

The Miller Ratio: Is It Really This Simple?

James E. Miller, CPA, DBA, Gannon University, USA
Scott E. Miller, CPA J.D., DBA, Edinboro University of Pennsylvania, USA

ABSTRACT

The implication of the study of the Miller Ratio (MR), given the simplicity of its computation, is the possibility of the MR being both a beneficial and easy to use tool for practitioners and regulators to detect for the possibility of earnings management (EM). The previously studied models, particularly the Modified Jones Model (MJM), were not designed to be utilized on a case-by-case basis since they were studied using large samples of firms in an attempt to make generalized statements about the effectiveness of the models. The MR, designed to be utilized on a case-by-case basis, is easily computed. If corporate managers become aware of this simple, easy-to-use tool to detect EM, they may be more cautious about engaging in this activity. Essentially, the MR could assist practitioners and regulators in prioritizing their work load of companies to analyze. It can be another tool in their arsenal to assist them in their regulatory and auditing duties. The simplicity and benefit of the MR is discussed in this study.

Keywords: Miller Ratio; Earnings Management; Financial Statements; Manipulations

BACKGROUND OF EARNINGS MANAGEMENT

Corporate managers, in their fiduciary role as the stewards of stockholders' assets, are expected to run the company in the best interests of the stockholders. Presumably, the firm should maximize long-term earnings. However, short-term goals are also necessary to enhance the productivity and image of the company (Giroux, 2004). One of the potential problems inherent in the corporate form is managers may focus on short-term personal incentives such as maximizing salaries, bonuses, and other short-term compensations, rather than focus on the long-term economic success of the firm (See Jensen and Meckling, 1976). While this can be accomplished through improved business strategies and successful operations; it can also be accomplished, at least in the short-term, through aggressive EM. It is this aggressive use of EM to accomplish managers' short-term goals, such as meeting earnings targets to receive bonuses and related recognition, which causes the topic of earnings management (EM) to rise to a level of importance for study. Accrual accounting creates an opportunity for managers to manage earnings within the guidelines and flexibility of Generally Accepted Accounting Principles (GAAP). To the extent that this EM becomes aggressive, it changes the reader's perception of the story being told. When aggressive earnings management crosses the boundaries of the flexibility of GAAP it becomes fraud (Mulford & Comiskey, 2002). Consequently, the study of earnings management, and methodologies to detect such, assist stakeholders of corporations in analyzing risk.

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This study focuses on the study of a tool practitioners and regulators may find useful. The large body of literature on the topic of earnings management provides discussions of total accruals, discretionary total accruals, and current accruals. The literature also offers discussions of the development and study of models to determine the level of earnings management given that cash flow from operations (CFO) and net income differ.

Miller (2007) discussed the fact the Modified Jones Model (MJM) has consistently been recognized as an indicator of EM in the literature (Mitra, 2007; Lobo & Zhou, 2006; Wright, Shaw & Guan, 2006; Xiong, 2006;

Kwon & Yin, 2006). Thus, it was reasonable to compare the behavior of the MR to the MJM using 354 companies from the GAO list of restatement announcements to ascertain if the volatility of the MR is as robust as that of the MJM. The appropriate variables were acquired from COMPUSTAT to compute the MR and MJM. Consistent with Dechow, Sloan and Sweeney (1995), and as emulated by Mitra (2007), Wright, et al., (2007), Lobo & Zhou (2006), and Kwon & Yin (2006), descriptive statistics were generated for the MR and the MJM from the same data set. The result was that the MR, when applied to the 354 identified firms, would prove to be as robust as the MJM, and also would indicate unusual levels of volatility.

THE MILLER RATIO

Accruals can be manipulated (earnings management) during the short-term, but these amounts will eventually reverse themselves. Accrual accounting provides the ability to manipulate net income by aggressive recording of revenues or postpone recording of expenses with offsetting entries to the various accounts comprising working capital. Therefore, it would appear that a relationship between the change in working capital and cash flow from operations would be an indicator of earnings management. If a firm was not engaging in aggressive earnings management, the relationship would be stable.

