

The Impact of Sarbanes-Oxley on Corporate Reporting of Working Capital

Jason Lin and Steve Jones

Abstract

The Sarbanes-Oxley Act was passed in July 2002 in response to a few high profile of accounting scandals in publicly-traded companies. Among other provisions created to prevent such scandals is Section 404, which requires the executives of publicly-traded companies to formally state their responsibility for the company's system of internal controls and assess the effectiveness of those internal controls as of the end of the fiscal year. Internal controls, though perhaps costly, should theoretically improve management's ability to monitor business processes and make better decisions. It is this latter benefit that may be the hardest to recognize, and the one that this study hopes to identify. This study indicates that Sarbanes-Oxley may have led to progress in the area of working capital management. However, the results could have been influenced by other factors implicit in the business environment. As more time passes, a more definitive trend should emerge. To fully understand the impact of Sarbanes-Oxley, further research will be needed.

Introduction

I. 1. The Sarbanes-Oxley Act (SOX)

The Sarbanes-Oxley Act was passed in July 2002 in response to a few high profile of accounting scandals in publicly-traded companies. Among other provisions created to prevent such scandals is Section 404, which requires the executives of publicly-traded companies to formally state their responsibility for the company's system of internal controls and assess the effectiveness of those internal controls as of the end of the fiscal year. It also requires auditors to report on this assessment, thereby forcing management to implement an effective internal control system. Internal controls certainly existed prior to this time but were used as a business saw fit to operate efficiently and effectively. Under 404, management had to implement a complete system of internal control and file an internal control report that explained management's responsibility for controls and its assessment of the company's internal control structure ("Summary of Sarbanes-Oxley Act of 2002").

The costs of Section 404 have been well documented. First, many companies have had to overhaul their system of controls in order to comply with the rules. This required significant amounts of time and money, particularly for smaller companies whose control systems were less advanced. Second, all companies had to document their internal control systems and verify that they were operating as planned. Again, this required significant expenditures of both time and money by publicly-traded corporations. Recent data indicates that the average first-year cost of implementing Sarbanes-Oxley in public companies was \$4.3 million and that the average company spent over 26,000 hours implementing internal controls related to 404 ("404: Worth the Cost?").

Jason Lin is professor of Business Administration in the School of Business at Truman State University, Kirksville Missouri. Steve Jones is Staff Accountant at Ernst & Young LLP, in Clayton, Missouri.

The benefits of Section 404 have not been as quantifiable. The main goal seems to be that it will increase the level of control management has over its operations and thereby improve the accuracy of financial reporting, which will enhance investors' ability to make informed decisions. However, there is also the potential that 404 can help companies improve their operational efficiency. Internal controls, though perhaps costly, should theoretically improve management's ability to monitor business processes and make better decisions. It is this latter benefit that may be the hardest to recognize, and the one that this study hopes to identify.

The Committee of Sponsoring Organizations (COSO) has created a framework that identifies five key components of an effective internal control system: control environment, risk assessment, control activities, information and communication, and monitoring. The control environment is management's attitude, which in turns influences the ethics and behavior of all company employees. Risk assessment is the identification of risks that threaten the company's ability to achieve its goals. Control activities are procedures put into place in order to mitigate those risks and may include authorizations, independent checks, security of assets, and segregation of duties. The information and communication component involves capturing and communicating information to enable employees to carry out their responsibilities. Finally, the monitoring component emphasizes that the internal control system must be monitored to ensure that it is working appropriately and to make any necessary adjustments ("COSO").

I. 2. Working Capital Management

One area of operational efficiency that one might expect to improve after instituting a better system of internal controls is working capital management. Working capital can be looked at as a measure of a company's ability to meet its short-term obligations as well its underlying operational efficiency. Most companies have three essential parts of net working capital: accounts receivable, inventory, and accounts payable. These three items demonstrate how well a company is able to manage its everyday operations and how quickly it is able to turn its earnings into cash. A company that minimizes inventories, entices customers to pay their bills faster, and delays its payments to vendors can minimize the amount of money that is tied up in working capital and also take advantage of the time value of money. It can therefore decrease the amount of borrowing it needs to fund its operations.

