmetry (Signaling theory) and the effect of debt financing. In this respect, the market performance of stock acquirers reflects a negative market reaction to acquisition announcements that is possibly due to signals sent to investors that the stocks are overvalued (Yook, 2003). In contrast to stock acquirers, cash acquirers witness favorable reaction to the acquisition announcement day. This is because when a company decides to cash finance an acquisition, it can either use hoarded cash or it can borrow. In this line, Jensen (1986) stresses the role of debt in motivating managers to act efficiently. The author argues that issuing debt reduces the cost of free cash flow by reducing the cash flow to be spent at the discretion of managers. This would reduce the agency costs and avoid bankruptcy.

Considering the above discussion, this study positions the negative market reaction to acquisition announcements as reflection of acquirers' shareholders' fears that the true motives of these corporate activities deviate from the neoclassical motives of M&A. We therefore use the Agency theory as a framework to investigate the change in US acquirer's performance after the adoption of SOX in view of highlighting the probable role played by this Act in enhancing the quality of financial reports and boosting investors' confidence. Moreover, the Signaling theory and Debt perspectives are used to investigate and understand the differential between stock-financed and cash-financed M&A activities in the context of SOX. It also remains that the estimation of abnormal stock price movement around a certain event (here M&A) is grounded in

the Efficient Market Hypothesis assuming that stock prices compound all existing information, corporate announcements, and news (Fama, 1991; Gandhi et al., 2013).

3. Hypotheses Development

The conventional corporate objective of managers is to maximize the wealth of shareholders (Jones and Felps, 2013). However, empirical research has markedly reflected shareholders’ fears that acquisitions can be also driven by managerial self-interest to increase their own wealth, or hubris where they commit mistakes in evaluating the values of targets and decide to engage in activities that do not lead to synergetic gains (Jensen and Meckling, 1976; Mishkin, 2010). For instance, Masulis et al. (2007) demonstrate that over a five-day event window around the bid announcement, the mean and median Cumulative Abnormal Returns (CAR) values for US acquirers are significantly negative (-1.484% and -1.194% respectively; $p=0.01$). Similarly, using a sample of 4173 bids and 618 distinct UK acquirers, Antoniou et al. (2007) demonstrate that shareholders of UK acquirers of public targets witness significant negative Cumulative Average Abnormal Returns (CAAR) over a five-day period around the announcement day (-1.16%). Similar evidence of negative market performance is also reported in a considerable number of other studies (see for example Walker, 2000; Sudarsanam and Mahate, 2006; Antoniou et al., 2007; Masulis et al., 2007; Alexandridis et al., 2010; Jory and Ngo, 2011; Chronopoulos et al., 2013). Boubaker and Hamza (2014) investigate the relationship between short term and long-term performance of acquirers. They find that on the short term, acquirers suffer negative returns but enjoy positive returns on the long run. Moreover, the authors find that only positive short-term performance can predict the long-term performance of acquirers. Kim et al. (2021) find that acquisitions of innovative targets yield positive returns for acquirers around the announcement day which can persist for a longer period if the acquirers are familiar with the targets industry.

From a different but related angle, research on the market performance of acquirers around the announcement day highlight a stock-cash return differential. In this context, Yook (2003) investigates the role of the Signaling theory and the Benefit of Debt theory in explaining this return differential in the US. His findings show that the cumulative median abnormal return for cash acquirers exhibits an insignificant value of -0.71% over the period covering the announcement day and the day prior to it. However, CAR for stock acquirers shows a significant value of -1.51%. He also notes that wealth creation in cash acquisitions depends on the merits that debt-financing

provides whereas the wealth creation in stock acquisitions depends on the synergy effects. Louis (2004) shows that over a three-day event window around the announcement, US stock acquirers suffer from statistically significant median cumulative abnormal returns of -2.28%, whereas cash acquirers witness a significant median CAR value of 0.44%. Furthermore, Oler (2008) shows that the mean announcement Buy and Hold Abnormal Returns (BHAR) for non-stock US acquirers and stock acquirers are -1.3% and -3.1% respectively where both values are significant at 1% level. In the context of earnout financing, where the payment of the of the acquisition is made by an upfront payment to the target at the time of the acquisition and the complementary payment is dependent on the post-acquisition announcement performance, Barbopoulos et al. (2018) find that earnout deals' gains for US acquirers depends on the payment method and that the value creation from earnouts for first time cross border acquisitions is higher than that of domestic bids financed using either stock or cash.

Market performance of acquirers around the announcement day is also prone to the positive or negative effect of market events. In this line, the passage of SOX 2002 is expected to have important implications on various aspects of the business environment, in particular on US acquirers' market performance. This Act has captured the interest of scholars from various academic disciplines (Iliev, 2010) who investigated its effect on different aspects of investors' welfare such as the ethical conduct of firms and corporate governance, earnings management, the investment environment, investor confidence and the quality of disclosure. In the context of corporate governance and ethics, studies show evidence of improved ethical conduct and governance practices of firms (Orin, 2008; Valenti, 2008). The favorable effect of SOX was also represented by a statistically significant decrease in expectation management in the post-SOX period compared to the period of the 1990s, suggesting that managerial activities have shifted from expectation management after the implementation of the Act (Bartov and Cohen 2009). Chen and Huang (2013) examine the effect of SOX on the pre-purchase earning management and its relationship with post-repurchases performance. They show that the significant negative relation between the pre-repurchase abnormal accruals and the post-repurchase performance is no more evident in the post-SOX period. Moreover, there is empirical evidence that SOX has improved the investment environment. For instance, Sun et al. (2014) find that the effect of investment opportunity on firms' performance is significantly greater after the passage of SOX and that the Act has lessened the effect of board independence on the relation between investment opportunities

and firm performance. From an international perspective, Abdioglu et al. (2015) show that the improvement of the quality of corporate disclosures and the decrease in the information asymmetry after the passage of SOX 2002 lead to the increase in the foreign international investment.

On the other hand, several studies reported negative consequences of SOX adoption; for instance, Deng et al. (2012) suggest that SOX has created benefits of reducing costs of capital and audit failure but has also reduced the level of profitable investments. Moreover, Brown and Nyonna (2015) examine the change in delisting activity from US exchanges over a period of five years after the passage of SOX and find that SOX increases the costs of compliance leading to increased delisting of international companies from US stock exchanges. Despite the additional costs created by the adoption of SOX, the promised benefits of this reform has been positively received by investors who exhibited higher confidence in the post-SOX period (Aghimien , 2010). Using stock returns and trading volume, Burks (2011) investigates the conjecture that SOX has confused investors and finds no evidence that investors are disordered by SOX related restatements in the post-SOX period.

Thus, if SOX is effective at disciplining managerial conduct, it is expected to drive corporate managers to act ethically in the best interest of their shareholders. In the context of M&A, the Act could contribute to deterring managers from engaging in acquisitions that increase their own wealth at the expense of shareholders' wealth. Hence, SOX is expected to dispel shareholders' fears that managers might engage in non-value maximizing acquisitions. As a result, acquirers' shareholders might exhibit less negative reaction to M&A announcements after the implementation of SOX. This reasoning leads to the formulation of the first hypothesis:

H₁ - The market performance of U.S. acquirers around the acquisition announcement day has improved after the passage of SOX.

Section 302 of the SOX 2002 Act (Corporate Responsibility of Financial Reporting) aims at boosting the quality of financial reporting by ensuring that financial statements are free from misleading materials and omissions (Lobo and Zhou, 2010). If SOX has been effective at achieving this aim, financial statements should tend to reflect more the true economic situation of firms. Consequently, information asymmetry and stock mispricing could be reduced because financial reports would better reflect the fundamental value of the firm. From this angle, and contrary to the

negative market performance witnessed by stock acquirers around the announcement day (Yook, 2003; Oler, 2008; Alexandridis et al., 2010 and others), acquirers are expected to demonstrate a less negative market reaction to stock financed acquisition announcements because SOX 2002 contributes to dispelling investors' fears that stock financed acquisitions signal stock overpricing. This reasoning leads to the formulation of the second hypothesis:

H₂ - The market performance of U.S. *stock* acquirers around the acquisition announcement day has improved after the passage of SOX.

Empirical research (such as Franks et al., 1991; Antoniou et al., 2007; Alexandridis et al., 2010) report market favorability towards cash financed acquisitions (Benefit of Debt Theory). In more explicit terms, the market exhibits favorable market reaction towards cash financed bids because investors perceive cash financing as a disciplining means for managerial conduct. If SOX 2002 has been effective, it should enhance governance, thus assuring responsible managerial conduct through its imposed penalties on managerial divergent behaviors. Although investors would still show a favorable reaction towards cash financed acquisition, their favorable reaction should be lower in magnitude because SOX 2002 offers a better governing atmosphere regardless of the takeover's financial considerations. As a result, it is expected that U.S. cash acquirers' market performance around the acquisition announcement day will be positive but with a lower magnitude after the implementation of SOX. This reasoning leads to the formulation of the third hypothesis:

H₃ - The market performance of U.S. *cash* acquirers around the acquisition announcement day has declined after the passage of SOX.

4. Data and Methodology

The following paragraphs describe the sampling procedures and outline the methodology used.

