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Earnings VS. Cash Flow: An Industry Examination

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Abstract

The FASB in SFAC No. 1 asserted that current earnings provide a better predictor of future operating cash flow than does current operating cash flow. The few empirical tests of this assertion have provided mixed results.

This study uses ordinary least squares (OLS) regression and industry membership as a control measure to test whether current earnings or current cash flow is a better predictor of future cash flow. The OLS test results show that current cash flow clearly dominates earnings as a predictor of future cash flow, which is contrary to the FASB's contention. Also, the test results confirm

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that industry membership is an important consideration when comparing the predictive ability of cash flow and earnings.

Key Words

CFO, IBED, OLS, FASB.

Introdution

Purpose of Study

The ability to predict firms' future cash flows has been of paramount interest to various groups including investors, financial analysts, creditors, governmental agencies and financial researchers. Several accounting studies in recent years have attempted to determine the relative abilities of accounting measures to predict future cash flows. Part of the impetus for these studies was the Financial Accounting Standards Board (FASB) Statement of Financial Accounting Concepts (SFAC) No. 1, which stated that providing informantion about the timing and amount of future cash flows is an important goal of financial reporting (1978, para. 37). The FASB (1978, para.44) asserted that current accrual accounting earnings is useful in the prediction of future cash flows and that it is also a better predictor of future cash flows than is current cash flow.

Since the 1978 issuance of SFAC No. 1, there have been several empirical studies investigating the FASB's assertion concerning the superior predictive power of current accrual

accounting earnings relative to current cash flow. These studies yielded mixed results due to use of different statistical procedures (e.g., use of OLS by Greenberg et al. 1986), use of naive expectation models (e. g., Bowen et al. 1986), or failure to treat industry membership as a control variable (Greenberg et al. 1986; Bowen et al. 1986; Finger 1991; kinnunen and Artto 1991).

Contributions of the Current Study

This study differs from prior work in that it uses industry membership as a control measure. It also utilizes an ordinary least-squares regression for each company. The study also covers a relatively long period of 14 years as compared to the prior studies.

Literature Review

The empirical research reviewed in this section includes studies examining the relative abilities of earnings versus cash flow measures to predict future cash flow. In addition, studies examining industry effect are also reviewed.

Comparing the Predictive Power of Various Measures of Cash Flow and Earnings

Fisher (1980) investigated seven alternative independent variables relative ability to predict future cash flow from operation. For each firm, seven separate regression models were

estimated using future cash flow from operations as the dependnet variable with each of the following as independent variables: (1) net income, (2) earnings after extraordinary items and discontinued operations, (3) earnings before extraordinnary items and discontinued operations, (4) working capital from operrations, (5) quick assets form operations, (6) net income from operations adjusted for depreciation and (7) cash flow from operations. The regression models measured the degree of linear relationship between the future cash flow from operations and the seven alternative independent variables, using the coefficient of determination (R^2). The study then compared the R^2 produced by the model using cash flow from operatons as the explanantory variable to the R^2 produced by each of the other six explanantory variables separately.

A majority of the firms had a greater R^2 when one of the other six variables was the independent variable. Fisher (1980) concluded that, based on these results, accrual measures predicted future cash flow from operations better than current cash flow from operations.

Costigan (1985) examined whether the accounting accruals improve the ability of current cash flow from operations to predict future cash flow from operations. The model used future cash flow from operations as the dependent variable. Three regression models were estimated using current cash flow from operatoins as the primary independent variable.

Additionally, each regression model used one of the following as a second independent variable: (1) total accruals, (2) earnings adjusted for depreciation, and (3) current accruals.

Total accruals was measured as the difference between earnings and cash flow from operations. Earnings adjusted for depreciation was measured as the difference between earnings before depreciation and cash flow from operations (earnings before depreciation component). Finally, current accruals was measured as the difference between working capital from operations and cash flow from operations (working capital component).

The results indicated that the working capital and earnings before depreciation components improve the ability of current cash flow from operations to predict future cash flow from operations. From these results Costigan (1985) concluded that working capital from operations and net income adjusted for depreciation predicted future cash flow from operations better than current cash flow from operations.

