

The incremental information content of earnings, working capital from operations, and cash flows

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ABSTRACT

This paper presents an empirical study to determine the effects of different factors including present profit, depreciation, working capital, operating cash flow and other accruals on future earnings stability. The study selects the information of 124 selected firms from Tehran Stock Exchange over the period 2006-2012. Using two regression analysis, the study has determined that as the fluctuation of profit increases, the profitability increases too. In addition, the study has concluded that firms with minimum fluctuations preserve more stable profitability. Moreover, firms with higher fluctuation in profitability maintain more volatile profitability for the next consecutive period.

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1. Introduction

Past studies indicated the information content of earnings for share prices but have not contributed anything about the incremental information content of working capital and cash flow from operation (Ali, 1994). Rayburn (1986) studied the relationships of operating cash flow and accruals with security returns. Some studies provided some linear relationship between abnormal returns and accounting information (Ruback, 2002; Bowen et al., 1987). Ali (1994) extended past studies by permitting for nonlinear relationships between returns and three variables; namely earnings, working capital from operations and cash flows. Almeida et al. (2004) modeled a firm's demand for liquidity to develop a new tool to study the impact of financial constraints on corporate policies. The effect of financial constraints was measured by the firm's propensity to save cash out of cash flows. They hypothesized that constrained firms should have a positive cash flow sensitivity of cash, while unconstrained firms' cash savings should not be systematically related to cash flows. They measured the cash flow sensitivity of cash based on a large sample of manufacturing companies over the period 1971-2000 and reported some robust support for the theory.

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Fairfield et al. (2003) disclosed that the accrual component of profitability was less persistent than the cash flow component, and that investors could fail to fully understand their differing usages for future profitability (Sloan 1996). Nevertheless, accruals are part of growth in net operating assets as well as a component of profitability. Just as we can disaggregate profitability into accruals and cash flows from operations, we may disaggregate growth in net operating assets into accruals and growth in long-term net operating assets. They reported that, after controlling for current profitability, both components of growth in net operating assets, accruals and growth in long-term net operating assets, maintained equivalent negative associations with one-year-ahead return on assets. This result is consistent with conservative accounting on investments. They also reported that, after controlling for current profitability, the market seemed to equivalently overvalue accruals and growth in long-term net operating assets relative to their association with one-year-ahead ROA. This could imply that the accrual anomaly documented in Sloan (1996) could be a special case of what could be considered as a more general growth anomaly. DeFond and Hung (2003) studied the trend in analysts disseminating operating cash flow forecasts and reported that analysts appeared to forecast cash flows for firms where accounting, operating and financing characteristics implied that cash flows were useful in interpreting earnings and assessing firm viability. They also reported that analysts appeared to forecast cash flows for companies with (1) large accruals, (2) more heterogeneous accounting choices relative to their industry peers, (3) high earnings volatility, (4) high capital intensity, and (5) poor financial health.

2. The proposed study

This paper presents an empirical study to determine the effects of different factors including present profit (E_{qt}), depreciation (D_{qt}), working capital (W_{qt}), operating cash flow (C_{qt}) and other accruals (O_{qt}), as independent variables, on future earnings stability (E_{qt+1}) as dependent variable. Eq. (1) and Eq. (2) demonstrate the structure of the proposed study based on the work by Clubb and Wu (2014).

$$E_{qt+1} = a_{1q} + a_{Eq}E_{qt} + \varepsilon_{1qt+1}, \quad (1)$$

$$E_{qt+1} = a_{2q} + a_{Cq}C_{qt} + a_{Wq}W_{qt} + a_{Dq}D_{qt} + a_{Oq}O_{qt} + \varepsilon_{2qt+1}. \quad (2)$$

Here, a_{1q} , a_{Eq} , a_{2q} , a_{Cq} , a_{Wq} , a_{Dq} and a_{Oq} are coefficients to be estimated and ε_{1qt+1} and ε_{2qt+1} are residuals for the first and the second regression models, respectively. The information used for Eq. (1) and Eq. (2) are quartile (q) at any time interval (t). In addition, other accruals are calculated as the difference between the current period profit, total operating cash flow, working capital items and amortization expenses. The proposed study of this paper considers the following two hypotheses,

1. There is a significant relationship between the volatility of earnings and stability of earnings.
2. There is a significant relationship between the volatility of the components of income and profit forecast.

The study collects the necessary information from 124 selected firm on Tehran Stock Exchange Table 1 demonstrates the summary of some basic statistics associated with the proposed study. Tables 2-5 present some basic information about the collected data.