By instituting a better internal control system, one might expect that companies would improve their working capital management. Each component of the COSO framework could play some role in this improvement. First, as management sets the tone and encourages employees to follow policies, employees will be more careful to follow the company's procedures. Second, management's identification of risks will help it formulate control procedures to mitigate those risks. Third, and perhaps most importantly, specific procedures will be identified and implemented to ensure that things are done right. These procedures will increase the accuracy of financial reporting but also increase adherence to company guidelines, which should benefit the company. Fourth, by capturing and communicating important information, management can see more of the details, identify problems as they arise, and respond to those problems. Finally, management's monitoring of the control system will increase employees' adherence to policies.

Specifically, this study hopes to identify meaningful improvement in each of the three main accounts that comprise working capital since the enactment of Sarbanes-Oxley. Regarding accounts receivable, one might expect that companies with more effective control systems would be less apt to bend the rules to grant credit to uncreditworthy customers. They might also place greater emphasis on uncollectible accounts and seek ways to entice overdue customers to pay up. Regarding accounts payable, companies would hope to extend credit terms as long as possible and pay at the latest date so as to take greatest advantage of the time value of money. Regarding inventory, an effective internal control system should cause a company to carefully monitor its processes so that it minimizes the inventory that it must carry on hand. For example, inventory purchases would be delayed until the inventory or supplies were actually needed in operations.

It might be anticipated that Section 404 would have different impacts on different companies. Two ways in which this might occur depend on a company's size and its industry. A large company, as previously noted, would be more likely to have already instituted an effective internal control system and would have less improvement to gain from complying with 404. A small company, on the other hand, may not have previously seen the benefits of an internal control system as outweighing the cost and so would not have implemented strong controls. Thus, it would be more likely to show improvements once it is forced to implement the new rules. It seems likely that different industries will be impacted differently as well. The nature of the industry may even dictate to some degree the controls that companies must have in place. Thus, it seems that some industries that previously had weaker control systems could show more significant improvements than industries that may have already had strong systems.

Data and Methodology

In order to analyze the impact of Sarbanes-Oxley on working capital, a sample was selected from four industries: electric, retail, technology, and financial services. Thirty companies were selected from each industry based on their market capitalization. Ten companies were selected from large (greater than \$5 billion), medium (between \$1 and \$5 billion), and small cap (less than \$1 billion). However, only seven medium and one small cap company were selected for the financial services industry due to limitations in information availability. In all cases, data was compared at the end of the companies' fiscal years. In order to create some consistency in the year ends of disparate companies, each company's year end was classified according to its nearest year end. In other words, companies with a fiscal year ending between January 1, 2001 and June 31, 2001 were classified as having 2000 year ends while those ending July 1, 2001 through December 31, 2001 were classified as having a 2001 year end. Since Sarbanes-Oxley was enacted in July 2002, it is assumed that companies began working towards meeting its requirements at that time and that any improvements would begin to materialize in the statements classified in this study as 2002. Data were gathered from <http://www.marketguide.com/>, a website created by Reuters. Unfortunately, there was some difficulty in gathering the data from this site as it provided only the five most recently released financial statements, which caused some companies to have results for years ended 2000-2004 and others to have results for 2001-2005.

Four measurements were calculated to assess working capital management: DSO, DPO, DIO, and DWC. To evaluate management of accounts receivable, Days Sales Outstanding (DSO) was used. It provides a measure of how quickly cash is collected from sales. Typically, well managed receivables would result in lower DSO since there would be fewer outstanding receivables for the amount of sales made. To evaluate accounts payable, Days Payables Outstanding (DPO) was used. It provides a measure of how long a company takes to pay its vendors. Typically, a company would seek to maximize outstanding payables and thereby have a higher DPO although sometimes discounts are offered for early payments which make prompt payment more advantageous. To evaluate inventory, Days Inventory Outstanding (DIO) was used. Ordinarily, well managed inventory will result in carrying less inventory and thereby a lower DIO. Finally, Days Working Capital (DWC) was used as a measure of overall working capital management. It essentially combines the three previous elements into one broad measure of working capital management. A company improving its working capital management would hope to see DWC fall as a result of improvements in the three previous measurements.