A review of the literature leads to the opportunity to study the relationship between CFO and ΔWC (Change in Working Capital) as a tool to detect earnings management. The relationship is to be known as the Miller Ratio and is specified as $\Delta WC / CFO$. The intent of the MR is such that practitioners and regulators can prioritize their list of firms to ascertain if, in fact, the firm is engaging in earnings management by inappropriately altering the financial story being told to the public.

The Miller Ratio is as follows:

$$(\Delta wc/cfo)_{t-0} - (\Delta wc/cfo)_{t-1} = 0$$

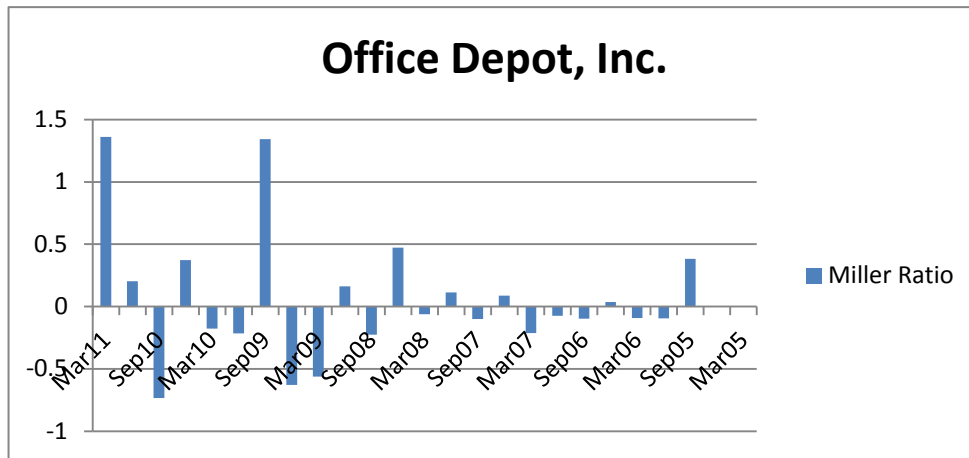
Acknowledged within the MR is change in revenue (ΔREV) and change in accounts receivable (ΔREC) by virtue of the definitional components of ΔWC and CFO. As can be ascertained from the aforementioned, the MJM requires six items of financial information and the MR requires two simple items of information.

THE CURRENT STUDY

Miller (2008) presented a study of four companies, identified by the GAO as having restatements for revenue recognition issues. Since the MR is designed to be used on a case-by-case situation to assist financial analysts and other stakeholders, this was a significant step forward in the application of the MR. The purpose of the current study is to continue the validation the construct of the model (the MR).

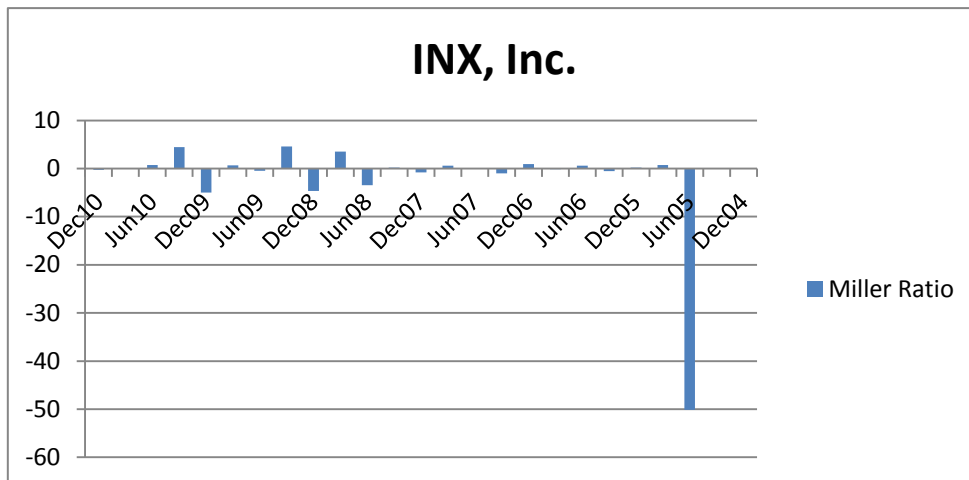
An internet search was performed seeking companies identified as having restatement of their financial statements. Five companies were chosen without regard to the reason for the restatement. This is different from the 2008 study which used companies who restated for revenue recognition reasons. One might say the 2008 study was a “stacked deck” since it was apparent earnings management was involved given restatements were required for revenue recognition reasons. This study of five companies with restatements without regard to the restatement reason is intended to establish the benefit of the MR, on a case-by-case basis, when used with any company, regardless of the restatement justification. The anticipated benefit is to utilize the MR to determine if any company may be in need of a detailed financial analysis, as mentioned in Miller (2007).