Table 1

The summary of some basic statistics

Variable	Mean	Median	Standard deviation	Min	Max	N
Profit	362849	79289.5	1210099	-7E+06	7695801	124
Operating cash flow	533268	67320.50	1662993	-2E+06	12579729	124
Working capital	-369504	71419	3339521	-3E+07	6381860	124
Depreciation	171819	29738	453808	4393	3912921	124
Other accruals	48232.19	-91477.5	2552000	-8E+06	22180342	124

Table 2

The summary of some basic statistics for the first quartile

Variable	Mean	Median	Standard deviation	Min	Max	N
Profit	37693	27575	41671	-41380	192462	31
Operating cash flow	44571	27625	76786	-1E+05	360470	31
Working capital	40044	36086	74778	-2E+05	232205	31
Depreciation	25012	16123	24759	4393	134073	31
Other accruals	-67468	-41325	92655	-5E+05	129165	31

Table 3

The summary of some basic statistics for the second quartile

Variable	Mean	Median	Standard deviation	Min	Max	N
Profit	84345	54691	89709	-73777	328136	31
Operating cash flow	67147	52306	93188	-1E+05	541274	31
Working capital	108090	84121	139752	-1E+05	606732	31
Depreciation	29030	26139	17302	5720	82082	31
Other accruals	-1E+05	-97913	142407	-7E+05	145154	31

Table 4

The summary of some basic statistics for the third quartile

Variable	Mean	Median	Standard deviation	Min	Max	N
Profit	119899	166753	81957	-27842	367864	31
Operating cash flow	90964	86714	77122	-1E+05	307917	31
Working capital	129135	116491	107559	-77435	414632	31
Depreciation	32547	27727	20862	7469	104949	31
Other accruals	-1E+05	-1E+05	102897	-4E+05	99674	31

Table 5

The summary of some basic statistics for the fourth quartile

Variable	Mean	Median	Standard deviation	Min	Max	N
Profit	1E+06	817953	81957	-7E+06	8E+06	31
Operating cash flow	2E+06	846275	3E+06	-2E+06	1E+07	31
Working capital	129135	116491	107559	-77435	414632	31
Depreciation	562533	367145	20862	6314	4E+06	31
Other accruals	-1E+05	-1E+05	102897	-4E+05	99674	31

As we can observe from the results of Table 2 to Table 5, there was an increasing trend on profits reported from the first to fourth quartile. On the other hand, firms with higher profits maintained higher volatility of profit forecast.

The implementation of F-Limmer Test for two hypotheses yield $F = 7.64$ (Sig. = 0.000) and $F = 4.88$ (Sig. = 0.000), respectively. Therefore, we should use panel data to verify the hypotheses. In addition, the implementation of Hausman test for two hypotheses yield Chi-Square = 47.21 (Sig. = 0.0161) and Chi-Square = 48.22 (Sig. = 0.000), respectively. Therefore, for both hypotheses, we use fixed effect to examine the hypotheses.

3. The results

In this section, we present the results of the implementation of regression analysis on testing different hypotheses of the survey.

3.1. The first hypothesis

The first hypothesis investigated the relationship between the volatility of earnings and stability of earnings. Table 6 shows the results of our survey.

Table 6

The summary of the regression model on testing the first hypothesis

Variable	Coefficient	t-value	Sig.
Intercept	81769	1.3208	0.1877
Present profit	0.6887	12.539	0.000

F-value = 157.2252 Sig. (0.000) Adjusted R-Square = 0.358953 Durbin-Watson = 1.606444

As we can observe from the results of Table 6, F-value is statistically significant, which means the relationship between dependent and independent variable is linear. In addition, Durbin-Watson is within the acceptable level, which means there is no correlation among residuals. Finally, Adjusted R-Square is equal to 0.348953, which means the independent variable could approximately describe 35 percent of the changes on dependent variable. Moreover, t-student value associated with present profit is statistically significant, which means the independent variable, present profit, influences positively on the next profit. Therefore, the first hypothesis of the survey has been confirmed. Now, in order to have better understanding on the relationship between independent and dependent variables we arrange the data on quarterly basis. Table 7 present the results on quartile basis.

Table 7

The results of the survey on different quartile

Quartile	Intercept	Present profit	P(t-value)	P(F-value)	Adj. R-Square	D-W
First quartile (The minimum fluctuation)	2275.163	1.086822	0.0000	0.0000	0.888212	2.298619
Second quartile	-5793.488	1.078566	0.0000	0.0000	0.890223	1.972659
Third quartile	19708.28	1.037830	0.0000	0.0000	0.627957	1.999482
The fourth quartile (The maximum fluctuation)	308906	0.629327	0.0000	0.0000	0.247293	1.573024

The results of Table 7 are statistically significant since all Durbin-Watson (D-W) values are within desirable levels. In addition, the positive signs indicate that there was a positive relationship between independent and dependent variables. The results indicate that as the fluctuation of profit increases, the profitability increases too. In other words, as fluctuation on earnings increases, the relationship between two consecutive earnings decreases. This also confirms the first hypothesis of the survey.

3.2. The second hypothesis

The second hypothesis of the survey is associated with the relationship between the volatility of the components of income and profit forecast. Table 8 presents the results of regression analysis.