Calculations were made as follows:

$$\text{DSO} = \text{A/R} \times 365 / \text{sales}$$

$$\text{DPO} = \text{A/P} \times 365 / \text{sales}$$

$$\text{DIO} = \text{Inventory} \times 365 / \text{sales}$$

$$\text{DWC} = (\text{A/R} - \text{A/P} + \text{Inventory}) \times 365 / \text{sales}$$

The four ratios were computed for each of the 108 companies selected. These were then analyzed to assess trends by industry, by size, and aggregately. Two methods of discerning improvement were used. First, the number of companies showing improvement over the one-, two-, three-, and four-year periods following the passage of Sarbanes-Oxley was computed. Second, the average accounts receivables, payables, inventory, and sales were computed and the four ratios computed based on the averages.

Empirical Results

It is difficult to discern very significant trends from the empirical results of the study. In computing the ratios for each company individually, the ratios often fluctuate widely for each company, regardless of size or industry. This could be due to the fact that the measurements used (DSO, DPO, DIO, and DWC) are not good indicators of working capital management. Because they are based on year-end amounts which may fluctuate greatly from the normal levels, these measurements may introduce additional ambiguity in the recognition of trends. Similarly, the use of these ratios may not reflect improvements in a company's management of its working capital. For example, a company may increase its use of credit sales or decrease its use of credit purchases, which may create false impressions in this study. In compiling the data aggregately, by industry, and by size, some small trends of improvement emerge.

When the data are aggregated, the study seems to indicate that working capital management has improved since the passage of Sarbanes-Oxley. Table 1 reveals that when looking at the one-, two-, three-, and four-year horizons following 2001, over half of the companies showed improvements in DWC in each horizon. This indicates that improvements have occurred since the signing of the Act and that those improvements have not disappeared with the passage of time. However, the percentage of companies showing DWC decreases did

not increase each year, indicating that there may not be continuous improvement occurring because of the Act. By looking at average DWC as in Table 2, however, it appears that there is a steady decline in DWC, indicating a steady improvement in working capital management over the time period studied. The aggregate improvements were fueled by high percentages of companies showing increases in DPO and decreases in DIO. Less than half of companies showed DSO decreases in each time horizon, which hurt the overall improvement demonstrated.

When the data are analyzed by industry, some interesting results develop. All industries showed signs of improvement, although not all of the signals were the same. Table 3 indicates that over half of firms in each industry improved over their 2001 ratios during nearly every time horizon. Table 4 indicates that DWC averages for each industry also showed steady improvement nearly every year. Improvements in each industry were fueled by improvements in DPO and DIO while DSO generally weakened the overall improvement in each industry.

In the electric industry, DWC improved in each of the four time horizons, with 71% of firms showing improvements by 2005. Likewise, the average DWC declined each year. This seems to indicate that the Act had a significant impact on the electric industry and has improved working capital management in this industry.

The effect on other industries was less clear. In the retail industry, only 43% and 50% of companies showed improvements in DWC in the first two years following the Act. However, this percentage increased to 53% and 69% by 2004 and 2005, respectively. The average DWC for the industry actually increased in the first year after the Act, but declined significantly in the second year and slightly in the third year. This indicates that improvement did occur but did not occur immediately or steadily.

In the technology industry, over half of the companies showed DWC improvements in the first three time horizons, reaching 63% in the three-year horizon. However, only 43% of companies showed improvements over the four-year horizon, indicating that improvements may not have been sustained. The average DWC, however, steadily declines, indicating that improvement may have steadily occurred.

In the financial services firm, the results again appear strong. Over half of companies showed improvements in DWC under each of the four time horizons, although the percentage of improving companies declined over the longer time horizons. In analyzing average DWC, it drops sharply in the first year, drops again in the second year, but then increases slightly in the third year. This seems to indicate that an improvement in working capital management did occur but continuous improvement may not be occurring.

When the data are accumulated by firm size, the results are somewhat surprising. Firms of all sizes still showed signs of improvement, indicating that progress occurred regardless of firm size. Table 5 shows that percentage of small firms with DWC improvements was at least as great as that of large firms. Table 6, however, shows that average DWC actually increased for smaller firms and to some extent for medium-sized firms, creating some ambiguity in the results by size. As previously noted, advances in DWC were fueled by DPO and DIO improvements and slowed by DSO increases.

