

The Role of Earnings and its Components on Equity Valuation Evidence from Amman Stock Exchange

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ABSTRACT

This paper examines whether current earnings and its components are value-relevant in predicting future earnings, cash flows, abnormal earnings or dividends. In addition, it examines the relative information content among net income, cash flows and accruals. Results from 112 companies traded on the Amman Stock Exchange during the period 1998 – 2003, provide insights in to the ability of current earnings and cash flows to predict future earnings, cash flows, abnormal earnings or dividends. First, the results show that current earnings and cash flows are value-relevant in predicting future earnings, cash flows, abnormal earnings or dividends. In contrast, current accruals are not value-relevant in predicting future earnings, cash flows, abnormal earnings or dividends. Second, the findings indicate that current earnings have a higher ability than current cash flows or accruals to predict future earnings, abnormal earnings or dividends.

Keywords: Earnings, Cash flows, Accruals, Dividends.

1. INTRODUCTION

Previous studies test the ability of earnings to predict earnings and cash flows as important financial variables that determine equity valuation of the firms. This study extends the research on the ability of earnings, accruals and cash flows to predict future earnings, cash flows, abnormal earnings or dividends. The study provides insight into the relation between earnings, cash flows, accruals and the value of firms. It compares the relative abilities of earnings, cash flows and accruals to predict future earnings, cash flows, abnormal earnings or dividends. The study uses samples traded on the Amman Stock Exchange. Different tests in prior studies find mixed results. One possible explanation for the mixed results of prior research may be due to the differences in the sample composition.

2. THE PURPOSE OF THE STUDY

1- This study provides insight into the characteristics of the earnings, accruals and cash flows that affect their relation to firm value.

2- By identifying the role of information in the earnings and its components in forecasting four future valuation attributes (abnormal earnings, earnings, cash flows and dividends), this study provides a natural setting in which to corroborate and extend prior evidence.

3- Conventional wisdom suggests that the relations among earnings, cash flows, accruals, abnormal earnings and dividends are expected to differ among countries due to the unique socio-economic environments. This study examines the differences, if any, between Jordan and other countries.

3. THE IMPORTANCE OF THIS STUDY

1- The study provides additional insight into the relation between earnings, cash flows, accruals and the value of firms.

2- The study shows empirically, whether current accruals or cash flows are value-relevant in predicting future earnings or cash flows. Regression of future cash flows on current cash flows and earnings are presented. This permits cash flows forecasts to exploit the negative serial correlation in cash flows documented in Dechow et al. (1998).

3- The study compares the relative abilities of earnings, cash flows and accruals to predict future

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earnings, cash flows, abnormal earnings or dividends.

4- The study uses samples traded on the Amman Stock Exchange. Different tests in prior studies in the U.S. find mixed results. The results of this study are compared with those in the U.S.

4. CONTRIBUTION TO THE LITERATURE

1- The study tests whether earnings and its components can be used as predictors of four valuation attributes: earnings, cash flows, abnormal earnings and dividends. Prior studies have not addressed all these issues in one study.

2- Previous studies test the ability of earnings to predict earnings and cash flows as important financial variables that determine the value of the firm. However, this study is different. It tests the ability of earnings, cash flows and accruals to predict future earnings and cash flows.

3- This study tests the ability of earnings, cash flows, and accruals to predict dividends. This has not been tested yet in prior literature.

4- Results using a sample from outside the U.S. for a recent period, are considered an important contribution to the literature.

5. LITERATURE REVIEW

Numerous studies review and synthesize modern finance valuation theory and the ways it relates to the valuation of firms and accounting data. A number of articles (Beaver et al., 1980; Beaver et al., 1987; Collins et al., 1987; Collins, and Kothari, 1988; Daley, 1984; Easton, 1985; Easton and Zmijewski, 1987; Komendi and Lipe, 1987; Lipe, 1985 and Ryan, 1986) consider formal security valuation models prior to the time that testing empirical hypotheses became a common practice. Some papers embed the analysis in the Litzenger and Rao (1971) valuation model and/or the Capital Asset Pricing Model (CAPM), while others do not. Another source of confusion arises because the security valuation models make reference to at least four different capitalization attributes (benefits of equity investment): earnings, cash flows, abnormal earnings and dividends. To estimate the value of the firm, one must forecast future earnings, future cash flows, future abnormal earnings or future dividends. The analysis shows that all approaches that have been used in equity valuation are useful, but none of

them is optimal. Each one has its own shortcomings.

Major Security Valuation Models During the Last Decade

Ohlson (1990) reviews and synthesizes the theory of security valuation for a multiple-date setting with uncertainty. In dealing with valuation issues, the accounting literature generally refers to cash flows, not to dividends, as the appropriate capitalization attribute. Two closely related ideas seem to motivate this concept:

1) dividends must be paid out of cash flows.

2) any reduction in current dividends leads to increased future dividends because the extra cash retained can be invested in bonds. The author shows that cash flows from existing assets can be used as a capitalization attribute if, and only if, the risk-adjusted net present value of future investments equals zero.

Ohlson (1988, 1991) establishes the idea that prices are based on expected future earnings. Price is discounted expected future dividends, and future dividends are paid out of future book value. This result suggests the way for constructing fundamental analysis to predict future earnings.

Ohlson (1995) develops and analyzes a model of a firm's market value related to contemporaneous and future earnings, book value and dividends. It contributes to the accounting literature by providing a benchmark model that can be used to conceptualize how value relates to the three accounting variables: earnings, book value and dividends.

The theory converges on how accounting data depend on dividends as opposed to on how dividends depend on accounting data. Feltham and Ohlson (1995) examine the relation between a firm's market value and accounting data related to operating and financial activities. Market value is assumed to equal the net present value of expected future dividends, and under the clean surplus relation concept¹, it equals book value plus net present value of expected future abnormal earnings. The authors analyze how accrual accounting relates to the valuation of a firm's equity and goodwill.

