

# A SORRY STATE OF AFFAIRS: THE PROBLEMS WITH FINANCIAL RATIO EDUCATION

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## ABSTRACT

*This paper examines a large sample of accounting, finance, management, marketing, and financial statement analysis texts. The “Top 20” ratios in business textbooks are identified and discussed. The paper finds two major problems with ratio presentation in business textbooks: formula confusion and naming confusion. Many ratios bearing the same name are presented with different mathematical formulas. Only four of the Top 20 ratios have 100% consensus on the formula. Many ratios also have several commonly used “aliases” or alternate names. These two issues may cause considerable difficulty for both students and practitioners.*

## INTRODUCTION

A basic understanding of financial ratios and financial analysis is considered by most professors to be a fundamental component of business literacy. This is demonstrated, in part, by the inclusion of financial ratios in a wide variety of business textbooks, including those for financial and managerial accounting, corporate finance, investments, business strategy, marketing research, and financial statement analysis. Business students typically encounter ratios for the first time in an introductory accounting class. They are then periodically re-exposed to them throughout their academic careers, culminating in what is probably a heavy dose of ratios and financial analysis in a capstone business policy or strategy class. Accounting and finance majors probably receive more instruction on ratios than other business students, but all business majors are probably exposed to ratios in at least three classes: accounting, finance, and business policy.

One of the great strengths of ratio analysis is its flexibility. Since there is no governing body in charge of ratios, users of ratios are free to customize or create their own ratios to address their particular analytical needs. This, of course, leads to the existence of many different ratios that each addresses a different issue.

Though flexibility is a strength of ratio analysis, unlimited flexibility has the potential danger of resulting in chaos. Users of financial ratios should have some expectation of consistency in ratio names and calculations. It is reasonable to assume that once a student learns a particular ratio that knowledge can be applied in a variety of situations with little potential for error or confusion. The data, however, show that that is probably not the case. There is little consistency in ratio names or formulas among the business textbooks in the sample. It appears that the textbook authors’ choices to exercise their flexibility have resulted in a bewildering array of minor variations in ratio formulas and names.

We have long been aware of anecdotal evidence, primarily in the form of student complaints, that ratios are presented quite differently in different textbooks and classes. Many students have complained about different classes emphasizing completely different sets of ratios. To some extent this is to be expected, as different business disciplines will find different ratios more useful. So this complaint may have little merit. More importantly, many students have complained about two specific problems they have experienced. First, ratio formulas are inconsistent. Many ratios with the same name have different formulas in other textbooks. Second, ratio names are inconsistent. Many ratios with the same formulas have different names in other textbooks.

Financial ratio calculations need to be precise so they have precise meanings to users, consistency between years and comparability among firms. Students, professors, and professionals naturally expect the ratios to have a high level of precision. However, the ratio formulas in the sample suffer from a lack of standardization and precision. Two of the primary student complaints about ratio instruction appear to have some merit. There are many “competing” mathematical formulas for ratios with the same name. Likewise many ratios with identical mathematical formulas have different names. This “formula confusion” and “naming confusion” creates a lack of consistency in financial ratio formulas and in financial ratio terminology that likely creates a lack of precision in financial analysis.

Checking several textbooks from different classes is enough to confirm the basic truth of the student complaints. However, a casual review is insufficient to assess the magnitude of the ratio problem. A certain amount of inconsistency in ratio names and formulas must be expected, due to the flexibility discussed above. However, it is difficult, without a thorough understanding of the issue, to know when we have crossed the line from a reasonable amount of inconsistency into the area of “chaos.” Because of the same complaints year after year, we decided that a more thorough study of these issues was appropriate.

One way to illustrate the problem of formula confusion is to compare ratios from a variety of popular investment websites. Many of these websites provide financial ratios of publicly traded companies. However, these websites frequently “disagree” on the values of various ratios. To illustrate this problem, an online search was performed to compare Return on Assets (ROA) numbers for the Coca-Cola Company. We chose ROA because it is a very common ratio that has many different formulas. These ROA numbers for Coca-Cola are shown on Exhibit 1.

<b>EXHIBIT 1 RETURN ON ASSETS COCA-COLA COMPANY 2/23/2011</b>	
<b>Website</b>	<b>Return on Assets</b>
Daily Finance	19.86%
Google Finance	19.51%
MSN Money	19.50%
Morningstar	14.98%
Yahoo Finance	9.60%

These ROA numbers were taken from these popular sites on the same day. The results ranged from 9.60% to 19.86%. The most common formula for ROA is Net Income / Assets [see

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Table 8]. However, there are several ways to calculate ROA that can give dramatically different results. The websites do not have to provide the formulas used in calculating the ratios, but Yahoo does provide a glossary for its key ratios. Yahoo calculates ROA as Earnings from Continuing Operations / Average Total Assets, which is a “non-standard” version of ROA. This simple example using a common ratio for a widely followed company shows the real problem of formula confusion.

Because of these problems with inconsistent ratio names and formulas, this paper will attempt to answer the following questions:

1. What ratios are most commonly being taught to business students?
2. How consistently are these ratios being taught, in terms of both formulas and names?
3. To what extent is inconsistency in ratio presentation explained by the business discipline? (Do accounting professors teach ratios differently from finance professors?)

## LITERATURE REVIEW

It is inconceivable that accounting data can be analyzed without transferring it into ratios, in one way or another...(Horrigan, 1965, 568)

Financial ratios were developed to be useful for investors, creditors, and managers. A historical review of the development and the use of financial ratios is helpful to show how these ratios are important to decision makers. This review of the financial ratio literature is provided in three sections. The first section gives a history of the early development of financial ratios. The second section discusses the many uses of financial ratios. The third section attempts to show which ratios are important to professionals.

### Early Development of Financial Ratios

The Industrial Revolution in the late 19<sup>th</sup> century changed business from small firms with owner-managers to large firms with professional managers and stockholders. This drove the need for financial statements and financial analysis. Commercial bank requests for company financial statements that began in the 1870's became widespread by the 1890's. The current ratio was the first financial ratio developed, in the 1890's, and remained the only ratio for several years. The passage of the Federal Income Tax in 1913 and the establishment of the Federal Reserve Board in 1914 were two important events in the United States that increased the demand for and the quality of financial statements. There were two innovations in 1919 that were very influential in expanding the use of financial ratios. The first was the Alexander Wall publication of *Study of Credit Barometrics*, and the second was the DuPont Company's development of its famous ratio triangle (Horrigan, 1968).

Alexander Wall (1919b) was a banker and credit manager who developed a system of seven ratios that he applied to 981 firms that he divided into nine geographic regions and nine industries. Wall's analysis was published as *Study of Credit Barometrics* in the *Federal Reserve Bulletin* in 1919. Because the Federal Reserve Board published the study, it was widely read and highly

influential (Horrigan, 1968). Wall used the term ‘barometrics’ to show the dynamic nature of the ratios’ changing during business cycles the ratios’ variation by industry and region.

