

# Sarbanes-Oxley and its Aftermath: A Review of the Evidence

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## Abstract

Introduced in response to several high profile US corporate collapses, the Sarbanes-Oxley Act (SOX) of 2002 has proven to be a gold mine for academic researchers: after only five years, no less than 528 studies of SOX appear on the Social Sciences Research Network ([www.ssrn.com](http://www.ssrn.com)). This essay seeks to review the results of this research and provide a concise summary of the available evidence as of late 2007. Overall, although SOX appears to have had some beneficial effects, it has also: increased the costs of auditing, governance and human capital, and compliance more generally; induced a mis-match between auditors and firms; encouraged firms to delist or otherwise stay below the regulatory radar; lowered corporate investment and risk-taking; and had ambiguous effects on the quality of investor information and capital market efficiency.

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# 1 Introduction

When George W. Bush signed the Sarbanes-Oxley Act (henceforth SOX) into law on 30 July, 2002, the legislative reform thus enacted was among the most intrusive in US corporate history.<sup>1</sup> Its scope was extensive, covering internal controls, external financial disclosures, corporate governance, and auditor behaviour. Broadly speaking, it sought to restructure the way that executives, directors and auditors combine to provide shareholders with information about company performance and financial health, and to give shareholders control over the incentive structures used for aligning the interests of management and shareholders. In particular, SOX required:

- (i) company executives to personally certify financial accounts and internal reports (with increased and additional criminal sanctions for known departures from these requirements)
- (ii) boards of directors to take responsibility for monitoring firm auditors (with greater liability for improper governance practices)
- (iii) auditors to forgo providing non-audit services for audit clients, to attest to the accuracy of internal control reports, and to follow detailed procedures on how to detect fraud.

SOX has proven to be a gold mine for academic researchers: at the time of writing the Social Sciences Research Network ([www.ssrn.com](http://www.ssrn.com)) lists 528 studies that cite the Act in their title or abstract. Most of this work examines the consequences of SOX for various economic agents - directors, executives, auditors and, most importantly, investors. The objective of this essay is to provide a brief summary of the results of this research. Although not intended to be exhaustive, it should be useful for those seeking a point of introduction to the vast SOX literature, and for readers wanting a concise summary of the available evidence as of the end of 2007. Of course, the flow of research in this area shows no signs of abating, and further evidence may ultimately yield different conclusions.

In the next section, we briefly outline the background to the enactment of SOX and then describe its principal provisions. Section 3 provides the core of the paper - the observed effects of SOX on investors, firms, auditors and markets. Section 4 offers some concluding remarks.

## 2 Background to SOX: Corporate Scandals and the Legislative Response

### 2.1 The Scandals

The US Congress introduced, and subsequently passed, SOX in response to a series of business scandals involving several well known companies: Enron, WorldCom, Waste Management, Sunbeam and Global Crossings. Of these, Enron and WorldCom had the largest

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<sup>1</sup>Sarbanes-Oxley Act (Public Company Accounting Reform and Investor Protection Act) 2002, Public Law 107-204 (US).

economic impact.

Enron began life in 1930 as a consortium of energy companies. Prior to its demise in 2001, it had become one of the largest companies in the US energy sector. However, it subsequently became clear that this growth, particularly over later years, was largely due to the use of accounting creativity – including the use of special purpose financing entities and mark-to-market valuation. Through the use of the former, Enron was able to ensure that failed and poorly-performing assets were assigned to unconsolidated affiliate businesses and thus kept out of its publicly available financial records, thereby allowing a significant overstatement of earnings.

This problem was exacerbated by the adoption of mark-to-market valuation of financial assets. Although such an approach was permitted by prevailing accounting standards, it provided Enron with considerable latitude in estimating fair market value, particularly given its own position as market-maker for many of its assets. The net effect was that Enron's management were able to manage asset values to a point where its true economic earnings had only the most tenuous link to those appearing in the financial reports.

Public awareness of Enron's financial troubles began on 16 October 2001 with the announcement of a third quarter net loss of \$618 million. When the full extent of the various manipulations were finally discovered, Enron collapsed, filing for Chapter 11 bankruptcy protection on 2 December 2001. This had immediate and significant economic consequences, including the loss of over 4500 jobs at its Houston operations, \$1.3 billion in Enron employee retirement funds, and \$61 billion from Enron's shareholders' investment portfolios.