Bowen et al. (1986) also compared the ability of different measures of cash flow from operations with accrual earnings to forecast cash flow from operations one and two periods into the future. The model used future cash flow from operations (CFO) as the dependent variable. The alternative independent variables were NI, NIDER, WCFO, CFO, CFAI and CC, as defined before (page 12). The model with the lowest absolute forecast error was

determined to be the best predictor.

The results showed that those measures of cash flow from operations that were calculated with fewer adjustments made to earnings (NIDPR and WCFO) were better predictors of future CFO than are other measures of cash flow. Furthermore, they stated that based on the results, they could not reject the hypothesis that the CFO and NI models have the same one - or two - period ahead forecast errors. They concluded that their resluts provide conditional support for the FASB only if WCFO and NIDER were assumed to be the variables providing informaion about current earnings of a firm. However, when using a narrower definition of current earnings from operations (i.e., NI) their findings were contrary to the FASB's statements.

Greenberg et al. (1986) examined the relative abilities of current cash flow from operations and current earnings to predict cash flow from operations one ot five years into the future. The Sturdy used two ordinary least squares regression models to estimate future cash flow from operations for each sample firm. The models utilized current cash flow from operations (the cash flow model) and current earnings (the earnings model) as their alternative explanatory variables. The predictive power of the models was determined based on the comparison of the coefficient of determination (R^2) produced by each model. The model with the greater R^2 was declared the better model.

After eliminating firms with models that exhibited

autocorrelation in the error terms, the current earnings predicted future cash flow from operations better than the current cash flow from operations for a majority of the sample firms. Furthermore, their results were supported, when the predictive abilities of the two indepenedent variables were compared based on two-multiyear models. The multiyear models used the previous two-period and three-period observations to predict current cash flow from operations. Again, the earnings model outperformed the cash flow model.

Gaharan (1988) examined the relative abilities of different measures of funds flow to predict future cash flow from operations. Using ordinary least-square estimation method to estimate a pooled cross-sectional and time - series regression model, the study estimated the relationship between future cash flow from operations and three alternative independent varibles. Independent varialbes were:

(1) working capital from operations

(2) quick assets from operations, and

(3) cash flow from operations.

The study compared the relative abilities of three independent variables, after controlling for autocorrelation, both across firms (an overall test) and also within industries. The results of the overall test indicatied that working capital from operations and quick assets from operations were better predictors of future cash flow from operations than cash flow from operations. The results

also indicated that the ability of the independent variables to predict future cash flow from operations varied across industries.

Finger (1991), as part of her study, examined the ability of current cash flow from operations versus current income to predict future cash flow. Using a regression model, the study covered 45 years of annual data for 50 firms. The model used future cash flow from operations as the dependent variable and cash flow from operations and earnings as the alternative independent variables (labeled CFO and earnings models), respectively. The study utilized two sets of tests to compare the predictive ability of the alternative independent cariables. The first set of tests involved regressing the dependent variable (CFO) on different lags (from two to eight of independent variables (CFO or earnings) separately. The adjusted R^2 produced by the CFO and earnings models were compared and models with the R^2 at least 10% higher than its competitor was deemed better.

Contrary to the FASB's assertions (SFAC No. 1, 1978), she found current earnings was not a better predictor of future cash flow than current cash flow. The results of her regression tests indicated that for a majority of the firms (67%), the CFO model outperformed the earnings model when the last two periods of the cash flow from operations were used to predict the current period's cash flow from operations. She concluded that the result of the regression tests "strongly refutes the FASB contention that earnings is better" (p. 25). However, she conceded that for a

considerable number of the firm's earnings was a better predictor of future cash flow than was cash flow from operations.

As part of her second set of tests she compared forecasting abilities of these two models. Any model with at least a 10% lower Root Mean Square Errors (RMSE) was determined a better predictor. The results of this set of tests were inconclusive. Neither of the two models outperformed the other. the earnings model and the CFO model were better for 24% and 28% of the firms, respectively, and for the remaining 48% of the firms the choice of either model was insignificant.

The overall results of the study did not support the FASB's assertion that earnings is a better predictor of future cash flow.

