The Research Relationship between the Operation Cycle and the Criteria ROS and ROA

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Abstract
The present study provides a clear view of the dynamic behavior of accounting data in macroeconomic texture, which may be a useful guideline for the analysts and users of financial statements to predict the main variables of accounting. The study helps decision makers improve their predictions of corporate performance consistent with macroeconomic conditions. Therefore, the present findings may assist decision makers, investors, financial analysts and corporate managers .A cycle begins with a period of economic expansion in economic activities and ends up with a depression. In other words, each business cycle includes the stages of improvement, boom, downturn and regression .In order to test research hypotheses, the data issued by the companies listed in TSE was studied for the 1998-2009 period. Spearman test, linear regression and developed linear models were used to analyze the data. The results showed a significant correlation of business cycles with ROS and ROA.
Keywords: Business Cycles, Economic Expansion and Contraction, ROA, ROS.

Introduction
Economic expansion and contraction is strongly associated with managers' manipulation of earnings. In general, irrelevant and unreliable information leads to inadequate allocation of capital, which may exert an adverse effect on stock market. It is important to observe the fundamental decision-making criteria in stock markets. Certainly, investors make investments in companies hoping to gain returns consistent with their investments. When a company succeeds in creating value, not only do investors and people inside the company but also the society at large benefit from the created values. Performance appraisal in decision-making process is one of the most important issues in financial economics considering the important role of the market. Thus, financial and economic criteria assume an important role in performance appraisal of a company. The present study investigates the

relationship between business cycles and some financial criteria of performance appraisal in the companies listed in TSE.

Theoretical Foundations

Unless it increases return on investors' assets, understanding a business cycle will not benefit investors. Fatas (2002) contends that business cycles influence productivity, investment and research and development costs. These variables are the major factors affecting economic development. In this regard, a business cycle is an important factor of economic growth. Fluctuations in business cycles may alter the development process and create permanent effects in economy. Investment links business cycles and long-term economic growth. He contends that increased fluctuations and uncertainty in business cycles may decrease risks, which in turn decreases return on invested capital and economic growth in the long run. Since managers and investors pay greater attention to risk of capital loss during recession periods, which intensifies the rapid downturn of stock prices in capital markets, corporate performance may be sensitive to business cycles. This may bring about more careful earnings management. The study helps decision makers improve their predictions of corporate performance consistent with macroeconomic conditions. Therefore, the present findings may assist decision makers, investors, financial analysts and corporate managers. The study aims to address the question 'is there any relationship between business cycles and financial criteria of performance appraisal in companies?'

Literature Review

We will review some studies already conducted on business cycles and company performance. Emami and Mehrabian (2007) investigated fluctuations in business cycles and inflation uncertainty through heterogeneity models of conditional variance of general regression. They estimated the effect of business cycle fluctuations on long-term economic development using cointegration tests and vector error correction models. The results showed that business cycle fluctuations might decrease economic development in the long run. The reason is that fluctuations in production development in Iran have led to production uncertainty, which has decreased investment and eventually economic development.

Perez and Timmermann (2007) studied fluctuations in stock return when business cycles were altering. They found considerable fluctuations in stock returns during business cycle alterations.

Antonio et al. (2007) addressed the question whether or not business cycles and biased profitability behavior account for trading speed in three major European markets. They reported that global trading conditions influenced the profitability of trading speed in European markets.

Namazi and Kermani (2008) investigated the effect of ownership structure on the performance of companies listed in TSE. They reported a significant negative correlation between institutional ownership and company performance but a significant positive correlation between corporate ownership and company performance. Managerial ownership exerted a significant negative effect on company performance. Heidari and Alipur (2009) studied the behavior of accounting data based on business cycles in TSE. They also investigated the behavior of accounting data based on business cycles and particular properties of companies. The results showed a significant correlation between some accounting variables (i.e. sales growth and gross margin) and business cycles. The results showed no correlation between some variables (i.e. change in total assets) and business cycle. The results also revealed that the size of companies and cyclical/non-cyclical nature of companies (specific company features) influenced the association between accounting variables and business

cycles. Heidari and Forouzesh (2010) conducted a study to investigate the relationship between business cycles and profit management based on specific company features such as company size, price to earnings ratio and their cyclicality in TSE. The results showed that company managers did not pay attention to business cycles and GDP in decision-making. There was a significant negative correlation between profit management and the ratio of total debt to companies' market value. They also reported a linear correlation between GDP and profit management.