WorldCom was a major telecommunications firm that had evolved from the breakup of AT&T in 1984. Like Enron, its problems also stemmed from questionable accounting practices – such as the reporting of fees and expenses as assets, expense misclassifications, and the marking of operating costs as long-term investments. And also like Enron, the principal outcome was inflated forecast and reported earnings.

In February 2002, WorldCom announced a cut in its earnings projections after incurring a second-quarter multi-billion dollar write-down charge. Subsequently, the company 'unmasked' a series of fraudulent transactions totalling \$3.8 billion in June 2002, closely followed (on 21 July 2002) by entry into Chapter 11 bankruptcy protection. This overtook Enron as the largest bankruptcy in US history.

A significant by-product of these events was the demise of accounting firm Arthur Andersen. Having been the auditor for a number of the collapsed companies - including Enron, WorldCom, and Waste Management - it suffered an irreparable tarnishing of its name and a subsequent collapse of demand for its services.

Overall, the events of 2001 and 2002 potentially undermined investor confidence in corporate governance and management, in the quality of financial information provided by companies, and in the ability (and, indeed, motivation) of auditors to offer protection from corporate malfeasance. All this provided fertile ground for the introduction of SOX.

## 2.2 The Legislative Response

In response to the above events, the US Senate and House of Representatives rapidly passed legislation intended to restore public confidence in the capital markets. This legislation was ultimately named the Sarbanes-Oxley Act of 2002, in honour of its two sponsors - Senator Paul Sarbanes and Representative Michael G. Oxley.<sup>2</sup> Its stated purpose, as outlined in its preamble, was “[t]o protect investors by improving the accuracy and reliability of corporate disclosures made pursuant to the securities laws, and for other purposes.” However, this objective was not universally accepted: some commentators (see, for example, Hilzenrath, Weisman, and Vandehei (2002)) argued that SOX was more a knee-jerk political reaction than a reasoned response to corporate difficulties.

The reforms contained in SOX focussed on four key areas: the accuracy and reliability of financial disclosures, corporate governance, fraud, and the accounting industry. We describe the key features of each of these in turn.

## 2.3 Financial Disclosures

Possibly the most important aspect of SOX was the new requirements it placed on and around financial disclosures by companies. Section 302 required CEO and CFO certification of (i) the accuracy of the firm’s periodic financial reports (including quarterly reports) and (ii) the reliability of the firm’s internal control systems relating to financial statements and general disclosures.<sup>3</sup> In addition, Section 906 introduced new criminal sanctions for certain violations of these requirements, while Section 304 stated that executives must forfeit certain equity and incentive-based bonuses and profits when a firm is required to “prepare an accounting restatement due to the material noncompliance of the issuer, as a result of misconduct, with any financial reporting requirement under the securities law”.

Section 404 expanded on Section 302 by requiring that firstly, public issuing firms produce an “internal control report” containing an assessment of the “effectiveness of the internal control structure and procedures of the issuer for financial reporting”, and secondly, that the firm’s auditor attest to and report on this assessment.<sup>4</sup>

In combination, Sections 302 and 404 required that a firm’s senior management and auditor take responsibility for any material weaknesses in a firm’s internal controls.

## 2.4 Corporate Governance

SOX sought to strengthen board independence by requiring, under Section 301, that all public companies establish independent audit committees consisting entirely of independent directors and that this committee is provided with independent legal counsel. For

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<sup>2</sup>The bill that ultimately emerged as SOX was a combination of two earlier bills initially proposed separately by Sarbanes and Oxley: the “Public Company Accounting Reform and Investor Protection Act” and the “Corporate and Auditing Accountability, Responsibility, and Transparency Act” respectively.

<sup>3</sup>Brown (2006) argues that the opportunity cost associated with these requirements - the time taken away from the running of a business - is the most expensive SOX mandate.

<sup>4</sup>Carney (2005) suggests that this provision is the most expensive SOX provision while Kamar, Karaca-Mandic, and Talley (2007, page 3) argue that it is the “most notorious mandate introduced by SOX”.

this purpose, an independent director is defined as one that (i) has not accepted any compensatory fee from the issuer or (ii) is not an affiliated person of the issuer or a subsidiary of that issuer. Furthermore, Section 407 required that the issuer disclose whether any of its audit committee members are financial experts, and an explanation if there are no such members. Finally, the audit committee was given direct responsibility “for the appointment, compensation, and oversight of the work of any registered public accounting firm employed by that issuer”.