Office Depot, Inc.



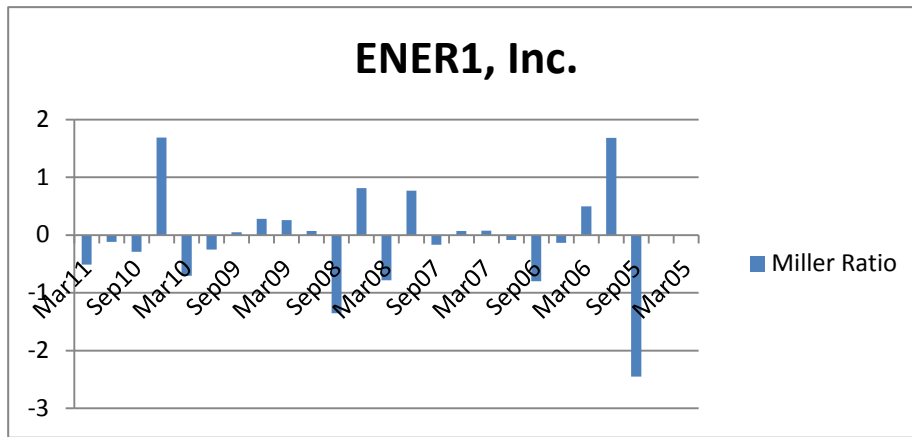
Office Depot restated its earnings in certain quarters in 2009 and 2010. Office Depot is in the office supply business. The Internal Revenue Service had denied a carryback of tax losses resulting in restatement which turned a \$33M profit into a \$46M loss. The spikes on the bar chart reflect the MR for the indicated periods. As noted in the table above, a spike in the Miller Ratio occurred in the quarter of the restatement.

INX, Inc.



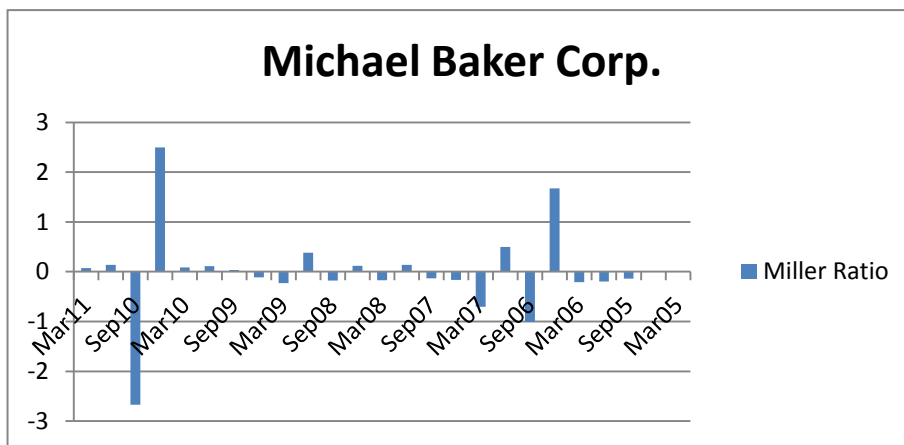
INX restated its earnings in December, 2009. INX is involved in IP communications and data center solutions. The December 2009 corresponds with restatement due to timing of recognition of revenues and cost of revenues. The reasoning for the June 2005 spike could not be determined. As noted in the table above, a spike in the Miller Ratio occurred in the quarter of the restatement.

ENER1, Inc.



