INVESTIGATION OF DISCREPANCIES IN THE COMPUTATION OF FINANCIAL RATIOS

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ABSTRACT

Several authors of accounting and finance textbooks have offered different formulas for the computation of the same financial ratio resulting in different results. This paper identifies, explores, and discusses some of these discrepancies in the computation of financial ratios.

INTRODUCTION

Ratio analysis is one of the most popular methods for the analysis of the financial statements of companies. Accounting and finance textbooks have introduced a number of financial ratios for the analysis of financial statements. The authors of this paper have noticed discrepancies in the suggested formulas for the computation of the same ratio in several textbooks. That is, the computation of a ratio produces a different answer depending on which author's suggested formula is used. This paper identifies, explores, and discusses these discrepancies in the computation of some of the financial ratios and its implications for the educators.

FINDINGS

To make our point we have chosen five ratios for our illustration. They are as follows:

1) Acid-Test Ratio (also known as Quick Ratio) is a more rigorous test of a company's ability to pay its current liabilities. It tries to measures the "instant" ability of the company in paying its current debt.

2) Inventory Turnover Ratio measures how quickly inventory is converted into sales.

3) Number of Days' Sales in Inventory (the average sale period) is a rough measure of the length of time (in days) that it takes to sell the merchandise after they are purchased or produced.

4) Average Collection Period (number of days' sales in receivables) is an estimate of the length of time (in days) that it takes to collect a credit sale.

5) Profit Margin is a measure of the profitability of the company obtained by relating either net income or operating income to revenue.

Normally these ratios are covered in the first introductory accounting course (Principles of Financial Accounting), the second introductory accounting course (Principles of Managerial Accounting), and the required finance course for the BBA degree. To better explain the discrepancies and the potential confusion confronting the students, we have examined the problem from the perspective a student that has used different textbooks in the above three courses. Three widely used accounting textbooks are shown below. A student may take the two different financial and managerial introductory courses using different textbooks, and then use yet a different text for his or her finance course. Consider the following scenario:

- In the first introductory accounting course (Principles of Financial Accounting), the student uses one of the following accounting principles textbooks for his or her first accounting principles course, Principles of Financial Accounting: *Accounting Concepts and Applications* by Albrecht, Stice, Stice, and Swain [1] , *Financial and Managerial Accounting* by Warren and Reeve [2] or *Fundamental Accounting Principles* by Wild, Larson and Chiappetta [3].

- The student uses a different one of the above textbooks in the second introductory accounting course (Principles of Managerial Accounting).

- The student then uses *Fundamentals of Financial Management* by Brigham and Houston [4] textbook in the required finance course for the BBA degree (Corporate Finance).

This student would have learned to calculate the ratios in the three courses using as follows:

	Financial and Managerial Accounting by Warren and Reeve	*Accounting Concepts and Applications* by Albrecht, Stice, Stice, and Swain	*Fundamentals of Financial Management* by Brigham and Houston	*Fundamental Accounting Principles* by Wild, Larson, and Chiappetta
1) Acid Test Ratio or Quick Ratio	(Cash + Marketable Securities + Receivables) divided by Current Liabilities	N/A	[Current Assets – Inventories] divided by Current Liabilities	(Cash + Short-term investments + Current receivables) divided by Current Liabilities
2) Inventory Turnover Ratio	Cost of Goods Sold divided by Avg. Inventory	Cost of Goods Sold divided by Average Inventory	Sales divided by Inventories[1]	Cost of Goods sold divided by Avg. Inventory
3) Number of days' sales in inventory	Inventory end of year divided by average daily cost of goods sold	365 divided by Inventory Turnover Ratio	N/A	(Inventory end of year divided by cost of goods sold) multiplied by 365
4) Average Collection Period	Accounts Receivable end of year divided by Average daily net sales	365 divided by Accounts Receivable Turnover Ratio	Receivables divided by Average sales per day	(Accounts Receivable divided by Net Sales) multiplied by 365
5) Profit Margin	Income from Operations divided by Sales	Income from Operations divided by Revenue	Net Income divided by Sales	Net Income divided by Net Sales

[1] Brigham and Houston claim that some established compilers of financial ratio statistics such as Dun & Bradstreet use the inventory turnover ratio in the format stated by them in the textbook.

To demonstrate the discrepancies, we have computed the above five ratios for Johnson Company for year 2008. The financial statements for Johnson Company are displayed in Exhibit I.

	Financial Accounting by Warren and Reeve	*Accounting* by Albrecht, Stice, Stice, and Swain	*Fundamentals of Financial Management* by Brigham and Houston	*Fundamental Accounting Principles* by Wild, Larson, and Chiappetta
1) Acid Test Ratio or Quick Ratio	0.79 to 1	N/A	0.96 to 1	0.79 to 1
2) Inventory Turnover Ratio	8.4 times	8.4 times	14.4 times	8.4 times
3) Number of days' sales in inventory	48 days	43 days	N/A	48 days
4) Average Collection Period	15 days	13 days	15 days	15 days
5) Profit Margin	8.33%	8.33%	4.17%	4.17%

IMPLICATIONS AND CONCLUSION

The discrepancies in the computation of certain financial ratios have created confusion among the students that have learned a ratio under different formulas in different courses. From the academic point of view, it would be useful to identify and recognize these discrepancies and explore the logic and perhaps to reach a resolution.

REFERENCES

[1] Albrecht, W.S., Stice, E.K., Stice, J. D., and Swain, M.R. (2008) *Accounting, Concepts and Applications* (10th ed.). Thomson South-Western.

[2] Warren, C.S. & Reeve, J. M. (2007). *Financial and Managerial Accounting* (9th ed.). Thomson South-Western.

[3] Wild, J.J., Larson, K.D., & Ciappetta, B. (2008). *Fundamental Accounting Principles* (18th ed.). McGraw-Hill Irwin.

[4] Brigham, E.F. & Houston. J.F. (2007) *Fundamentals of Financial Management* (5th ed.). Thomson South-Western.

Exhibit I

Financial statements for Johnson Company

Johnson Company
Statement Of Financial Position
As of 31-Dec

	2008	*2007*
Cash	400	780
Marketable securities	300	500
Accounts receivable (net)	1,200	900
Office Supplies	200	120
Prepaid expenses	200	100
Inventories	2,000	1,600
Total current assets	4,300	4,000
Land	500	500
Building and equipment (net)	4,700	4,000
Total long-term assets	5200	4500
Total assets	$9,500	$8,500
Accounts payable	$1,400	700
Wages payable	1,000	500
Total current liabilities	2,400	1,200
Long-term debt	3,000	4,000
Total liabilities	5,400	5,200
Common stock, $10 par	3,000	3,000
Additional paid-in capital	100	100
Retained earnings	1,000	200
Total stockholders' equity	4100	3300
Total liabilities and equities	$9,500	$8,500

Johnson Company
Income Statement
For the Year Ending December 31, 2008

Sales (all on account)	$28,800
Cost of goods sold	(15,120)
Gross margin	13,680
Operating expenses	(11,280)
Net operating income	2,400
Interest expense	(400)
Net income before taxes	2,000
Income taxes (40%)	(800)
Net income	1,200