In response to loan abuses at WorldCom (and also Tyco Corporation and Adelphia Communications), Section 402 introduced a complete ban on the offering of credit to directors and executives. Note, however, that this provision is one of the easiest to circumvent (see, for example, Brown (2006) and Coates (2007)).

SOX also sought to diminish problems associated with insider trading. Section 306 restricted firm officers and directors from trading in that firm’s securities during pension plan blackout periods, while Section 403 required officers and directors who trade such securities outside these periods to report the trade details to the SEC electronically and post them on the firm’s website within two business days after the month of trade. This latter requirement had previously been set at ten business days.

## **2.5 Fraud**

Section 806 provided additional protection for whistle-blower employees by specifying that companies may not “discharge, demote, suspend, threaten, harass, or in any other manner discriminate against an employee” if that employee lawfully provides information related to suspected fraud. In addition, Section 804 extended the Statute of Limitations for shareholder lawsuits by increasing the window for plaintiff shareholders to file claims against companies or their directors to within five years of the occurrence of fraud or two years of its discovery.

## **2.6 The Accounting Industry**

Section 101 established the Public Company Accounting Oversight Board (PCAOB) and made it responsible for overseeing “the audit of public companies that are subject to the securities laws” and to further the “public interest in the preparation of informative, accurate, and independent audit reports”. More controversially, Section 201 prohibited audit firms from providing a range of non-audit services to firms which they audit, including appraisal or valuation services, actual services, internal audit outsourcing services, legal services unrelated to the audit, services related to the accounting records or financial statements of the audit client, and brokerage. Furthermore, Section 203 required audit partners to rotate between clients. Finally, Section 204 required auditors to report to firms’ audit committees directly on several matters, including: (i) critical accounting policies and practices to be used in the audit, (ii) any deviations from generally accepted accounting principles and (iii) any written communications with management.

## 3 Effects of Sarbanes-Oxley

SOX-related research has taken many forms and investigated a wide range of issues. Broadly speaking however, much of this research can be placed in one of three categories. First, the effect of SOX on firms – on their costs, their governance, their investment and risk-taking strategies, and so on. Second, its effect on the quality of information provided to investors by firms and auditors. Third, its effects on the efficiency of capital markets.

### 3.1 Firms

#### 3.1.1 Costs

Research into the effects of SOX on firm costs has tended to take one of two forms: either statistical studies of the reaction of securities prices to events affecting the implementation of SOX, or direct surveys of post-SOX changes in costs.

The market reaction studies are based on the idea that a firm's stock price is the present value of future discounted earnings, so any SOX-attributable changes in this price represent a rational expectations estimate of the net cost of SOX to the firm. Thus, several papers examine the stock market response to events that are assumed to have had a significant effect on the probability of SOX being passed. For example, Li, Pincus, and Rego (2006) compare market returns during the period leading up to the enactment of SOX with a historical benchmark and find that the former was 14.7% higher on average. Similarly, Jain and Rezaee (2006) estimate the market response dependent on whether a particular event made the successful passage of SOX more or less likely; they report excess market returns of 12.95% for events that increased the probability of eventual enactment and of -13.49% for events that did the opposite. However, Zhang (2005) uses a different model of benchmark returns and concludes that the legislative events leading up to the passage of SOX were associated with a \$1.4 trillion loss in stockmarket value.

Other studies look for inter-firm variation in market reaction. Using data from 5259 firms for the period December 2001 to June 2005, Aggarwal and Williamson (2006) examine the relationship between market value and 64 different governance attributes. They find that the value impact of the SOX-mandated governance attributes is significantly greater for firms that adopted these measures before they were mandated. Although this indicates that while SOX may indeed have targeted the relevant governance attributes, it also shows that the market was already rewarding firms that voluntarily adopted these measures, and hence makes questionable their mandatory imposition.