Wall championed the idea of using more than one single ratio based on a single absolute standard when he questioned the axiom that the current ratio should be at least 2.0. Wall asserted:

Experience has fixed upon a ratio of two dollars of quick assets for every dollar of quick liabilities. There has, however, been no scientific method used in establishing this ratio or requirement, and in many cases it is neither sound nor economic, and least of all safe as a credit guide. It is, however, a law of comparative analysis and serves a purpose, as it tends to create a margin of safety (Wall 1919a, 132).

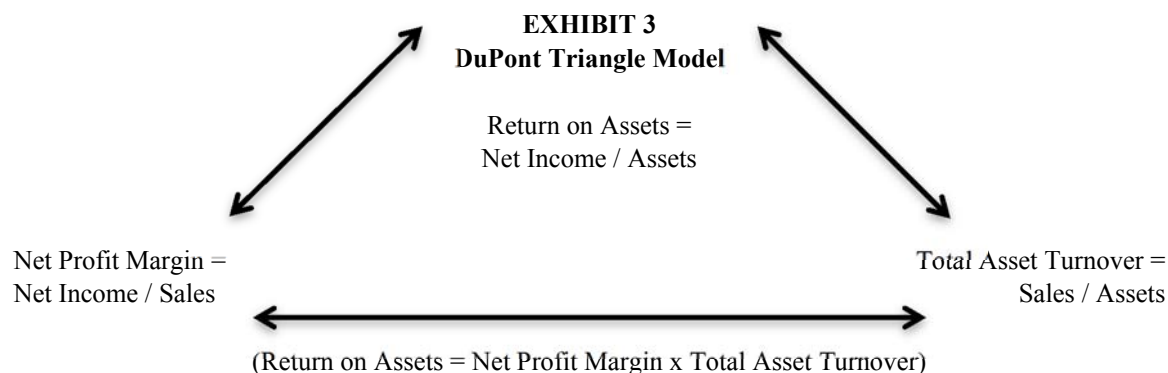
Wall’s analysis showed wide variability of the current ratio by industry and by geographic region. He argued for the use of relative standards to compare a firm’s ratios by industry. Wall termed this industry analysis the “law of averages” to encourage evaluations based on industry criteria rather than absolute standards.

Wall presented his findings by summarizing his seven ratios by industry and by region. He explained how to calculate these ratios, what information they provided and why they were necessary for credit decisions. This study gave credit managers a way to calculate these seven ratios for a firm and compare them to the average for that industry in the proper region (Wall 1919b). Wall was one of the founders and the first secretary-treasurer of the professional trade organization Robert Morris Associates, now known as the Risk Management Association (Kansas Chapter, 2008). His work was continued by RMA as its *Annual Statement Studies* that has remained in continuous publication. The list of seven ratios for 981 financial statements has grown to nineteen ratios for more than 200,000 financial statements (RMA, 2010). The original seven ratios calculated by Wall with his additional eighth ratio added two years later are shown in Exhibit 2.

<b>EXHIBIT 2</b>
<b>Original Credit Barometrics Ratios (Wall 1919b)</b>
Current Ratio
Receivables to Merchandise
Net Worth to Non-Current Assets
Total Debt to Net Worth
Sales to Receivables
Sales to Merchandise
Sales to Net Worth
<b>Additional Ratio Included in <i>Analytical Credits Book</i> (Wall 1921)</b>
Sales to Non-Current Assets

In addition to the Wall study, the second important financial ratio development in 1919 began with the DuPont Company. The company created a triangle model to evaluate its operating results. Specifically, the model decomposes Return on Assets (ROA) into Net Profit Margin and Total Asset Turnover (Barnes, 1987). This model was not initially accepted as widely as the Wall study, but the DuPont model has since become a classic financial analysis technique (Horrigan,

1968). A depiction of the DuPont triangle is shown in Exhibit 3. The Wall study and the DuPont triangle were early financial ratio developments that helped make financial ratios popular for many uses. The following section discusses some of these uses of financial ratios.



### Uses of Financial Ratios

Financial ratios are used for several important purposes. Whittington (1980) summarized two basic uses of financial ratios as normative and positive. Normative uses include comparing a firm's ratios to another company or to an industry average. Positive uses include estimation of future variables such as profit margins, returns, debt, and market prices. Positive uses can also include using predictive models for corporate failure, bond ratings, and credit risk.

Normative uses of financial ratios involve two primary functions: financial analysis and business education. Financial analysis involves evaluating a firm's profitability and riskiness and then comparing them to benchmarks such as industry averages. Ratios generally involve a mathematical proportion that allows analysts control for two factors: size and industry (Barnes, 1987). First, ratios control for the size of the firm. Different firms' ratios can be compared even if the firms' sizes are not comparable. For example, a small company with thousands of dollars in debt may have a higher debt ratio than a large company with debt in the millions of dollars. Second, ratios control for industry factors. Industries often have unique characteristics that are seen if a firm's financial ratios are compared to the industry average. It is a maxim that a firm's financial ratios should be compared to its industry averages. Both financial researchers (Lev, 1969) and textbook authors (White, Sondhi, & Fried, 2003) recommend that proper financial analysis should include industry averages. This recommendation is a normative use of ratios.

A second normative use of financial ratios includes their use in business education. Financial ratios are an important tool in business education. Students learn to use financial ratios over several business courses in their college careers. Huefner (2002) argued that financial ratio preparation and analysis is an important part of the very first accounting course. The New York State Society of Certified Public Accountants (NYSSCPA) issued a recommendation of educational goals for CPA candidates (NYSSCPA, 2008). Included in that recommendation was the preparation and interpretation of financial ratios for students preparing for careers as CPAs.

Financial ratios also have positive uses. Positive uses of ratios include estimating certain financial variables or predicting future outcomes such as business failure or bankruptcy. Financial ratios are used in many financial research studies to predict certain outcomes.

One of the well-studied areas of financial ratios is business failure. These studies attempt to identify which companies may experience financial hardship, default, or bankruptcy. These studies began in rudimentary form early in the 20<sup>th</sup> century. Smith and Winakor (1930) were one of the first researchers to use ratios as predictors of failure. Their study used 21 ratios in the predictive model. One of the weaknesses of their study is that it only included failed firms and not a control group of successful firms. Merwin (1942) also used ratios as failure predictors in what Horrigan (1968, 289) called the “first really sophisticated analysis of ratio predictive power.”

The 1960’s were a classic era in financial studies to predict business failure. Several of the studies of this era are seminal studies in using financial ratios as failure predictors. Beaver (1966) used financial ratios of failed firms and non-failed firms to predict business failure using a univariate technique. He found certain financial ratios that had predictive power in identifying failed firms. Altman (1968) expanded this into multivariate research by using multiple discriminant analysis (MDA). This research led to the well-known Altman’s Z-score model that is widely used in business failure analysis (Krantz, 2010).

Another positive use of ratios is in determining which financial ratios are most useful. Obviously, the utility of these ratios is governed by how they are used. For example, in studying business failure Tamari (1966) found the Current Ratio to be useful because failed firms had lower current ratios than successful firms. Beaver (1966) found that a Cash Flow to Debt ratio was the most useful in his business failure study. Hossari and Rahman (2005) analyzed 53 business failure studies from 1966-2002 and ranked 48 separate ratios. They found that Return on Assets (ROA) was the single most common ratio in all the studies. Pinches, Mingo, and Carruthers (1973) used factor analysis to determine which ratios had long-term stability. They identified not a single ratio but a set of seven ratios that were stable over time.

