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Evaluating the Effects of Firm Size on Predictive Value of Future Cash Flows

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ABSTRACT

Predicting of cash flows can satisfy a considerable portion of user's information needs regarding with amount, timing and uncertainty of future cash flows. In this study, we utilize firm size and evaluate its effects on predictive value of future cash flows for Iranian listed firms. We investigate the ability of prediction models based on past operating cash flows and past operating earnings to generate out of sample predictions of operating cash flows. Regarding to limitations, the information of 95 firms which were accepted in Tehran Stock Exchange is studied between 1999 to 2010.We find the MAPEs of larger firms are significantly smaller than the MAPEs of smaller firms. This suggests that past CFOs of larger firms are more stable and lead to more accurate one-year ahead CFO predictions than those of smaller firms.

KEYWORDS: Firm size, Operating Cash flow, Operating Earning, Panel Data Method.

1. INTRODUCTION

Statement of Financial Accounting Concepts No.1 expressed “financial reporting should provide information to help present and potential investors and creditors and other users in assessing the amount, timing and uncertainty of prospective cash receipts from dividends or interest and the proceeds from the sale redemption or maturity of securities or loans[1]”. The prospects for those cash receipts are affected by an entrprise’s ability to generate enough cash to meet its obligations, to reinvest in operations and to pay cash dividends. So, one of the most important financial information qualitative characteristics is future cash flows predicting [4].

In some researches some effective factors on future cash flows have been analyzed, such as operating cycle, cash flow variability and firm size. In this study we utilize firm size and evaluate its effects on predictive value of future cash flows for Iranian listed firms. We investigate the ability of prediction models based on past operating cash flows (Model1) and past operating earnings (Model2) to generate out of sample predictions of operating cash flows. Our analysis employs actual operating cash flow numbers reported by sample firms. We use Panel Data Method and Statistical Analysis to examine our hypothesis.

Farshadfar et al (2008) tested the predictive ability of earnings and operating cash flows for one-year-ahead operating cash flows in Australia between 1992 to 2004. They also used firm size as a contextual variable, in the regression models. The results showed that current operating cash flows were a better predictor of future operating cash flows than earnings. They provided evidence that the predictability of operating cash flows was superior to earnings regardless of the size of company, and the predictability of earnings and operating cash flows in large companies was significantly greater than that in medium and small companies [3]. Lorek and Willinger (2009) found larger firms exhibited significantly more accurate cash-flow predictions than smaller firms and firms with relatively shorter operating cycles showed significantly more accurate cash-flow predictions than firms with longer operating cycles [7]. Habib (2010) extended prior Australian research on cash flow prediction by examining future cash flow predictions for one, two and three-year-ahead forecast horizons. Also, he considered company size, operating cycle, cash flow variability and whether the operating cash flows of the company were positive or negative as additional contextual variables that were likely to affect the predictive ability of current operating cash flows and earnings for future operating cash flows. His results exhibited current operating cash flows based prediction model had the strongest predictive ability for future cash flows. The predictive ability of this model was larger for smaller companies, companies with a long operating cycle, companies generating negative cash flows and companies characterized by high cash flow variability [5]. Memoun (2011) examined the relative predictive ability of current cash flows and current earning for future operating cash flows in Jordan. His results showed the predictive ability of operating cash flows was stronger than that of earnings for future operating cash flows for one- to three-year-ahead forecast horizons. Besides, his tests revealed such predictive ability was stronger for large companies, companies with short operating cycle, and companies reporting positive operating cash flows [8]. Hechmi (2012)

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analysed the effect of debt, firm size and liquidity on investment cash flow sensitivity. He did his tests on a sample of 82 French firms and found that the firm size had a positive effect on investment cash flow sensitivity [6].

2. Research design

a. Data

We obtain data from actual financial reports of firms which were accepted in Tehran Stock Exchange before 1998. Our research time period is 1999 to 2009. We extract 95 firms from 7 industries: metals, automobile, machinery, chemical, cement and food by using cluster sampling method.

b. Dependent Variable: Cash Flow from Operation

We test whether enhanced stability of large firms translates into a more predictable CFO series. So we evaluate effects of firm size on predictive value of future cash flows by using cash flow based model (Model1) and earning based model (Model2).

3. Classifying firms, prediction models and our analysis

At first, we classify 95 sample firms equally into small (N=32), medium (N=33) and large (N=30) based on the mean of book value of total assets reported during the research period. After that we evaluate Model 1 and Model 2 for these three firm groups separately by using Panel Data Method (OLS), fixed effect model.

We investigate the relation between current CFO, current earning and future CFO. We do so by employing regression models previously analyzed by Dechow et al (1998) [2]. The first model regresses future CFO upon its past values:

$$CFO_{i,t+1} = b_0 + b_1 CFO_{i,t} + a_{i,t} \qquad \text{Model 1}$$

The second model regresses future CFO upon past values of net earnings, essentially substituting past net earning for past CFO in Model 1:

$$CFO_{i,t+1} = c_0 + c_1 E_{i,t} + d_{i,t} \qquad \text{Model 2}$$

CFO: operating cash flows, *E*: operating earnings ,*a* and *d*:error components

Tables 1 to 6 show data from analyzing Model 1 and Model 2 for all given groups:

Table 1: Analysing Model 1 for Small Firms

Independent variable	Coefficient	Standard Error	t-value	prob	Relation	The significance level
E	0.545554	0.059276	9.230629	0.0000	positive	0.99
R^2	0.744416	Mean dependent var			18075.78	
$Adj-R^2$	0.714012	S.D dependent var			34185.50	
S.E of regression	18281.67	Sum squared resid			8.53e+10	
		Durbin Watson stat			2.052464	