Table 8

The summary of regression analysis for testing the second hypothesis

Variable	Coefficient	t-value	Sig.
Intercept	137496.8	2.033433	0.0431
Operating cash flow	0.988312	13.11804	0.0000
Working capital	0.981086	10.17628	0.0000
Depreciation	-0.049024	-0.252826	0.8006
Other accruals	0.924977	9.100885	0.0000

F-value = 47.93440 Sig. = 0.0000 Durbin-Watson = 2.083650 Adjusted R-Square = 44.0970

The results of Table 8 indicate that F-value is equal to 47.93440(Sig. = 0.0000), which indicates that there was a linear relationship between independent variables and dependent variable. Durbin-Watson value is within desirable limit, which means there was no correlation among residuals. Moreover, Adjusted R-Square is equal to 44.0970, which means the independent variables could approximately estimate 44 percent of the changes on dependent variable. Finally, t-student values for three

independent variables, operating cash flow, working capital and other accruals, are statistically significant, which means these three variables influence positively on estimating the next year's earnings. Next, we present details of regression analysis when data were arranged according to different items in Tables 9-12.

Table 9

The summary of testing the second hypothesis when the data are arranged according to cash flow

Quartile	a_{2q} P(t-value)	a_{cq} P(t-value)	a_{wq} P(t-value)	a_{dq} P(t-value)	a_{oq} P(t-value)	F-value Sig.	Adj. R ²	D-W
First	-5014.89	0.990389	1.094764	1.3123	0.9935	133.65	0.9266	1.9257
	0.6319	0.000	0.000	0.0524	0.000	0.000		
Second	26701.29	1.072516	1.112113	0.0993	1.1725	83.866	0.8804	1.596834
	0.0139	0.000	0.000	0.8186	0.000	0.000		
Third	6187.128	1.065803	0.925806	1.1203	0.9836	43.023	0.7962	2.180828
	0.5797	0.000	0.000	0.0001	0.000	0.000		
Fourth	229250.1	0.846263	0.824684	0.8384	0.8731	37.96	0.751	2.186861
	0.1692	0.000	0.000	0.0027	0.000	0.000		

Table 10

The summary of testing the second hypothesis when the data are arranged according to working capital

Quartile	a_{2q} P(t-value)	a_{cq} P(t-value)	a_{wq} P(t-value)	a_{dq} P(t-value)	a_{oq} P(t-value)	F-value Sig.	Adj. R ²	D-W
First	522.866	1.2037	1.1428	1.4536	1.320861	109.639	0.9099	2.0987
	0	0	0	0.0002	0	0		
Second	-3757.57	1.0385	1.0042	1.0575	1.042209	68.9294	0.8579	1.8933
	0.504	0	0	0	0	0		
Third	23385.54	0.8556	0.942	0.7884	0.848007	47.1485	0.8146	2.6159
	0.079	0	0	0.007	0	0		
Fourth	241661.9	0.8437	0.8201	0.8288	0.868373	37.6756	0.7496	2.1936
	0	0	0	0.003	0	0		

Table 11

The summary of testing the second hypothesis when the data are arranged according to amortization

Quartile	a_{2q} P(t-value)	a_{cq} P(t-value)	a_{wq} P(t-value)	a_{dq} P(t-value)	a_{oq} P(t-value)	F-value Sig.	Adj. R ²	D-W
First	-1573.15	1.028735	1.175473	1.205898	1.099743	117.0323	0.920655	1.906443
	0.8713	0	0	0.1036	0	0		
Second	-16606.9	1.514479	1.185968	2.212379	1.454787	325.532	0.965777	2.070218
	0.1679	0	0	0	0	0		
Third	2944.335	0.995489	1.072138	0.958558	1.021999	61.97775	0.847175	1.822568
	0.7721	0	0	0	0	0		
Fourth	216605.8	0.846804	0.823874	0.845822	0.872405	38.71569	0.754832	2.189817
	0.19	0	0	0.0025	0	0		

Table 12

The summary of testing the second hypothesis when the data are arranged according to other accruals

Quartile	a_{2q} P(t-value)	a_{cq} P(t-value)	a_{wq} P(t-value)	a_{dq} P(t-value)	a_{oq} P(t-value)	F-value Sig.	Adj. R ²	D-W
First	-54.81	0.999	1.004	1.332	0.99	133.652	0.94	1.754
	0	0	0	0	0	0		
Second	-159.16	1.519	1.188	2.219	1.457	319.52	0.91	1.844
	0.521	0	0	0	0	0		
Third	7154.128	1.053	0.915	1.122	0.1202	43.021	0.81	2.127
	0.7721	0	0	0	0	0		
Fourth	22251.9	0.847	0.841	0.871	0.8833	37.66	0.83	2.111
	0.1882	0	0	0.0007	0	0		

The results of Tables 9-12 are consistent with findings reported on Table 8, which means firms with higher volatility represent higher fluctuation on earnings forecast in different consecutive years.

Finally, we have executed the survey on different industry such as automobile, chemical, etc. and the results were the same as we found in this survey for the whole industry.

4. Conclusion

In this paper, we have presented an empirical investigation to study the effects of earnings fluctuation on the next consecutive earnings. The study has gathered necessary information from Tehran Stock exchange and, using two regression analysis, the study has determined that the as the fluctuation of profit increases, the profitability increases too. In addition, the study has concluded that firms with minimum fluctuations preserve more stable profitability. Moreover, firms with higher fluctuation in profitability maintain more volatile profitability for the next consecutive period.

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