Many financial ratios have been used in normative uses such as financial analysis. Also many ratios have been used in positive uses such as failure prediction studies. The following section attempts to determine which financial ratios are important to financial analysts.

### **Using Financial Ratios**

To attempt to identify which ratios financial analysts find valuable, Gibson (1987) asked financial analysts which ratios they thought were the most significant in a set of 60 ratios. The participants were asked to provide the level of significance on a scale from 0-9, with 9 being the most significant. The twenty ratios that financial analysts rated the highest are shown in Exhibit 4. This exhibit shows what ratios financial analysts value the most. Of the twenty ratios, eight are related to returns and profitability, including four of the top five ratios. Another eight of the top twenty give information about a firm’s liquidity and debt. The other ratios relate to market valuations and operating leverage.

<b>EXHIBIT 4</b> <b>TOP 20 HIGHEST RATED FINANCIAL RATIOS BY ANALYSTS</b> <b>(GIBSON, 1987)</b>		
Rank	Ratio Name	Significance (0-9)
1	Return on Equity After Tax	8.21
2	Price / Earnings Ratio	7.65
3	Earnings Per Share	7.58
4	Net Profit Margin After Tax	7.52
5	Return on Equity Before Tax	7.41
6	Net Profit Margin Before Tax	7.32
7	Fixed Charge Coverage	7.22
8	Quick Ratio	7.10
9	Return on Assets After Tax	7.06
	Times Interest Earned	7.06
11	Debt to Equity Ratio	7.00
12	Return on Total Invested Capital After Tax	6.88
13	Stock Price / Book Value	6.75
14	Degree of Financial Leverage	6.61
15	Long-Term Debt / Total Invested Capital	6.52
16	Debt / Assets	6.50
17	Total Debt / Total Assets	6.42
18	Return on Total Invested Capital Before Tax	6.40
19	Degree of Operating Leverage	6.36
20	Current Ratio	6.34

## THE SAMPLE

This study used a sample of business textbooks to evaluate the state of financial ratio education. The following process was used to accept textbooks and ratios into the sample:

1. The text had to be a current edition available for sale by the publisher.
2. Authors were permitted to have more than one textbook in the sample as long as the texts were for different courses or different audiences. For example, Needles & Powers (2009) *Financial Accounting, 10th ed.* and Needles, Powers, & Crosson (2011) *Principles of Accounting, 11th ed.* are both included in the sample because these books are different versions and not simply different editions of the same text.
3. Generally speaking, electronic copies of the texts had to be available at CourseSmart.Com. A few texts were obtained in hardcopy form from the publisher.
4. The text had to have a clearly defined chapter, section, or appendix on financial ratios. The sections were typically called “Financial Analysis,” “Performance Measurement” or some similar name.
5. Many texts have a chapter or section on financial ratios but then also have various other ratios scattered through other chapters. Only ratios appearing in the main chapter, section, or appendix were included in the sample.
6. Ratios or calculations containing any math more sophisticated than simple arithmetic were omitted. Therefore, measures like alpha, beta, and correlation were not defined as ratios for the purposes of this study.
7. Differences in ratio formula format or terminology that did not result in mathematical differences in the ratio were standardized away.
8. Different formulas with the same ratio name were recorded as different “versions” of a ratio. For example, there are four mathematically different versions of the Quick Ratio in the sample.
9. Identical formulas with different names were logged as the same ratio, but the “aliases” were recorded.

The sample included 77 textbooks containing a total of 1427 ratios, an average of 18.53 ratios per textbook. There are 129 unique ratios in the sample. For these purposes, a unique ratio has a unique name and a formula that is mathematically different from all other ratios in the sample. Different versions of the same ratio are not counted as unique. For example, the four different versions of the Quick Ratio only count as one unique ratio since they are all called “Quick Ratio.”

Accounting textbooks are the most common in the sample, representing 31 books. There are 27 finance textbooks in the sample. For the sake of comparisons the 13 management and marketing books were combined into one group. Since financial statement analysis courses are frequently taught as a hybrid of finance and accounting, the 6 textbooks for these courses were also placed in a separate category. A complete breakdown of the sample by business discipline can be found below in Table 1.



<b>TABLE 1 DATA SET BY DISCIPLINE</b>					
	ACCOUNTING	FINANCE	MGT/MKT	FSA	TOTAL
TEXTBOOKS	31	27	13	6	77
TEXTBOOK %	40.3%	35.1%	16.9%	7.8%	100.00%
TOTAL RATIOS	573	485	196	173	1427
MEAN	18.48	17.96	15.08	28.83	18.53
MINIMUM	13	11	4	15	4
MAXIMUM	26	28	27	37	37

A complete description of the sample can be found in the appendix to this paper. Table A1 shows a summary of the sample tabulated by publisher and business discipline. Table A2 shows a summary of the sample tabulated by copyright date and business discipline. Tables A3-A6 show the complete sample of textbook titles and authors for each business discipline.

## **RESULTS**

We hoped to find exactly what ratios were being covered most frequently in the classroom. As previously mentioned, we found a total of 129 unique ratios in the sample. However, these ratios were not all present with the same frequency. In fact some ratios were present in almost all of the textbooks, while many show up in only a very small handful of books. Table 2 shows the Top 20 ratios ranked by the frequency with which they appear in the sample.

There are several interesting points in Table 2. First, the current ratio is the most popular ratio in business textbooks, appearing in 74 of the 77 texts in the sample. It is interesting to note that none of the ratios appear in every textbook. Second, very few of the ratios are present in the vast majority of the texts. Only three ratios appear in over 90% of the sample, while only seven of the ratios appear in over 80% of the sample. The bottom few ratios in the top 20 appear in only about 40% of the sample. Third, while this table only shows 20 of the 129 unique ratios in the sample, it actually accounts for over 73% of the total ratios in the sample. The Top 20 ratios account for 1,051 of the 1,427 (73.65%) observations in the sample.

**TABLE 2**  
**TOP 20 RATIOS BY FREQUENCY**

RANK	RATIO NAME	FREQUENCY	PERCENT OF BOOKS
1	Current Ratio	74	96.10%
2	Inventory Turnover	72	93.51%
3	Return on Assets (ROA)	70	90.91%
4	Quick Ratio	69	89.61%
5	Times Interest Earned	68	88.31%
6	Net Profit Margin (Return on Sales)	66	85.71%
7	Days Sales Outstanding (DSO)	62	80.52%
8	PE Ratio	61	79.22%
9	Total Asset Turnover	60	77.92%
	Return on Equity (ROE)	60	77.92%
11	Receivables Turnover	51	66.23%
	Debt Ratio	51	66.23%
13	Debt to Equity	49	63.64%
14	EPS	42	54.55%
15	Days Sales in Inventory (DSI)	37	48.05%
	Gross Profit Margin	37	48.05%
17	Dividend Payout	32	41.56%
18	Dividend Yield	31	40.26%
	Fixed Asset Turnover	31	40.26%
20	Market to Book	28	36.36%
	<b>Total Ratios</b>	<b>1,051</b>	

The second fact we hoped to explore is the consistency with which ratios are being presented, both in terms of ratio formulas and names. When exploring the issue of formula consistency we decided to focus only on differences that would create mathematical differences in the computed values for the ratios. In other words, we choose to ignore, or more accurately standardize away, any semantic differences in how the formulas were presented. This proved to be a bigger challenge than originally anticipated. Sadly, there is an appalling lack of standardized vocabulary when it comes to financial analysis. To pick a simple example, all of the following phrases have exactly the same meaning to an experienced analyst: Net Income, Net Profit, Net Earnings, After-Tax Profit, Earnings After Tax (EAT), Income After Tax. However, to a novice student each of those phrases may appear to represent a different number or value. In examples like this we simply choose a preferred term, Net Income in this case, and standardized all of the ratios to use that term.