Penman and Sougiannis (1998) examine how dividends, cash flow and earnings techniques perform in finite-horizon analysis. Dividends, cash flow and

¹ The clean surplus relation implies that all changes in the book value of equity, other than cash transactions with equity holders, are deemed to be part of accounting earnings, $BV_{t+1} = BV_t + E_{t+1} - D_{t+1}$, where BV = book value of equity, E = earnings, and D = dividends.

earnings approaches are equivalent when the respective payoffs are predicted to infinity, but in practice forecasts are made over finite horizons. The authors focus particularly on the question of whether forecasting accounting earnings facilitates finite horizon analysis is better than forecasting cash flows. Analysts typically forecast earnings, but for valuation purposes should these be transformed to cash flows? The difference between earnings and cash flows is in the accruals.

Feltham and Ohlson (1999) provide a general version of the accounting-based valuation model that equates the market value of a firm's equity to book value, plus the present value of expected abnormal earnings. Prior theoretical work (e.g., Ohlson 1995; Feltham and Ohlson 1995, 1996) assumes that investors are risk-neutral and interest rates are nonstochastic and flat. The authors' analysis rests on only two assumptions: no arbitrage in financial markets and clean surplus accounting. These assumptions imply a risk-adjusted formula for the present value of expected abnormal earnings. The risk adjustments consist of certainty-equivalent reductions of expected abnormal earnings. The authors find that given clean surplus accounting, equity value can always be thought of as equal to book value, plus the present value of anticipated abnormal earnings.

The Relative Information Content Among Earnings, Cash Flows and Accruals

Prior studies consistently indicate that operating cash flows has higher market valuations than the aggregate accruals do (Bowen et al. 1987; Rayburn, 1986; Ali, 1994² and Cheng et al., 1996), but evidence for differential valuations of operating cash flows over current accruals has been characterized as weak and inconsistent (Bernard and Stober, 1989 and Jennings, 1990). Sloan (1996) finds that the persistence of current earnings³ performance is increasing in the cash flows component of earnings and decreasing in the accruals component of earnings.

Accruals, on average, have incremental information content above cash flows (Bowen et al., 1987), and

² Ali (1994) detects statistically significant higher valuations for operating cash flows only after allowing for valuation differences for extreme and nonextreme realized changes in each of the funds-based components. The observed valuation differences is, however, relatively minor.

³ Earnings and its components are considered to be persistent if they are permanent in the future.

accrual-based earnings is a superior measure of firm performance than various cash flows measures (Dechow, 1994). However, this evidence is not established if the superiority of accrual-based earnings is because of management's discretionary accounting choices (Subramanyam, 1996).

Barth et al. (1999) provide insights into the characteristics of the accruals and cash flows components of earnings that affect their relation to firm value. The authors expect accruals and cash flows to have different abnormal earnings forecasting ability. They find that the relation is negative and positive for accruals and cash flows, respectively, indicating that abnormal earnings is less persistent when accruals comprise a large proportion of current earnings. The authors find that for all industries accruals and cash flows, each has a significant incremental explanatory power, to forecast future abnormal earnings in valuation models that also includes book value of equity and abnormal earnings.

Dechow et al. (1996) developed the "bird in hand" argument, because cash flows are realized in the current period, while accruals represent future cash flows, the market's valuation of accruals should impound discounts for futurity and risk. Furthermore, Sloan (1996) shows that cash flows are more persistent than accruals for future earnings. Accordingly, the relative valuation coefficients of cash flows and current accruals should reflect differential discounts for futurity, risk and persistence.

Dechow (1994) regresses returns on earnings and cash flows and compares adjusted R²s to test whether accruals improve the ability of earnings to reflect the firm's performance. She finds that over short measurement intervals earnings are more strongly associated with stock returns than cash flows are. In addition, accruals play an important role in improving the ability of earnings to reflect firm performance.

Related International Studies:

Previous studies suggest that the relations among earnings, cash flows, accruals, abnormal earnings and dividends are expected to differ among countries, due to the unique socio-economic environments that result in differences in financial reporting and determination of stock prices.

Bartov et al. (2001) investigate whether earnings or cash flows provide greater information for equity valuation within the U.S., the U.K., Canada, Germany

and Japan. The authors generalize the findings of prior U.S. research, by showing that earnings are more important than cash flows for equity valuation in other Anglo-Saxon countries. In the two non-Anglo-Saxon countries where capital is traditionally raised from private sources, earnings are generally not superior to cash flows for equity valuation. The findings demonstrate that the superiority of earnings over cash flows is not universal. Rather, it depends on the national reporting regime and attendant institutional factors.

Seng (1996) examines whether cash-flow information adds to the accruals information provided in annual reports. The question of whether accrual measures contain incremental information over and above cash flow measures is also investigated. Overall, the results show that cash flows do not provide any incremental information content over and above that contained in accruals data.

6. HYPOTHESES DEVELOPMENT

The idea that earnings, accrual and cash flow have different implications for firm value appears to be commonly held by practicing investment analysts (e.g., Fridson, 1995 and O'glove 1987). Barth et al. (1999) provide insights into the characteristics of the accruals and cash flows components of earnings that affect their relation to firm value. Finger (1994) examines the value-relevance of earnings by testing the ability of earnings to predict two future benefits of equity investment: earnings and cash flows from operations. Few studies have examined the relation between earnings and future dividends. Other studies (e.g., Easton, 1985 and Easton and Zmijewski, 1987) have made an attempt to tackle this empirically complex issue. Thus, based on the literature review, the following hypotheses for predicting future earnings, cash flows, abnormal earnings and dividends can be stated in alternative forms:

H_{1A}: Current earnings are value-relevant in predicting future earnings, cash flows, abnormal earnings or dividends.

H_{1B}: Current cash flows are value-relevant in predicting future earnings, cash flows, abnormal earnings or dividends.

H_{1C}: Current accruals are value-relevant in predicting future earnings, cash flows, abnormal earnings or dividends.

