Operating Cash Flow Ratios Measure A Retail Firm's "Ability To Pay"

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Abstract

Analysts derive a broad array of financial ratios from published financial reports to assess business enterprise performance. Only a few, however, may be necessary for meaningful insight. This study explores whether operating cash flow ratios provide unique or redundant insight in financial ratio analysis of retail firms. Adoption of Financial Accounting Standard #95, The Statement of Cash Flows, by the Financial Accounting Standards Board in 1987 provides the impetus for the ongoing interest in cash flow ratios. We find that operating cash flow ratios provide unique insight, relative to traditional accrual-based financial ratios, regarding a retail firm's "ability to pay." Therefore, financial ratio analysis of a retail firm should include cash flow ratios for predictive, explanatory or descriptive purposes.

Introduction

Financial ratios play a central role in retail firm financial analysis. Creditors, investors and others combine and group key financial ratios over time, by industry and across industries with qualitative measures for predictive, explanatory and descriptive purposes (Barnes 1987). Their objectives include firm performance evaluation, liquidity analysis, future profit estimation, competitor analysis, prediction of corporate failure and cash flow potential. This study explores the relative utility of newly derived operating cash flow ratios in the financial analysis of retail firms.

A significant change to financial reporting is the impetus for a recent interest in operating cash flow ratios. In 1987 the Financial Accounting Standards Board (FASB) adopted Statement of Financial Accounting Standard (SFAS) 95 that mandated the Statement of Cash Flows (SCF) as a required financial statement. The SCF was designed to bridge the information gap between traditional accrual accounting and an understanding of the cash flow activities of a business enterprise. A gap existed because accrual accounting failed to provide relevant information to assess the amount, timing and uncertainty of future cash flows. Why? First, the primary categories of cash flow activity had not been specified under the predecessor Statement of Changes in Financial Position (SCFP). Second, the term "cash" had not been defined. For these reasons, the SCFP and related ratios lacked comparability over time and across firms (Drtina and Largay 1985).

As a result of SFAS 95, potentially useful cash flow ratios can now be derived from the SCF (Figlewicz and Zeller 1991). With the SCF the primary categories of cash flow are the firm's operating, investing, and financing activities. SFAS 95 defines "cash" to include cash equivalents with maturities of 90 days or less, such as treasury bills, commercial paper, and money market funds. The structured reporting framework enables comparability of cash flow ratios over time and among enterprises. This development is significant because reliable cash flow reporting is theoretically one of the best measures of a retail firm's financial health (Rauh 1990).

Operating cash flow ratios may close the information gap that existed with the SCFP. According to the literature (see for example, Livnat and Zarowin 1990; Figlewicz and Zeller 1991; Carslaw and Mills 1991; Stickney 1991; and Giacomino and Mielke 1993), operating cash flow ratios may provide a more complete picture of a firm's ability to generate sufficient operating cash flow to service its debt and equity obligations and to fund asset acquisitions. (The ability to generate sufficient operating cash flow is labeled "ability to pay" in this study.) The literature, however, does not furnish empirical evidence supporting whether or how operating cash flow ratios should be used in the financial analysis of retail firms.

This study reports on the uniqueness and stability of

operating cash flow ratios, relative to accrual-based financial ratios, for retail firms for the period 1988 to 1991. A specific retail industry focus is taken because financial ratios do not have the same relevance across industries due to competitive pressures and asset structures (Griffin 1987; Ketz et al. 1990). For example, retail firms are different from manufacturing firms because operating cycles are shorter and profit to sales ratios are lower (Ketz et al. 1990). Therefore, to explore the value of operating cash flow ratios, an industry specific focus is necessary.

Further, the literature is inconsistent regarding the value of operating cash flow ratios to the retail industry. Gombola and Ketz (1983b), using factor-analyzed data for the years 1962 to 1980, found that operating cash flow ratios provide unique insight. Ketz et al. (1990), however, using factor analyzed data for the years 1983 to 1987, found that operating cash flow ratios provide redundant insight. The results of this study suggest that operating cash flow ratios, for the period 1988 to 1991, provide unique insight regarding a retail firm's "ability to pay" when using data drawn from the new SCF, mandated by SFAS 95.