A second issue revolved around terms that were near synonyms, but not perfect synonyms. One example of this would be Sales and Net Sales. For a small subset of firms there is a significant

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difference between those two accounts, but for most firms they can be used interchangeably. There did not seem to be any great logic behind a text choosing to use Sales vs. Net Sales. Furthermore there was not a single ratio in the sample where both terms were used. This led us to conclude that we could standardize away the possible difference between them. So for our purposes, the two ratios Net Income / Sales and Net Income / Net Sales were treated as two observations of the same ratio.

A counter-example of near synonyms that we choose to treat as separate items is Earnings Before Interest and Taxes (EBIT) and Operating Profits. Many texts appear to use these terms interchangeably. However the mathematical difference between the two terms, non-operating items, can be large and economically significant for many firms. Therefore we treated those terms as separate entities. For example Operating Profit / Total Assets and EBIT / Total Assets both show up in the sample as Return on Assets (ROA). We treated those two formulas as two separate versions of ROA rather than two observations of the same version of ROA.

A third issue arose involving how to classify ratios when different books used the same name for different formulas or used different names for the same formula. For example, the ratio Net Income / Total Assets is known by several names in the sample, two of which are Return on Assets and Return on Total Capital. This would imply that Total Assets and Total Capital have the same value. In fact, some textbooks seemed to use these terms interchangeably while others went to great lengths to explain the difference between the two. (The most common explanation is that Total Capital does not include Current Liabilities. So, Total Capital = Long-Term Debt + Equity). Some texts even had one formula for Return on Assets and another for Return on Total Capital. So, if a text gave the name Return on Total Capital to the formula Net Income / Total Assets and did not have another ratio called Return on Assets, we classified this as an observation of Return of Assets and noted the “alias” Return on Total Capital. If a text gave the name Return on Total Capital to a formula other than Net Income / Total Assets it was recorded as Return on Total Capital, not Return on Assets. However, if a book gave the name Return on Assets to a completely different formula, like EBIT / Average Total Assets, this was recorded as a separate version of Return on Assets.

Beyond the differences in terminology described above, there were also significant challenges due to the different methods of mathematical presentation of the ratios. The differences in terminology and presentation were significant enough that we sometimes had to put pencil to paper and work out examples to determine if two formulas were mathematically equivalent or not. In short, this process of trying to compare the textbooks in detail turned out to be more complex and to involve much more judgment we had originally anticipated. The end result of this process has been summarized in Tables 3 and 4 below.

For the sake of simplicity Table 3 limits itself to considering the same 20 ratios from Table 2. The ratios have been re-sorted so they are no longer in order of frequency. They are now in order of the “consensus” about how to define them. The table shows the most common formula for the ratios, the degree of consensus among the textbooks about how to define the ratios, and the number of different versions for each ratio. For these purposes the “consensus” is defined as the percentage of the textbooks containing the ratio that use the most popular version of the ratio formula. For example, we know from Table 2 that 73 textbooks contain the Current Ratio. Of these 73 books, all define the Current Ratio exactly the same way, as Current Assets / Current Liabilities.

We know from Table 2 that 69 textbooks contain the ratio Return on Assets. Table 3 tells us that of those 69 textbooks, only about 40% of them define ROA with the most popular formula, Net Income / Total Assets, and that there are eleven mathematically different versions of ROA in the sample.

TABLE 3 TOP 20 RATIOS BY DEGREE OF CONSENSUS				
RANK	RATIO NAME	RATIO FORMULA	PERCENT	TOTAL VERSIONS
1	Current Ratio	Current Assets / Current Liabilities	100.00%	1
	Gross Profit Margin	Gross Profit / Sales	100.00%	1
	Dividend Yield	Dividends Per Share / Market Price	100.00%	1
	Market to Book	Market Price / Book Value	100.00%	1
5	Debt Ratio	Debt / Assets	96.00%	3
6	PE Ratio	Market Price / EPS	95.08%	4
7	Net Profit Margin (Return on Sales)	NI / Sales	90.91%	3
8	Debt to Equity	Debt / Equity	87.76%	3
9	Times Interest Earned	EBIT / Interest Expense	82.35%	4
10	Fixed Asset Turnover	Sales / Fixed Assets	73.33%	2
11	Earnings Per Share (EPS)	(NI – Preferred Dividends) / WAvg Common Shares	64.29%	2
12	Total Asset Turnover	Sales / Assets	59.32%	4
13	Return on Equity (ROE)	NI / Equity	57.63%	5
14	Dividend Payout	Dividends Per Share / EPS	56.25%	3
15	Quick Ratio	(Cash + AR + Mkt Sec) / Current Liabilities	49.28%	4
16	Receivables Turnover	Sales / Average AR	46.00%	6
17	Days Sales in Inventory (DSI)	365 / Inventory Turnover	45.95%	5
18	Days Sales Outstanding (DSO)	365 / Receivables Turnover	45.90%	5
19	Inventory Turnover	COGS / Average Inventory	44.44%	4
20	Return on Assets (ROA)	NI / Assets	40.00%	11
AR = Accounts Receivable COGS = Cost of Goods Sold EBIT = Earnings Before Interest and Taxes EPS = Earnings Per Share Mkt Sec = Marketable Securities NI = Net Income WAvg = Weighted Average				
			Minimum	1
			Maximum	11
			Mean	3.60
			Median	3.50
			Mode	4.00

There are several interesting observations about Table 3. First, only four ratios enjoy 100% consensus on their mathematical formulas from the textbooks. This certainly gives a bit of credence to student complaints about different formulas in different books. Second, the twelve different versions of Return on Assets are fairly compelling evidence of chaos in defining this ratio. Third, the average, median, and mode for the number of different versions of each ratio are all very near 4.0. The fact that even the most commonly used ratios have about four mathematically different versions on average is somewhat alarming. This also gives credence to student complaints about ratio inconsistency.

Table 4 is not a simple re-sort of Tables 2 and 3. Rather, it shows all of the ratios in the sample that have at least three different names. This cutoff of three names was simply for the sake of brevity. Many more ratios had two different names. A total of 16 ratios have at least three names, with four ratios having five names, four ratios having four names, and eight ratios having three names. The process used to analyze the sample only classified a ratio name as an alias if it had the same formula, after standardizing terminology, as a ratio with a different name. In other words, there are ratios in the sample called Debt to Equity, Book Debt to Equity, and Liabilities to Stockholders' Equity that all give mathematically identical answers. This "naming confusion" problem illustrated in Table 4 helps explain some of the difficulties students have in learning and using ratios.