H_{1A}: is tested empirically using equations (1a) through

(1d):

$$X_{t+1} = \alpha_{10} + \alpha_{11}X_t + \varepsilon_t \quad (1a)$$

$$CFO_{t+1} = \alpha_{20} + \alpha_{21}X_t + \varepsilon_t \quad (1b)$$

$$X^a_{t+1} = \alpha_{30} + \alpha_{31}X_t + \varepsilon_t \quad (1c)$$

$$DIV_{t+1} = \alpha_{40} + \alpha_{41}X_t + \varepsilon_t \quad (1d)$$

where X is net income before extraordinary items and discontinued operations, CFO is cash flows from operations, X^a , is abnormal earnings, DIV , is dividends.

The coefficients α_{11} , α_{21} , α_{31} , and α_{41} reflect the ability of current earnings to predict future earnings, cash flows, abnormal earnings or dividends, respectively. Since H_{1A} states that earnings is value-relevant in predicting future earnings, cash flows, abnormal earnings or dividends, α_{11} , α_{21} , α_{31} and α_{41} are expected to be significantly different from zero.

H_{1B}: is tested empirically using equations (2a) through (2d):

$$X_{t+1} = \alpha_{50} + \alpha_{51}CFO_t + \varepsilon_t \quad (2a)$$

$$CFO_{t+1} = \alpha_{60} + \alpha_{61}CFO_t + \varepsilon_t \quad (2b)$$

$$X^a_{t+1} = \alpha_{70} + \alpha_{71}CFO_t + \varepsilon_t \quad (2c)$$

$$DIV_{t+1} = \alpha_{80} + \alpha_{81}CFO_t + \varepsilon_t \quad (2d)$$

all other variables are as defined previously. The coefficients α_{51} , α_{61} , α_{71} and α_{81} reflect the ability of current cash flows to predict future earnings, cash flows, abnormal earnings or dividends, respectively. Since H_{1B} states that cash flows are value-relevant in predicting future earnings, cash flows, abnormal earnings or dividends, α_{51} , α_{61} , α_{71} and α_{81} are expected to be significantly different from zero.

H_{1C} is tested empirically using equations (3a) through (3d):

$$X_{t+1} = \alpha_{90} + \alpha_{91}ACC_t + \varepsilon_t \quad (3a)$$

$$CFO_{t+1} = \alpha_{100} + \alpha_{101}ACC_t + \varepsilon_t \quad (3b)$$

$$X^a_{t+1} = \alpha_{110} + \alpha_{111}ACC_t + \varepsilon_t \quad (3c)$$

$$DIV_{t+1} = \alpha_{120} + \alpha_{121}ACC_t + \varepsilon_t \quad (3d)$$

where ACC is accruals and all other variables are as defined previously. The coefficients α_{91} , α_{101} , α_{111} and α_{121} reflect the ability of current accruals to predict future earnings, cash flows, abnormal earnings or dividends, respectively. Since H_{1C} states that accruals are value-relevant in predicting future earnings, cash flows, abnormal earnings or dividends, α_{91} , α_{101} , α_{111} and α_{121} are expected to be significantly different from zero.

Prior studies consistently indicate that operating cash flows have higher market valuations than aggregate

accruals do (Bowen et al., 1987; Wilson, 1986; 1987; Rayburn, 1986; Ali, 1994 and Cheng et al., 1996), but evidence of differentially higher valuations of operating cash flows over current accruals has been characterized as weak and inconsistent (Bernard and Stober, 1989 and Jennings, 1990). Dechow et al. (1998) explain why accounting earnings are better predictors of future operating cash flows than current cash flows. Greenberg et al. (1986) conclude that aggregate earnings have more predictive ability than cash flows. Thus, based on the literature review, the following hypotheses can be stated in alternative forms:

H_{2A}: Earnings have higher ability than cash flows to predict future earnings, cash flows, abnormal earnings or dividends.

H_{2B}: Earnings have higher ability than accruals to predict future earnings, cash flows, abnormal earnings or dividends.

H_{2C}: Cash flows have higher ability than accruals to predict future earnings, cash flows, abnormal earnings or dividends.

Hypothesis H_{2A} implies that the adjusted R²s in the equations (1a), (1b), (1c) and (1d) are significantly higher than the adjusted R²s in the equations (2a), (2b), (2c) and (2d), respectively. Hypothesis H_{2B} implies that the adjusted R²s in the equations (1a), (1b), (1c) and (1d) are significantly higher than the adjusted R²s in the equations (3a), (3b), (3c) and (3d), respectively. And finally, hypothesis H_{2C} implies that the adjusted R²s in the equations (2a), (2b), (2c) and (2d) are significantly higher than the adjusted R²s in the equations (3a), (3b), (3c) and (3d), respectively.

7. EMPIRICAL RESULTS

Data and Univariate Analyses

The sample used in this study for the period 1998-2003 includes 112 companies traded on the Amman Stock Exchange (which represents about 58% of all publicly traded firms in Jordan). The other companies are excluded because of missing data. Prior to 1998, the number of firms that reported the required information is small. The sample is restricted to firms with complete useful data. All variables are measured at fiscal year-end, including the market value of equity, and expressed in Jordanian Dinars.

Table (1) presents descriptive statistics for each of the variables used in the estimated equations. Panel A of

Table (1) reports distributional statistics and panel B contains Pearson correlations. Panel A of Table (1) shows that, on average, accruals are negative and cash flows are positive. Panel A also demonstrates that the mean abnormal earnings is zero, which could be attributable to the cost of capital being equal to 7% in Jordan.⁴ Panel B of Table (1), shows that most of the variables are highly correlated with each other. Earnings are positively correlated with cash flows, abnormal earnings, dividends, and accruals. Cash flows are positively correlated with abnormal earnings and dividends and negatively correlated with accruals. Abnormal earnings is positively correlated with dividends and accruals. And finally, dividends is positively correlated with accruals.

Regression Results

Table (2) presents regression results of one-year ahead earnings, cash flows, abnormal earnings and dividends on current earnings equations (1a) through (1d) for each year and for pooled data. The coefficient estimates and *t*-statistics values are summarized in the Table.