Operating Cash Flow Ratios: New and Traditional

Table 1 lists four new operating cash flow ratios that have been discussed in recent professional business literature. The first ratio, cash flow from operations divided by average current debt (CFFOACD), indicates the approximate excess (or shortfall) of cash generated from operations that is available to meet current debt obligations. This is a useful liquidity measure, as the current and quick ratios do not accurately reflect a firm's "ability to pay" (Walter 1957). CFFOACD represents the excess of operating cash flow after funding working capital needs (Stickney 1991, p. 236).

The second ratio, cash flow from operations plus interest and taxes paid divided by interest paid (CFFOBITIP), indicates the operating cash flow coverage of interest paid to creditors. (Under SFAS 95, CFFO is net of interest and taxes paid. Interest and taxes paid are added back for a pretax measure of cash flow available for interest-paid coverage.) The conventional "times-interest-earned" ratio may not accurately reflect coverage of interest because of the noncash adjustments required by Generally Accepted Accounting Principles (GAAP) when calculating accrual income. In

contrast, CFFOBITIP indicates the firm's ability to generate cash flow from operations in relation to its interest payment obligations.

The third ratio, cash flow from operations less dividends paid divided by total debt (CFFODTD), represents the percentage of current operating cash flow available to satisfy all debt obligations beyond the coverage of interest, taxes, and dividends. A decreasing trend in CFFODTD may signal a potential problem with debt repayment out of operating cash flow, as well as a possible need for additional

financing to satisfy interest charges, taxes, and dividends.

Table 1
New Cash Flow Ratios

	Abbreviation
Cash Flow from Operations ^{a,c} Average Current Debt	CFFO ^a ACD
CFFO + Interest and Taxes Paid ^{a,b} Interest Paid	CFFOBITIP
CFFO - Total Dividends ^{b,c} Total Debt	CFFODTD
CFFO ^{b,d} Operating Income	CFFOOI

^a Figlewicz and Zeller (1991)

^b Carslaw and Mills (1991)

^c Stickney (1991)

^d Giacomino and Mielke (1993)

^e Cash flow from operations according to SFAS 95, Statement of Cash Flows.

The final ratio in Table 1, cash flow from operations divided by operating income (CFFOOI), indicates the percentage of CFFO represented in operating income. For example, if CFFOOI consistently and significantly deviates from 1.00, operating income may not be measuring a firm's true performance over time. If a trend surfaces where CFFOOI is significantly less than 1.00, this means that operating income may be overstating the firm's true performance, measured in spendable dollars. The problem may be that sales are generated by expanding receivables or an under booking of payables. Knowing a difference exists and understanding why are, therefore, key components in evaluating a firm's true economic performance.

In addition to the above newly derived operating cash flow ratio, traditional operating cash flow ratios are re-explored herein with cash flow from operations (CFFO) coming from the SCF. Traditional operating cash flow ratios employed prior to SFAS 95 were cash flow from operations divided by sales (CFFOS), cash flow from operations divided by total assets (CFFOTA) and cash flow from operations divided by total debt (CFFOTD) (See for example, Foster 1986 and Gombola and Ketz 1983a, 1983b). Before SFAS 95, CFFO had to be estimated from the SCFP and suffered from the inherent limitations of cash flow reporting identified by Drtina and Largay (1985). For this reason traditional operating cash flow ratios are incorporated into the study.

Literature Review

Factor analysis is an established approach to classifying a firm's key financial characteristics measured by ratios. Chen and Shimerda (1981) reviewed prior studies (See -- Pinches, Mingo, and Caruthers 1973; Pinches, Eubank, Mingo and Caruthers 1975; Stevens 1973; and Libby 1975) that factor-analyzed financial ratios and concluded that the primary financial characteristics of firm activity were: (1) capital turnover, (2) cash position, (3) financial leverage (4) inventory turnover, (5) receivables turnover, (6) return on investment and (7) short-term liquidity. Chen and Shimerda (1981) concluded that financial reports carry a wide range of financial characteristics to support the users needs in decision making.