The third issue we wanted to explore is whether or not there are consistent differences in presentation of ratios among textbooks from the different business disciplines. In other words, to what extent is the variability we see in ratio formulas simply because accounting textbooks are consistently different from finance textbooks and finance textbooks are consistently different from management textbooks, etc. Our original hypothesis, based on anecdotal evidence, was that there was probably a good bit of difference between finance and accounting textbooks. We did not have any real opinion on how management, marketing, or financial statement analysis books would compare to the finance and accounting texts. In order to examine this issue, we constructed detailed tables for each of the Top 20 ratios. These tables each show every version of the ratio and the frequency with which that version appears in each category of textbook. We will discuss the detail tables for three specific ratios below, and attempt to draw some general conclusions from them. The remaining detail tables may be found in the appendix. (We did not include the detail tables for the ratios with 100% consensus, as they are completely uninteresting.)

The most frequent cause of inconsistency in ratio formulas in the sample has to do with the philosophy of the authors in comparing income statement accounts to balance sheet accounts. The matching principle of accounting tries to match revenues with the expenses that generate them. A matching problem occurs when comparing income statement and balance sheet numbers. This is because the income statement shows results from a period of time (flow numbers), while the balance sheet shows numbers from a specific point in time (stock numbers). When comparing income statement numbers to balance sheet numbers, averaging the balance sheet numbers preserves the matching principle. It is very clear in the sample that the accounting texts are far more likely to use this averaging approach than texts from the other disciplines. Eight of the top 20 ratios involve comparing income statement accounts to balance sheet accounts. The issue of whether or not to average the balance sheet account is a major source of inconsistency for all eight of those ratios.

**TABLE 4**  
**TOP 16 RATIOS FOR NAMING CONFUSION**

NAME	TOTAL NAMES	ALIASES
Days Sales Outstanding (DSO)	5	Days Sales in Receivables, Average Collection Period (ACP), Days Sales Uncollected, Collection Period
Cash Conversion Cycle	5	Operating Cycle, Net Trade Cycle, Cash to Cash Operating Cycle, Cash to Cash Period
Equity Multiplier	5	Leverage Ratio, Financial Leverage Ratio, Financial Structure Ratio, Assets to Equity
Days Payables Outstanding (DPO)	4	Average Payment Period, Payables Period, Days Purchases in Payables
Debt Ratio	4	Total Debt to Total Assets, Debt to Total Capital, Total Debt Ratio
Net Profit Margin	4	Profit Margin, Return on Sales (ROS), Profit Margin on Sales
Return on Assets (ROA)	4	Return on Total Assets, Rate Earned on Total Assets, Return on Total Capital
Operating Cash Flow to Income	4	Cash Flow Yield, Quality of Income, Cash Flow from Operations to Income
Operating Cash Flow to Total Assets	3	Cash Flow to Assets, Cash Return on Assets
Return on Equity (ROE)	3	Return on Stockholders' Equity, Rate Earned on Stockholders' Equity
Long-Term Debt Ratio	3	Long-Term Debt to Total Capital, Debt to Total Capital
Days Sales in Inventory (DSI)	3	Average Age of Inventory, Days Inventory Held
Total Asset Turnover	3	Turnover Ratio, Net Sales to Assets
Fixed Asset Turnover	3	Sales to Fixed Assets, PP&E Turnover
Times Interest Earned	3	Interest Coverage Ratio, Number of Times Interest Charges are Earned
Debt to Equity	3	Book Debt to Equity, Liabilities to Stockholders' Equity

Days Sales in Inventory (DSI) is a good example of the impact the “averaging issue” can have on a ratio’s consistency. Table 5 shows the detail information for DSI. Notice that the first three versions of DSI in the list, comprising about 95% of the observations, are identical except in their treatment of the averaging issue. The majority of the accounting texts (14/20) average the inventory in the denominator. The clear majority of the finance, management and marketing texts (9/12) do not average the denominator, using ending inventory instead. One author chooses not to average, but uses beginning inventory instead of ending inventory in the denominator. This is a pattern that shows up over and over again in the sample: accounting texts have a clear preference for averaging while finance, management, and marketing texts do not. Interestingly, the Financial

Statement Analysis texts are virtually split down the middle on the issue, showing no clear preference for averaging or not averaging. The other two versions of DSI are caused by minor changes that are unrelated to the averaging issue. Notice that each of these versions only appears one time in the sample. This is another pattern in the sample. Many of the ratio versions in the sample have only one or two observations. In fact every single ratio in the sample with more than three versions has at least one version with only one or two observations.

		Accounting	Finance	Mgt/Mkt	FSA	Total	Percent
1	365 / (COGS / Inventory)	6	5	4	2	17	45.95%
2	365 / (COGS / Average Inventory)	14	1		2	17	45.95%
3	365 / (COGS / Beginning Inventory)		1			1	2.70%
4	365 / (Sales / Inventory)		1			1	2.70%
5	360 / (COGS / Inventory)				1	1	2.70%
		<b>20</b>	<b>8</b>	<b>4</b>	<b>5</b>	<b>37</b>	<b>100.00%</b>
COGS = Cost of Goods Sold							

A second cause of inconsistency in ratio formulas in the sample has to do with the use of near, but not quite, synonyms in the ratio formulas. Examples of this include using Operating Profit in lieu of EBIT or Common Equity in lieu of Stockholders' Equity. This creates ratios that will have similar values most of the time, but could potentially be very different some of the time. The Times Interest Earned Ratio is a good example of this.

		Accounting	Finance	Mgt/Mkt	FSA	Total	Percent
1	EBIT / Interest Exp	23	23	6	4	56	82.35%
2	Operating Profit / Interest Exp	5	2	2	1	10	14.71%
3	(Pretax Operating Profit + Interest Exp) / Interest Exp	1				1	1.47%
4	Recurring Earnings / Interest Exp				1	1	1.47%
		<b>29</b>	<b>25</b>	<b>8</b>	<b>6</b>	<b>68</b>	<b>100.00%</b>
EBIT = Earnings Before Interest and Taxes, Interest Exp = Interest Expense							

The difference between EBIT and Operating Profit is non-operating items, which is usually assumed to be zero in classroom examples but can be very significant for real companies. It is difficult to say in this case whether the authors were assuming non-operating items away, in which case the first two versions would give identical answers, or whether they intended to differentiate

between EBIT and Operating Profit. Our basic methodology in situations like this was to take the formula at face value. In other words, we assumed that Operating Profit meant Operating Profit, not EBIT. Notice again that the third and fourth versions of TIE only show up one time in the sample.