In a sample of 2320 firms, Choi, Frye, and Yang (2007) find that firms with below-average shareholder rights at the time SOX was enacted generated superior risk-adjusted returns during the 12 month period centred around that date. This suggests that the market perceived a benefit from the adoption of SOX for those firms that previously offered only weak governance protection to shareholders. An interesting twist to this finding is provided by Chhaochharia and Grinstein (2007). They find that stockmarket

performance during the SOX announcement period was worse in small firms, particularly in those with less independent boards and weaker internal controls. That is, although large firms with weak governance saw a significantly positive market response to events that made SOX more likely to pass, the re-rating of small firms was much more muted. This suggests that the market viewed small firms as being particularly affected by higher SOX-imposed costs, with any benefits being largely offset by these additional costs. As we shall see, subsequent experience has shown this pessimism to be largely justified.

Turning to other capital markets, DeFond, Hung, Karaoglu, and Zhang (2007) examine 1219 bonds issued by 328 US firms between January 2002 and July 2002 and conclude that debt markets reacted negatively to announcements that made the eventual passage of SOX more likely, particularly for bonds issued by firms with (i) the greatest likelihood of requiring SOX-mandated changes to their governance structure and (ii) with high default risk.

As another measure of market responses to SOX, Jain, Kim, and Rezae (2006) investigate changes in market liquidity and investor confidence surrounding the events leading up to SOX. They examine 610 firms that filed CEO- and CFO-certified financial statements with the SEC prior to 14 August 2002, using quoted spreads, effective spreads, depths, depth/quoted spread, and the adverse selection component of spreads to measure market liquidity. They find that these liquidity measures deteriorated during the period of the Enron and WorldCom scandals and then improved following the passage of SOX. This, they suggest, indicates that SOX was successful in (p3) “creating a climate of investor confidence in financial information, and restoring normalcy in the financial markets particularly in the long term.”

A number of other studies have attempted to identify actual increases in costs attributable to various aspects of SOX. For example, Eldgridge and Kealey (2005) use financial information from a sample of 648 Fortune 1000 companies as at 8 April 2005 and find that average audit fees increased by \$2.32 million between 2003 and 2004 (the year in which Section 404 compliance became mandatory for companies of this size). Asthana, Balsam, and Kim (2004) argue that this increase is at least in part an outgrowth of SOX compliance costs. Surveys document similar findings – Financial Executives International (2005, 2006) reports that average annual compliance costs for public firms increased from \$1.93 million to \$4.36 million over the same period, while average audit fees went from \$590,100 to \$1.3 million.

Other evidence also indicates that SOX-mandated increases in compliance costs have affected smaller firms to a greater extent – the results of Hartman (2005, 2006), and United States Government Accountability Office (2006) all suggest that this is the case. Based on these and other findings, Kamar, et al. (2007) conclude that the initial implementation of SOX has had a disproportionately negative impact on smaller firms. While partly due to fewer economies of scale in small firms, Brown (2006) notes that such a phenomenon is consistent with these companies having poor internal accounting systems.

### 3.1.2 Governance

SOX appears to have had a significant impact on board composition and behaviour. Linck et al. (2007) reports that boards have become larger and more independent, and that audit committee meetings have occurred more frequently, following the adoption of SOX. Moreover, directors are more likely to be lawyers, consultants, financial experts and retired executives, and less likely to be current executives. Such changes are consistent with the SOX requirements of greater independence and more financial expertise on boards.

However, Choi, et al. (2007) make the interesting observation that in the years following the adoption of SOX, a substantial number of firms with shareholder protection in excess of that mandated by SOX actually *reduced* their level of protection. As these authors note, this seems likely to reflect a view that governance provisions exceeding those required under SOX are simply a form of “redundant monitoring” and hence of little value.

The increases in audit fees documented above seem likely to reflect the greater responsibilities imposed on auditors by SOX. Similarly, the increased liabilities and expectations imposed on boards has resulted in higher director remuneration. Linck, Netter, and Yang (2007) find that median director compensation for all firms increased from US\$52,495 to US\$80,646 between 2001 and 2004. During the same period, director fees per \$1000 of net sales increased from \$0.84 to \$3.19 for small firms and from \$0.25 to \$0.32 for large firms.<sup>5</sup>

Executive compensation has also been affected. In a sample of 277 S&P 500 firms covering the period from 1992 to 2003, Cohen, Dey, and Lys (2005a) find that the ratio of incentive to fixed salary compensation decreased substantially following the adoption of SOX. In particular, option-based compensation declined significantly from 48% of total pay in 2001 to 37% in 2003. This seems likely to be the result of the increased liability placed on executives under Section 304. However, this change has not come entirely free to executives, as Chen, Jeter, and Yang (2007) note that it appears to have been accompanied by increased scrutiny of the performance component that remains.