Guaray and Gonzales (2008) investigated the relationship between corporate leadership system and the criteria for company performance appraisal such as distribution of profits, P.B ratio (market value to equity book value) and Tobin Q in The Caracas Stock Exchange. The results showed that one percent increase in corporate leadership system index increased profit distribution by 11.3 percent, P.B ratio by 9.9 percent and Tobin Q by 2.7 percent.

Materials and Method

As the study deals with actual data, it is considered as a quasi-experimental research within the domain of positive accounting studies. In terms of purpose, the study is an applied research the results of which may be used by financial statement users. It adopts a descriptive-correlational method whereby the obtained data is used to describe and analyze the relations among variables. Correlational study is a subset of descriptive studies. As the study examines research hypotheses through reference to past data, it is considered as a post hoc research. Based on the theoretical foundations laid down above, the research hypotheses are formulated as follows:

1. There is a significant correlation between business cycles and ROA.
2. There is a significant correlation between business cycles and ROS.

The data was collected through library study. The data was obtained using Rahavard Novin software, financial reports on companies issued on TSE website, Islamic Republic of Iran Central Bank and Statistical Center of Iran for the period 1998 to 2009.

The thematic scope of the research includes the examination of the correlation between business cycles and performance in the companies listed in TSE. The temporal scope of the study includes a 5-year period from among the years 1998 through 2009. The spatial scope of the study encompasses all companies listed in TSE consistent with their defined characteristics.

Population, Sampling Technique and Sample Size

The population of the study consisted of all companies listed in TSE. Systematic elimination method was used to select the research sample. Accordingly, companies that met the following criteria were selected as the sample while the rest were excluded from the research:

1. Financial statements and respective annotations on the companies should be available for 12 successive years (from 1998 to 2009).
2. They should have their fiscal year end in March 20 in order to facilitate comparison and avoid heterogeneity.
3. They should not have altered their fiscal year over the research period (from 1998 to 2009).
4. They should not have stopped their trading in TSE from 1998 to 2009. In other words, they should have kept their stock active over the respective years. In case of any halt in stock trading, the interruption should not have lasted more than three months.

Descriptive Statistics

Descriptive statistics was used to describe raw data, as illustrated in Table 1. **Table 1:** Descriptive statistics of research variables

Kurtosis	Skewness	SD	Mode	Median	Mean	No.	Variable
849.685	28.943	54.5793	1.3469	5.80813	3.836	876	ROA
48.829	6.514	24.555	5.174 -	0.84964	0.67514	876	ROS
-1.890	-0.339	0.493	1.00	1.000	0.583	876	BC
810.9	28.009	27.186	0.752	0.704	2.435	876	LEV
0.766	0.173	1.784	12.782	12.487	12.481	876	Size
353.78	18.121	760.089	-1.130	1.924	65.049	876	MTB

Examining the Normality of Dependent Variables

One of the most important characteristics of regression is that it allows for examination of the normality of the dependent variable. Kolmogorov-Smirnov test was run to examine the suitability of regression analysis on the data. The confidence level was considered to be 95 percent. Thus, if the level of significance for research variables exceeds 0.05, the data is assumed to be normally distributed at 95 percent confidence level. However, if the level of significance is smaller than 0.05, the data is assumed to be non-normal at 95 percent confidence level. **Table 2:** Kolmogorov-Smirnov test results of dependent variables

ROA	ROS	No.
876	876	
9.933	13.970	Test statistic
0.000	0.000	Significance
0.061	0.061	Test statistic
1.000	1.000	Significance

Considering the significance of Kolmogorov-Smirnov test, the level of significance was smaller than 0.05 for all research variables. Therefore, all dependent variables were non-normally distributed. Minitab 16 software was used to normalize the dependent variables. Table 2 illustrates the results of Kolmogorov-Smirnov test after normalization of dependent variables.

Testing Research Hypotheses

Testing H1

There is a significant correlation between business cycles (BC) and ROS.