Data collection and sample description

Data on M&As announcements are obtained from Thomson Reuters Eikon. Stock prices, data on firms, and data on bids are obtained from Thomson Reuters DataStream. The sample consists of

675 complete bids (excluding reverse takeovers, stock repurchases and acquirers listed in foreign exchanges) that were announced during the period January, 1999 and 31 December 2006 (pre-SOX: January, 1999- July, 25, 2002 and post-SOX: July 26, 2002-December 31, 2006) by US companies. Only US acquirers acquiring US targets are included in the sample (Table 1). Furthermore, in order for an acquiring company to be included in the final sample, the following criteria are fulfilled:

- The deal is successfully completed²
- The bidder and the target are publically listed US firms
- The bidder and its target are non-financial companies
- The transaction is either pure stock swap or pure cash

Insert Table 1 about here

While Table 1 shows a considerable decrease in the sample size from 301,014 to 675, it should be noted that the starting number of observations reflects the population of M&As available in Thomson Reuters Eikon before applying any filtering. Upon the application of various data filtering criteria, the sample size nets to 675. These filtering procedures described in table 1 reflect the cross-sectional and time scope of the study (the acquisitions of public targets over the period 1999-2006). The study period ends in 2006 to isolate the effect of the world financial crisis. The sample size is relatively comparable to that of Louis (2004) with 373 mergers over the period 1992-2000.

Panel A of Table 2 shows that the year 1999 witnessed the highest number of acquisitions among the sampled years, with a total of 144 bids (21.33% of the sample) whereas the year 2004 witnessed the lowest number of acquisitions with a total of 57 bids only (8.44% of the sample). Panel A also shows that unlike stock bids, cash bids are distributed in similar percentages across

² Our analysis does not consider firms that go private after the acquisition given that this type of firms suffer from a different form of agency problem represented by power imbalance between large and small shareholders rather than the managerial induced agency problem that we investigate with respect to the SOX adoption. See Belkhir et al. (2013) and Boubaker et al. (2014) on the causes of going private and how such decisions can mitigate the consequences of the imbalance in the shareholders.

the years of the sampling period whereas Panel B of Table 2 shows that the highest percentage (36.3%) of the sample is for acquirers operating in the high technology industry. Real estate and retail industries have the least contribution to the sample with 2.37% and 3.41% respectively.

Insert Table 2 about here

Table 3 shows that in the pre-SOX sample, cash and stock bids have relatively close proportions with 49.25% and 50.75% respectively. However, in the post-SOX period, cash bids have markedly higher proportion than stock bids as they contribute to 73.45% of the post-SOX sample.

Insert Table 3 about here

The choice of market performance proxy

This study investigates the change in the US acquirers' market performance around the adoption of SOX. We follow the standard approach estimating cumulative average abnormal returns (CAR) as a measure of market performance (Antoniou et al., 2007; Masulis et al., 2007; Louis, 2004). The rationale for using abnormal returns is its ability to capture the investors' reactions to acquisition announcements represented by stock price movements uniquely attributed to the acquisition event. Consequently, the estimation of abnormal returns requires a benchmark of normal returns. Normal or expected returns can be estimated using asset pricing models such as the market model and Fama and French (1995) model. Consistent with Firth (1980), Wansley et al. (1983), Yook (2003), and Goergen and Renneboog (2004), and based on the premise that there is no evidence that more complicated models provide additional benefits (Dyckman et al. 1984; Armitage, 1995), this paper uses the market model to estimate the normal returns during the estimation period. However, in an attempt to ensure the robustness of the results, we additionally use the market adjusted returns model as an alternative model for estimating normal returns (Smith

and Kim, 1994; Walker, 2000; Fuller et al., 2002; Sudarsanam and Mahate, 2006). The market model is expressed as:

$$ER_{j,t} = \alpha_j + \beta_j R_{m,t} + e_{j,t} \quad (1)$$

Where,

$ER_{j,t}$ is the expected return on stock j at time t

$R_{m,t}$ is the return on market index on time t

α_j is the intercept.

β_j is the estimated measure of stock j's systematic risk.

In order to obtain the coefficients of the market model, this regression is run using daily return data of 260 days (i.e. from -300 to -61 days where day zero is the announcement day). Then the abnormal return on any stock and on each day is calculated as follows:

$$AR_{j,t} = R_{j,t} - E(R_{j,t}) \quad (2)$$

Where,

$AR_{j,t}$ is the abnormal return on stock j at time t

$R_{j,t}$ is the actual logarithmic return on stock j at time t

$E(R_{j,t})$ is the expected return on stock j at time t

The cumulative abnormal returns are calculated as follows:

$$CAR_{(j, -k + k)} = \sum_{-k}^k AR_t \quad (3)$$

Moreover, this paper uses an event study approach where the choice of an appropriate event window is crucial (Mackinlay, 1997). In this line, average abnormal returns (AARs) play a pivotal role in identifying market reaction to the release of a firm-specific type of information (McWilliams and Siegel, 1997) such as M&A announcements. In this study, test results of AAR values show that the most appropriate event window for hypothesis testing is (-1, 0). Additional event windows (-2, +2) are also included in the study for the purpose of comparing our results with

those of previous studies (Masulis et al., 2007 and Antoniou et al., 2007). Moreover, t-tests and Wilcoxon rank tests are used to test the significance of mean and median CAR values respectively for the aggregate sample and the stock, cash, pre- and post-SOX subsamples.

Multivariate Regression

There is considerable empirical evidence on the favorable role for corporate governance practices in mitigating shareholders' concerns on agency driven managerial conduct. For example, Masulis et al. (2007) study one form of corporate governance, namely antitakeover provisions, and find that firms that are protected by this form of governance witness lower returns around the announcement acquisition date which is an indication that these firms are less subject to corporate governance forces. Moreover, the authors find that firms that separate the CEO from chairman position witness higher abnormal returns around the announcement. Koerniadi et al. (2014) construct a corporate governance index using a number of corporate governance variables namely, board compensation, shareholders right, and disclosure policies. The authors find that corporate governance is associated with a lower level of risks measured by volatility. Gompers et al. (2003) study the effect of seven corporate governance factors, related to board's characteristics, attendance, the share ownership of its members and shareholders' rights, on the pricing of the firms' options. Thus, to insure that the improved market performance around SOX adoption is not driven by governance characteristics of firms, we control for the following corporate governance measures:

- Board size: Lipton and Lorsche (1992) and Jensen (1994) were pioneers in highlighting the importance of having an optimal board size for a smooth functioning of the firm. Similar studies find evidence that the size of the board provides signals for investors on the effectiveness of board conduct. For instance, while small size boards may not be capable of effectively managing the firm, large boards may suffer from confirmation bias as some board members may choose to suppress their honesty and "mold the corporate disclosure policy to keep their private benefits extraction activities secret from outsiders" (Boubaker and Labégorre, 2008, p. 963). Beiner et al. (2004) explain that large board sizes could be associated with agency problem as the board ends up being "prestige" with no actual monitoring for its duties. Conversely, some other empirical

studies have found evidence for an inverse relationship between board size and firms' valuation (Yermack, 1996).

- Board independence and non-executive board members: the rationale for using board independence as a corporate governance indicator springs from the potential monitoring that these members exercise on boards' decisions (Fama, 1980). This is empirically manifested by a significant positive relationship between board independence and firm's performance (Dahya et al., 2008; Aggarwal et al., 2009 and Bruno and Claessens, 2010).

- CEO Duality takes place when the CEO of the firm acts as the chair of the board. There are two theoretical predictions for the effect of CEO duality on firm's performance. From the perspective of Agency theory, CEO duality enforces the CEO's control over the board. This weakens the independence of the board which is crucial for monitoring the managerial conduct. From the perspective of Stewardship theory, CEO duality enhances the focus of management (Salancik and Pfeffer, 1980; Donaldson and Davis, 1991; Finkelstein and D'Aveni, 1994; Dahya et al., 1996). The inconclusive theoretical predictions on the role of CEO independence is also reflected by mixed evidence highlighted by other empirical studies (Daily and Dalton, 1994 and Faleye, 2007).

- Number of board meetings: the frequency of board meetings can be an indicator of increased monitoring by the firms' top management. However, empirical evidence suggests that more frequent meetings are succeeded by poor performance of firms and higher occurrences of fraud (Vafeas, 1999; Chen et al., 2006). Chen et al. (2006) explain that this result could be due to the possibility that board members are discussing illegal activities when they are meeting.

In addition to the governance factors discussed above, we also include firm and bid-related variables that have proven to affect bidders' market performance around the acquisition announcements. The following paragraphs introduce these variables and explains the rationale for including them in the empirical model.

- Size: Moeller et al. (2004) report that the returns for small acquirers (significant gains of 2.318%) are approximately two percentage points higher than large acquirers (insignificant gains of

0.076%) regardless of the adopted method of payment. To explain their findings, the authors investigate the possibility that size effect is driven by other bid characteristics such as the mode of payment, and whether the target is a private or public firm. They find that neither of these characteristics can explain the size effect and attribute this effect to managerial hubris driving managers to acquire large firms. Similar findings are also provided by Moeller et al. (2004) and Gorton et al. (2009).

- Relative Size: Asquith et al. (1983) argue that if acquirers' value is affected by mergers then it should be affected by the relative size of targets to the acquirers. They find that the Cumulative Abnormal Returns (CAR) increase as relative target size increases and firm size decreases. Moreover, Mueller and Sirower (2003) report that the losses to the acquiring firm's shareholders are proportionally larger when the target's size relative to the size of the bidder is smaller.

- Market to Book Value: The relative market to book value of the bidder can be an indicator of hubris driven acquisitions. For instance, managers and investors would overestimate the ability of glamour acquirers at managing the acquiring company. Consistently, Rau and Vermaelen (1998) and Sudarsanam and Mahate (2003) find that companies with high P/E or MTBV ratios (i.e. glamour firms) underperform those with low P/E or MTBV ratios (i.e. value firms).