Table 2: Analysing Model 1 for Medium Firms

Independent variable	Coefficient	Standard Error	t-value	prob	Relation	The significance level
E	0.193324	0.064364	3.003597	0.0000	positive	0.99
R^2	0.313075	Mean dependent var			36377097	
$Adj-R^2$	0.233257	S.D dependent var			59780.38	
S.E of regression	52364.03	Sum squared resid			7.78e+11	
		Durbin Watson stat			1.869495	

Table 3: Analysing Model 1 for Large Firms

Independent variable	Coefficient	Standard Error	t-value	prob	Relation	The significance level
E	0.518513	0.056288	9.211720	0.0000	positive	0.99
R^2	0.687454	Mean dependent var			556436.1	
$Adj-R^2$	0.651667	S.D dependent var			1418768	
S.E of regression	837353.8	Sum squared resid			1.84e+14	
		Durbin Watson stat			2.089426	

Table 4: Analysing Model 2 for Small Firms

Independent variable	Coefficient	Standard Error	t-value	prob	Relation	The significance level
E	0.736170	0.056655	12.99402	0.0000	positive	0.99
R^2	0.790028	Mean dependent var			18120.85	
$Adj-R^2$	0.765050	S.D dependent var			34170.95	
S.E of regression	16563.23	Sum squared resid			7.38e+10	
		Durbin Watson stat			1.640983	

Table 5: Analysing Model 2 for Medium Firms

Independent variable	Coefficient	Standard Error	t-value	prob	Relation	The significance level
E	0.510506	0.069050	7.393286	0.0000	positive	0.99
R^2	0.399234	Mean dependent var			36264.23	
$Adj-R^2$	0.329672	S.D dependent var			59720.88	
S.E of regression	48895.61	Sum squared resid			6.81e+11	
		Durbin Watson stat			1.856760	

Table 6: Analysing Model 2 for Large Firms

Independent variable	Coefficient	Standard Error	t-value	prob	Relation	The significance level
E	0.755398	0.053276	14.17893	0.0000	positive	0.99
R^2	0.731689	Mean dependent var			555128.0	
$Adj-R^2$	0.701084	S.D dependent var			141655.2	
S.E of regression	774458.8	Sum squared resid			1.58e+14	
		Durbin Watson stat			1.690436	

As we see, R^2, adjusted R^2 and Durbin-watson values of both models for all groups show these models are fitted appropriately and their estimations are well.

After this stage , we transfer software outputs to Excel Software. We need coefficients and residuals which are extracted from these models to predict future operating cash flows for all three groups. Model 3 calculates mean absolute values of predictive errors of cash flows for all sample firms:

$$MAPE = \frac{1}{n}\left|\frac{CFO_{i,t-}CFOP_{i,t}}{CFO_{i,t}}\right| \qquad \text{Model 3}$$

MAPE: mean absolute values of predictive error of cash flows, *n*: number of sample firms, *CFOP*: predicted cash flows by using outputs from Model 1 and Model 2.

By using Model 3, MAPE for Model 1 and MAPE for Model 2 calculate saparately for each three groups.

Table 7

	Small Firms	Medium Firms	Large Firms
MAPE for Model 1	0.702	0.683	0.593
MAPE for Model 2	0.876	0.663	0.301

To evaluate statistically significant diversity of acquired MAPEs, we do Wilcoxon Test in the error level of 5%. So we use two below hypothesis:

$$\begin{Bmatrix} H_0 : MAPE1 > MAPE2 \\ H_1 : MAPE1 < MAPE2 \end{Bmatrix}$$

Table 8 exhibits the results from comparison of significantly of obtained MAPEs from Model 1 for all firm groups:

Table 8

	Z-value	The significance level
Small vs. Medium Firms	14.53	0.0001
Small vs. Large Firms	14.06	0.0001
Medium vs. Large Firms	14.03	0.0001

Table 9 reveals the results from comparison of significantly of obtained MAPEs from Model 2 for all firm groups:

Table 9

	Z-value	The significance level
Small vs. Medium Firms	6.55	0.0001
Small vs. Large Firms	11.43	0.0001
Medium vs. Large Firms	9.25	0.0001

Z-values show H_1 hypothesis is accepted for all firm groups. So,Both model 1 and Model 2 show in larger firms, the level of predictive error of future cash flows is lower than the other firms.

4. SUMMARY AND CONCLUSION

In this study we evaluate the effects of firm size on predictive value of future cash flows. So we classify 95 sample firms equally into small, medium and large and evaluate the effects of firm size on predictive value of future cash flows by using cash flow based model (Model1) and earning based model (Model2).Then we extract coefficients and residuals from these models to predict future operating cash flows for all three groups to calculate mean absolute values of predictive error of cash flows.

Our results show MAPEs of larger firms are significantly smaller than the MAPEs of smaller firms. This suggests that past CFOs of larger firms are more stable and lead to more accurate one-year ahead CFO predictions than those of smaller firms. Our finding are similar to the results which were found by Lorek and Willinger (2009) who found larger firms exhibited significantly more accurate cash-flow predictions than smaller firms, Farshadfar et al (2008) who provided evidence which predictability of earnings and operating cash flows in large companies was significantly greater than that in medium and small companies and Memoun (2011). So we find that firm size is one of the effective factors to evaluate future cash flows.

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