Gombola and Ketz (1983b), using factor-analyzed data for the years 1962 to 1980, expanded the literature with a study that: 1) divided the sample between manufacturing and retail firms and 2) included traditional cash flow ratios. Gombola and Ketz (1983b) identified a separate inventory factor, return on sales factor and cash flow factor for retail firms. This can be interpreted as preliminary evidence that some ratios are more important in certain industries than in others. Specifically, it showed that the type of information available for

financial ratio analysis varies between manufacturing and retail firms (Gombola and Ketz 1983b).

Ketz et al. (1990) extended this work to a wide range of industries for the years 1978 to 1987. Retail firms, SIC code 5200 to 5995, represented one of the industries. Ketz et al. (1990) reported that retail firm financial ratios load on seven factors: (1) cash flow/working capital, (2) cash position, (3) debt, (4) inventory, (5) liquidity, (6) return on assets and (7) return on sales. Cash flow ratios (#5, #6, #7) and working capital ratios (#27, #28, #29) in Table 2 formed the cash flow/working capital financial characteristic. Because Ketz et al. (1990) used data prior to SFAS 95, CFFO was estimated from the SCFP. It is, therefore, unlikely that this estimation procedure produced comparable measures of CFFO activity across retail firms according to evidence supplied by Drtina and Largay (1985). Whether this is a cash flow or working capital component of firm activity is unclear.

The inconsistent findings between Gombola and Ketz (1983b) and Ketz et al. (1990) leaves open the issue of whether and how operating cash flow ratios should be applied in decision making. The structured reporting framework of the SCF, however, may have contributed enough stability to this data source to clarify its value in financial analysis.

Methodology, Research Issues, and Measures

We have used factor analysis to examine whether and how cash flow ratios, drawn from the SCF, should be employed relative to accrual-based ratios in financial analysis. Factor analysis is a data reduction procedure that creates a statistical-based taxonomy of financial ratios which in turn is defined as a grouping of an entire ratio set into several subsets called common factors. According to Gombola and Ketz (1983b), factor analysis:

takes a correlation matrix (or covariance matrix) among original variables as inputs and constructs new variables where the number of new variables (called factors) to be retained is smaller than the number of variables in the original data set. If the correlation coefficient between one of the original variables and a factor is close to unity then the original variable can be used to represent the factor. In this manner, a larger set of variables can be reduced to a much smaller set, where the smaller set of variables is then used for some predictive, explanatory, or descriptive purpose.

In the present study, we have labeled the condition responsible for the common variability of a ratio subset as a financial characteristic of firm activity. Each condition is identified by the specific ratios that consistently load to the respective common factor (Gombola and Ketz 1983a; 1983b). For example, Gombola and