In the four hypothesis, we addressed the relationship between BC and ROS. Accordingly, H0 and its corresponding hypothesis were formulated as follows:

H0 (b1=0): There is no significant correlation between BC and ROS.

H1 (b1≠0): There is a significant correlation between BC and ROS.

Table illustrates R square, adjusted R square, standard error of the estimate and Durbin-Watson coefficient of the four hypothesis.

Summary of H1 regression model

Durbin-Watson coefficient	Standard error of the estimate	Adjusted R square	R square	R	Model
1.954	0.749	0.436	0.438	0.662	Regression

As shown in the table, R square is 0.438, suggesting that regression or independent and control variables account for about 44 percent of variations in the dependent variable. We need to examine the results of ANOVA and partial regression coefficients in order to test the linear regression model and the four hypothesis.

ANOVA-for-regression results of the four hypothesis

Significance	F	Mean square	df	Sum of squares	Model
0.000	169.806	95.498	4	381.993	Regression
		0.562	871	489.848	Residual
			875	871.841	Total

As shown in the table, the overall significance of regression model (0.000) is smaller than 0.05. Thus, there is a linear correlation between the dependent and independent variables. We need to examine partial regression coefficients to test the second research hypothesis. The significance level of BC, size (0.000) and MTB (0.002) indicates the significant relationship between these variables and QT. Considering the coefficients of these variables in the regression model, there is a significant positive relationship of operating cycle and MTV with ROS. Therefore, the results support the first hypothesis indicating a significant correlation between BC and QT. The regression may then be written as follows: ROS=-0.102+0.086BC-0.047LEV-0.394Size+0.528MTV

Partial regression coefficients of the four hypothesis

Significance	T	Standardized coefficients		Non-standardized coefficients		Acronym	Model
		Beta		Standard error	B		
0.014	-2.458			0.042	-0.102	C	Constant
0.002	3.103	0.086		0.056	0.175	BC	Business cycle
0.066	-1.840	-0.047		0.026	-0.047	LEV	Financial leverage
0.000	-14.403	-0.394		0.027	-0.394	Size	Company size
0.000	20.011	0.528		0.026	0.528	MTB	Market value to book value of equity

Testing H2

There is a significant correlation between business cycles (BC) and ROA.

In the second hypothesis, we addressed the relationship between BC and ROA. Accordingly, H0 and its corresponding hypothesis were formulated as follows:

H0 (b1=0): There is no significant correlation between BC and ROA.

H1 (b1≠0): There is a significant correlation between BC and ROA.

Table 5 illustrates R square, adjusted R square, standard error of the estimate and Durbin-Watson coefficient of the second hypothesis.

As shown in the table, R square is 0.263, suggesting that regression or independent and control variables account for about 26 percent of variations in the dependent variable. We need to examine the results of ANOVA and partial regression coefficients in order to test the linear regression model and the second hypothesis

As shown in the table, R square is 0.263, suggesting that regression or independent and control variables account for about 26 percent of variations in the dependent variable. We need to examine the results of ANOVA and partial regression coefficients in order to test the linear regression model and the second hypothesis.

As shown in the table, the overall significance of regression model (0.000) is smaller than 0.05. Thus, there is a linear correlation between the dependent and independent variables. We need to examine partial regression coefficients to test the second research hypothesis.

As shown in the table, the significance level of Size، LEV and MTB coefficients (0.000 - 0.004) are smaller than 0.05 while the significance level of BC (0.386) coefficients are greater than 0.05. Therefore, the second research hypothesis (H2) is rejected. there is no significant correlation between BC and ROA. The regression model may be written as follows:

ROA = -0.033+0.028 BC+0.085LEV+0.401Size+0.371MTV

The present findings revealed a significant correlation between some accounting variables and BC. The results showed a significant correlation of ROS with BC in economic expansion and contraction periods. However, there was no significant relationship between BC and ROA that is a special feature of companies. In other words, ROA does not contribute to the effect of BC on accounting variables.

Conclusion

The present findings revealed a significant correlation between some accounting variables and BC. The results showed a significant correlation of ROA, and ROS with BC in economic expansion and contraction periods. The results showed a significant correlation of ROS with BC in economic expansion and contraction periods.

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