We control for these variables in investigating the change in US acquirers' market performance around the adoption of SOX by estimating the following model:

$$CAR_{i,t} = a_0 + a_1SOX + a_2BRD_SIZE_{i,t} + a_3NONEXC_{i,t} + a_4INDEP_{i,t} + a_5CEO_DUAL_{i,t} + a_6BRD_MTG_{i,t} + a_7SIZE_{i,t} + a_8R_SIZE_{i,t} + a_9MTBV_{i,t} + \varepsilon_{i,t} \quad (4)$$

where $CAR_{i,t}$ is the Cumulative Abnormal Return (CAR) over the two event windows ($t = [-1,0]$ and $t = [-2,+2]$) using the market model; SOX is a dummy variable that takes on the value of 1 in the post-SOX and 0 otherwise; $BRD_SIZE_{i,t}$ is the log of total number of board members; $NONEXC_{i,t}$ represents the percentage of non-executive board members; $INDEP_{i,t}$ is the proportion of non-executive officers being independent; $CEO_DUAL_{i,t}$ is CEO duality taking on the value of 1 if the Chairman and CEO is the same and 0 otherwise; and BRD_MTG is the number of

board meetings during the year; $SIZE_{i,t}$ is the size of the acquirer as measured by the Log of its total assets; $R_SIZE_{i,t}$ captures relative size of the bidding and target firm as defined by the ratio of the value of the transaction to the market value of the acquirer the year prior to the announcement date; $MTBV_{i,t}$ is the market-to-book value (MTBV) ratio defined as the market value of the common equity divided by the book value of the common equity of the acquirer the year before the merger announcement; a_0 is an intercept term; and $\varepsilon_{i,t}$ is the residual term. We estimate model 4 using ordinary least squares (OLS) with robust standard errors to correct for heteroscedasticity.³ The effect of SOX is captured by a_1 . In line with H1, If SOX has been effective in mitigating investors' agency concerns, we expect a_1 to be positive and significant. We also segregate our aggregate sample into stock and cash subsamples and follow two approaches: in the first we augment model 4 with dummies related to the mode of payment as follows:

$$CAR_{i,t} = a_0 + a_1SOX + a_2BRD_SIZE_{i,t} + a_3NONEXC_{i,t} + a_4INDEP_{i,t} + a_5CEO_DUAL_{i,t} + a_6BRD_MTG_{i,t} + a_7SIZE_{i,t} + a_8R_SIZE_{i,t} + a_9MTBV_{i,t} + a_{10}Stock + a_{11}Stock_SOX + a_{12}Cash + a_{13}Cash_SOX + \varepsilon_{i,t} \quad (5)$$

Where Stock is a dummy variable that takes on the value of 1 for stock financed acquisitions and 0 otherwise. Cash is a dummy variable that takes the value of 1 for cash financed acquisitions and 0 otherwise. In line with prior evidence on negative market performance for stock acquirers and a positive market performance for cash acquirers, we expect a_{10} to be negative and significant and we expect a_{13} to be positive and significant. The change in the market performance of stock and cash acquirers is reflected by a_{11} and a_{13} . In line with H2 and H3, we expect a_{11} to be positive and a_{13} to be negative and significant respectively. It is worth mentioning here that given that our sample consists of stock and cash acquisitions only, we need to omit cash related variables from model (5) when estimating the effect of SOX on stock acquirers and we need to omit stock related variables when estimating the effect of SOX on cash acquirers.

In the second approach, we re-estimate model 4 for each of the subsamples. In line with H2, we expect that the negative market performance to decrease in the post-SOX period: a_1 is positive

³ The Variance Inflation Factor for the regression is 1.54 indicating that there is no multicollinearity issue.

and significant. Also, in line with H3, we expect the favorable market reaction for cash acquirers to decrease: α_1 is negative and significant.

5. Empirical results

Univariate analysis results

U.S. acquirers' market performance

Panel A of Table 4 shows that US acquirers suffer from statistically significant loss around the announcement day of the merger. For instance, on the announcement day and the day before it, US acquirers earn a mean (median) cumulative abnormal return of -0.92% (-0.35%), both values are significant at 1%. This finding is consistent with results of a number of studies that report negative market performance for US acquirers around the announcement of the acquisition (see for example Smith and Kim, 1994; Walker 2000; Fuller et al., 2002; Masulis et al., 2007). This negative market performance highlights investors' concerns about the managerial intentions behind engaging in such activities.

Table 4 Panel A also shows that stock acquirers suffer from a statistically significant loss over three event windows. For instance, results for the event window of (-1, 0) show that stock acquirers witness mean and median CAR values of -2.49% and -1.52% respectively, both are significant at 1%. Over the three-day event window, acquirers even suffer a greater loss with mean and median CAR of -3.34% and -3.1% respectively (significant at 1%). These results are consistent with those of Yook (2003) and Louis (2004) and could be explained by the Signaling theory which suggests that in an imperfectly efficient market, if a company chooses to finance an acquisition through stocks, it signals to the market that its stocks are overvalued. As a result, the market would react negatively to stock-financed acquisition announcement (Yook, 2003).

Moreover, Panel A of Table 4 shows that cash acquirers witness favorable market performance around the announcement of the bid. This is demonstrated by mean and median CAR (-1, +1) values of 0.63% and 0.13% respectively (significant at 5%). However, it is worth mentioning that over the event window (-1, 0) which is the basic event window of this study, cash acquirers witness insignificant mean and median cumulative abnormal return of 0.11% and 0.02% respectively. In fact, the results of cash acquisitions are consistent with the findings of other studies that have also found a positive market performance for cash acquirers around the announcement day (see for example, Louis (2004) who reported a significant mean CAR (-1, +1) value of 0.440%). This can

be explained by The Benefit of Debt theory that suggests that, in cash financed acquisitions, the company has either to issue debt or to use the hoarded liquidity to finance the acquisition. When a company issues debt, borrowing would pressure managers to act more efficiently thus reducing agency costs (Yook, 2003) and the cost of free cash flow by reducing the cash flow spent at the discretion of managers (Jensen, 1986). Panel A also demonstrates that the return difference between the market performance of stock acquirers and that of cash acquirers is statistically significant. When the market adjusted model is used, results are roughly the same for the aggregate sample (stock and cash bids).

Insert Table 4 about here

The change in U.S. acquirers' market performance

When pre- and post- SOX subsamples are analyzed, the negative market performance remains evident in the pre-SOX subsample. For instance, Panel B of Table 4 shows that over the announcement day and the day before it, acquirers in the pre-SOX sample earn a mean and a median cumulative abnormal return values of -1.33% and -0.65% respectively, both are significant at 1%. Moreover, over the three-day event window, the mean and median CAR results show significant values of -1.11% and -0.72% respectively. In the post-SOX period, results reveal that the negative market performance is still obvious, however with a lower significance level. For example, the mean and median CAR (-1, 0) values are -0.33% (insignificant) and -0.15% (significant at 10%) respectively. Over the three-day event window, the mean and median CAR values score are -0.73% and -0.37% respectively, with a 10% significance level. Moreover, the pre-post- SOX return difference (Post-Pre) is positive over all event windows. For instance, the mean return difference for the pre-post over (-1, 0) event window is 0.99% with a significance level of 5%. Thus, it can be inferred that the cumulative abnormal return values for US acquirers have improved in the post-SOX period. More precisely, the market participants show a less negative market reaction to acquisition announcement.

This empirical evidence is considered as a support for the first hypothesis. In other words, the US acquirers' market performance has improved after the passage of Sarbanes Oxley Act of 2002. This performance improvement can be explained by the favorable governance atmosphere

introduced by the Act. Better governance leads to better acquisition decisions (Porta et al., 2002; Masulis et al., 2007), higher returns and lower agency costs (Gompers *et al.*, 2003). It also makes investors more informed and less susceptible to corporate events and news.

On a more specific level, Table 5 reports the results for Pre- and Post-SOX analysis, for stock and cash acquirers' subsamples. Results show that over the three reported event windows stock acquirers earn significant negative cumulative abnormal returns in the pre-SOX period. For instance, over the announcement day and the day before it, stock acquirers earn mean (median) CAR values of -2.82% and -1.66% respectively, both significant at 1%. Moreover, the mean (median) CAR (-1, +1) value is -3.16% (-3.13%), both significant at the 1% level. In the post-SOX period stock acquirers do not show consistent values of CAR over the three reported event windows. In other words, the mean CAR (-1, 0) value has increased to -1.59% (significant at 10%). Moreover, the median CAR (-1, 0) is -1% (insignificant). However, over the three-day event window the mean cumulative abnormal return CAR (-1, +1) has decreased to -3.84%, (significant at 1%) level, whereas the median CAR (-1, +1) has increased to -2.98% (significant at 5%).

Insert Table 5 about here

Table 5 also shows that, over the basic event window (-1, 0), stock acquirers witness an improved market reaction to acquisition announcements in the post-SOX period. The mean return difference (post-pre) is 1.12%. However, this value is insignificant. Therefore, there is no sound evidence about the improvement of stock acquirers' market performance after the implementation of the SOX Act. This leads to a partial support for the second hypothesis. Post-SOX period, stock acquirers exhibit less negative reaction to M&As possibly due to an increased confidence in the quality of financial reporting and a reduced information asymmetry between the underwriter and the investor (Kasrer et al., 2011). For cash bids, Table 5 shows that in the pre-SOX period, cash acquirers earn positive abnormal returns around the announcement day. The mean CAR (-1, 0) scores a positive value of 0.11% (a median value of 0.07%). Furthermore, the mean and median CAR (-2, +2) values are 1.10% and 0.15% respectively. Results in the post-SOX period show that the only significant cumulative abnormal returns for cash acquirers are reported for the event

window (-2, +2) days as the corresponding mean and median values are 0.58% and 0.28%. The pre-post-SOX return difference for cash acquirers reveals insignificant mean (median) values of 0.00% (-0.08%) over the event window (-1, 0) day. Thus, it can be inferred that cash acquirers have not witnessed any change in the market performance in the post- SOX period. In other words, there is no empirical support for the third hypothesis that suggests that there is decline in the market performance of cash acquirers around the announcement day in the post-SOX period.