Table 2
Financial Ratios Used in Study

Financial Ratio	Abbreviation
1. Cash/Current Debt	CCD
2. Cash/Sales	CS
3. Cash/Total Assets	CTA
4. Cash/Total Debt	CTD
5. CFFO/Sales	CFFOS
6. CFFO/Total Assets	CFFOTA
7. CFFO/Total Debt	CFFOTD
8. Cost of Goods Sold/Inventory	CGSINV
9. Cost of Goods Sold/Sales	CGSS
10. Current Assets/Current Debt	CACD
11. Current Assets/Sales	CAS
12. Current Assets/Total Assets	CATA
13. Current Debt/Total Debt	CDTD
14. Inventory/Current Assets	INVCA
15. Inventory/Sales	INVS
16. Inventory/Working Capital	INVWC
17. Long-Term Debt/Total Assets	LTDTA
18. Operating Income/Sales	OPINCS
19. Operating Income/Total Assets	OPINCTA
20. Operating Income/Total Debt	OPINCTD
21. Operating Income Plus Depreciation/Sales	OPIPDS
22. Operating Income Plus Depreciation/Total Assets	OPIPDTA
23. Operating Income Plus Depreciation/Total Debt	OPIPDTD
24. Quick Assets/Current Debt	QACD
25. Sales/Total Assets	STA
26. Total Debt/Total Assets	TDTA
27. Working Capital from Operations/Sales	WCFOFOS
28. Working Capital from Operations/Total Assets	WCFOFTA
29. Working Capital from Operations/Total Debt	WCFOFOTD
30. CFFO/Average Current Debt	CFFOACD
31. CFFO + Interest and Taxes Paid/ Interest Paid	CFFOBITIP
32. CFFO-Total Dividends/Total Debt	CFFODTD
33. CFFO/Operating Income	CFFOOI
34. Income before Interest Charges and Taxes/Interest Charges	TIE

CFFO = Cash flow from operations according to SFAS 95,
Statement of Cash Flows.

pendent financial information. Ratios with a common factor loading value greater than .70 can be used to represent such financial information (Ketzer et al. 1990). Ratios with a factor loading less than .70 are labeled as redundant measures. Thus, factor analysis can be used to indicate the relative financial information of operating cash flow ratios.

A statistical based taxonomy will produce the necessary output to address the research issues in this paper if (1.) the condition driving the variability of cash flow ratios is the same condition that drives the variability of accrual-based ratios, then cash flow ratios will load with the accrual-based ratios to a common factor. This outcome would suggest that cash flow ratios only serve as redundant measures for predictive, explanatory, and descriptive purposes; and (2.) the condition driving the variability of cash flow ratios is unique relative to accrual-based ratios, then

cash flow ratios will load on a separate common factor. This outcome would indicate that a distinct underlying condition is contributing to the variability of cash flow ratios, which in turn would suggest that cash flow ratios capture a unique financial characteristic of firm activity.

Ketzer (1983a; 1983b) and Ketzer et al. (1990) identify inventory as a financial characteristic of firm activity. This means that ratios capturing inventory management activity, such as inventory to sales and cost of goods sold to inventory, load to the inventory common factor.

Benishay (1971) and Barnes (1987) refer to each financial characteristic of firm activity identified by factor analysis as either fully independent or semi-inde-

There are three primary criteria for identifying the subset of financial characteristics of firm activity (Tabachnick and Fidel 1983). They are: (#1) eigen-

values greater than one, Kaiser's criterion; (#2) an identifiable factor above the level plane on the scree plot, Cattell's scree criterion; and (#3) the common factor should be interpretable. This three-tier approach is consistent with prior work using factor-analyzed financial ratio data to identify the primary financial characteristics of firm activity (Gombola and Ketz 1983a, 1983b; and Ketz et al. 1990).

The sample consists of retail firms with Standard Industrial Classification (SIC) code 5200 to 5995. All data were obtained from Compustat annual data tapes for the years 1988 to 1991. The imposed four-year time limit on this study parallels the introduction of the SCF in 1988.

A broad definition of the retail industry was necessary to assemble a sample size large enough to accommodate a factor analysis methodology. The factor analysis literature specifies a minimum number of observations necessary for valid, interpretable results. Tabachnick and Fidell (1983) and others suggest that approximately 200 observations are necessary to produce meaningful results. Guertin and Bailey (1970) have noted the disadvantages of smaller samples:

[T]he random errors of the less reliable correlations coefficients increase the absolute size of the correlations in the matrix. This results in greater communalities and a large amount of common factor variance, although the increase is due to spurious common factor variance (p. 200).

This suggests that using a small sample may result in common factors being identified that are attributable to methodological issues and not financial characteristics of firm activity.