The post-SOX era has also been characterised by a reduction in executive attempts to influence the value of stock options. In a study of 2901 CEO stock option awards by 813 firms between January 1999 and December 2003, Collins, Gong, and Li (2005) report that the introduction of the Section 403 requirement for accelerated reporting of the grant of executive stock options has significantly reduced CEO influence over grant date stock prices. However, they also find that opportunistic and unscheduled granting of awards before the announcement of good news continues to occur at some firms.

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<sup>5</sup>Linck, Netter, and Yang (2007) report that director and executive insurance premiums also increased substantially.



### 3.1.3 Unintended consequences: investment, risk-taking, and organisational form

Faced with more onerous regulations, economic agents inevitably react in ways that minimise the obligations thus imposed. SOX has been no exception to this general rule.

There is ample evidence suggesting that some firms have adopted practices aimed at avoiding the requirements of SOX. Leuz, Triantis, and Wang (2006), Engel, Hayes, and Wang (2007) and Kamar, et al. (2007) all report an increase in the frequency of “going dark” transactions – where firms reduce their shareholder numbers to below 300 in order to escape Securities and Exchange Commission scrutiny (and hence the application of SOX) under Section 12(g)(4) of the Securities and Exchange Act 1934. Two surveys (see Block (2004) and United States Government Accountability Office (2006)) of firms that went dark during the SOX passage through Congress conclude that the costs of SOX compliance were a commonly-cited reason for doing so.

Because firms that go dark typically continue to trade in over-the-counter markets, the level of protection afforded stockholders decreases as a result. In a sample of 484 gone-dark firms, Leuz, et al. (2006) observe that these firms tend to be smaller, have high leverage, be in greater financial distress, have lower growth opportunities, weaker accounting quality, and poor recent stock market performance. Unsurprisingly, the market’s reaction to firms going dark is strongly negative - the delisting decision is interpreted as a signal of a weak financial position. Whether investors are better off as the result of such firms slipping below the regulatory radar is certainly debatable.

The Securities and Exchange Commission often exempts firms with a public float below \$75 million from meeting the requirements of Section 404.<sup>6</sup> This has apparently provided firms with an incentive to remain below this size threshold. Gao, Wu, and Zimmerman (2007) examine the characteristics of 1680 publicly listed firms with a market capitalisation of \$150 million or less during the period 1 June 2003 to 31 December 2005 and conclude that firms actively sought to remain below the SEC threshold by (p32)

[U]ndertaking less investment, issuing fewer secondary equity offerings, making more cash payouts through dividends and share repurchases than control firms, and by making more bad news disclosures, reporting lower earnings, and engaging in more insider selling in the second fiscal quarter than control firms.

SOX also appears to have had a chilling effect on IPOs and US listings of foreign firms. Committee on Capital Markets Regulation (2006) notes that from 2000 to 2005 the US share of the global IPO market by value declined from 50% to 5%, and by number from 37% to 10%. Similarly, Barger, Lehn, and Zutter (2007) analyse 1882 UK IPOs and 7380 US IPOs occurring between 1990 and 2006 and conclude that, relative to the UK, the likelihood of an IPO occurring in the US declined significantly after the passage of SOX, particularly if the IPO was in a risky industry. And Hostak, Lys, and Yang (2006)

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<sup>6</sup>See SEC Release Number 33-8812 and Number 33-8819. Here ‘public float’ refers to the non-affiliated aggregate market value holding of voting and non-voting common equity.

document the extensive delisting of foreign firms from US markets that has occurred post-SOX. Interestingly, they find that the home-country market reacted negatively to firms announcing a delisting from the US, suggesting that such an action is driven not only by value-maximising motivations (via the avoidance of SOX compliance costs), but also by a managerial desire to retain agency rents that could be revealed by exposure to Sections 304 and 404.

Moreover, SOX-avoiding activities are not restricted to equity market listings. Pittman (2007) notes that the post-SOX period has been characterised by a significant increase in the number of bonds sold to institutions on the private debt market (which do not have to be registered with the SEC) relative to those sold to the public.