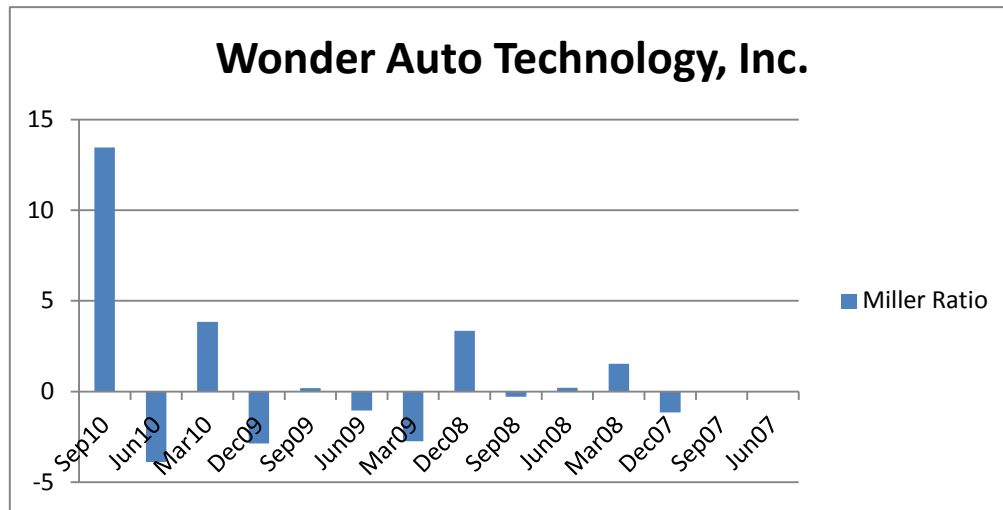
ENR1, Inc. restated its earnings in 2010. ENR1, Inc. is involved with automotive technology. The 2010 restatement was due to accounts receivable recognition issues with closely affiliated companies. As noted in the table above, a spike in the Miller Ratio occurred in the quarter of the restatement.

Michael Baker Corp.



Michael Baker Corp. restated its earnings in 2010. Michael Baker Corp. is involved in architectural engineering and construction services. The 2010 restatements, along with restatements for 2006, 2007 and 2008 were voluntarily restated. As noted in the table above, a spike in the Miller Ratio occurred in the quarter of the restatement.

Wonder Auto Technology, Inc.



Wonder Auto Technology restated its earnings in 2010. Wonder Auto Technology is involved in designing, manufacturing and selling automotive parts. The restatement were due to cut-off errors in sales, cost of goods sold and annual reports from subsidiaries in China. Wonder Auto is schedule to restate 2008, 2009 and 2010. As noted in the table above, a spike in the Miller Ratio occurred in the quarter of the restatement.

This brief study appears to support, along with the Miller 2008 study, the possibility the *Miller Ratio* could indicate a more detailed analytical review should be made of the company’s financial statements, particularly the accounts that comprise the *Miller Ratio*. Essentially, the MR could assist practitioners and regulators in prioritizing their work load of companies to analyze. It is another arrow in their quiver, so to speak. A study of five companies does not establish the validity of the *Miller Ratio* to detect for the possibility of earnings management. However, the findings discussed indicate that there is sufficient reliability in the *Miller Ratio* to justify further study. Rather, the purpose of the Miller Ratio is to provide a tool for analysts to indicate the *possibility* of earnings management and allows analysts to focus their efforts and be more inquisitive of periods when the Miller Ratio signals the potential for EM. Given the fact this study was conducted with companies with different reasons for the restatements, the ease of use of the MR is illustrated.