Summary

The results are mixed as to the superiority of current earnings over the cash flow from operations. Although, neither Bowen et al. (1986) nor Finger (1991) provide evidence in support of current earnings as the better predictor of the future cash flow from operaions, Fisher (1980), Costigan (1985), Greenberg et al. (1986) and Gaharan (1988) provide evidence supporting that hypothesis. The studies in this area of research suffer from several factors, such as the use of simple statistical procedures (e.g., Bowen et al. 1986 and Finger 1991). All of these studies, with exception of Costigan (1958) and Gaharan (1988), have ignored the effect of industry on the ability of different measures of cash

flow and earnings to predict future cash flow from operations.

Both studies refuting the FASB's statements, Bowen et al. (1986) and Finger (1991), use naive expectation models (i.e., random-walk) to compare the abilities of cash flow and earnings to forecast future cash flow.

Industry Effect

The mixed results in this area of research could be due to ignoring the industry effect in the literature reviewed above. Current cash flow from operations might be a better predictor of future cash flow than current earnings in some industries, and a poorer predictor in others. Industry membership has been found to be a signinficant factor in explaining the variation in accounting earnings, systematic risk and security returns (Magee 1979; Fabozzi and Francis 1979; Lev 1989). Of the research studies reviewed here, only Bernard and Stober (1989), Costigan (1985) and Gaharan (1988) used industry membership as a control measure.

Bernard and Stober (1989) reported that their results did not change after controlling for industry effet. However, they classified the sample firms according to two-digit SIC industry classification codes. According to Magee (1979) this method of defining industry is too broad and is the reason earlier studies had not found the industry effect as a significant factor explaining the variation in accounting earnings. For example, Brown and Ball

(1967), using two-digit SIC industry classification codes to define industries, found the industry effects not a significant factor in explaining accounting earnings variation. However, Magee (1979) reported that when industries were difined according to four-digit SIC industry classification, codes, the industry effect was significant in explaining variation in accounting earnings of the firms. The research in earnings response coefficients has also found that the industry effect is a significant variable in explaining the relationship between accounting earnings and securities return (Bublitz et al. 1985; Lev 1989; Biddle and Seow 1991).

Although they used two-digit SIC industry classification codes, both Costigan (1985) and Gaharan (1989) reported that industry classification affects their results. Costigan (1985) reported that taking industry membership into consideration, working capital from operations provided additional explanatory power in the drug, steel, air and retail industries. Net income adjusted for depreciation improved the prediction of future cash flow in all industries except for the air industry.

Total accruals improved the prediction of future cash flow in only the retail industry. The main weaknesses of this study are its small sample size (only 65 firms) and only four industries are represented in the sample.

The Gaharan (1988) study had a larger sample size (454 firms) and more industries are represented in the sample (15). She reported that the relative ability of cash flow from operations,

quick assets from operations and working capital from operations to predict future cash flow from operations varied across industries. Working capital from operations was the best predictor in four industries: (1) chemicals, (2) electronics, (3) automotive and aerospace, and (4) investments. Quick assets from operations was the best predictor in only one industry, forest products. Cash flow from operations was the best predictor in two industries, (1) apparel manufacturing, and (2) machinery and equimpent. A potential limitation associated with these two studies is the use of two-digit SIC industry classification codes as the basis for industry classification. A narrower industry definition could produce different results regarding the ability of current cash flow from operations and current earnings to predict future cash flow within industries (Magee 1979). Additionally, both studies also suffer form use of simple regression methods (i.e., LOS) and limited industry representation.

The current study uses four-digit SIC industry classification codes to group the sample firms.

Summary

The review of related emirical research indicates that the relative ability of the current cash flow from operations and current earnings to predict future cash flow from operations is an unsettled question.

Research Methodology

This section discusses the sample selection procedures and the methodology used to examine the research question. The basic research question is whether future cash flows are better predicted by current accrual earnings from operations or by current cash flow from operations. Examining the research question within industries controls industry effects.

The first part of this chapter describes the sample selection procedures, and is followd by the formal presentation of the research question and variable descriptions. Finally, the methodology to be used and the related econometric issues are discussed.

Sample Selection

The sample consists of 520 firms drawn from the Compustat industrial database for the 14-year period from 1975 through 1988, where the 1974 data were also needed for certain items. All firms meeting the following conditions were included in the sample:

1- The firm must not have engaged in merger or acquisition activities during the period of the study.