The results in Panel A of Table (2) reveal that α_{11} is positive and significant for all years and for pooled as well. These results suggest that current earnings have the ability to predict future earnings. The results in Panel B of Table 2 reveal that α_{21} is positive and significant for four years out of five and for pooled as well. These results suggest that current earnings have the ability to predict future cash flows. The results in Panel C of Table (2) reveal that α_{31} is positive and significant for all years and for pooled as well. These results suggest that current earnings have the ability to predict the future abnormal earnings. The results in Panel D of Table (2) reveal that α_{41} is positive and significant for all years and for pooled as well. These results suggest that current earnings have the ability to predict the future dividends.

In summary, the results show that earnings are value-relevant in predicting future earnings, cash flows, abnormal earnings or dividends.

⁴ Even though Dechow et al. (1999), Hand and Landsman (1999) and Barth et al. (1999) used 12% as a cost of capital, I use 7% because this is the percentage that gives weighted average of zero abnormal earnings for all sample firms for the period 1998-2003. I re-estimate the equations assuming different costs of capital, and I find that the results are insensitive to the change in cost of capital.

Table 1. Descriptive statistics for the sample of 672 firm-year observations from the Amman Stock Exchange Market, 1998-2003.

Panel A: Distributional statistics (in Jordanian Dinars)				
Description	Variable	Mean	Median	Std dev
Net income	X	0.10	0.07	0.23
Cash flows	CFO	0.24	0.13	0.61
Accruals	ACC	-0.14	-0.07	0.59
Abnormal earnings	X ^a	0.00	-0.02	0.19
Dividends	DIV	0.06	0.00	0.12

Panel B: Pearson correlations between variables				
Variable	DIV	X ^a	ACC	CFO
X	0.710	0.938	0.096	0.254
DIV		0.552	0.133	0.117
X ^a			0.092	0.264
ACC				-0.928

X is net income before extraordinary items and discontinued operations. CFO is cash flows from operations. Abnormal earnings, X^a, is X minus 0.07 * book value of equity lagged one year. DIV is dividends. Accruals, Acc, is X minus CFO. All variables are deflated by number of subscribed shares.

Table 2. Summary statistics from regressions of one-year ahead earnings, cash flows, abnormal earnings, and dividends on current earnings. Sample of 672 firms from the Amman Stock Exchange, 1998 - 2003.

Panel A: Regressions of one-year ahead earnings on current earnings:						
$X_{t+1} = \alpha_{10} + \alpha_{11}X_t + \varepsilon_t$ (1a)						
X _{t+1} year	α_{11}		N	D-W	Adj R ²	White χ^2
	coef	t-stat				
2003	0.677	9.25***	112	1.796	.433	17.70
2002	0.821	13.85***	112	1.906	.632	0.67
2001	0.638	11.71***	112	2.209	.551	27.89
2000	0.716	11.23***	112	1.905	.530	14.11
1999	0.798	14.79***	112	2.279	.662	16.91
Pooled	0.729	26.72***	560	1.993	.560	77.28

Panel B: Regressions of one-year ahead cash flows on current earnings:

$$CFO_{t+1} = \alpha_{20} + \alpha_{21}X_t + \varepsilon_t \quad (1b)$$

CFO _{t+1} year	α_{21}		N	D-W	Adj R ²	White χ^2
	coef	t-stat				
2003	1.011	3.19***	112	1.861	.076	0.11
2002	0.471	1.49	112	1.846	.011	5.60
2001	0.391	1.83**	112	1.998	.021	28.22
2000	1.068	4.25***	112	0.926	.133	7.62
1999	0.602	3.08***	112	1.854	.071	2.13
Pooled	0.545	4.68***	560	1.826	.036	0.56

Panel C: Regressions of one-year ahead abnormal earnings on current earnings:

$$X^a_{t+1} = \alpha_{30} + \alpha_{31} X_t + \varepsilon_t \quad (1c)$$

X ^a _{t+1} year	α_{31}		N	D-W	Adj R ²	White χ^2
	coef	t-stat				
2003	0.458	6.62***	112	1.786	.278	16.02
2002	0.570	8.98***	112	1.969	.418	6.27
2001	0.406	7.60***	112	2.250	.338	28.22
2000	0.517	8.57***	112	1.919	.395	16.69
1999	0.570	10.09***	112	2.081	.476	11.65
Pooled	0.505	18.72***	560	2.027	.385	72.80

Panel D Regressions of one-year ahead dividends on current earnings:

$$DIV_{t+1} = \alpha_{40} + \alpha_{41}X_t + \varepsilon_t \quad (1d)$$

DIV _{t+1} year	α_{41}		N	D-W	Adj R ²	White χ^2
	coef	t-stat				
2003	0.330	8.79***	112	1.940	.407	52.08
2002	0.399	11.82***	112	2.292	.555	61.15
2001	0.322	8.28***	112	1.792	.378	40.43
2000	0.380	13.33***	112	1.800	.614	71.68
1999	0.352	10.82***	112	2.090	.511	71.79
Pooled	0.356	23.28***	560	1.848	.491	263.76

X is net income before extraordinary items and discontinued operations. CFO is cash flows from operations. Abnormal earnings, X^a, is X minus 0.07 * book value of equity lagged one year. DIV is dividends. All variables are deflated by number of subscribed shares. For all regressions, the Durbin-Watson test does not reject the null hypothesis of zero autocorrelation, and the White χ^2 statistics do not reject the null of homoscedasticity. * = significant at 10% level, ** = significant at 5% level, *** = significant at 1%.

Table (3) presents regression results of one-year ahead earnings, cash flows, abnormal earnings and dividends on current cash flows equations (2a) through (2d) for each year and for pooled data. The coefficient estimates and *t*-statistics values are summarized in the Table.