Multivariate analysis results

The following section explains the results of the multivariate analysis where we investigate the change in US acquirers’ market performance after the adoption of SOX and control for bid and firm related variables that can affect the acquirers’ market performance.

Insert Table 6 about here

Table 6 shows the descriptive statistics of these firm and bid related variables for the entire sample, as well as for stock and cash bids in the pre- and post- SOX periods. It is worth mentioning that the small sample size in the pre-SOX period is due to the possibility that firms were not serious in reporting corporate governance variables before SOX. This is highlighted by the increase in the sample size for these variables in the post-SOX period. In the pre-SOX periods, all corporate governance and firm related variables seem to have similar values across entire sample and cash and stock subcategories. It is noteworthy, however, on average, that in the post-SOX period, the relative size of the target in stock acquisitions is almost double the relative size of the cash acquirers, which is consistent with the suggestions of Moeller et al., (2004) that cash is usually used to finance the acquisition of small targets.

Multivariate regressions with a SOX dummy variable

This section reports the results for regressing US acquirers market performance on a dummy variable that takes the value of one in the post-SOX period and zero otherwise while controlling for corporate governance and other firm related variables.

Insert Table 7 about here

As shown in Table 7, US acquirers' market performance has improved in the post-SOX period. This is represented by the positive and significant coefficient of SOX dummy. It means that the market reaction is less negative after adopting SOX. In columns (1) and (2) we report the results, for CAR (-1, 0) and CAR (-2, +2)⁴ respectively, thus estimating equation (4) without firm and bid related variables, namely size, relative size and MTBV. In column (3) and (4) we report the results for all variables. Results are robust to using different event windows as all columns, pertaining to the two day and three-day event windows, show positive and significant coefficients α_1 indicating an improvement in the market performance of US acquirers following the adoption of SOX. Accordingly, it can be concluded that the improvement in market performance is not driven by changes in governance and firm and bid related variables.

Insert Table 8 about here

We extend the analysis to study the change in market performance for stock and cash acquirers separately. For this aim, we augment model 4 with payment related dummies as follows:

$$CAR_{i,t} = \alpha_0 + \alpha_1 SOX + \alpha_2 BRD_SIZE_{i,t} + \alpha_3 NONEXC_{i,t} + \alpha_4 INDEP_{i,t} + \alpha_5 CEO_DUAL_{i,t} + \alpha_6 BRD_MTG_{i,t} + \alpha_7 SIZE_{i,t} + \alpha_8 RSIZE_{i,t} + \alpha_9 MTBV_{i,t} + \alpha_{10} Stock + \alpha_{11} Stock_SOX + \alpha_{12} Cash + \alpha_{13} Cash_SOX + \varepsilon_{i,t} \quad (5)$$

Where Cash is a dummy variable that takes the value of 1 for cash financed acquisitions and 0 otherwise and Stock is a dummy variable that takes on the value of 1 for stock financed acquisitions and 0 otherwise. This complementary analysis allows for revealing possible channels through

⁴ The choice of event widow (-1, 0) is based on empirical testing following McWilliams and Siegel (1997). We also add the event window (-2,+2) due to its frequent use in similar studies.

which the improvement in the market performance of US acquirers has taken place. In other words, earlier studies have reported a difference in the performance between stock and cash acquirers. It has been documented that negative market performance suffered by stock acquirers around the announcement of acquisition can be explained by the Signaling theory (Yook, 2003). Therefore, if the improvement in market performance that is reported for the aggregate sample of acquirers holds for stock acquirers, then this can be an indication that SOX has improved US acquirers' market performance by improving the quality of information environment as investors have more confidence that the prices of stocks reflect the true economic value of firms, and will not react to stock acquisition announcement as a signal of mispricing. To test for the effect of SOX on the market performance of stock acquirers, we omit cash related variables from model 5. In line with prior findings on negative market performance for US acquirers we expect a_{10} to be negative and significant. Also, in line with our second hypothesis we expect a less negative market performance for US acquirers represented by a positive and significant coefficient on the interaction term Stock_SOX a_{11} . To test for the effect of SOX on the performance of cash acquirers, we omit the stock related variables from model 5. Also, consistent with prior literature on the significant positive market reaction to cash financed acquisitions we expect a_{12} to be positive and significant. Moreover, we expect a decrease in this positive market performance following the improved governance brought by SOX. In other words, we expect a_{13} to be negative,

Table 8 shows the results for estimating model 5. The first and second column report the results for the event window (-1, 0) for cash and stock acquirers, respectively. Columns (3) and (4) report the same estimation respectively for the (-2, +2) event window for cash and stock acquirers respectively. Results show that coefficient of Cash dummy (a_{12}) is positive and significant, while the coefficient of stock acquirers a_{10} is negative and significant. These findings confirm the results of univariate section and are consistent with previous studies reporting return difference between stock and cash acquisitions where the negative market reaction to stock financed acquisition reflects shareholders' fears of acquirers' stock overvaluation. On the other hand, the favorable market performance of cash acquisitions reflects the governance role of this form of financing. In Table 8, we also look at the change in US stock and cash acquirers' market performance from a Signaling theory and Benefit of Debt theory perspectives; the interactions term Stock_SOX and Cash_SOX indicate whether the change in market performance is different for cash and stock subsamples. Table 8 shows that the coefficients of these interaction a_{11} and a_{13} of SOX with stock

and cash respectively, are insignificant. This indicates no evidence that stock or cash acquirers witness a unique change in their market performance after the adoption of SOX, thus there is no support for H2 and H3.

Insert Table 9 about here

To further investigate the change in the market performance for cash and stock acquirers, we re-estimate model 4 on cash and stock samples separately. Table 9 shows the results of estimating model 4 for these two subsamples. It shows that the coefficients on SOX dummy (a_{10} from model 4) are insignificant for the two event windows across the two subgroups. Consequently, with respect to stock acquirers, there are indications that SOX was not effective at reducing stock markets' concerns of mispricing that is usually signaled by stock acquisitions (H2 not supported). The insignificant changes in the market performance of stock acquirers can be interpreted in light of the findings of Rice et al. (2015) regarding the unreliability of SOX reports and its creation of additional confusion for investors. For Cash acquisitions, the insignificant change can be an indicator that cash acquisitions continue to play the positive governance role in the post-SOX period.

In a nutshell, on the aggregate level⁵, our results show a significant improvement in the market performance after the adoption of SOX. These results are consistent with previous studies highlighting an improvement in investor confidence in the quality of corporate and information quality (Aghimien, 2010; Abdioglu et al., 2015). In particular, the results are also in line with the findings of Bhabra and Hossain (2017) that the US acquirers' market performance has improved after SOX. However, we do not find any significant effect for the stock and cash subsamples. Our results also highlight the possibility of the existence of channels through which SOX lead to the improvement in US acquirers market performance, other than the Signaling theory channel.

⁵ Results are robust to using log of Relative Size

6. Robustness tests

Our baseline estimations highlight evidence of a less negative reaction to mergers and acquisitions announcements after the adoption of SOX 2002 which reflects higher confidence in managerial decision making. In this section we investigate whether our results are driven by an omitted bias, a major source for endogeneity in social sciences. In our baseline empirical model, model 4, we include firm as well as bid related variables as control variables for estimating the effect of SOX adoption on US acquirers’ market performance. It can be argued that additional unobserved variables could have affected the market performance around that SOX adoption time. For instance, an overall trend in improvement in acquirer’s market performance, proxied by cumulative abnormal returns (CAR), might be driving the reported improvements in market performance following the adoption of SOX. To control for this possibility, we use time and industry fixed effects (FE). Specifically, we augment model (4) with yearly and industry fixed effects allowing CAR to vary across years and industries.

Results of table 10 show that using FE estimation does not affect the significance of the improved market performance. For instance, the change in market performance a_1 , proxied by the 5-day CAR (-2, +2) still takes on a significant positive value of 0.0739, significant at 5%, when all governance and size variables are considered- an additional support for H1.

Insert Table 10 about here

When we consider the stock and cash subsamples separately in tables 11 and 12, results show that there is no change in US stock and cash acquirers’ market performance after the adoption of SOX (the coefficients a_{11} and a_{13} from model 5 representing the change in stock and cash acquisitions respectively from table 11 are not significant). Similar to baseline analysis, we conduct out robustness checks of the change in market performance by estimating model (4) for stock and cash subsamples separately (table 12). Table 12 shows no change in the market performance of stock and cash acquisitions, where this insignificant change is represented by insignificant a_1 from model 4 after controlling for unobserved year and industry variations.

The second probable source of endogeneity is measurement error. This form of endogeneity takes place when the utilized independent variables do not reflect the studied construct. For instance, the number of board meetings does not accurately measure the level of governance in a firm. It should be noted here that the firm and bid characteristics adopted in this study are backed by the variables' wide adoption by a battery of reputable studies (Vafeas, 1999; Chen et al., 2006; Moeller et al., 2004; Asquith et al., 1983; Mueller and Sirower, 2003).

The third source of endogeneity is simultaneity. In the context of this study, simultaneity can take place through two channels. The first path happens when the abnormal market performance of US acquirers around acquisition announcements affects the independent variables. Such a scenario is very unlikely and insensible given that these independent variables are estimated before the happenstance of the acquisitions. In other words, there is a delay between the independent variables and the dependent variable. The second path happens when the US acquirers' market performance causes the adoption of SOX. In other words, it can be argued that regulators have timed the adoption of SOX with the improved market performance. This is also an insensible scenario because our sampled acquisitions are spread over several years in the pre and the post-SOX periods and not on the particular SOX adoption day. It can also be argued that the adoption of SOX happened in response to the improved governance. Future research can address further endogeneity concerns by using propensity score matching and instrumental variables.