Table 2 lists the ratios employed in this study. Ratios 1 to 29 are the same ratios employed by Ketz et al. (1990). According to Ketz et al. (1990) these ratios are typically employed in financial ratio analysis. The only modification to this ratio set is that the CFFO component for ratios #5 to #7 is drawn from the SCF. Ratios 30 to 33 are the new operating cash flow ratios and ratio 34 is included for comparability according to the discussion regarding the CFFOBITIP.

Several improvements to the Ketz et al. (1990) study are incorporated into our work. First, new cash flow ratios are included in this study. Second, the CFFO component is taken from the SCF as specified under SFAS 95 when computing the new and, traditional operating cash flow ratios. Therefore, CFFO is measured without the inherent limitations of using cash flow data identified by Drtina and Largay (1985).

Third, the findings of Ketz et al. (1990) are challenged

based upon methodological issues. Ketz et al. (1990) identified seven factors for retail firms, using common factor analysis, to maintain comparability across all industries included in their study. The results of our work are not bound to retaining seven factors.

Fourth, Ketz et al. (1990) used a small sample ($n = 40$) of firms. The results of factor analysis, however, are based upon correlation coefficients which when estimated from small samples are less reliable (Tabachnick and Fidell, 1983). Therefore this study, with a sample size greater than 200, provides greater validity in exploring a financial characteristic consistency of new and traditional operating cash flow ratios.

Fifth, potential confounding to the statistical output was reduced by eliminating outlier data points from each ratio. An outlier ratio is defined as any point three standard deviations from the mean (Ezzamel and Mar-Molinero, 1990). Consistent with Ezzamel and Mar-Molinero (1990), relatively few data points (less than 5%) had to be eliminated for the distribution of each ratio to approximate a normal distribution.

Results

A yearly taxonomy of retail firm financial ratios is listed in Table 3. The factors and loadings are based on criteria #1 - #3 for principal component factor analysis (PCFA) with a promax rotation. PCFA is applied to avoid confounding typically caused by financial ratio data redundancy. A promax rotation enhances the interpretation of factor loadings because the ratios are not assumed to be independent, which is most likely true with financial ratio data. This approach to building a statistical based taxonomy of financial ratios improves interpretability because the clustering of financial ratios are represented more accurately (Ketz et al. 1990). The factors explain 77%, 72%, 72% and 78% of the total variance among the ratio set for 1988 to 1991, respectively. This means that the identified factors capture the majority of the independent and semi-independent information that is available in the ratio data set.

New and traditional operating cash flow ratios capture unique insight to firm activity. For each year CFFOTD, CFFOTA, CFFOS, CFFODTD and CFFO-ACD group on a unique cash flow factor (Table 3). This finding provides evidence that a retail firm's net cash operating flows is a unique activity that appears stable over the time frame of this study. In contrast, Ketz et al. (1990) found that both operating cash flow and working capital ratios form one unstable factor when using data from the previous SCFP. Therefore, new and traditional operating cash flow ratios are suggested for use in meeting the users objectives when estimating a retail firm's "ability to pay." That is, these

Table 3 - Retail Firms
Factor Pattern and Ratio Identification
Promax Rotation (1988 to 1991)