The results in Panel A of Table (3) reveal that α_{51} is positive and significant for four years out of five and for pooled as well. These results suggest that current cash flows have the ability to predict the future earnings. The results in Panel B of Table (3) reveal that α_{61} is positive and significant for three years out of five and for pooled as well. These results suggest that current cash flows have the ability to predict the future cash flows. The results in Panel C of Table (3) reveal that α_{71} is positive and significant for three years out of five and for pooled as well. These results suggest that current cash flows have the ability to predict future abnormal earnings. The results in Panel D of Table (3) reveal that α_{81} is positive and significant for four years out of five and for pooled as well. These results suggest that current cash flows have the ability to predict future dividends.

In summary, the results show that current cash flows are value-relevant in predicting future earnings, cash flows, abnormal earnings and dividends.⁵

Table (4) presents regression results of one-year ahead earnings, cash flows, abnormal earnings and dividends on current accruals equations (3a) through (3d) for each year and for pooled data. The coefficient estimates and *t*-statistics values are summarized in the Table.

The results in Panel A of Table (4) reveal that α_{91} is positive and significant for just one year out of five and it is not significant for pooled. These results suggest that current accruals don't have the ability to predict future earnings. The results in Panel B of Table (4) reveal that α_{101} is negative and significant for two years out of five and for pooled as well. These results suggest that current accruals have weak ability to predict future cash flows. The results in Panel C of Table (4) reveal that α_{111} is not significant for any year out of five and for pooled as well. These results suggest that current accruals don't have the ability to predict future abnormal earnings. The results in Panel D of Table (4) reveal that α_{121} is positive and significant for two years out of five and it is not

significant for pooled. These results suggest that current accruals have weak ability to predict future dividends.

In summary, the results show that current accruals are not value-relevant in predicting future earnings, cash flows, abnormal earnings or dividends.⁶

Relative Information Content Results

Biddle et al. (1995) defines relative information content comparisons as if one measure provides greater information content than the other. Relative comparisons ask whether the information content of X alone is greater than, equal to or less than the information content of Y alone. To test for relative information content comparisons, the study used Vuong's likelihood ratio test to determine whether or not there is significant differences in the adjusted R^2 between different models.

Table (5) presents relative information content comparisons between net income and cash flows from operations. The *z*-statistics values are summarized in the Table. The results in Panel A of Table (5) show the relative information content comparisons between regressing one-year ahead earnings on current earnings, and one-year ahead earnings on current cash flows. The results reveal that *z*-statistics values are positive and significant for all years and for pooled as well. These results suggest that earnings has higher ability than cash flows to predict future earnings. The results in Panel B of Table (5) show the relative information content comparisons between regressing one-year ahead cash flows on current earnings, and one-year ahead cash flows on current cash flows. The results reveal that *z*-statistics values are negative and significant for just one year out of five and it is not significant for pooled. These results suggest that earnings and cash flows have the same ability to predict future cash flows. The results in Panel C of Table (5) show the relative information content comparisons between regressing one-year ahead abnormal earnings on current earnings, and one-year ahead abnormal earnings on current cash flows. The results reveal that *z*-statistics values are positive and significant for all years and for pooled as well. These results suggest that earnings have higher ability than cash flows to predict future abnormal earnings. The results in Panel D of Table (5) show the relative information

⁵ Barth et al. (1999) find that cash flows tend to have the ability to predict future abnormal earnings.

⁶ Barth et al. (1999) find that accruals tend to have the ability to predict future abnormal earnings. The differences in the results may due to the differences in the samples and the socio-economic environments.

content comparisons between regressing one-year ahead dividends on current earnings and one-year ahead dividends on current cash flows. The results reveal that z-statistics values are positive and significant for all years and for pooled as well. These results suggest that earnings have higher ability than cash flows to predict

future dividends.

In summary, the findings indicate that earnings have higher ability than cash flows to predict future earnings, abnormal earnings or dividends. In addition, earnings and cash flows have the same ability to predict future cash flows⁷.

Table 3. Summary statistics from regressions of one-year ahead earnings, cash flows, abnormal earnings, and dividends on current cash flows. Sample of 672 firms from the Amman Stock Exchange, 1998 - 2003.

Panel A: Regressions of one-year ahead earnings on current cash flows:

$$X_{t+1} = \alpha_{50} + \alpha_{51}CFO_t + \varepsilon_t \quad (2a)$$

X _{t+1} year	α_{51}		N	D-W	Adj R ²	White χ^2
	coef	t-stat				
2003	0.079	2.74***	112	1.798	.055	5.60
2002	-0.004	-0.12	112	1.827	-.009	0.78
2001	0.095	3.57***	112	2.022	.096	4.93
2000	0.136	3.32***	112	1.969	.083	5.49
1999	0.295	5.14***	112	2.092	.186	9.41
Pooled	0.094	5.92***	560	1.988	.057	29.68

Panel B: Regressions of one-year ahead cash flows on current cash flows:

$$CFO_{t+1} = \alpha_{60} + \alpha_{61}CFO_t + \varepsilon_t \quad (2b)$$

CFO _{t+1} year	α_{61}		N	D-W	Adj R ²	White χ^2
	coef	t-stat				
2003	0.096	0.95	112	1.833	-.001	10.42
2002	0.419	3.69***	112	1.892	.102	32.14
2001	-0.075	-1.01	112	2.075	.000	53.76
2000	0.729	7.08***	112	1.792	.307	31.58
1999	0.471	3.57***	112	1.742	.096	51.18
Pooled	0.233	5.07***	560	1.717	.042	95.20

Panel C: Regressions of one-year ahead abnormal earnings on current cash flows:

$$X^a_{t+1} = \alpha_{70} + \alpha_{71}CFO_t + \varepsilon_t \quad (2c)$$

X ^a _{t+1} year	α_{71}		N	D-W	Adj R ²	White χ^2
	coef	t-stat				
2003	0.051	2.08**	112	1.799	.029	4.93
2002	0.030	0.95	112	1.959	-.001	0.22
2001	0.025	1.11	112	2.158	.002	10.64
2000	0.080	2.83***	112	1.975	.059	2.58
1999	0.217	4.38***	112	2.086	.141	2.02
Pooled	0.059	4.43***	560	2.023	.032	22.96

⁷ Bartov et al. (2001) find that the superiority of earnings over cash flows is not universal. Rather, it depends on the national reporting regime and attendant institutional factors. Greenberg et al. (1986) conclude that aggregate earnings have more predictive ability than cash flows.