Insert Table 11 about here

Insert Table 12 about here

7. Conclusion

Mergers and acquisitions are significant corporate actions that drive changes in shareholder wealth. Our paper attempts to provide a laboratory for studying the magnitude of such changes in light of a significant regulatory transformation like SOX. Bhabra and Hossain (2017) investigate the effect of the adoption of SOX on US acquirers' market performance and note that the serious penalties

that this Act imposes on managerial misconduct reduce managerial fraud. Thus, acquirers' shareholders show improved attitude towards acquisition decisions. While the authors find evidence supporting this conjecture, their evidence is only limited to an aggregate sample of US acquirers. We therefore extend their work by investigating the effect of SOX on US acquirers' market performance by considering stock and cash acquisitions separately. We believe that this approach provides unique insights on the role of this Act in reducing the consequences of information asymmetry that is usually manifested by a negative market reaction to cash acquisitions as suggested by the Signaling theory. At the aggregate level, our results show significant improvements in the market performance in post- SOX that could be explained by the favorable governance atmosphere that reigned after the enactment of the Act, thus signaling improved investors' confidence in corporate decisions. This is consistent with the findings of Bhabra and Hossain (2017). Nevertheless, when accounting for the mode of payment, results show that stock acquirers witness an insignificant improvement in the market performance although there are indications that the SOX-induced transparency may have lessened the negative reaction to the information content inherent in the stock-financed acquisition announcements. Cash acquirers do not witness any significant change in market performance after the passage of SOX, which can be an indicator that cash acquisitions still play the same governing role in financial markets. Results stay robust after controlling for corporate governance variables as well as unobserved year and industry variations.

The findings of this research have a number of important implications. For instance, the significant improvement in the market performance may signal more confidence in managerial decisions and a reduction in agency problems, thus providing evidence for regulators and legislators on the contribution of SOX 2002 in curbing managerial misconduct. Moreover, the insignificant improvement in stock acquirers' market performance might be an indication that SOX is more effective in mitigating agency concerns rather than reducing mispricing concerns. Moreover, this study opens a window for future studies on the possible channels through which SOX has improved US acquirers' market performance. Through the inclusion of additional control variables and the use of larger samples, future studies can consolidate the findings presented herein. Other directions include investigating the change in insider trading activity around the merger and acquisition activity after the implementation of the Act.

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Table 1: Sampling Procedures

Distribution	Net Count
Initial Sample	301,014
Net after exclusion of:	
Non-US acquirers acquiring non-US targets (43,972)	257,042
Public US acquirers acquiring non-public US targets (218,460)	38,582
Non public US acquirers (8,752)	29,830
Announcements that do not lie between 1/1/1999 and 31/12/2006 (20,380)	9,450
Acquirers whose target is from the financial sector ⁱ (2,902)	6,548
Deals whose payment method is neither pure cash nor pure equity (5,260)	1,288
Incomplete bids ⁱⁱ (206)	1,082
Stock repurchases ⁱⁱⁱ , reverse takeovers ^{iv} , listed in foreign exchanges (69)	1,013
Missed Datastream codes (141)	872
Unavailable return indices in Datastream (166)	706
Stocks with no return index movements during estimation and event period (31)	675
Final Sample	675

ⁱ Financial sector acquisitions undergo procedures that are different than that of other acquisitions.

ⁱⁱ Incomplete bids include rumors, ceased rumors and withdrawn bids.

ⁱⁱⁱ Deals in which both acquirer and target are the same.

^{iv} According to Thomson Financial (TF) deal definitions, Reverse Takeover indicates a merger in which the acquiring company offers more than 50% of its equity as consideration offered to the target company resulting in the target company becoming the majority owner of the new company. These deals are excluded because they could confound the results.

Table 2: The Distribution of the Sample across Years and Industries*Panel A: Distribution of sample acquirers by year and method of payment*

Year	Stock Bids		Cash Bids		All Bids	
	Freq.	%	Freq.	%	Freq.	%
1999	71	26.29	73	18.02	144	21.33
2000	62	22.96	58	14.32	120	17.78
2001	49	18.15	50	12.35	99	14.67
2002	22	8.15	45	11.11	67	9.93
2003	26	9.63	41	10.12	67	9.93
2004	15	5.56	42	10.37	57	8.44
2005	17	6.30	42	10.37	59	8.74
2006	8	2.96	54	13.33	62	9.19
Total	270	100.00	405	100.00	675	100.00

Panel B: Distribution of sample acquirers by industry

	All Bids	
	Freq.	%
Consumer Products	35	5.19
Consumer Staples	26	3.85
Energy and Power	44	6.52
Healthcare	108	16.00
High Technology	245	36.30
Industrials	71	10.52
Materials	25	3.70
Media and Entertainment	31	4.59
Real Estate	16	2.37
Retail	23	3.41
Telecommunication	51	7.56
Total	675	100.00

This table shows the distributions of bids across years, and across industries. Panel A shows the distributions for all, stock, and cash bids across years of the study 1999-2006. Panel B shows the distribution of all bids across industries

Table 3: Cross-tabulation between Method of Payment and Period (before & after SOX 2002)

	Pre-SOX bids		Post-SOX bids		All Bids	
	Freq.	%	Freq.	%	Freq.	%
Stock Bids	197	49.25	73	26.54	270	40.00
Cash Bids	203	50.75	202	73.45	405	60.00
Total	400	100.00	275	100.00	675	100.00

This table cross-tabulates the number and percentage of the acquisitions and the per-versus post-SOX periods.

Table 4: Cumulative Abnormal Returns (CARs) Using the Market Model

Panel A: Cumulative abnormal returns (CARs) results for entire sample, stock and cash bids								
	All Bids		Stock Bids		Cash Bids		Difference Stock – Cash	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
CAR (-1,0)	-0.0092***	-0.0035***	-0.0249***	-0.0152***	0.0011	0.0002	-0.0260***	-0.0154***
P-Value	(0.0005)	(0.0000)	(0.0000)	(0.0000)	(0.3317)	(0.3410)	(0.0000)	(0.0000)
No. of Obs.	675		270		405			
CAR (-1,+1)	-0.0095***	-0.0048***	-0.0334***	-0.0310***	0.0063**	0.0013**	-0.0398***	-0.0324***
P-Value	(0.0061)	(0.0005)	(0.0000)	(0.0000)	(0.0256)	(0.0220)	(0.0000)	(0.0000)
No. of Obs.	675		270		405			
CAR (-2,+2)	-0.0073**	-0.0054***	-0.0311***	-0.0302***	0.0084***	0.0023**	-0.0396***	-0.0326***
P-Value	(0.0434)	(0.0040)	(0.0004)	(0.0000)	(0.0089)	(0.0235)	(0.0000)	(0.0000)
No. of Obs.	675		270		405			

Panel B: Cumulative abnormal returns (CARs) results for the pre--and post-SOX subsamples						
	Pre-SOX Bids		Post-SOX Bids		Difference Post SOX-Pre SOX	
	Mean	Median	Mean	Median	Mean	median
CAR (-1,0)	-0.0133***	-0.0065***	-0.0033	-0.0015*	0.0099**	0.0049**
P-Value	(0.0005)	(0.0000)	(0.1653)	(0.0750)	(0.0410)	(0.0435)
No. of Obs.	400		275			
CAR (-1,+1)	-0.0111**	-0.0072***	-0.0073*	-0.0037*	0.0037	0.0035
P-Value	(0.0250)	(0.0015)	(0.0516)	(0.0760)	(0.3135)	(0.1425)
No. of Obs.	400		275			
CAR (-2,+2)	-0.0090*	-0.0106***	-0.0049	-0.0011	0.0041	0.0095*
P-Value	(0.0798)	(0.0035)	(0.1577)	(0.2635)	(0.3169)	(0.0450)
No. of Obs.	400		275			

This table shows the results for Cumulative Abnormal Returns (CARs) for acquiring firms using the Market model over three event windows. The first event window is estimated over the day of the bid announcement and the day before it ($t = [-1, 0]$); the second event is estimated over the period from one day before to one day after the bid announcement day ($t = [-1, +1]$); and the third event window is estimated over the period from two days before to two days after the bid announcement day ($t = [-2, +2]$). Panel A shows CARs results for entire sample, stock and cash bids while Panel B reveals CARs values for the Pre--and Post-SOX subsamples. The results are based on parametric (t-tests for the means) and non-parametric (Wilcoxon signed-ranks test for the medians). P-values are given in parentheses and significant results are marked in bold. ***, **, *denote one-tailed significance at 1%, 5%, and 10% level respectively.