1988 n = 209	1989 n = 235	1990 n = 240	1991 n = 209
Return	Return	Return	Cash Position
WCFOTA .91	WCFOTA .91	OPINCTD .92	QACD .95
OPIPDTA .90	OPINCTD .91	WCFOTD .92	CCD .94
OPINCTD .90	OPIPDTD .89	WCFOTA .91	CS .91
OPIPDS .90	OPIPDTA .88	OPIPDTD .91	CAS .89
WCFOS .88	WCFOTD .88	OPIPDTA .90	CTD .88
OPINCTA .88	OPINCTA .85	OPINCTA .86	CACD .87
OPIPDTD .86	OPINCS .84	OPINCS .85	CTA .59
WCFOTD .86	WCFOS .82	WCFOS .83	
OPINCS .79	OPIPDS .82	OPIPDS .82	
	TIE .57	TIE .64	
	TDTA -.61	TDTA -.60	
Cash Position	Cash Flow	Cash Flow	Return
CCD .92	CFFOTA .93	CFFOTD .96	OPINCTA .91
CTD .90	CFFOACD .93	CFFODTD .95	OPINCTD .90
QACD .86	CFFOTD .91	CFFOTA .94	WCFOTA .85
CS .85	CFFODTD .89	CFFOS .92	OPINCS .84
CTA .78	CFFOS .83	CFFOACD .91	OPIPDTA .84
		CFFOBITIP .60	TIE .72
Cash Flow	Cash Position	Cash Position	Cash Flow
CFFOTA .94	CCD .89	CS .91	CFFOTD .91
CFFOTD .91	CTD .87	CCD .91	CFFOTA .89
CFFODTD .88	CTA .84	CTD .89	CFFODTD .87
CFFOS .86	CS .80	CTA .86	CFFOACD .86
CFFOACD .86	QACD .67	QACD .76	CFFOS .82
	INVCA -.59	INVCA -.51	CFFOBITIP .65
Inventory	Inventory	Inventory	Inventory
INVS .88	INVS .85	INVS .88	INVS .86
CATA .80	CAS .84	CATA .82	CATA .75
CAS .72	CATA .77	CAS .82	INVCA .70
INVCA .63	CACD .76	CACD .64	CGSS -.49
CACD .60	CGSS -.53	CGSS -.52	CGSINV -.86
CGSS -.47	CGSINV -.73	CGSINV -.77	
CGSINV -.84			
Debt	Debt	Debt	Debt
CDTD .88	CDTD .73	CDTD .81	CDTD .82
STA .61	STA .68	STA .64	TDTA -.66
TDTA -.50	LTDTA -.70	LTDTA -.75	LTDTA -.88
LTDTA -.85			
Coverage			Working Capital
CFFOBITIP .93			WCFOS .88
TIE .93			OPIPDS .88
			WCFOTD .70
			OPIPDTD .70

ratios signal a retail firm's ability to generated operating cash flow. This financial characteristic was not available from traditional accrual-based financial ratios.

Two cash flow ratios appear to add very little to financial ratio analysis, according to the data and time frame of this study. For each year CFFOOI fails to correlate with a common factor (Table 4). This means CFFOOI measures an insignificant financial characteristic of firm activity not captured by the ratios used in this study. Therefore, it is unclear as to the contribution of this ratio in overall financial analysis of a retail firm.

solely on accrual accounting techniques to asses a retail firm's true economic performance.

The aggressive expansion of Walgreen Co. reported by Byrne (1990) is an excellent case study to investigate how well cash flow ratios provide unique insight into planned growth activities. Plotting new and traditional operating cash flow measures against accrual-based ratios will provide a better understanding of Walgreen's success or failure during and after the expansion. A successful expansion should show improved operating cash flow and operating income measures over time.

**Table 4 - Retail Firms
Ratio failing to load on any factor**

<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>
	CFFOBITIP		
CFFOOI	CFFOOI	CFFOOI	CFFOOI
INVWC	INVWC	INVWC	INVWC
			STA

The inconsistent correlations between CFFOBITIP and related factors for each year cast doubt on the value of this ratio in financial analysis. CFFOBITIP loads to the coverage factor in 1988, the cash flow factor in 1990 and 1991 (Table 3), but does not load to any factor in 1989 (Table 4). The unstable loading pattern makes it impossible to identify the specific financial characteristic measured by CFFOBITIP. Therefore, it is not clear how CFFOBITIP should be used in evaluating a retail firm's "ability to pay" interest due creditors.