2- The firm must have the necessary data for the entire period.

3- The firm must not have changed industry classification during the period of the study.

Out of 13,245 industrial firms on Compustat data base, 2,730

firms were eliminated as the result of merger or acquisition activities, 9,373 firms were also eliminated because of missing data and 1 firm was eliminated as the result of a change in the industry classification during the period. Finally, 621 firms were eliminated due to industries being represented by fewer that eight firms. The final sample contained 520 industrial firms, representing 27 industries with at least eight firms in each industry.

In order to reduce the number of the firms eliminated as the result of missing data and hence increase the sample size, different formulations of CFO were tried. Net incom (Compustat item #172) was used instead of net income before extraordinary items and discontinued operations (Compustat #18) to compute CFO. This item was adjusted for extraordinary items and discontinued operations (Compustat # 48) in order to arrive at income before extraodinary items and discontinued operations (Compustat # 18). However the sample size did not change and in fact, the resulting sample was the same as the current one. Other approaches were tried such as the use of earnings per share including and excluding extraordinary items (Compustat items # 53 and # 58) as the starting value to compute CFO after making the appropriate adjustments. These attempts also proved unsatisfactory because the resulting sample size was smaller than the current sample size. Table 1 presents a summary of the final sample firms.

Firms on 1990 Compustat file	13,245
Firms eliminated due to merger and acquisition	(2,730)
Firms eliminated due to missing information	(9,373)
Firms eliminated due to change in industry classification	(1)
Firms eliminated due to an industry being represented by less than eight firms	(621)
Firms in final sample	520

Table 1- Sample Selection Procedures

Research Question

As stated previously, the basic question is whether current earnings from operations or current cash flow from operations is the better predictor of future cash flows from operations. This question is relevant because the results of prior studies are mixed. This study uses an ordinary least-square regression method to examine this research question for each firm within its own industry.

To examine this question, the sample firms were formed into groups based on four-digit SIC industry classification codes, as shown in table 2.

Variables

Two explanatory variables are used in this study: current earnings and current cash flow. Current earnings is measured as

Industry Code	Number of Firms	Industry Description
1311	22	Crude petroleum & natural gas
1531	17	Operative builders
2911	8	Petroleum refining
3140	8	Footwear, except rubber
3312	12	Steel works & blast furnaces
3663	10	Radio, TV broadcast, comm. equip.
3679	8	Electronic components
3825	8	Electronic meas. & test instruments
4813	26	Phone comm. except radiotelephone
4911	67	Electric services
4923	14	Natural gas transmis. & distr.
4924	27	Natural gas distribution
4931	48	Electric & other service comb.
4941	8	Water supply
5311	9	Department stores
5411	11	Grocery stores
6021	64	National commercial banks
6022	30	State commercial banks
6311	15	Life insurance
6331	13	Fire, marine, casualty insurance
6512	14	Operators-nonresidential buildings
6552	11	Subdivid. develop. except cemetery
6795	8	Mineral royalty traders
6798	36	Real estate investment trust
6799	10	Investors
7011	8	Hotels, motels, tourist courts
7948	8	Racing, including track operations

Table 2- Description of Industries Analyzed

net income before extraordinary items and discontinued operations (IBED), or Compustat data item 18. Current cash flow is measured as current cash flow from operations (CFO), and is computed as follows (Compustat data item 18. Current cash flow is measured as current cash flow from operations (CFO), and is computed as follow (Compustat data item number are indicated in brackets):

CFO = Net income before extraaordinary items and discontinued

operations [item 18]

+ Depreciation and amortization (0 if missing) [item 14]

+ Minority interest income (0 if missing) [item 49]

+ deferred tax, income statement (0 if missing) [item 50]

+ Change in total current liabilities (0 if missing) [Δ in item 5]

- Change in current portion of long-term debt (0 if missing) [Δ in item 34]

- Change in total current assets (0 if missing) [Δ in 4]

+ Change in cash and cash equivalents (0 if missing) [Δ in item 1]

where Δ indicates that first differencing was used. This measure is the one used by Greenberg et al. (1986). Some studies have used working capital from operations (Compustat data item 110) plus and minus certain adjustments to obtain CFO (see e.g., Bowen et al. 1986, 1987). However, in this study item 110 was not used since many firms in the 1980s adopted a cash flow format and therefore item 110 was not available for many of the sample firms.