CONCLUSION

Therefore, to answer the questions posed by the title of this study- *The Miller Ratio: Is It Really This Simple?* the following comparison is offered:

The Modified Jones Model (developed to be used with a large grouping of companies) (Jones, 1991):

$$EDAC_{it} = [((\Delta CA_t - \Delta CL_t - \Delta Cash_t + \Delta STD_t - Dept)/(A_{t-1})) - [a_{11}(1/A_{t-1}) + b_{11}((\Delta REV_{it} - \Delta AR_{it})/A_{t-1}) + b_{12}(PPE_{it}/A_{t-1})]]_{t-0} - [((\Delta CA_t - \Delta CL_t - \Delta Cash_t + \Delta STD_t - Dept)/(A_{t-1})) - [a_{11}(1/A_{t-1}) + b_{11}((\Delta REV_{it} - \Delta AR_{it})/A_{t-1}) + b_{12}(PPE_{it}/A_{t-1})]]_{t-1}$$

Where:

- EDAC_{it} = Estimated discretionary accruals for firm i in year t,
- TAC_{it} = Total accruals for firm i in year t,
- A_{it-1} = Total assets for firm i at beginning of year t,
- ΔREV_{it} = Change in revenue for firm i from year t-1 to year t,
- ΔAR_{it} = Change in accounts receivable for firm i from year t-1 to year t, and
- PPE_{it} = gross property, plant and equipment for firm i in year t.

The Miller Ratio developed to be used on a case-by-case basis:

$$(\Delta wc/cfo)_{t-0} - (\Delta wc/cfo)_{t-1} = 0$$

Given the results and simplicity of the MR, the answer to the question must be a resounding YES ! The MR signaled the presence of EM. Therefore, moving forward, it appears to be a useful tool for practitioners and regulators as another tool in their toolbox.

AUTHOR INFORMATION

Dr. James E. Miller, CPA, DBA is an Associate Professor of Accounting at Gannon University in Erie, PA. He was awarded the Doctor of Business Administration degree, with a major in Accounting, at Anderson University in Anderson, IN upon his successful dissertation defense on October 1, 2007. Dr. Miller also holds Master of Business Administration and Bachelor of Science degrees from Gannon University. Upon retiring from a successful 20+ year career in public accounting in 1991, Dr. Miller embarked upon a career in teaching, which he has found to be most rewarding. E-mail: miller005@gannon.edu

Dr. Scott E. Miller, CPA, J.D., DBA is an Associate Professor of Accounting at Edinboro University of Pennsylvania where he teaches all levels of financial accounting. Dr. Miller holds a DBA in Accounting from Anderson University, a J.D. from University of Pittsburgh School of Law and a B.S. in Accounting (*summa cum laude*) from Gannon University. Dr. Miller brings twenty years of professional experience, including experience as a CPA and Attorney, to his research and into the classroom. Dr. Miller has presented and published research throughout the United States as well as internationally. E-mail: millerse@edinboro.edu

REFERENCES

1. Dechow, P. M., Sloan, R. G., Sweeney, A. P. (1995). Detecting Earnings Management. *The Accounting Review*, 70, 193-225.
2. Jensen, M. & Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3, 305-360.
3. Jones, J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, 29, 193-228.
4. Kwon, S. S., & Yin, Q. J. (2006). Executive compensation, investment opportunities, and earnings management: High-tech firms versus low-tech firms. *Journal of Accounting, Auditing & Finance*, 2 1(2), 119-148.
5. Lobo, G., & Zhou, J. (2006). Did conservatism in financial reporting increase after the Sarbanes Oxley act? Initial evidence. *Accounting Horizons*, 20(1), 57-73.
6. Miller, James E. (2007). Detecting Earnings Management: A Tool for Practitioners and Regulators. (Doctoral Dissertation, Anderson University).
7. Miller, James E. "The Development of the Miller Ratio (MR): a Tool to Detect for the Possibility of Earnings Management (EM)". Proceedings of International Business and Economics Research Conference: September 28-October 2, 2008, Las Vegas, NV.
8. Mitra, S. (2007). Nonaudit service fees and auditor independence: Empirical evidence from the oil and gas industry. *Journal of Accounting, Auditing & Finance*, 22 (1), 85-107.
9. Mulford, C., & Comiskey, E. (2002). *The financial numbers game: Detecting creative accounting practices*. New York: John Wiley & Sons, Inc.
10. Wright, C. J., Shaw, J. R., & Guan, L. (2006). Corporate governance and investor protection: Earnings management in the U.K. and U.S. *Journal of International Accounting Research*, 5(1), 25-40.
11. Xiong, Y. (2006). Earnings management and its measurement: A theoretical perspective. *Journal of American Academy of Business*, 9 (1), 21

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