Firms that have been unable to avoid SOX completely have tended to take other, not necessarily desirable, actions to combat what are perceived to be its more onerous impositions. Calculating R&D expenses and capital expenditures over time, Cohen, et al. (2005a) find that the post-SOX period has been associated with a reduction in risk-taking and investment by firm management, which they suggest is likely to be due in part to both the reduction in executive performance incentives and the increase in personal liability placed on executives by Section 304. Similarly, Barger, et al. (2007) find that relative to the UK, US firms have (i) significantly lowered their R&D and capital expenditures and (ii) significantly increased their cash holdings since the SOX enactment. Both papers suggest that SOX has caused US firms to reduce their investment in risky projects.

Along with this lower exposure to risk, firms seem to have become more risk averse. Kang and Liu (2007) report evidence from 2826 firms between 1999 and 2004 that investment project hurdle rates increased significantly following the adoption of SOX. Perhaps most worryingly, this tendency appears to be concentrated amongst firms with good governance, strong credit ratings and high transparency. By contrast, managers of firms with less desirable characteristics seem to have become more aggressive risk-takers.

## **3.2 Investors**

### **3.2.1 Quality of information provided by firms**

One of SOX's principal objectives was to improve the quality of information provided to investors. And consistent with this objective, Prentice (2007, page 18) argues "that together Sections 302 and 404 are providing investors in U.S. markets with the most reliable financial statements in history, which benefits issuers by reducing their capital costs and benefits investors by reducing their risk". Supporting this view, Bédard (2006) examines a large sample of firms that undertook a Section 404 internal control assessment and finds that there was a significant decrease in the number of unexpected accruals (suggesting greater reliability of financial statements) in a firm's first year of Section 404 scrutiny. Similarly, Cohen, Dey, and Lys (2005b) analyse financial reports filed by 2078 firms and conclude that earnings management (approximated using accounting accruals, inventory,

sales and special items) fell significantly following the adoption of SOX. And Bartov and Cohen (2007) report a significant post-SOX reduction in managers' propensities to meet or beat analyst expectations by adjusting accruals and undertaking expectations management.

However, Begley, Cheng, and Gao (2007) arrive at a very different conclusion. Rather than examine company disclosures directly, they focus on the accuracy of analysts' earnings forecasts (which rely in part on these disclosures) for 1807 firms between August 2001 and July 2005. They find that SOX induced a temporary increase in the quality of public information, but that this disappeared after one year and that overall quality has since remained below pre-SOX levels. They suggest this is the result of the Section 304 disclosure penalties – managers now disclose less information even though the precision of the information that is disclosed has increased.<sup>7</sup> Koh, Matsumoto, and Rajgopa (2007) express similar reservations – they note that although the use of accrual-based earnings management has declined post-SOX, it seems to have been largely replaced by management of expectations about earnings.

On a more positive note, Gordon, Loeb, Lucyshyn, and Sohail (2006) observe that firms have increased their voluntary disclosure of information security activities. Based on examination of 27,253 annual reports filed with the SEC over the years 2000 to 2004, with information security defined to include “computer-based systems security” related to protecting the confidentiality, integrity, and availability of information, they conclude that their findings provide (p504) “strong indirect evidence that corporate information security activities are receiving more focus since the passage of SOX than before SOX was enacted.”

### **3.2.2 Quality of information provided by auditors**

Another objective of SOX was to increase investor confidence in the quality of audit reports. However, the evidence that is available to date suggests that the firms most in need of quality audits are now less likely to obtain the services of top-tier auditors. Cassell, Giroux, Myers, and Omer (2006) compare audit client portfolios during 2000-2002 with those for 2003-2004 and observe that top-tier audit firms significantly reduced their exposure to higher-risk clients during the latter period. Correspondingly, of course, non-top-tier audit firms increased their exposure to these clients. Similarly, Asthana, et al. (2004) and Ettredge, Heintz, Li, and Scholz (2007) respectively find that, after the passage of SOX, riskier firms were (i) subject to higher growth in audit fees and (ii) more likely to see their auditor resign.