Table 5: Cumulative Abnormal Returns (CARs) using the Market Model for the Pre- and Post-SOX Bids with the Method of Payment

	Stock Bids						Cash Bids					
	Pre-SOX Bids		Post-SOX Bids		Difference Post-Pre		Pre-SOX Bids		Post-SOX Bids		Difference Post-Pre	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
CAR (-1,0)	-0.0282***	-0.0166***	-0.0159*	-0.0100	0.0122	0.0066	0.0011	0.0007***	0.0011	-0.0001	0.0000	-0.0008
P-Value	(0.0000)	(0.0000)	(0.0570)	(0.3385)	(0.1702)	(0.1920)	(0.3963)	(0.0080)	(0.3513)	(0.4725)	(0.4979)	(0.4175)
No. of Obs.	197		73				203		202			
CAR (-1,+1)	-0.0316***	-0.0313***	-0.0384***	-0.0298**	-0.0068	0.0015	0.0087**	0.0016***	0.0039	0.0009	-0.0048	-0.0007
P-Value	(0.0009)	(0.0000)	(0.0007)	(0.0455)	(0.3519)	(0.3770)	(0.0403)	(0.0000)	(0.1734)	(0.1215)	(0.2273)	(0.2930)
No. of Obs.	197		73				203		202			
CAR (-2,+2)	-0.0298***	-0.0308***	-0.0347***	-0.0293*	-0.0048	0.0015	0.0110**	0.0015***	0.0058*	0.0028*	-0.0051	0.0013
P-Value	(0.0055)	(0.0000)	(0.0047)	(0.0695)	(0.4074)	(0.3035)	(0.0232)	(0.0020)	(0.0967)	(0.0750)	(0.2330)	(0.4755)
No. of Obs.	197		73				203		202			

This table shows the results for Cumulative Abnormal Returns (CARs) for acquiring firms over three event windows for pre- and post-SOX bids under both stock and cash sub-samples. The first event window is estimated over the day of the bid announcement, and the day before it ($t = [-1, 0]$); the second event window is estimated over the period from one day before to one day after the bid announcement day ($t = [-1, +1]$) and the third event window is estimated over the period from two days before to two days after the bid announcement day ($t = [-2, +2]$). The results are based on parametric (t-tests for the means) and non-parametric (Wilcoxon signed-ranks test for the medians). P-values are given in parentheses and significant results are marked in bold. ***, **, *denote two-tailed significance at 1%, 5%, and 10% level respectively.

Table 6: Descriptive Statistics of Control Variables*Panel A: Descriptive statistics of Pre-SOX bids*

	All Bids				Stock Bids				Cash Bids			
	N	Mean	Median	STD	N	Mean	Median	STD	N	Mean	Median	STD
BRD_SIZE	77	10.86	11.00	2.17	38	10.53	11.00	2.04	39	11.18	12.00	2.27
NONEXC	72	85.36	88.89	7.96	37	7.88	88.89	7.88	35	87.96	91.67	7.29
INDEP	76	76.37	80.19	17.61	38	13.37	80.19	13.37	38	76.19	83.22	21.19
CEO_DUAL	81	0.88	1.00	0.33	39	0.87	1.00	0.34	42	0.88	1.00	0.33
BRD_MGT	63	8.17	7.00	3.08	32	8.25	7.00	3.44	31	8.10	7.00	2.71
SIZE	81	16.65	16.79	1.39	39	7.17	7.24	0.61	42	16.69	16.83	1.37
R_SIZE	80	508.33	293.52	945.21	39	476.75	293.52	476.75	41	578.18	329.11	1240.29
MTBV	81	3.81	3.42	1.87	39	3.78	3.42	1.84	42	42.00	3.24	1.92

Panel B: Descriptive statistics of Post-SOX bids

	All Bids				Stock Bids				Cash Bids			
	N	Mean	Median	STD	N	Mean	Median	STD	N	Mean	Median	STD
BRD_SIZE	129	10.63	11.00	2.08	25	10.64	11.00	2.10	104	10.63	11.00	2.09
NONEXC	125	84.23	87.50	8.47	24	83.38	85.16	7.60	101	84.44	87.5	8.69
INDEP	126	76.55	78.33	13.03	24	75.76	76.92	12.98	102	78.94	81.82	13.03
CEO_DUAL	129	0.87	1.00	0.33	25	0.88	1.00	0.33	104	0.87	1.00	0.33
BRD_MGT	117	8.52	8.00	3.18	22	8.64	8.00	3.11	95	8.49	8.00	3.21
SIZE	129	16.49	16.47	1.32	25	16.47	16.29	1.34	104	16.50	16.55	1.32
R_SIZE	128	639.10	293.52	1352.83	25	1014.19	485.16	1578.64	103	548.05	246.67	1284.32
MTBV	128	3.94	3.42	3.19	25	3.65	3.15	2.12	103	4.00	3.42	3.40

This table shows the descriptive statistics for firm related variables by the payment method and the period. Panel A shows the descriptive statistics for firm related variables in the pre-SOX period for all, stock, and cash bids. Panel B shows the descriptive statistics for all, stock and cash bids in the post-SOX period. ; BRD_SIZE_{i,t} is the log of total number of board members, NONEXC_{i,t} represents the percentage of non-executive board members; INDep_{i,t} is the proportion of non-executive officers being independent, CEO_DUAL_{i,t} is CEO duality taking the value of 1 if the Chairman and CEO is the same and 0 otherwise, BRD_MGT is the number of board meetings during the year; SIZE_{i,t} is the size of the acquirer as measured by the Log of its total assets; R_SIZE_{i,t} captures relative size of the bidding and target firm as defined by the ratio of the value of the transaction to the Market Value of the acquirer the year prior to the announcement date; and MTBV_{i,t} is the market-to-book value (MTBV) ratio defined as the market value of the common equity divided by the book value of the common equity of the acquirer the year before the merger announcement.

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Table 7: Multivariate Regression Results (Model 4)

VARIABLES	Without firm and bid-related variables		With firm and bid-related variables	
	CAR (-1,0)	CAR (-2,+2)	CAR (-1,0)	CAR (-2,+2)
Intercept a_0	-0.1030 (0.1820)	-0.1320 (0.2170)	-0.0990 (0.285)	-0.2290* (0.060)
SOX a_1	0.0162* (0.0570)	0.0270* (0.0630)	0.0160* (0.060)	0.0300** (0.0390)
BRD_SIZE a_2	0.0320 (0.2620)	0.0470 (0.2750)	0.0380 (0.194)	0.0170 (0.7210)
NONEXC a_3	0.0000 (0.9530) ¹	0.0010 (0.5400)	0.0000 (0.938) ²	0.0010 (0.3590)
INDEP a_4	0.0002 (0.6890)	-0.0005 (0.5950)	0.0002 (0.732)	-0.0007 (0.4440)
CEO_DUAL a_5	-0.0150 (0.2480)	-0.0190 (0.2880)	-0.0150 (0.290)	-0.0280 (0.1400)
BRD_MTG a_6	-0.0003 (0.8170)	-0.0010 (0.4370)	-0.0003 (0.850)	-0.0020 (0.3130)
SIZE a_7			-0.0010 (0.837)	0.0100* (0.0540)
R_SIZE a_8			-0.0000 (0.951) ³	-0.0000* (0.0620)⁴
MTBV a_9			-0.0005 (0.513)	-0.0010 (0.5860)
Observations	175	175	175	175
R-squared (%)	3.8	3.8	3.9	6.0

This table shows estimation results for model (4): $CAR_{i,t} = a_0 + a_1SOX + a_2BRD_SIZE_{i,t} + a_3NONEXC_{i,t} + a_4INDEP_{i,t} + a_5CEO_DUAL_{i,t} + a_6BRD_MTG_{i,t} + a_7SIZE_{i,t} + a_8R_SIZE_{i,t} + a_9MTBV_{i,t} + \varepsilon_{i,t}$, where $CAR_{i,t}$ is the cumulative abnormal return around the acquisition announcement date, SOX is a dummy variable that takes the value of 1 in the post-SOX period and 0 otherwise; $BRD_SIZE_{i,t}$ is the log of total number of board members, $NONEXC_{i,t}$ represents the percentage of non-executive board members; $INDEP_{i,t}$ is the proportion of non-executive officers being independent, $CEO_DUAL_{i,t}$ is CEO duality taking the value of 1 if the Chairman and CEO is the same and 0 otherwise, BRD_MTG is the number of board meetings during the year; $SIZE_{i,t}$ is the size of the acquirer as measured by the Log of its total assets; $R_SIZE_{i,t}$ captures relative size of the bidding and target firm as defined by the ratio of the value of the transaction to the Market Value of the acquirer the year prior to the announcement date; and $MTBV_{i,t}$ is the market-to-book value (MTBV) ratio defined as the market value of the common equity divided by the book value of the common equity of the acquirer the year before the merger announcement; a_0 is an intercept term; and $\varepsilon_{i,t}$ is the residual term. P-values are given in parentheses and significant results are marked in bold. ***, **, * denote two-tailed significance at 1%, 5%, and 10% level respectively.

^{1, 2, 3, 4} The actual values of the coefficients are 0.0000431, 0.0000592, -0.000000132, and -0.00000547 respectively, all reported as 0.0000 to meet formatting requirements. The negative sign is kept next to the coefficients where appropriate to indicate the direction of the effect.

