

The Impact of the Business Cycle on the Performance of Companies Active in the Automotive Industry and Parts, Pharmaceuticals and Chemical Products

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ABSTRACT

Commercial cycles are a kind of fluctuation that arises in the overall economic activity of countries that have built their economies most often based on the market economy or the activity of business firms. A cyclone with expansion and boom will begin almost simultaneously in most economic activities, and periods with a similar range of general recessions will slow down and begin a boom. And again, after a while, it leads to a boom in the next cycle. This sequence of changes is repeatable, but lacking in definite rotation. Periodically, the duration of business cycles varies from one year to ten or twelve years, which can not be subdivided into shorter cycles with similar characteristics and fluctuations. This research examines the impact of the business cycle on the performance of companies active in the automotive industry, parts, pharmaceuticals, and chemical products. The statistical population of the study consists exclusively of all listed companies in Tehran Stock Exchange. Eviews software is used to analyze the data. The results showed that the business cycle has a significant effect on the performance of the companies active in the automotive and parts industry. But the business cycle has no significant effect on the performance of active companies in the pharmaceutical and chemical products industry.

KEYWORDS

performance, volatility, trading cycle, stock exchange

INTRODUCTION

Corporate performance is the basis of many decisions. An important factor that most lenders, investors, managers, and other economic actors can take into account is performance. When performance measures are measured

instead of crude numbers in the form of percentages or ratios, it's possible to measure and compare the performance of small and large companies in different industries over a period of time (Shanazarian, 2010).

More than three decades of systematic and systematic inquiry into the impact of accounting information on stock prices. But the use of ratios in financial affairs dates back to the late nineteenth century, when comparing current assets with current debt as the first financial ratio. But with the start of the 20th century and the evolution of industries and economics, several important developments in the use of financial ratios occurred. First, accountants and investors realized that one can not rely solely on a financial ratio and need a set of financial ratios for investors' purposes or analysis (Saleh Nejad and Ghayour, 2009).

The criteria for evaluating corporate performance in the capital market are divided into categories of traditional and general criteria and value-based criteria. The use of traditional valuation criteria such as company revenues, earnings per share, return on equity, returns on assets, cash flow and so on were consecutive years for assessing corporate performance in the capital market. The performance evaluation of companies in the traditional way is not a desirable method because they do not consider the cost of providing corporate capital resources. Of course, following traditional criteria, value-based metrics were also introduced to assess the performance of companies (Lovata, 2002).

PROBLEM STATEMENT

Today, efficient management of working capital is considered as one of the important aspects of financial management practices in all companies. Management of working capital, management of current assets and current liabilities of commercial units. Working capital management can play a role in the company's growth and survival. If the

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amounts invested in working capital are unbalanced relative to the total assets of the company, it may be that these amounts are not used in an efficient position. Efficiency in working capital management is especially important in manufacturing companies. Good and orderly management of working capital results in an increase in the value of the business unit, and the management of working capital can bring significant results, and ignoring it for any company may be dangerous (Pourheidari & Hooshmand, 423). It is also expected that working capital management will affect the liquidity and profitability of business units. The literature in this area also shows the effect of working capital on liquidity (Kim et al., 1998; Oppler et al., 1999) and the profitability of companies (Shin & Sonen, 1998; Dilof, 2003; Lazaridis & Trifonidis, 2006; Samson et al., 2012).

On the other hand, the general conditions of the economy (recession or economic prosperity) can affect the performance of companies. The macroeconomic fluctuations that occur independently of corporate operations play an important role in the demand for company products as well as any financing decisions that are made by the company. For example, Kurajzik and Levy (2003) claimed that companies would determine the timing of their debt issuance based on expected future economic conditions. Also, given that accumulated profit is one of the important elements of corporate turnover, it can be argued that business cycles affect the sources of financing for all firms through their effects on economic growth and sales volumes of companies. For example, when corporate sales decline, this has led to a threat to corporate profits and, as such, affects one of the key sources of working capital in the company. The recent global downturn, which led to a significant decline in customer demand, is one of the obvious examples of this. The economic crisis under discussion, which was characterized by a sharp decline in the volume of sales of companies, has led to a reduction in corporate earnings and margins and, as a result, affects capital requirements for corporate turnover. This global issue led to a re-focus on the management of working capital.

Commercial cycles are a kind of fluctuation that arises in the entire economic activity of countries that base their economies on the basis of the market economy or business activity. A cycle with expansion and boom will start almost simultaneously in most economic activities, and periods with a similar range of general recessions will slow down and begin a boom, and again after some time it will lead to a boom in the next cycle. This sequence of changes is repeatable, but lacking in definite rotation. Periodically, the duration of business cycles varies from one year to ten or twelve years, which can not be subdivided into shorter cycles with similar characteristics and fluctuations (Burns and Michell, 1946).