Models

This study exaines the ability of current cash flow and of current earnings to predict future cash flows. Two models, a cash flow model and an earnings model, are fitted using an ordinary least-squares regression method. See Table 3 for description of these two models.

The two models used in this study are as follows:

$CFO_{it} = a + b(CFO_{it-1}) + e_{it}$ cash flow model

$CFO_{it} = a + b(IBED_{it-1}) + e_{it}$ earnings model

where:

$i = 1,2,...,N$ no. of firms

$t = 1,2,...,T$ time periods

a = estimate of the intercept parameter

b = estimate of the slope parameter

e_{it} = error term of firm i in time period t

Table 3 - Identification of Models

Model Assumption

The regression procedures are used to estimate two relationships:(1) the average linear relationship between each firm's current cash flow and its future cash flow and (2) the average linear relationship between each firm's current earnings and its future cash flow.

Tests of Autocorrelation

The followig statistical tests were utilized to determine the existence of autocorrelation in error terms over time.

Autocorrelation

When time-series data are used, the assumption that error terms are independent over time may be violated. That is, the

error terms may be serially correlated. When error terms are autocorrelated, the estimated standard errors of coefficients can be underestimated. Estimates of parameters will be inefficient, the coefficient of determination will be misstated, and t-statistics will be biased. This could lead to incorrect conclusions when comparing the predictability of cash flow and earnings models. Two different procedures were used to test for the presence of autocorrelation. For the earnings models, a Durbin-Watson two - sided test was used.

The Durbin-Watson test connot be used when the independent variable is a lagged value of the dependent variable (Kmenta 1986, 329) and in the cash flow mode, the dependent variable CFO_t is estimated using its previous value (CFO_{t-1}). When the independent variable is a lagged value of the dependent variable, the independent variable is a lgged value of dependent variable: the h test and the m test (Kmenta 1986, 333). The h test cannot be used when teh product of sample size and the variance of the estimated coefficient of the independent variable is greater than one. Because this might occur in this study, the m test was used.

The m test uses a two-state least- square regression method. In the first stage, the least-square methode is applied to the original data. The second stage involves the application of the least squares method to a reression model in which the dependent variable is this period's estimated error term (e_t), and the independent variables are the prior period's cash flows from

operations (CFO_{t-1}) and the prior period's estimated error term (e_{t-1}) is significantly different from zero, based on the application of the t-test, then autocorrelation is deemed to be present . The small sample properties of the m test and the h test have been examined in two Monte Carlo studies. One study reported no significant difference in their performance (Maddala and Rao 1973) and another study favored the m test (Spencer 1975). Likewise, Kmenta (1986, 333) recommends the m test.

Comparison of Cash Flow and Earnings Models

Two fitted regression equations for each industry group were compared to determine which explanatory variable, CFO_{t-1} or $IBED_{t-1}$, has a stronger linear relationship with future cash flows from operations (CFO_t). The coefficient of determination (R^2) measures the proportion of variance explained by a set of independent variables (current period's cash flows and earnings). The R^2 of the two models, cash flow and earnings, for each firm are compared, and the model with the greater R^2 is determined to have the greater predictive ability.

Empirical Results, Summary and Conclusions

This section reports the results of comparing the relative ability of the two explanatory variables, CFO and IBED, to predict future cash flows from operations.

Comarison of Cash flow and Earnings Models

As discussed earlier, the comparisons are based on the relative size of coefficients of determination produced by the cash flow model and the earnings model for each firm.

Comparing the Predictive Ability of the Cash Flow Model and the Earnings Model Firm by Firm

For each firm in the sample the CFO model and the IBED model using OLS regression were fitted to predict the future cash flows from operation one period ahead. Tabel 4 represents the results of the comparison between these two models. The CFO model dominates the IBED model. There were 347 firms for which the CFO model produced a greater R^2 as opposed to 173 firms for which the IBED model produced a greater R^2.