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Table 8: Multivariate Regression Results with Stock and Cash Interaction Terms (Model 5)

VARIABLES	CAR (-1,0): CASH	CAR (-1,0): STOCK	CAR (-2,+2): CASH	CAR (-2,+2): STOCK
Intercept a_0	-0.0800 (0.3950)	-0.0510 (0.5900)	-0.2020* (0.099)	-0.1560 (0.2150)
SOX a_1	0.0160 (0.4120)	0.0030 (0.4120)	0.0410 (0.1620)	0.0070 (0.1620)
BRD_SIZE a_2	0.0352 (0.2060)	0.0350 (0.2060)	0.0110 (0.7970)	0.0110 (0.7970)
NONEXC a_3	-0.0000 (0.9290)¹	-0.0000 (0.9290)²	0.0010 (0.4490)	0.0010 (0.4490)
INDEP a_4	0.0001 (0.8080)	0.0001 (0.8080)	-0.0010 (0.3740)	-0.0010 (0.3740)
CEO_DUAL a_5	-0.0140 (0.3460)	-0.0140 (0.3460)	-0.0260 (0.1670)	-0.0260 (0.1670)
BRD_MTG a_6	-0.0002 (0.8980)	-0.0002 (0.8980)	-0.0020 (0.3540)	-0.0020 (0.3540)
SIZE a_7	-0.0020 (0.7260)	-0.0020 (0.7260)	0.0090* (0.070)	0.0090* (0.0700)
R_SIZE a_8	0.0000 (0.9890)³	0.0000 (0.9890)⁴	-0.0000* (0.0510)⁵	-0.0000* (0.0510)⁶
MTBV a_9	0.0006 (0.4280)	0.0006 (0.4280)	-0.0010 (0.5360)	-0.0010 (0.5360)
CASH a_{12}	0.0280** (0.0350)		0.0460* (0.071)	
CASH_SOX a_{13}	-0.0130 (0.5350)		-0.0330 (0.3260)	
STOCK a_{10}		-0.0280** (0.0350)		-0.0460* (0.0710)
STOCK_SOX a_{11}		0.0130 (0.5350)		0.0330 (0.3260)
Observations	175	175	175	175
R-squared (%)	7.2	7.2	8.9	8.9

This table shows estimation results for model (5): $CAR_{i,t} = a_0 + a_1SOX + a_2BRD_SIZE_{i,t} + a_3NONEXC_{i,t} + a_4INDEP_{i,t} + a_5CEO_DUAL_{i,t} + a_6BRD_MTG_{i,t} + a_7SIZE_{i,t} + a_8R_SIZE_{i,t} + a_9MTBV_{i,t} + a_{10}Stock + a_{11}Stock_SOX + a_{12}Cash + a_{13}Cash_SOX + \varepsilon_{i,t}$, where $CAR_{i,t}$ is the cumulative abnormal return around the acquisition announcement date, SOX is a dummy variable that takes the value of 1 in the post-SOX period and 0 otherwise; BRD_SIZE $_{i,t}$ is the log of total number of board members, NONEXC $_{i,t}$ represents the percentage of non-executive board members; INDEP $_{i,t}$ is the proportion of non-executive officers being independent, CEO_DUAL $_{i,t}$ is CEO duality taking the value of 1 if the Chairman and CEO is the same and 0 otherwise, and BRD_MTG is the number of board meetings during the year; SIZE $_{i,t}$ is the size of the acquirer as measured by the Log of its total assets; R_SIZE $_{i,t}$ captures relative size of the bidding and target firm as defined by the ratio of the value of the transaction to the Market Value of the acquirer the year prior to the announcement date; and MTBV $_{i,t}$ is the market-to-book value (MTBV) ratio defined as the market value of the common equity divided by the book value of the common equity of the acquirer the year before the merger announcement; a_0 is an intercept term; Cash is a dummy variable that takes the value of 1 for cash acquirers and 0 otherwise; Stock is a dummy variable that takes the value of one for stock acquirers and 0 otherwise; and $\varepsilon_{i,t}$ is the residual term. P-values are calculated using robust standard errors and given in parentheses and significant results are marked in bold. ***, **, * denote two-tailed significance at 1%, 5%, and 10% level respectively.

^{1, 2, 3, 4, 5, 6} The actual values of the coefficients are -0.0000675, -0.0000675, 0.0000000312, 0.0000000312, -0.00000552, and -0.00000552 respectively, all reported as 0.0000 to meet formatting requirements. The negative sign is kept next to the coefficients where appropriate to indicate the direction of the effect.

Table 9: Multivariate Regression Results for Stock and Cash Subsamples

VARIABLES	CAR (-1,0): STOCK	CAR (-1,0): CASH	CAR (-2,+2): STOCK	CAR (-2,+2): CASH
Intercept a_0	0.0540 (0.7390)	-0.1030 (0.3820)	-0.0648 (0.7990)	-0.0200 (0.1520)
SOX a_1	0.0140 (0.4940)	0.0060 (0.3360)	0.0490 (0.1210)	0.0930 (0.5830)
BRD_SIZE a_2	0.1180 (0.1300)	0.0080 (0.7580)	0.1180 (0.4090)	-0.0100 (0.7910)
NONEXC a_3	-0.0020* (0.0810)	0.0010 (0.1390)	-0.0030 (0.3170)	0.0020** (0.0320)
INDEP a_4	0.0010 (0.2130)	-0.0010* (0.0770)	0.0001 (0.9470)	-0.0010* (0.0870)
CEO_DUAL a_5	-0.0420** (0.0340)	-0.0030 (0.8530)	-0.0440 (0.1570)	-0.0130 (0.5540)
BRD_MTG a_6	0.0003 (0.9060)	-0.0010 (0.5150)	0.0030 (0.4020)	-0.0010 (0.4800)
SIZE a_7	-0.0140 (0.1920)	0.0030 (0.4740)	0.0030 (0.8300)	0.0090 (0.1040)
R_SIZE a_8	0.0000 (0.7410) ¹	-0.0000 (0.2720) ²	-0.0000 (0.1540) ³	-0.0000* (0.0890)⁴
MTBV a_9	-0.0020 (0.5950)	-0.0003 (0.6060)	-0.0090 (0.2360)	0.0001 (0.8930)
Observations	53	122	53	122
R-squared (%)	17.99	4.20	14.99	5.61

This table shows estimation results for model (4): $CAR_{i,t} = a_0 + a_1SOX + a_2BRD_SIZE_{i,t} + a_3NONEXC_{i,t} + a_4INDEP_{i,t} + a_5CEO_DUAL_{i,t} + a_6BRD_MTG_{i,t} + a_7SIZE_{i,t} + a_8R_SIZE_{i,t} + a_9MTBV_{i,t} + \varepsilon_{i,t}$, where $CAR_{i,t}$ is the cumulative abnormal return around the acquisition announcement date, SOX is a dummy variable that takes the value of 1 in the post-SOX period and 0 otherwise; $BRD_SIZE_{i,t}$ is the log of total number of board members, $NONEXC_{i,t}$ represents the percentage of non-executive board members; $INDEP_{i,t}$ is the proportion of non-executive officers being independent, $CEO_DUAL_{i,t}$ is CEO duality taking the value of 1 if the Chairman and CEO is the same and 0 otherwise, and BRD_MTG is the number of board meetings during the year; $SIZE_{i,t}$ is the size of the acquirer as measured by the Log of its total assets; $R_SIZE_{i,t}$ captures relative size of the bidding and target firm as defined by the ratio of the value of the transaction to the Market Value of the acquirer the year prior to the announcement date; and $MTBV_{i,t}$ is the market-to-book value (MTBV) ratio defined as the market value of the common equity divided by the book value of the common equity of the acquirer the year before the merger announcement; a_0 is an intercept term; and $\varepsilon_{i,t}$ is the residual term. P-values are calculated using robust standard errors and are given in parentheses and significant results are marked in bold. ***, **, * denote two-tailed significance at 1%, 5%, and 10% level respectively.

^{1, 2, 3, 4} The actual values of the coefficients are 0.00000191, -0.00000253, -0.0000105, and -0.00000504 respectively, all reported as 0.0000 to meet formatting requirements. The negative sign is kept next to the coefficients where appropriate to indicate the direction of the effect.

Table 10: Multivariate Results with Industry and Year Fixed Effects

VARIABLES	CAR (-1,0)	CAR (-2,+2)	CAR (-1,0)	CAR (-2,+2)
Intercept a_0	-0.0349 (0.5630)	-0.0055 (0.9550)	-0.0164 (0.8070)	-0.0682 (0.5150)
$SOX\ a_1$	0.0710*** (0.0090)	0.0720** (0.0420)	0.07330*** (0.009)	0.0739** (0.0450)
$BRD_SIZE_{i,t}a_2$	0.0258 (0.3410)	0.0206 (0.6190)	0.0379 (0.2250)	0.0127 (0.7880)
$NONEXC_{i,t}\ a_3$	-0.0007 (0.3170)	-0.0004 (0.7560)	-0.0007 (0.3300)	-0.0000 (0.9820) ¹
$INDEP_{i,t}\ a_4$	0.0004 (0.4430)	0.0004 (0.6970)	0.0004 (0.4960)	0.0000 (0.92600) ²
$CEO_DUAL_{i,t}a_5$	-0.0054 (0.6250)	-0.0217 (0.2170)	-0.0046 (0.6910)	-0.0286 (0.1130)
$BRD_MTG_{i,t}a_6$	-0.0016 (0.1980)	-0.0017 (0.3840)	-0.0014 (0.3610)	-0.0023 (0.2590)
$SIZE_{i,t}a_7$			-0.0025 (0.6120)	0.0063 (0.2100)
$MTBV_{i,t}a_9$			-0.0010 (0.6780)	-0.0044 (0.2880)
$R_{SIZE_{i,t}}a_8$			-0.0000 (0.354) ³	-0.0000** (0.0150) ⁴
Year effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
Observations	172	172	172	172
R-squared (%)	24.9	18.7	25.6	21.2

This table shows estimation results for model (4): $CAR_{i,t} = a_0 + a_1SOX + a_2BRD_SIZE_{i,t} + a_3NONEXC_{i,t} + a_4INDEP_{i,t} + a_5CEO_DUAL_{i,t} + a_6BRD_MTG_{i,t} + a_7SIZE_{i,t} + a_8R_SIZE_{i,t} + a_9MTBV_{i,t} + \varepsilon_{i,t}$, where $CAR_{i,t}$ is the cumulative abnormal return around the acquisition announcement date, SOX is a dummy variable that takes the value of 1 in the post-SOX period and 0 otherwise; $BRD_SIZE_{i,t}$ is the log of total number of board members, $NONEXC_{i,t}$ represents the percentage of non-executive board members; $INDEP_{i,t}$ is the proportion of non-executive officers being independent, $CEO_DUAL_{i,t}$ is CEO duality taking the value of 1 if the Chairman and CEO is the same and 0 otherwise, BRD_MTG is the number of board meetings during the year; $SIZE_{i,t}$ is the size of the acquirer as measured by the Log of its total assets; $R_SIZE_{i,t}$ captures relative size of the bidding and target firm as defined by the ratio of the value of the transaction to the Market Value of the acquirer the year prior to the announcement date; and $MTBV_{i,t}$ is the market-to-book value (MTBV) ratio defined as the market value of the common equity divided by the book value of the common equity of the acquirer the year before the merger announcement; a_0 is an intercept term; and $\varepsilon_{i,t}$ is the residual term. P-values are given in parentheses and significant results are marked in bold. ***, **, * denote two-tailed significance at 1%, 5%, and 10% level respectively

^{1, 2, 3, 4} The actual values of the coefficients are -0.0000310, 0.0000918, -0.00000250, and -0.00000868 respectively, all reported as 0.0000 to meet formatting requirements. The negative sign, where appropriate, is kept next to the coefficients to indicate the direction of the effect.