Panel D Regressions of one-year ahead dividends on current cash flows:

$$DIV_{t+1} = \alpha_{80} + \alpha_{81}CFO_t + \varepsilon_t \quad (2d)$$

DIV _{t+1} year	α_{81}		N	D-W	Adj R ²	White χ^2
	coef	t-stat				
2003	0.024	1.62	112	1.804	.014	2.69
2002	0.038	2.02**	112	1.763	.027	9.97
2001	0.075	4.82***	112	1.800	.167	27.44
2000	0.069	3.46***	112	1.823	.090	14.34
1999	0.123	4.12***	112	1.875	.126	20.50
Pooled	0.042	5.08***	560	1.883	.042	19.04

X is net income before extraordinary items and discontinued operations. CFO is cash flows from operations. Abnormal earnings, X^a, is X minus 0.07 * book value of equity lagged one year. DIV is dividends. All variables are deflated by number of subscribed shares. For all regressions, the Durbin-Watson test does not reject the null hypothesis of zero autocorrelation, and the White χ^2 statistics does not reject the null of homoscedasticity. * = significant at 10% level, ** = significant at 5% level, *** = significant at 1%.

Table 4. Summary statistics from regressions of one-year ahead earnings, cash flows, abnormal earnings and dividends on current accruals. Sample of 672 firms from the Amman Stock Exchange, 1998 - 2003.

Panel A: Regressions of one-year ahead earnings on current accruals:

$$X_{t+1} = \alpha_{90} + \alpha_{91}ACC_t + \varepsilon_t \quad (3a)$$

X _{t+1} year	α_{91}		N	D-W	Adj R ²	White χ^2
	coef	t-stat				
2003	-0.018	-0.55	112	1.707	-.006	0.11
2002	0.103	3.15***	112	1.761	.074	2.13
2001	-0.022	-0.74	112	2.030	-.004	2.46
2000	0.015	0.34	112	2.065	-.008	0.22
1999	0.090	1.33	112	2.275	.007	8.74
Pooled	0.022	1.30	560	1.962	.001	1.12

Panel B: Regressions of one-year ahead cash flows on current accruals:

$$CFO_{t+1} = \alpha_{100} + \alpha_{101}ACC_t + \varepsilon_t \quad (3b)$$

CFO _{t+1} year	α_{101}		N	D-W	Adj R ²	White χ^2
	coef	t-stat				
2003	-0.001	-0.01	112	1.773	-.009	9.86
2002	-0.301	-2.80***	112	1.792	.058	44.80
2001	0.032	0.40	112	2.122	-.008	33.71
2000	-0.508	-4.43***	112	1.850	.143	9.18
1999	-0.214	1.46	112	1.713	.010	36.40
Pooled	-0.154	-3.23***	560	1.762	.017	123.20

Panel C: Regressions of one-year ahead abnormal earnings on current accruals:

$$X_{t+1}^a = \alpha_{110} + \alpha_{111} ACC_t + \varepsilon_t \quad (3c)$$

X _{t+1} ^a year	α_{111}		N	D-W	Adj R ²	White χ^2
	coef	t-stat				
2003	-0.009	0.34	112	1.739	-.008	0.34
2002	0.044	1.52	112	1.909	.012	9.30
2001	0.026	1.09	112	2.110	.002	1.79
2000	0.011	0.31	112	2.063	-.008	1.23
1999	0.057	1.00	112	2.266	.000	17.02
Pooled	0.021	1.50	560	2.007	.002	3.36

Panel D Regressions of one-year ahead dividends on current accruals:

$$DIV_{t+1} = \alpha_{120} + \alpha_{121} ACC_t + \varepsilon_t \quad (3d)$$

DIV _{t+1} year	α_{121}		N	D-W	Adj R ²	White χ^2
	coef	t-stat				
2003	-0.008	0.50	112	1.756	-.007	0.22
2002	0.081	5.07***	112	1.712	.182	0.45
2001	0.042	2.34**	112	1.829	.039	8.74
2000	0.011	0.50	112	1.995	-.007	0.22
1999	0.048	1.42	112	2.089	.009	0.90
Pooled	0.140	1.65	560	1.909	.003	9.52

X is net income before extraordinary items and discontinued operations. ACC is accruals. CFO is cash flows from operations. Abnormal earnings, X^a, is X minus 0.07 * book value of equity lagged one year. DIV is dividends. All variables are deflated by number of subscribed shares. For all regressions, the Durbin-Watson test does not reject the null hypothesis of zero autocorrelation, and the White χ^2 statistics do not reject the null of homoscedasticity. * = significant at 10% level, ** = significant at 5% level, *** = significant at 1%.

Table 5. Relative information content comparisons between net income (X) and cash flows from operations (CFO), 1998 - 2003.

Panel A: Relative information content comparisons between regressing one-year ahead earnings on current earnings (equation 1a) and one-year ahead earnings on current cash flows (equation 2a).

X _{t+1} year	Equation (1a)	Equation (2a)	N	Z-statistics
	Adj R ²	Adj R ²		
2003	.433	.055	112	3.73***
2002	.632	-.009	112	6.61***
2001	.551	.096	112	4.48***
2000	.530	.083	112	4.36***
1999	.662	.186	112	5.14***
Pooled	.560	.057	560	30.83***

Panel B: Relative information content comparisons between regressing one-year ahead cash flows on current earnings (equation 1b) and one-year ahead cash flows on current cash flows (equation 2b).

CFO _{t+1} year	Equation (1b)	Equation (2b)	N	Z-statistics
	Adj R ²	Adj R ²		
2003	.076	-.001	112	1.41
2002	.011	.102	112	-1.54
2001	.021	.000	112	0.71
2000	.133	.307	112	-2.39**
1999	.071	.096	112	-0.81
Pooled	.036	.042	560	-1.47

Panel C: Relative information content comparisons between regressing one-year ahead abnormal earnings on current earnings (equation 1c) and one-year ahead abnormal earnings on current cash flows (equation 2c).