		Accounting	Finance	Mgt/Mkt	FSA	Total	Percent
1	NI / Sales	25	19	10	6	60	90.91%
2	EACS / Sales		5			5	7.58%
3	(NI + Interest Exp (1-Tax Rate)) / Sales	1				1	1.52%
		<b>26</b>	<b>24</b>	<b>10</b>	<b>6</b>	<b>66</b>	<b>100.00%</b>
EACS = Earnings Available to Common Shareholders = (Net Income – Preferred Dividends), Interest Exp = Interest Expense, NI = Net Income							

A third cause of inconsistency in ratio formulas in the sample has to do with the authors trying to measure slightly different things, but using the same name for the measurement. Net Profit Margin is a good example of this. Table 7 shows the detail information for Net Profit Margin. Note that over 90% of authors prefer version 1, Net Income / Sales, which is by far the best known and most widely used version of the ratio. However, a significant minority of the finance texts (5/23) prefer version 2, Earnings Available to Common Shareholders (or EACS) / Sales. The difference between Net Income and EACS is preferred dividends. (EACS = Net Income – Preferred Dividends). Net Income is a broader measure since it includes money that can be claimed by all shareholders, both common and preferred. EACS is claimable only by common shareholders. Clearly Net Income and EACS are two measures that are closely related, yet significantly different, at least for firms with preferred shareholders. EACS / Sales is certainly a useful measure for firms with preferred shareholders, but it is measuring something different from Net Income / Sales. EACS / Sales might more accurately be called Common Shareholders Net Profit Margin or something similar, yet none of the authors in the sample were that descriptive, choosing instead to use Profit Margin or Net Profit or Return on Sales, all common aliases for Net Income / Sales. This pattern of making a very useful, but perhaps situational, variation of the “standard” version of a ratio, but giving it the same name is quite common in the sample.

Table 8 shows the detail information for Return on Assets (ROA). ROA exhibits all three of the problems with ratio consistency discussed above. Notice that several versions of the ratio are identical except for the averaging issue. Also note that we see both the “synonym” issue (EBIT and Operating Profit) and the “slightly different” issue (Net Income and EACS) represented. Further, note that we have a “quite a bit different” issue with some of these versions. The numerators feature pre-tax values as large as Operating Profit and after-tax numbers as small as EACS. This will result in potentially vast differences between the calculated values of the various versions. Finally, note that two of the versions only appear once in the sample while another three only appear twice in the sample. For whatever reason, ROA is certainly the ratio where authors



have most chosen to exercise their flexibility. For a more complete discussion of the many different ROA formulas, see Jewell and Mankin (2011).

		Accounting	Finance	Mgt/Mkt	FSA	Total	Percent
1	NI / Assets	3	16	7	2	28	40.00%
2	NI / Average Assets	9	1		1	11	15.71%
3	(NI + Int Exp) / Average Assets	8				8	11.43%
4	(NI + Int Exp (1-Tax Rate)) / Average Assets	6			1	7	10.00%
5	EACS / Assets		5			5	7.14%
6	EBIT / Average Assets	1	1		1	3	4.29%
7	Operating Profit / Assets		1	1		2	2.86%
8	NI + Int Exp / Assets			2		2	2.86%
9	(NI + Int Exp (1-Tax Rate)) / Assets	1	1			2	2.86%
10	EBIT / Assets			1		1	1.43%
11	EBT / Assets			1		1	1.43%
		<b>28</b>	<b>25</b>	<b>12</b>	<b>5</b>	<b>70</b>	<b>100.00%</b>

EACS = Net Income – Preferred Dividends, EBIT = Earnings Before Interest and Taxes, EBT = Earnings Before Taxes, Int Exp = Interest Expense, NI = Net Income

## CONCLUSION AND RECOMMENDATION

Professionals and business students use financial ratios extensively. Professors and employers expect students to learn to use and interpret financial ratios in their business courses and throughout their careers. However, there is currently a barrier to learning financial ratios caused by the use of different names and different formulas for the same ratio. An experienced professional may already have a preferred set of standardized ratios or may easily adjust to differences in names or formulas. However, this may not be the case with business students moving through a typical business curriculum. For these students subtle changes in names or formulas may be a source of frustration and an impediment to learning.

There is a certain amount of tension in the world of ratios between the flexibility analysts and authors have in creating their own ratios and the potential for confusion that a myriad of different ratio names and formulas can cause. It is difficult to fully assess the true costs and benefits of flexibility in ratio construction. This study attempts to illustrate some of the costs of unconstrained flexibility, or the lack of ratio standardization, by highlighting the two issues of naming confusion and formula confusion in financial ratio education. These issues are a problem because financial ratios need to be precise and consistent in order to avoid confusion and improve understanding of financial results.

The solution to the problems of naming confusion and formula confusion is quite simple in theory, but quite complex in practice. Both problems could be largely eliminated by simply having analysts and authors agree on more descriptive names for the various ratios. No actual flexibility would be lost; authors would simply have to use unique names for mathematically different ratios, rather than recycling existing ratio names. For example the ratio Net Income / Total Assets would retain the name Return on Assets, but the ratio Net Income / Average Total Assets could be named Return on Average Assets and the ratio EACS / Total Assets could be named Common Shareholders' Return on Assets. Similar "common sense" naming systems could in theory be devised for all of the ratios with competing formulas and names. Of course the practical impediment to this solution is that there is no simple way to achieve consensus on the best name for each ratio formula. Even if a set of descriptive and less confusing ratio names could be devised there is no easy way to insure compliance with the naming system.

The solution described above is not likely to happen anytime soon. In the mean time professors should take whatever steps they can in the classroom to make ratio education less confusing for students.

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## APPENDIX

<b>TABLE 1A TEXTBOOKS BY PUBLISHER</b>						
PUBLISHER	ACCOUNTING	FINANCE	MGT/MKT	FSA	TOTAL	PERCENT
Cengage	13	9	2	2	26	33.8%
McGraw-Hill	8	9	4	1	22	28.6%
Prentice Hall	4	5	6	1	16	20.8%
Wiley	5	2	1	1	9	11.7%
Cambridge Business	1			1	2	2.6%
Textbook Media		2			2	2.6%
<b>TOTAL</b>	<b>31</b>	<b>27</b>	<b>13</b>	<b>6</b>	<b>77</b>	<b>100%</b>

<b>TABLE 2A TEXTBOOKS BY COPYRIGHT DATE</b>						
DATE	ACCOUNTING	FINANCE	MGT/MKT	FSA	TOTAL	PERCENT
2011	4	4	2	1	11	14.3%
2010	8	7	7	1	23	29.9%
2009	7	8	1		16	20.8%
2008	4	7	1	1	13	16.9%
2007	6	1	2	2	11	14.3%
2006 or earlier	2			1	3	3.9%
<b>TOTAL</b>	<b>31</b>	<b>27</b>	<b>13</b>	<b>6</b>	<b>77</b>	<b>100%</b>