Large firms showed a significant progressive trend. Over half of firms showed improvements under each of the four time horizons. This number did not steadily increase, however, and only 54% of firms showed increases by 2005. Average DWC steadily declined each year, indicating that large firms did show steady improvement since the passage of the Act.

Medium-sized firms also demonstrated improvement, although it was less significant. Less than half of the firms showed progress in the first year following the act. However, in the two-, three-, and four-year horizons, over half of the firms decreased their DWC. Average DWC declined in the first and second years, but then increased sharply in the third year. This creates some ambiguity regarding the overall improvement of these firms.

The results of small firms were also ambiguous. While the percentage of firms showing DWC improvements was over 50% under each time horizon and reached 75% by 2005. However, the average DWC declined only in the first year and was followed by substantial increases in years two and three after the passage of Sarbanes-Oxley. This paints two distinct pictures of small firms' working capital management since 2001.

Further Analysis

The main goal of the study was to determine if Sarbanes-Oxley has led to advancements in working capital management. Based on the empirical results, these advancements do seem to have occurred. It seems that of those studied, more companies improved their working capital management since the passing of the Act than did not. This conclusion is supported by the fact that over half of the firms decreased their DWC in each of the one-, two-, three-, and four-year time horizons and average DWC declined steadily each of the years after the passage of Sarbanes Oxley. It should be noted, however, that only 54% of companies studied had lower DWC in 2005 than they had in 2001. This indicates that the results are still somewhat ambiguous and further studies may be required to fully analyze Sarbanes-Oxley's impact on working capital management.

A secondary goal of the study was to determine if working capital management was affected differently in different industries. Although each industry showed signs of progress, the strongest signs were seen in the electric and financial services industries. (Note: Excluding DIO in financial service industry.) The percentages of firms showing improvements in DWC in these industries were much higher under each time horizon and the average DWC declined significantly and fairly steadily in each. The retail and technology industries were less clearly impacted. In the retail industry, progress in DWC seems to have occurred, but not until 2003. After that time, however, the improvements do seem significant. In the technology industry, only 43% of firms showed a lower DWC in 2005 than they had in 2001. However, average DWC steadily decreased and over half of the firms showed DWC decreases under the three other time horizons. The 2005 data may therefore have been skewed and the overall improvement may still exist in this industry. Overall, it does seem that the financial services and electric industries were more strongly impacted than the retail and technology industries.

The third goal of the study was to determine if working capital management varied due to the size of firms. The original idea was that smaller firms would be more affected by increased internal control requirements and so would show greater improvements. This study does not provide a conclusive answer. Overall, a higher percentage of small companies showed DWC progress than did large companies over the various horizons surveyed. However, the average DWC for small companies actually increased while that of large companies steadily decreased. The results of medium-sized firms were also ambiguous. It cannot be conclusively claimed that smaller firms were affected more strongly than their larger counterparts.

Conclusions

This study indicates that Sarbanes-Oxley may have led to progress in the area of working capital management. However, the results could have been influenced by other factors implicit in the business environment. As more time passes, a more definitive trend should emerge. To fully understand the impact of Sarbanes-Oxley, further research will be needed.

There are several ways in which this study could be expanded upon in future research. First, a closer link between internal controls and working capital management could be theoretically developed. Such research could examine the behavioral influence of increased scrutiny due to new 404 requirements or focus on demonstrating that better internal controls have a direct effect on working capital management. Second, measurements could be refined so as to better capture the impact that internal control changes have had on operations. Such measurements should seek to avoid the complications that arise when using point measurements. Point measurements may increase the variability and introduce error due to unusual transactions or changes near the fiscal year end. Third, more time is required to adequately assess the impact of Sarbanes-Oxley. Many companies have focused purely on complying with the act rather than using its requirements to improve its business processes. Over time, it is more likely that the benefits of the Act will begin to materialize or a trend will become more discernable.