X ^a _{t+1} year	Equation (1c)	Equation (2c)	N	Z-statistics
	Adj R ²	Adj R ²		
2003	.278	.029	112	2.78***
2002	.418	-.001	112	3.87***
2001	.338	.002	112	3.31***
2000	.395	.059	112	3.45***
1999	.476	.141	112	3.67***
Pooled	.385	.032	560	16.59***

Panel D: Relative information content comparisons between regressing one-year ahead dividends on current earnings (equation 1d) and one-year ahead dividends on current cash flows (equation 2d).

DIV _{t+1} year	Equation (1d)	Equation (2d)	N	Z-statistics
	Adj R ²	Adj R ²		
2003	.407	.014	112	3.73***
2002	.555	.027	112	4.79***
2001	.378	.167	112	2.76***
2000	.614	.090	112	5.06***
1999	.511	.126	112	4.02***
Pooled	.491	.042	560	23.64***

X is net income before extraordinary items and discontinued operations. CFO is cash flows from operations. Abnormal earnings, X^a, is X minus 0.07 * book value of equity lagged one year. DIV is dividends. All variables are deflated by number of subscribed shares. Z-statistics measures the significant differences between adjusted R²s in net income model and cash flows model. * = significant at 10% level, ** = significant at 5% level, *** = significant at 1%.

Table (6) presents relative information content comparisons between net income and accruals. The z-statistics values are summarized in the Table. The results in Panel A of Table (6) show the relative information content comparisons between regressing one-year ahead

earnings on current earnings and one-year ahead earnings on current accruals. The results reveal that z-statistics values are positive and significant for all years and for pooled as well. These results suggest that earnings have higher ability than accruals to predict future earnings. The

results in Panel B of Table (6) show the relative information content comparisons between regressing one-year ahead cash flows on current earnings, and one-year ahead cash flows on current accruals. The results reveal that *z*-statistics values are not significant for any year but it is positive and significant for pooled. These weak results suggest that earnings and accruals have the same ability to predict future cash flows. The results in Panel C of Table (6) show the relative information content comparisons between regressing one-year ahead abnormal earnings on current earnings, and one-year ahead abnormal earnings on current accruals. The results reveal that *z*-statistics values are positive and significant for all years and for pooled as well. These results suggest

that earnings have higher ability than accruals to predict future abnormal earnings. The results in Panel D of Table 6 show the relative information content comparisons between regressing one-year ahead dividends on current earnings and one-year ahead dividends on current accruals. The results reveal that *z*-statistics values are positive and significant for all years and for pooled as well. These results suggest that earnings have higher ability than accruals to predict future dividends.

In summary, the findings indicate that earnings have higher ability than accruals to predict future earnings, abnormal earnings or dividends. In addition, earnings and accruals have the same ability to predict future cash flows.

Table 6. Relative information content comparisons between net income (X) and accruals (ACC), 1998 - 2003.

Panel A: Relative information content comparisons between regressing one-year ahead earnings on current earnings (equation 1a) and one-year ahead earnings on current accruals (equation 3a).				
X_{t+1} year	<u>Equation (1a)</u> Adj R ²	<u>Equation (3a)</u> Adj R ²	N	Z-statistics
2003	.433	-.006	112	3.97***
2002	.632	.074	112	5.30***
2001	.551	-.004	112	4.87***
2000	.530	-.008	112	4.71***
1999	.662	.007	112	5.85***
Pooled	.560	.001	560	35.46***

Panel B: Relative information content comparisons between regressing one-year ahead cash flows on current earnings (equation 1b) and one-year ahead cash flows on current accruals (equation 3b).				
CFO _{t+1} year	<u>Equation (1b)</u> Adj R ²	<u>Equation (3b)</u> Adj R ²	N	Z-statistics
2003	.076	-.009	112	1.48
2002	.011	.058	112	-1.10
2001	.021	-.008	112	0.84
2000	.133	.143	112	0.54
1999	.071	.010	112	1.25
Pooled	.036	.017	560	2.58***

Panel C: Relative information content comparisons between regressing one-year ahead abnormal earnings on current earnings (equation 1c) and one-year ahead abnormal earnings on current accruals (equation 3c).

X^a_{t+1} year	Equation (1c) Adj R ²	Equation (3c) Adj R ²	N	Z-statistics
2003	.278	-.008	112	2.96 ^{***}
2002	.418	.012	112	3.81 ^{***}
2001	.338	.002	112	3.32 ^{***}
2000	.395	-.008	112	3.74 ^{***}
1999	.476	.000	112	4.28 ^{***}
Pooled	.385	.002	560	17.55 ^{***}

Panel D: Relative information content comparisons between regressing one-year ahead dividends on current earnings (equation 1d) and one-year ahead dividends on current accruals (equation 3d).

DIV _{t+1} year	Equation (1d) Adj R ²	Equation (3d) Adj R ²	N	Z-statistics
2003	.407	-.007	112	3.82 ^{***}
2002	.555	.182	112	4.13 ^{***}
2001	.378	.039	112	3.43 ^{***}
2000	.614	-.007	112	5.15 ^{***}
1999	.511	.009	112	4.51 ^{***}
Pooled	.491	.003	560	25.78 ^{***}

X is net income before extraordinary items and discontinued operations. CFO is cash flows from operations. Abnormal earnings, X^a , is X minus 0.07 * book value of equity lagged one year. DIV is dividends. Accruals, Acc, is X minus CFO. All variables are deflated by number of subscribed shares. Z-statistics measures the significant differences between adjusted R²s in net income model and accruals model. * = significant at 10% level, ** = significant at 5% level, *** = significant at 1%.