<b>TABLE 3A ACCOUNTING TEXTBOOKS</b>			
AUTHORS	TITLE	DATE	PUBLISHER
Ainsworth	Introduction to Accounting: An Integrated Approach, 6ed	2011	McGraw-Hill
Albrecht, Stice, Stice	Financial Accounting, 10ed	2008	Cengage
Anthony, Hawkins, Merchant	Accounting: Text and Cases, 12ed	2007	McGraw-Hill
Breitner, Anthony	Core Concepts of Accounting, 10ed	2006	Prentice Hall
Brewer, Garrison, Noreen	Introduction to Managerial Accounting, 4ed	2008	McGraw-Hill
Edmonds, Edmonds, Olds, McNair, Ysay, Schneider, Milam	Fundamental Financial and Managerial Accounting, 1ed	2007	McGraw-Hill
Harrison, Horngren, Thomas	Financial Accounting, 8ed	2010	Prentice Hall
Hartgraves, Morse, Davis	Managerial Accounting, 5th ed	2009	Cambridge Business
Horngren, Harrison, Oliver	Accounting, 8ed	2009	Prentice Hall
Horngren, Harrison, Oliver	Financial and Managerial Accounting, 2ed	2009	Prentice Hall
Ingram, Albright	Financial Accounting, 6ed	2007	Cengage
Kieso, Weygandt, Warfield	Intermediate Accounting, 12ed	2008	Wiley
Kimmel	Financial Accounting: Tools for Business Decision Making, 5ed	2009	Wiley
King, Lembke, Smith	Financial Accounting: A Decision-Making Approach	2001	Wiley
Libby, Libby, Short	Financial Accounting, 5ed	2007	McGraw-Hill
Marshall, McManus, Viele	Accounting: What the Numbers Mean, 7ed	2007	McGraw-Hill
Needles, Powers	Financial Accounting, 10ed	2009	Cengage
Needles, Powers, Crosson	Principles of Accounting, 11ed	2011	Cengage
Nikolai, Bazley, Jones	Intermediate Accounting, 11ed	2010	Cengage
Porter, Norton	Financial Accounting: Impact on Decision Makers, 6ed	2010	Cengage
Porter, Norton	Using Financial Accounting Information: The Alternatives to Debits & Credits, 6ed	2010	Cengage
Reeve, Warren, Duchac	Accounting: Using Excel for Success	2011	Cengage
Rich, Jones, Hietger, Mowen, Hansen	Cornerstones of Financial & Managerial Accounting, 1ed	2009	Cengage
Stice, Stice, Skousen	Intermediate Accounting, 17ed	2010	Cengage
Stickney, Weil, Schipper, Francis	Financial Accounting, An Introduction to Concepts, Methods, and Uses, 13ed	2010	Cengage
Warren	Survey of Accounting	2011	Cengage
Warren, Reeve, Duchac	Financial and Managerial Accounting, 10ed	2009	Cengage
Weygandt, Kieso, Kimmel	Accounting Principles, 8ed	2008	Wiley
Weygandt, Kieso, Kimmel	Financial Accounting, 7ed	2010	Wiley
Wild, Larson, Chiappetta	Fundamental Accounting Principles, 18ed	2007	McGraw-Hill
Williams, Haka, Bettner, Carcello	Financial and Managerial Accounting, 15ed	2010	McGraw-Hill

<b>TABLE 4A FINANCE TEXTBOOKS</b>			
<b>AUTHORS</b>	<b>TITLE</b>	<b>DATE</b>	<b>PUBLISHER</b>
Berk, DeMarzo	Corporate Finance: The Core	2009	Prentice Hall
Berk, DeMarzo, Harford	Fundamentals of Corporate Finance	2009	Prentice Hall
Besley, Brigham	Essentials of Managerial Finance, 14ed	2008	Cengage
Block, Hirt	Fundamentals of Investment Management, 9ed	2008	McGraw-Hill
Block, Hirt, Danielson	Foundations of Financial Management, 13ed	2009	McGraw-Hill
Bodie	Essentials of Investments, 8ed	2010	McGraw-Hill
Booth, Cleary	Introduction to Corporate Finance, Canadian ed	2008	Wiley
Brealey, Myers, Allen	Principles of Corporate Finance, 10ed	2011	McGraw-Hill
Brigham, Daves	Intermediate Financial Management, 10ed	2010	Cengage
Brigham, Ehrhardt	Financial Management: Theory and Practice, 12ed	2008	Cengage
Brigham, Houston	Fundamentals of Financial Management, 12ed	2009	Cengage
Brooks	Financial Management: Core Concepts	2010	Prentice Hall
Cornett, Adair, Nofsinger	Finance: Application and Theory, 1ed	2009	McGraw-Hill
Gallagher	Financial Management, 5ed	2009	Textbook Media
Gitman, Joehnk	Fundamentals of Investing, 10ed	2008	Prentice Hall
Graham, Smart, Megginson	Corporate Finance, 3ed	2010	Cengage
Hawawini, Viallet	Finance for Executives: Managing for Value Creation, 3ed	2007	Cengage
Hirschey, Nofsinger	Investments, 2ed	2010	McGraw-Hill
Jordan, Miller	Fundamentals of Investments, 5ed	2009	McGraw-Hill
Keown, Martin, Petty	Foundations of Finance, 7ed	2011	Prentice Hall
Lasher	Practical Financial Management, 6ed	2011	Cengage
Mayo	Investments: An Introduction, 10ed	2008	Cengage
Megginson, Smart	Introduction to Corporate Finance, 2ed	2009	Cengage
Melicher, Norton	Introduction to Finance: Markets, Investments, and Financial Management, 13ed	2008	Wiley
Ross, Westerfield, Jaffe	Corporate Finance, 9ed	2010	McGraw-Hill
Ross, Westerfield, Jordan	Essentials of Corporate Finance, 7ed	2011	McGraw-Hill
Werner, Stoner	Modern Financial Managing: Continuity and Change, 3ed	2010	Textbook Media

<b>TABLE 5A MANAGEMENT AND MARKETING</b>			
<b>AUTHORS</b>	<b>TITLE</b>	<b>DATE</b>	<b>PUBLISHER</b>
Bamford, West	Strategic Management: Value Creation, Sustainability, and Performance, 1ed	2010	Cengage
Barney, Hesterly	Strategic Management and Competitive Advantage, 3ed	2010	Prentice Hall
Coulter	Strategic Management in Action, 5ed	2010	Prentice Hall
David	Strategic Management: Concepts and Cases, 13ed	2011	Prentice Hall
de Kluyver	Strategy: A View from the Top	2009	Prentice Hall
Dess, Lumpkin, Eisner	Strategic Management: Creating Competitive Advantages, 5ed	2010	McGraw-Hill
Gamble, Thompson	Essentials of Strategic Management, 2ed	2011	McGraw-Hill
Grant	Contemporary Strategy Analysis, 7ed	2010	Wiley
Harrison, St. John	Foundations in Strategic Management	2010	Cengage
Kerin, Peterson	Strategic Marketing Problems: Cases and Comments, 11ed	2007	Pearson
Peter, Donnelly	Marketing Management: Knowledge and Skills, 8ed	2007	McGraw-Hill
Thompson, Strickland, Gamble	Crafting and Executing Strategy: The Quest for Competitive Advantage, 16ed	2008	McGraw-Hill
Wheelen, Hunger	Strategic Management and Business Policy: Achieving Sustainability, 12ed	2010	Prentice Hall