However these results could be misleading since any difference, no matter how small, in magnitude of R^2 were taken into consideration to determine a better model. For example a model, CFO or IBED, was determined a better model as long as its R^2 was mathematically greater than the competing model's R^2. Therefore, to provide a more reasonable comparison between the predictive ability of CFO and IBED models only significant differences were taken into consideration in presenting Table 5. A difference in R^2s produced by the CFO and IBED models were considered significant if the magnitude of the R^2 produced by one model was greater than the magnitude of the other cometing

Industry Code	No. of Firms	No. of Firms for Which the R_2 for the CFO Model Was Greater	No. of Firms for Which the R^2 for the IBED Model Was Greater
1311	22	11	11
1531	17	8	9
2911	8	7	1
3140	8	2	6
3312	12	7	5
3663	10	8	2
3679	8	4	4
3825	8	6	2
4813	26	23	3
4911	67	61	6
4923	14	10	4
4924	27	14	13
4931	48	43	5
4941	8	6	2
5311	9	3	6
5411	11	9	2
6021	64	43	21
6022	30	13	17
6311	15	11	4
6331	13	10	3
6512	14	6	8
6552	11	6	5
6795	8	2	5
6798	36	17	19
6799	10	6	4
7011	8	4	4
7948	8	6	1
Total	520	346	172

Table 4 - Comparing the predictive Ability of the Cash Flow Model and the Earnings Model Within All Industries Firm by Firm

model by at least 10% (.60 versus at least .70). Table 5, shows the comparison of the CFO and the IBED models using this new significant criterion. CFO model again dominated the IBED. There were 221 firms for which the CFO model was determined a better model as opposed to 72 firms for which the IBED model

was determined a better model. But, a closer examination shows that the firms representing the following industries mostly drive the results: Phone communication, electric services and electric and other service cominations.

Industry Code	No. of Firms	No. of Firms for Which the R_2 for the CFO Model Was Greater	No. of Firms for Which the R^2 for the IBED Model Was Greater
1311	22	7	4
1531	17	8	4
2911	8	5	1
3140	8	1	2
3312	12	3	2
3663	10	2	0
3679	8	1	3
3825	8	1	0
4813	26	22	2
4911	67	52	3
4923	14	8	1
4924	27	9	4
4931	48	35	3
4941	8	4	1
5311	9	2	2
5411	11	8	1
6021	64	17	12
6022	30	4	3
6311	15	6	2
6331	13	6	1
6512	14	3	2
6552	11	4	2
6795	8	1	3
6798	36	6	12
6799	10	1	0
7011	8	3	2
7948	8	2	0
Total	520	221	72

Table 5 - Comparing the Predictive Ability of the Cash Flow Model and the Earnings Model Within All Industries Firm by Firm with only the Significant Differences between R^2 Reported

The reported results could be furthermore misleading if the reported R^2s were misstated due to the autocorrelation presented in the models' error terms. As explained before the appropriated tests were conducted to examine the error terms for the presence of the autocorrelation.

Table 6 reports the results after eliminating firms due to detection of autocorrelation in their error terms. Although the CFO model still dominated the IBED model the difference between these two models was not as significant as previously reported in Table 5. There 56 firms for which the CFO model produced a greater R^2 as opposed to 34 firms for which the IBED model produced a greater R^2. closer examination again points out that two industries, electric services (17) and electric and other service combination (10) influence these results.

The results in Table 6 partially support the results reported by Nassiripour (1993). Of the six industries identified by Nassiripour (1993) as having the CFO model as the better model, only firms from two industries, petroleum refining and life insurance, again show the CFO model as the bettrr model. The results for two industries were determined a tie, crude petroleum and natural gas and operative builders, and the results for the remaining two industries, electronic components and national commercial banks, were reversed in this study in favor of the IBED model.