Table (7) presents relative information content comparisons between cash flows from operations and accruals. The z-statistics values are summarized in the Table. The results in Panel A of Table (7) show the relative information content comparisons between regressing one-year ahead earnings on current cash flows and one-year ahead earnings on current accruals. The results reveal that z-statistics values are positive and significant for just one year out of five and it is positive and significant for pooled. These results suggest that cash flows tend to have higher ability than accruals to predict future earnings. The results in Panel B of Table (7) show the relative information content comparisons between regressing one-year ahead cash flows, on current cash flows and one-year ahead cash flows on current accruals. The results reveal that z-statistics values are positive and

significant for just one year out of five and it is positive and significant for pooled. These results suggest that cash flows tend to have higher ability than accruals to predict future cash flows. The results in Panel C of Table (7) show the relative information content comparisons between regressing one-year ahead abnormal earnings on current cash flows and one-year ahead abnormal earnings on current accruals. The results reveal that z-statistics values are positive and significant for just one year out of five and it is positive and significant for pooled. These results suggest that cash flows tend to have higher ability than accruals to predict future abnormal earnings. The results in Panel D of Table (7) show the relative information content comparisons between regressing one-year ahead dividends on current cash flows, and one-year ahead dividends on current accruals. The results reveal

that z-statistics values are positive and significant for three years out of five, negative and significant for one year, and positive and significant for pooled. These results suggest that cash flows tend to have higher ability than accruals to predict future dividends.

In summary, the findings indicate weak results that cash flows have higher ability than accruals to predict future earnings, cash flows, abnormal earnings or dividends⁸.

8. CONCLUSIONS

Prior literature find that equity valuation of any firm depends on its future earnings, cash flows, abnormal earnings or dividends. This paper tests whether or not the current earnings and its components are value-relevant in predicting future earnings, cash flows, abnormal earnings or dividends. In addition, the paper examines the relative information content among earnings, cash flows and accruals.

Results from 112 companies traded on the Amman Stock Exchange during the period 1998 – 2003 provide insights in to the ability of current earnings and cash flows to predict future earnings, cash flows, abnormal earnings or dividends. First, the results show that current earnings and cash flows are value-relevant in predicting future earnings, cash flows, abnormal earnings, or

dividends. In contrast, current accruals are not value-relevant in predicting future earnings, cash flows, abnormal earnings or dividends. Second, the findings indicate that current earnings have higher ability than current cash flows or accruals to predict future earnings, abnormal earnings or dividends. In addition, current earnings, cash flows and accruals have the same ability to predict future cash flows. And finally, the findings indicate weak results that current cash flows have higher ability than current accruals to predict future earnings, cash flows, abnormal earnings or dividends.

9. FUTURE RESEARCH

Future research in the value-relevance of earnings, accruals and cash flows in equity valuation, may be extended to compare the ability of earnings and its components to predict future returns as one of the future valuation attributes. In addition, the relations among earnings, cash flows, accruals, abnormal earnings and dividends are expected to differ across countries. Unique socio-economic and cultural environments may generate differences in financial reporting and determination of stock prices. Using different samples and/or different periods to examine the ability of earnings and its components to predict future dividends, may be re-examined since these results were not tested in the prior literature.

Table 7. Relative information content comparisons between Cash Flows from Operations (CFO) and accruals, 1998 - 2003.

Panel A: Relative information content comparisons between regressing one-year ahead earnings on current cash flows (equation 2a) and one-year ahead earnings on current accruals (equation 3a).				
X_{t+1} year	Equation (2a)	Equation (3a)	N	Z-statistics
	Adj R ²	Adj R ²		
2003	.055	-.006	112	1.25
2002	-.009	.074	112	-1.46
2001	.096	-.004	112	1.62
2000	.083	-.008	112	1.53
1999	.186	.007	112	2.49**
Pooled	.057	.001	560	4.62***

⁸ Prior studies indicate that operating cash flows have higher market valuations than do aggregate accruals (Bowen et al., 1987; Wilson, 1986; 1987; Rayburn, 1986; Ali, 1994 and Cheng et al., 1996). Pfeiffer et al. (1998) find that cash flows have incremental information content over current accruals, and Lorek and Willinger (1996) find that accruals have predictive ability incremental to cash flows. The mixed results may due to differences in samples.

Panel B: Relative information content comparisons between regressing one-year ahead cash flows on current cash flows (equation 2b) and one-year ahead cash flows on current accruals (equation 3b).

CFO _{t+1} year	Equation (2b)	Equation (3b)	N	Z-statistics
	Adj R ²	Adj R ²		
2003	-.001	-.009	112	0.45
2002	.102	.058	112	1.08
2001	.000	-.000	112	0.43
2000	.307	.143	112	2.32**
1999	.096	.010	112	1.50
Pooled	.042	.017	560	2.98**

Panel C: Relative information content comparisons between regressing one-year ahead abnormal earnings on current cash flows (equation 2c) and one-year ahead abnormal earnings on current accruals (equation 3c).

X ^a _{t+1} year	Equation (2c)	Equation (3c)	N	Z-statistics
	Adj R ²	Adj R ²		
2003	.029	-.008	112	0.95
2002	-.001	.012	112	-0.55
2001	.002	.002	112	0.13
2000	.059	-.008	112	1.31
1999	.141	.000	112	1.95*
Pooled	.032	.002	560	3.30***

Panel D: Relative information content comparisons between regressing one-year ahead dividends on current cash flows (equation 2d) and one-year ahead dividends on current accruals (equation 3d).

DIV _{t+1} year	Equation (2d)	Equation (3d)	N	Z-statistics
	Adj R ²	Adj R ²		
2003	.014	-.007	112	0.73***
2002	.027	.182	112	-2.09**
2001	.167	.039	112	1.90*
2000	.090	-.007	112	1.58
1999	.126	.009	112	1.77*
Pooled	.042	.003	560	3.90***

X is net income before extraordinary items and discontinued operations. CFO is cash flows from operations. Abnormal earnings, X^a, is X minus 0.07 * book value of equity lagged one year. DIV is dividends. Accruals, Acc, is X minus CFO. All variables are deflated by number of subscribed shares. Z-statistics measures the significant differences between adjusted R²s in cash flows model and accruals model. * = significant at 10% level, ** = significant at 5% level, *** = significant at 1%.

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