The relationship between business cycles and earnings per share and Tobin Q ratios

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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 recession. In order to test research hypotheses, the data issued by the companies listed in TSE was studied for the 2008-2012 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 EPS and Tobin Q ratios

Keywords: Relationship ; Business cycles ; Earnings per share ; Tobin Q ratios

Introduction

Capital markets play a crucial role in national economy. Not only do they mobilize monetary resources and frozen assets via enterprises, but they themselves function as an indicator of economic expansion.

Enterprise performance appraisal is an important factor in economic decision-making. There are various financial criteria and approaches to performance appraisal some of which include market value added, QTobin.

The association between company performance and economic activities help financial statement users, particularly investors, predict the direction of changes in these variables under different economic conditions. The results of regression analysis may further reveal the enterprise performance under different economic conditions.

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. A cycle begins with a period of economic expansion in economic activities and ends up with a depression period (contraction). In other words, every business cycle includes improvement, boom, downturn and recession (Burns and Mitchell, 1946). In the present study, a business cycle refers to economic expansion and contraction. 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. The information provided by accounting system is the basis of future predictions. However, accounting data are not enough to conduct an accurate prediction of future data. Rather, other factors such as national economic conditions (i.e. expansion or recession) need to be addressed as well. Economic conditions may exert various effects on companies and their performance and may influence the behavior of accounting data. Business cycles refer to regular fluctuations in macroeconomic activities that are typically organized by business enterprises.

Literature review

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. Pur Heydari and Alipur (2009) studied the behavior of accounting data based on business cycles in TSE.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.

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. Pur 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.

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:

The research hypotheses were developed so that the relationships could be investigated among variables, which required the analysis of year-company data over 5 fiscal years (2008-2012). Following initial collection of the data on each variable, they were analyzed in terms of normality and outliner. Considering the research questions, Spearman test, linear regression analysis and developed linear models were used to analyze the data. 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 2008 through 2012. 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. Companies should not be involved in investment, insurance, leasing and banking as these activities assume a different nature.

2. Financial statements and respective annotations on the companies should be available for 5 successive years (from 2008 to 2012).

3. They should have their fiscal year end in March 20 in order to facilitate comparison and avoid heterogeneity.

4. They should not have altered their fiscal year over the research period (from 2008 to 2012).

5. In order to have a homogeneous sample, they should have been listed in TSE before 2008 and have begun trading their shares from the beginning of 2008.

6. They should not have stopped their trading in TSE from 2008 to 2012. 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.

Testing research hypotheses

Testing H1

There is a significant correlation between business cycles (BC) and Q Tobin (QT).

In the first hypothesis, we addressed the relationship between BC and QT.

Accordingly, H0 and its corresponding hypothesis were formulated as follows:

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

H1 ($b1\neq0$): There is a significant correlation between BC and QT.

Table 1: Illustrates R square, adjusted R square, standard error of the estimate and Durbin-Watson coefficient of the first hypothesis. Table 5: Summary of H1 regression model					
Model	R	R square	Adjusted R square	Standard error of the estimate	Durbin-Watson coefficient
Regression	0.662	0.438	0.436	0.749	1.954

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 first hypothesis.

Table 2: ANOVA-for-regression results of the first hypothesis					
Model	Sum of squares	df	Mean square	F	Significance
Regression	381.993	4	95.498	169.806	0.000
Residual	489.848	871	0.562		
Total	871.841	875			

| Significant | T | Standardized coefficients | | Standardized not   coefficients | | Symbol | 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
0.000	-14.403	-.394	0.027		-0.394	Size	Company size

there is a significant negative relationship of operating cycle and with Qtobin.

Testing H2

There is a significant correlation between business cycles (BC) and earnings per share (EPS). In the second hypothesis, we addressed the relationship between BC and EPS. Accordingly, H0 and its corresponding hypothesis were formulated as follows: H0 (b1=0): There is no significant correlation between BC and EPS.

H1 (b1≠0): There is a significant correlation between BC and EPS. Table 5 illustrates R square, adjusted R square, standard error of the estimate and Durbin-Watson coefficient of the second hypothesis.

Table 3. Summary of H2 regression model

Model	R	R square	Adjusted R square	Standard error of the estimate	Durbin-Watson coefficient
Regression	0.491	0.241	0.237	0.8713	1.790

As shown in the table, R square is 0.241, suggesting that regression or independent and control variables account for about 24 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.

Table 4. ANOVA-for-regression results of the second hypothesis

Model	Sum of squares	df	Mean square	F	Significance
Regression	209.495	4	52.374	68.987	0.002
Residual	661.248	871	0.759		
Total	870.743	875			

As shown in the table, the overall significance of regression model (0.002) 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.

Table 5. Partial regression coefficients of the second hypothesis

Model	Acronym	Non-standardized coefficients	Standardized coefficients		T	Significance
		B	Standard Error	Beta		
Constant	C	0.470	0.048		7.679	0.001
Business cycle	BC	-0.635	0.065	-0.214	-9.694	0.002
Company size	Size	0.070	0.032	0.070	1.876	0.061

there is a significant negative relationship of operating cycle and with EPS.

EPS=0.470 – 0.214 BC + 0.070 Size

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

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