Industry Code	No. of Firms	No. of Firms for Which the R_2 for the CFO Model Was Greater	No. of Firms for Which the R^2 for the IBED Model Was Greater
1311	22	3	3
1531	17	3	2
2911	8	5	1
3140	8	0	1
3312	12	2	1
3663	10	1	0
3679	8	0	3
3825	8	1	0
4813	26	6	0
4911	67	26	2
4923	14	2	1
4924	27	1	3
4931	48	13	2
4941	8	0	1
5311	9	0	1
5411	11	1	1
6021	64	7	7
6022	30	1	2
6311	15	3	2
6331	13	4	0
6512	14	2	2
6552	11	1	2
6795	8	0	2
6798	36	0	9
6799	10	0	0
7011	8	1	2
7948	8	0	0
Total	520	83	50

Table 6 - Comparing the Predictive Ability of the Cash Flow Model and the Earnings Model Within All Industries Firm by Firm with only the Significant Differences between R^2 Reported after Exclusion of Firms Dueto Autocorrelation

Summary of Conclusions

In general, the results of this study do not confirm the assertions made by the FASB that current earnings from operations are a better predictor of the future cash flows from operations than are current cash flows from operations. The

results demonstrate that contrary to the FASB, current earnings do not clearly dominate current cash flows from operations. In fact the results show that current cash flows are a better predictor than are current earnings for firms in eleven industrieds. The results clearly show that industry membership is a major factor in determining the relative ability of current cash flows from oerations and current earnings from operations to predict future cash flow from operations.

The results of this study are consistent with the prior findings that the relative ability of the cash flow and earnings measures to predict future cash flow vary across different industry groupings (Costigan 1985, Gaharan 1989). Moreover, the findings of this study provide two major improvements over these prior studies regarding the industry effect. First, more industry groups represented in this study than in prior studies. There are twenty-seven industries represented in this study but there were only four industries represented in Costigan (1985) and fifteen industries in Gaharan (1989). Second, prior studies used the two-digit SIC classification codes to define an industry but this study used a narrower definition of an industry, four-digit SIC classification codes.

In conclusion, consistenet with previous studies, this study demonstrates the important role that industry membership plays in determining the relative ability of current cash flow from operations and current earnings from operations to predict future

cash flow from operations.

Limitations

There are several limitations present in this study. First, the sample firms were not selected randonly but from the population firms that were available on Compustat for the stated period and met the requirements set by this study. Only 560 firms out of 13,245 available on Compustat survived screenings for inclusion in the final sample. This may limit the generalizability of the study's results to the full population. Second, because the sample firms during the period of the study didt not report current cash flows from operations, the study used the indirect method to cmopute the current cash flow from operations by adjusting the current earnings from operations for noncash items and for changes in current assets and current liabilities. However, by eliminating the firms that has engaged in merger or acquisition activity and by removing the current portion of long-term liabilities from current liabilities, the cureent cash flow from operations used in this study is a good surrogate for the actual cash flow from operations.

Third, the fourteen-year length of the study period may also be a limitation. A longer period may enhance the results of the regression analysis by providing more data points although a longer period would have reduced the number of the firms in each industry and is turn would have resulted in exclusion of a few industries from analysis in this study. Also, a longer period

increases the probability that the process generating firms' earnings and cash flows may undergo structurral change due to changes in technology, the economy and/or product mix. This would violtate the assumption of a stable process inherent in the regression models.

As mentioned above a longer period would have reduced the number of industry groupings analyzed in this study.

Implications for Future research

This study may be improved if a regression model that incorporated individual firm's characteristics into its estimation proceddures while controlling for the industry memebership could be used. Regression models with the preceding attributed often require time-series data points that exceed the number of firms being analyzed. This requirement is usually difficult to meet when annual data are analyzed.

A future study could use cash flow from operations as reported by the firms in accordance with the SFAS No. 95, "Statement of Cash Flows", which required all firms to report cash flow from operations after July 15, 1988 for financial reporting purposes. Therefore, future studies may avoid the need to compute CFO indirectly.

Furthermore, it would be interesting to examine the findings of the current study in more detail and determine why current cash flow from operations demonstrates and advantage over current

earnings from operations to predict future cash flow from operations in some industry groupings. These findings may be the result of the characteristics unique to each industry grouping such as similar accounting method choices, level of capital intensity, and similar capital structures. However, the findings may alos be the results of the individual sample firms' characteristics, such as size, analyzed in this study. Additional research is needed in order to determine the reasons for the existence of industry differences.

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