Another worrying piece of evidence is provided by Ahmed, Duellman, and Abdel-Meguid (2006). They examine the relationship between (i) the propensity of firms to use abnormal accounting accruals (as a proxy for weak monitoring) and (ii) client importance to the auditor's total business (as a proxy for client influence), and find that the high

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<sup>7</sup>Zolotoy and Melenberg (2007) document a downward bias in analyst forecasts post-SOX, but attribute this to greater analyst caution following the Enron and WorldCom scandals rather than to SOX directly.

association between these variables that had existed prior to SOX continued after the adoption of SOX.

Somewhat more encouragingly, Dyck, Morse, and Zingales (2006) analyse a sample of 230 successful fraud suits and report that following the adoption of SOX, auditor contribution to the detection of fraud increased from 7.2% to 28.9%. As they note, this result suggests that the SOX attestation provisions had a positive effect on the role of auditors in detecting fraud. However, somewhat offsetting this is their additional finding that whistleblower fraud detection fell from 20.7% to 15.6% of all successful cases, consistent with the views of Cherry (2004) who argues that Section 806 – in failing to specify a precise method of dealing with Enron-type frauds – does not sufficiently protect whistleblowers.

### 3.3 Markets

To the extent that information has become more reliable, capital markets can be expected to react more decisively to the release of new information. Zolotoy and Melenberg (2007) and Koh, Matsumoto, and Rajgopa (2007) both find evidence consistent with this proposition: Zolotov and Melenberg conclude that the speed of stock market adjustment to new information increased significantly following the enactment of SOX, while Koh et al report that the stock market response to firms just meeting forecasts and beating forecasts substantially has disappeared and diminished respectively, consistent with increased market scepticism about such events. Interestingly however, they also find that the correlation between meeting or beating forecasts and subsequent operating performance has increased after SOX, suggesting that markets may in fact have become *over-sceptical* about the value of announcements of performance relative to forecast.

Markets appear to find some, but not all, of the new information provided by SOX to be valuable. For example, Ashbaugh-Skaife, Collins, Kinney Jr, and LaFond (2007) analyse 1053 firms that disclose at least one internal control deficiency under either Section 302 or Section 404 and find such firms have higher systematic risk. They conclude that firms which are able to demonstrate effective internal controls have a cost of equity between 50 and 150 basis points lower than would otherwise be the case. On the other hand, the value of CEO and CFO certification is less certain: Bhattacharya, Groznik, and Haslem (2006) and Begley, Cheng, and Gao (2007) find no useful information in these announcements, while Lobo and Zhou (2005) and Griffin and Lont (2003) report the opposite.

Notwithstanding Sections 306 and 403, private information still appears to be an important source of capital market profit. In their study of 262,931 option exercises that were disclosed to the SEC by 51,388 corporate executives between 1996 and 2003, Brooks, Chance, and Cline (2006) find that the exploitation of private information in the exercising of options has actually become more profitable post-SOX. Although this phenomenon cannot be definitively attributed to SOX, it is apparent that SOX has failed to constrain this form of opportunistic executive behaviour.

## 4 Concluding Remarks

Introduced in response to several high profile US corporate collapses, SOX has proven to be of great value to academic researchers. But whether it has also benefitted the group it was intended to help – shareholders – is much less certain. While apparently improving market liquidity and some aspects of corporate governance and information disclosure, SOX has also had a number of more deleterious effects: greater costs of auditing, governance and human capital, and compliance more generally; a mis-match between auditor quality and firm risk; more firms delisting or otherwise staying below the regulatory radar; less corporate investment and risk-taking; and ambiguous changes in the quality of investor information and capital market efficiency. Moreover, several of these adverse consequences seem to be more extreme for small firms, an observation that may have particular relevance for any moves to adopt a similar rules-based system in New Zealand.

However, some caution must be exercised before drawing any firm conclusions about the overall impact of SOX. In particular, the studies cited in this paper typically face at least two problems in isolating the effects of SOX. First, it is difficult to differentiate any impact of SOX from that of other post-scandal regulatory initiatives – Coates (2007) notes that SOX was enacted “amidst sharp financial, economic, and political changes”. Second, it is also often difficult to distinguish the impact of SOX from that of the corporate scandals themselves. For these reasons, and the fact that only five years have passed since enactment, more time and evidence is needed to assess the full implications of SOX. Nevertheless, the evidence to date is not particularly reassuring: commentators who argued that SOX would be a case of “legislate in haste, repent at leisure” look increasingly likely to be proved correct.

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