This study has shed some light on an important topic related to Sarbanes-Oxley—how its requirements may provide meaningful financial benefits for companies. Although it is difficult to prove the extent of such benefits, this study has demonstrated that they do exist and has provided a foundation that future studies can build upon to more definitively analyze this topic.

	2001-05*	2001-04	2001-03	2001-02
DSO	37%	46%	42%	44%
DPO	65%	59%	59%	56%
DIO*	57%	56%	59%	55%
DWC	54%	57%	61%	57%
*For firms that included 2005 data				
**Improvement in DIO based on firms with inventory data (51 firms)				

Table 1: The percentage of firms showing improvement from the entire data set

	2004	2003	2002	2001
DSO	110.7	100.8	98.0	105.2
DPO	183.1	167.6	160.6	158.6
DIO*	26.1	26.5	27.9	27.2
DWC	(46.3)	(40.3)	(34.7)	(26.2)
*Inventory averages were based on non-financial (90 firms)				

Table 2: Overall average of the four measurements

		2001-05	2001-04	2001-03	2001-02
Electric	DSO	43%	57%	53%	40%
	DPO	86%	50%	43%	57%
	DIO	50%	60%	57%	53%
	DWC	71%	57%	63%	60%
Retail	DSO	54%	47%	33%	57%
	DPO	62%	53%	50%	40%
	DIO	69%	50%	60%	50%
	DWC	69%	53%	50%	43%
Technology	DSO	24%	47%	40%	33%
	DPO	67%	63%	70%	63%
	DIO	62%	60%	63%	63%
	DWC	43%	63%	57%	53%
Financial Services	DSO	47%	28%	39%	50%
	DPO	67%	78%	83%	72%
	DIO	N/A	N/A	N/A	N/A
	DWC	60%	56%	83%	83%

Table 3: The percentage of firms showing an improvement by industry

		2004	2003	2002	2001
Electric	DSO	62.9	61.1	77.9	85.5
	DPO	58.8	56.8	72.4	77.8
	DIO	21.6	23.5	27.6	29.2
	DWC	25.7	27.9	33.1	36.9
Retail	DSO	7.7	7.6	9.1	8.5
	DPO	28.6	27.4	27.6	27.6
	DIO	38.4	37.7	38.9	38.7
	DWC	17.5	17.8	20.3	19.7
Technology	DSO	61.7	67.6	66.6	64.1
	DPO	41.0	39.4	37.2	33.8
	DIO	20.6	20.7	21.2	23.0
	DWC	41.4	48.8	50.6	53.4
Financial Services	DSO	685.2	627.3	533.6	450.7
	DPO	1,282.2	1,227.0	1,075.7	810.9
	DIO	N/A	N/A	N/A	N/A
	DWC	(596.9)	(599.6)	(542.1)	(360.2)

Table 4: Industry averages of the four measurements

		2001-05	2001-04	2001-03	2001-02
Large	DSO	39%	48%	48%	53%
	DPO	64%	63%	60%	58%
	DIO	55%	45%	43%	35%
	DWC	54%	63%	55%	63%
Medium	DSO	43%	43%	38%	41%
	DPO	74%	57%	62%	59%
	DIO	63%	50%	57%	47%
	DWC	57%	54%	65%	49%
Small	DSO	33%	48%	39%	39%
	DPO	75%	58%	55%	52%
	DIO	67%	60%	67%	73%
	DWC	75%	55%	65%	61%

Table 5: The percentage of firms showing improvement by size

		2004	2003	2002	2001
Large	DSO	120.2	109.8	106.6	115.0
	DPO	204.7	187.6	179.8	178.8
	DIO	34.1	34.9	37.1	36.4
	DWC	(50.4)	(42.8)	(36.2)	(27.4)
Medium	DSO	52.1	45.3	48.6	52.9
	DPO	51.5	49.8	50.5	48.1
	DIO	29.6	28.8	29.2	26.7
	DWC	30.2	24.2	27.3	31.6
Small	DSO	60.3	63.7	55.1	48.7
	DPO	59.3	62.6	59.9	52.2
	DIO	28.9	26.4	25.5	26.2
	DWC	29.9	27.4	20.7	22.6

Table 6: Average of the four measurements by firm size

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