Table 11: Fixed Effects for Stock and Cash

VARIABLES	CAR (-1,0)	CAR (-2,+2)	CAR (-1,0)	CAR (-2,+2)
Intercept a_0	0.0417 (0.518)	0.0303 (0.785)	0.0092 (0.889)	-0.0244 (0.818)
<i>SOX</i> a_1	0.0842** (0.033)	0.0892** (0.300)	0.0842** (0.011)	0.0892** (0.030)
<i>BRD_SIZE</i> $_{i,t}a_2$	0.0322 (0.271)	0.0027 (0.952)	0.0322 (0.271)	0.0027 (0.952)
<i>NONEXC</i> $_{i,t}a_3$	-0.0010 (0.198)	-0.0004 (0.778)	-0.0009 (0.198)	-0.0004 (0.778)
<i>INDEP</i> $_{i,t}a_4$	0.0004 (0.492)	0.0000 (0.981) ¹	0.0004 (0.492)	0.0000 (0.981) ²
<i>CEO_DUAL</i> $_{i,t}a_5$	-0.0028 (0.812)	-0.0257 (0.169)	-0.0028 (0.812)	-0.0257 (0.169)
<i>BRD_MTG</i> $_{i,t}a_6$	-0.0014 (0.370)	-0.0023 (0.270)	-0.0014 (0.370)	-0.0023 (0.270)
<i>SIZE</i> $_{i,t}a_7$	-0.0029 (0.543)	0.0056 (0.259)	-0.0029 (0.543)	0.0056 (0.259)
<i>R_SIZE</i> $_{i,t}a_8$	-0.0000 (0.289) ³	-0.0000*** (0.009) ⁴	-0.0000 (0.289) ⁵	-0.0000*** (0.009) ⁶
<i>MTBV</i> $_{i,t}a_9$	-0.0015 (0.551)	-0.0051 (0.217)	-0.0015 (0.551)	-0.0051 (0.217)
<i>Stock</i> a_{10}	-0.0324** (0.017)	-0.0547** (0.042)		
<i>Stock_SOX</i> a_{11}	-0.0319 (0.206)	-0.0496 (0.199)		
<i>Cash</i> a_{12}			0.0324** (0.017)	0.0547** (0.042)
<i>Cash_SOX</i> a_{13}			-0.0319 (0.206)	-0.0496 (0.199)
Year effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
Observations	172	172	172	172
R-squared (%)	28.7	24.9	28.7	24.9

This table shows estimation results for model (5): $CAR_{i,t} = a_0 + a_1SOX + a_2BRD_SIZE_{i,t} + a_3NONEXC_{i,t} + a_4INDEP_{i,t} + a_5CEO_DUAL_{i,t} + a_6BRD_MTG_{i,t} + a_7SIZE_{i,t} + a_8R_SIZE_{i,t} + a_9MTBV_{i,t} + a_{10}Stock + a_{11}Stock_SOX + a_{12}Cash + a_{13}Cash_SOX + \varepsilon_{i,t}$ where $CAR_{i,t}$ is the cumulative abnormal return around the acquisition announcement date, SOX is a dummy variable that takes the value of 1 in the post- SOX period and 0 otherwise; $BRD_SIZE_{i,t}$ is the log of total number of board members, $NONEXC_{i,t}$ represents the percentage of non-executive board members; $INDEP_{i,t}$ is the proportion of non-executive officers being independent, $CEO_DUAL_{i,t}$ is CEO duality taking the value of 1 if the Chairman and CEO is the same and 0 otherwise, BRD_MTG is the number of board meetings during the year; $SIZE_{i,t}$ is the size of the acquirer as measured by the Log of its total assets; $R_SIZE_{i,t}$ captures relative size of the bidding and target firm as defined by the ratio of the value of the transaction to the Market Value of the acquirer the year prior to the announcement date; and $MTBV_{i,t}$ is the market-to-book value ($MTBV$) ratio defined as the market value of the common equity divided by the book value of the common equity of the acquirer the year before the merger announcement; a_0 is an intercept term; and $\varepsilon_{i,t}$ is the residual term. P-values are given in parentheses and significant results are marked in bold. ***, **, * denote two-tailed significance at 1%, 5%, and 10% level respectively.

^{1, 2, 3, 4, 5, 6} The actual values of the coefficients are 0.0000214, 0.0000214, -0.00000279, -0.00000904, -0.00000904, and -0.00000904, respectively, all reported as 0.0000 to meet formatting requirements. The negative sign is kept next to the coefficients where appropriate to indicate the direction of the effect.

Table 12: Year and Industry Fixed Effects for Stock and Cash Subsamples

VARIABLES	(1) CAR (-1,0) STOCK	(2) CAR (-1,0) CASH	(3) CAR (-2,+2) STOCK	(4) CAR (-2,+2) CASH
Intercept a_0	-0.0052 (0.9870)	0.0393 (0.4970)	-0.2240 (0.6550)	-0.0437 (0.7120)
<i>SOX</i> a_1	0.1230* (0.0660)	0.0232 (0.2410)	0.1090 (0.2670)	0.0478 (0.2390)
<i>BRD_SIZE</i> $_{i,t}a_2$	0.1380 (0.2730)	-0.0115 (0.5680)	0.1980 (0.2930)	-0.0583 (0.1580)
<i>NONEXC</i> $_{i,t}a_3$	-0.0017 (0.5510)	0.0001 (0.7760)	-0.0004 (0.9330)	0.0012 (0.2410)
<i>INDEP</i> $_{i,t}a_4$	0.0007 (0.6730)	-0.0003 (0.3750)	0.0023 (0.3500)	-0.0007 (0.4030)
<i>CEO_DUAL</i> $_{i,t}a_5$	-0.0554 (0.2740)	0.0195** (0.0420)	-0.1350* (0.080)	0.0124 (0.5260)
<i>BRD_MTG</i> $_{i,t}a_6$	-0.0044 (0.3510)	0.0002 (0.8570)	-0.0077 (0.2770)	0.0005 (0.8030)
<i>SIZE</i> $_{i,t}a_7$	-0.0089 (0.5640)	-0.0015 (0.6110)	-0.0111 (0.6320)	0.0078 (0.1870)
<i>R_SIZE</i> $_{i,t}a_8$	0.0000 (0.3730) ¹	-0.0000** (0.015)²	0.0000 (0.7630) ³	-0.0000** (0.0170)⁴
<i>MTBV</i> $_{i,t}a_9$	-0.0006 (0.9440)	0.0004 (0.8490)	-0.0207 (0.1310)	0.0027 (0.5090)
Year effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
Observations	53	119	53	119
R-squared (%)	37.4	68.4	41.2	45.0

This table shows estimation results for model (4): $CAR_{i,t} = a_0 + a_1SOX + a_2BRD_SIZE_{i,t} + a_3NONEXC_{i,t} + a_4INDEP_{i,t} + a_5CEO_DUAL_{i,t} + a_6BRD_MTG_{i,t} + a_7SIZE_{i,t} + a_8R_SIZE_{i,t} + a_9MTBV_{i,t} + \varepsilon_{i,t}$, where $CAR_{i,t}$ is the cumulative abnormal return around the acquisition announcement date, *SOX* is a dummy variable that takes the value of 1 in the post-SOX period and 0 otherwise; *BRD_SIZE* $_{i,t}$ is the log of total number of board members, *NONEXC* $_{i,t}$ represents the percentage of non-executive board members; *INDEP* $_{i,t}$ is the proportion of non-executive officers being independent, *CEO_DUAL* $_{i,t}$ is CEO duality taking the value of 1 if the Chairman and CEO is the same and 0 otherwise, *BRD_MTG* is the number of board meetings during the year; *SIZE* $_{i,t}$ is the size of the acquirer as measured by the Log of its total assets; *R_SIZE* $_{i,t}$ captures relative size of the bidding and target firm as defined by the ratio of the value of the transaction to the Market Value of the acquirer the year prior to the announcement date; and *MTBV* $_{i,t}$ is the market-to-book value (MTBV) ratio defined as the market value of the common equity divided by the book value of the common equity of the acquirer the year before the merger announcement; a_0 is an intercept term; and $\varepsilon_{i,t}$ is the residual term. P-values are given in parentheses and significant results are marked in bold. ***, **, * denote two-tailed significance at 1%, 5%, and 10% level respectively.

^{1, 2, 3, 4} The actual values of the coefficients are 0.0000121, -0.00000593, 0.00000610, and -0.0000119, respectively, all reported as 0.0000 to meet formatting requirements. The negative sign is kept next to the coefficients where appropriate to indicate the direction of the effect.