Overall, identification of a unique cash flow factor is meaningful to the financial analyst and researcher. The analyst needs information about a firm's ability to fund capital expenditures and service debt. Capital expenditures are necessary for long-term competitiveness because store appearance and modern display fixtures attract customers. This study suggests that by comparing traditional accrual measures and cash flow ratios the analyst can estimate a firm's ability to fund capital expenditure and service current and long term debt. For instance, if OPINCTA is increasing and CFFOTA is decreasing over time, a firm's operating cash flows may not be providing the necessary resources for capital expenditures. The primary issue is that this study provides empirical evidence indicating management should not ignore operating cash flow analysis and rely

Discrepancies between cash flow and traditional ratios is cause for investors and management to question a strategic plan of expansion that may not be generating the required operating cash flow to support future capital expenditures.

This study also benefits the researcher. Typically, the researcher uses regression analysis or some form of discriminatory model with traditional financial ratios to predict, for example, a firm's stock price, bond rating or bankruptcy. A unique operating cash flow factor suggests that operating cash flow ratios hold additional explanatory power for this industry in discriminatory models. For example, cash flow ratios can be tested in regard to predicting a retail firm's bond rating.

Comparing the findings of this study to Ketz, et al. (1990) points to a change when evaluating a retail firm's liquidity. Ketz et al. (1990) identified a specific liquidity factor measured by CACD, QACD and CAS. The new taxonomy (Table 3) indicates that CACD attaches to the inventory factor in 1988, 1989 and 1990 and the cash position factor in 1991, and CAS consistently combines with the inventory factor. QACD merges with the cash position factor for all period. This means that liquidity analysis of a retail firm should focus on cash and near cash reserve ratios and eliminate CACD from consider-

ation. Both this study and Ketz et al. (1990) identified cash position, debt, inventory, and return factors.

The new taxonomy of financial ratios for retail firms (Table 3) should have an impact on textbooks and annual statement studies. Most textbooks and annual statement studies, such as Robert Morris and Associates (RMA) and Duns Analytical Services (DAS), classify financial ratios into broad categories. RMA, for example, categorizes ratios into liquidity, coverage, leverage and operating ratios and DAS categorizes ratios into solvency, efficiency and profitability ratios. Table 3 outlines a different framework for financial ratio analysis than those found in traditional textbooks and annual statement studies. The most significant are that operating cash flow ratios should be 1) included in textbooks to show an expansion of financial analysis and 2) included in annual statement studies to more fully assess a retail firm against industry averages.

Finally, the findings of this study make a contribution to retail firm financial reporting. A statistical based taxonomy of financial ratios for retail firms provides a parsimonious structured framework consistent with the notion of summary annual reports (SAR). A SAR is a report to shareholders that contains a condensed presentation of a firm's financial and nonfinancial data in a readable format (Schroeder and Gibson, 1992). This form of reporting was approved by the Securities and Exchange Commission (SEC) in 1987. The SEC stated that as long as all disclosures are met in other reports, such as proxy statements and Form 10K, there is no requirement to issue a traditional annual report. A retail business can use the findings of this study to justify a section in a SAR regarding a retail firm's "ability to pay."

Conclusion

Financial ratios play a central role in the quantitative analysis of a retail firm. The challenge in this analysis lies in selecting the key ratios that capture the primary financial characteristics of firm activity. This study yields empirical evidence that operating cash flow ratios signal a unique aspect of a retail firm's activity within a new taxonomy of financial ratios. A retail firm's true economic health can no longer be fully assessed with accrual-based accounting measures alone. New and traditional operating cash flow ratios measure a retail firm's "ability to pay."

Suggestions for Future Research

This study, along with previous research, provides substantial evidence supporting the application of cash flow measures in financial ratio analysis. For example, cash flow measures can be studied to justify or refute

management's operating strategy. Is the Walgreen Co. expansion supported by operating cash flow or other forms of financing? Such efforts will demonstrate specifically how new cash flow ratios can be used to reflect the economic impact of strategic decisions. Future research concerning cash flow and traditional ratios that failed to load to an identifiable factor (table 4) would be another logical extension of this study. The question of information value becomes an issue because these ratios are being employed in financial analysis. Finally, determining the extent to which financial analysts rely on cash flow ratios would signal the perceived value of cash flow reporting. ■

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