<b>TABLE 6A FINANCIAL STATEMENT ANALYSIS TEXTBOOKS</b>			
<b>AUTHORS</b>	<b>TITLE</b>	<b>DATE</b>	<b>PUBLISHER</b>
Easton, McAnally, Fairfield, Zhang, Halsey	Financial Statement Analysis & Valuation, 2ed	2010	Cambridge Business
Fraser, Ormiston	Understanding Financial Statements, 9ed	2007	Prentice Hall
Gibson	Financial Reporting & Analysis, 12ed	2011	Cengage
Palepu, Healy	Business Analysis & Valuation, 4ed	2008	Cengage
White, Sondhi, Fried	The Analysis and Use of Financial Statements	2003	Wiley
Wild, Subramanyam, Halsey	Financial Statement Analysis, 9ed	2007	McGraw-Hill

<b>TABLE 7A INVENTORY TURNOVER</b>						
	<b>ACCOUNTING</b>	<b>FINANCE</b>	<b>MGT/MKT</b>	<b>FSA</b>	<b>TOTAL</b>	
COGS / Average Inventory	26	2	1	3	32	44.44%
COGS / Inventory	5	14	4	2	25	34.72%
Sales / Inventory		8	5	1	14	19.44%
COGS / Beg Inventory		1			1	1.39%
	<b>31</b>	<b>25</b>	<b>10</b>	<b>6</b>	<b>72</b>	<b>100.00%</b>
COGS = Cost of Goods Sold						

<b>TABLE 8A QUICK RATIO</b>							
		Accounting	Finance	Mgt/Mkt	FSA	Total	
1	(Cash + AR + Mkt Sec) / Current Liabilities	24	5		5	34	49.28%
2	(Current Assets – Inventory) / Current Liabilities	1	17	11	1	30	43.48%
3	(Cash + AR) / Current Liabilities	1	3			4	5.80%
4	(Current Assets - Inventory – Ppd) / Current Liabilities	1				1	1.45%
		<b>27</b>	<b>25</b>	<b>11</b>	<b>6</b>	<b>69</b>	<b>100.00%</b>
AR = Accounts Receivable, Ppd = Prepaid Expenses							

<b>TABLE 9A DAYS SALES OUTSTANDING</b>							
		Accounting	Finance	Mgt/Mkt	FSA	Total	
1	365 / (Sales / AR)	5	15	6	2	28	45.16%
2	365 / (Sales / Average AR)	18	1	1	2	22	35.48%
3	365 / (Credit Sales / AR)	2	5	2		9	14.52%
4	360 / (Sales / AR)		1		1	2	3.23%
5	365 / (COGS / Beg Inventory)		1			1	1.61%
		<b>25</b>	<b>23</b>	<b>9</b>	<b>5</b>	<b>62</b>	<b>100.00%</b>
AR = Accounts Receivable, COGS = Cost of Goods Sold							

<b>TABLE 10A PRICE / EARNINGS RATIO</b>							
		Accounting	Finance	Mgt/Mkt	FSA	Total	
1	Market Price / EPS	25	24	7	2	58	95.08%
2	Market Cap / Net Income	1				1	1.64%
3	Average Market Price / EPS	1				1	1.64%
4	Market Price / Diluted EPS				1	1	1.64%
		<b>27</b>	<b>24</b>	<b>7</b>	<b>3</b>	<b>61</b>	<b>100.00%</b>
EPS = Earnings Per Share							

<b>TABLE 11A TOTAL ASSET TURNOVER</b>							
		Accounting	Finance	Mgt/Mkt	FSA	Total	
1	Sales / Assets	6	21	7	2	36	60.00%
2	Sales / Average Assets	17	2		3	22	36.67%
3	Sales / Beginning Assets		1			1	1.67%
4	Sales / (Average Assets – LT Inv)	1				1	1.67%
		<b>24</b>	<b>24</b>	<b>7</b>	<b>5</b>	<b>60</b>	<b>100.00%</b>
LT Inv = Long-Term Investments							

<b>TABLE 12A RETURN ON EQUITY</b>							
		Accounting	Finance	Mgt/Mkt	FSA	Total	
1	NI / Equity	6	16	11	2	35	58.33%
2	NI / Average Equity	13	2		3	18	30.00%
3	EACS / Common Equity		3			3	5.00%
4	EACS / Average Equity	2				2	3.33%
5	NI / Common Equity		2			2	3.33%
		<b>21</b>	<b>23</b>	<b>11</b>	<b>5</b>	<b>60</b>	<b>100.00%</b>
EACS = Net Income – Preferred Dividends, NI = Net Income							

<b>TABLE 13A RECEIVABLES TURNOVER</b>							
		Accounting	Finance	Mgt/Mkt	FSA	Total	
1	Sales / Average AR	21			2	23	45.10%
2	Sales / AR	2	8	1	2	13	25.49%
3	Credit Sales / AR		3	5		8	15.69%
4	Credit Sales / Average AR	4	1			5	9.80%
5	Sales / Beginning AR		1			1	1.96%
6	Sales / Average Gross AR				1	1	1.96%
		<b>27</b>	<b>13</b>	<b>6</b>	<b>5</b>	<b>51</b>	<b>100.00%</b>
AR = Accounts Receivable							



<b>TABLE 14A</b>							
<b>DEBT RATIO</b>							
		Accounting	Finance	Mgt/Mkt	FSA	Total	
1	Debt / Assets	17	19	10	3	49	96.08%
2	LT Debt / (LT Debt + Equity)	1				1	1.96%
3	Debt / (LT Debt + Equity)				1	1	1.96%
		<b>18</b>	<b>19</b>	<b>10</b>	<b>4</b>	<b>51</b>	<b>100.00%</b>
LT Debt = Long-Term Debt							

<b>TABLE 15A</b>							
<b>DEBT TO EQUITY</b>							
		Accounting	Finance	Mgt/Mkt	FSA	Total	
1	Debt / Equity	19	8	10	6	43	87.76%
2	LT Debt / Equity	1	4			5	10.20%
3	(LT Debt – Deferred Taxes) / Equity	1				1	2.04%
		<b>21</b>	<b>12</b>	<b>10</b>	<b>6</b>	<b>49</b>	<b>100.00%</b>
LT Debt = Long-Term Debt							

<b>TABLE 16A</b>							
<b>EARNINGS PER SHARE</b>							
		Accounting	Finance	Mgt/Mkt	FSA	Total	
1	EACS / WAvg Common Shares	20	2	2	3	27	64.29%
2	NI / WAvg Common Shares	6	5	3	1	15	35.71%
		<b>26</b>	<b>7</b>	<b>5</b>	<b>4</b>	<b>42</b>	<b>100.00%</b>
EACS = Net Income – Preferred Dividends, WAvg = Weighted Average							

<b>TABLE 17A</b>							
<b>DIVIDEND PAYOUT</b>							
		Accounting	Finance	Mgt/Mkt	FSA	Total	
1	Dividend Per Share / EPS	8	5	4	1	18	56.25%
2	Common Dividends / NI	8	2		3	13	40.63%
3	Dividend Per Share / Diluted EPS				1	1	3.13%
		<b>16</b>	<b>7</b>	<b>4</b>	<b>5</b>	<b>32</b>	<b>100.00%</b>
EPS = Earnings Per Share, NI = Net Income							