One of the ways to determine and understand the general state of the economy is to look at business cycles. Nonetheless, a narrow section of the existing literature has examined the relationship between circulating business and

working capital. The business cycles are the same as the economic downturn, which is being evaluated by economic indicators such as labor and income. One of the early studies in this area, by Merwill and Tavis (1973), tested the relationship between corporate turnover policies and business cycles. However, domestic studies on the relationship between working capital management and profitability have not paid much attention to macroeconomic aspects. Companies may have found a level of working capital that creates the highest value for their shareholders. However, optimal turnover levels of capital may change in response to changes in economic and environmental conditions. Therefore, considering the above issues, the present research seeks to show whether business cycles affect the performance of firms.

BACKGROUND RESEARCH

Momeni Taheri and Sadeghi (2017) investigated the relationship between capital structure and financial performance with emphasis on business cycle. For this purpose, the companies were divided into two groups of companies with debt-driven capital structure and share-based axis. Results show that in each group of companies, the capital structure has a negative and significant effect on the financial performance of companies in each group of companies. The financial performance of companies is also more severe than the economic downturn in companies with a capital-driven debt-to-equity structure.

Bondyopadaya and Barva (2016), using capital market information in India, examined the impact of the business cycle on capital structure and corporate performance. The sample included 1594 enterprises in a 14-year period (1998-2011). The findings of this study indicate that the business cycle has a significant impact on the capital structure and the performance of Indian companies.

Encoist et al. (2014) in their study examined the impact of business cycles on the relationship between working capital and profitability of firms admitted to the Finnish Stock Exchange. Their research findings indicate that the relationship between working capital and profitability during the period of the recession is stronger than its period of prosperity.

Yegan et al. (2014) explores the impact of working capital management on financial performance of the company. The results show that cash cycle, net cash cycle, net trading cycle and inventory turnover have a significant impact on financial performance of the company. Similarly, financial leverage, sales growth and firm size have a significant impact on profitability. The listed companies use a conservative policy to manage working capital and need to focus and improve their payback policy. Effective management and provision of working capital can also be a factor in increasing profits of these companies.

Zaitoun and Tian (2007) investigated the relationship between capital structure and company performance using information from 167 companies and concluded that there is a meaningful relationship between the ratio of short-term debt to total assets, total debt to total assets, non-current

debt to total assets and total debt to shareholders equity with the ratio of return on assets.

HYPOTHESES

- The business cycle has a significant effect on the performance of companies operating in the automotive and parts industry.
- The business cycle has a significant impact on the performance of companies active in the pharmaceutical industry.
- The business cycle has a significant impact on the performance of companies active in the chemical industry.

METHOD AND TOOL FOR COLLECTING INFORMATION

Measurement and measurement tools are tools that the researcher can measure variables with and help them to analyze the phenomenon studied and eventually discover the truth. Therefore, they must be designed and organized so that they can collect information about measuring and measuring variables in a desirable manner (Hafeznia, 2013, 171).

The process of gathering information is the beginning of a process in which the researcher collects field and library findings and is inductively compressed by classification and then analyzes and evaluates their hypotheses and ultimately issuing a warrant. In this research, the library method was used to collect information; and considering that the only reliable reference for collecting financial data, computer databases and the library of the Stock Exchange Organization and the new software, www.rdis.ir Therefore, the required data of this research were collected through the mentioned references.

SOCIETY AND RESEARCH SAMPLE

The statistical population of the study consists exclusively of all listed companies in Tehran Stock Exchange. The statistical sample of this study, the total of accepted companies in the Tehran Stock Exchange, is selected using systematic elimination methods. The statistical sample should have the following conditions.

1. During the mentioned period, they are constantly active in the stock market.
2. Their financial period will end in March.
3. It is not part of investment and financial intermediation companies and insurance companies and banks.
4. During this period, there will be no change in fiscal year.
5. All financial and other financial information required, including notes accompanying financial statements, will be available.

Based on the calculations, the sample number is $n = 51$, and the samples were randomly selected from among different industries.

RESEARCH METHODOLOGY

Considering the purpose of the research on the analysis of the impact of the business cycle on the capital structure of the companies active in the automotive industry, parts, pharmaceuticals and chemical products, this research is based on the correlation and methodology of the research, the quasi-experimental and post-event type in the field a positive accounting research. Which is done using real information and because it can be used in the process of using information, so a kind of research is applied. The post-event method is a method in which research using past information and studying past relationships of dependent variables and variables Independent examines the relationships between them. In other words, post-event method is a way to find out the possible cause from past information and from the disability. This research is also based on actual financial statements and notes accompanying corporate financial statements. In this research, the total amount of data required to test the hypotheses has been collected by direct withdrawal of the required information from the financial statements and the organization's website. Eviews software is used to analyze the data.

RESEARCH MODEL

In their research, the researcher seeks to identify variables and how they relate to each other. The researcher, on the basis of initial studies and the study of the literature, attempts to determine the variables studied, lists them, and formulates them in the form of an analytical and dissimilar model. To this end, the design of the theoretical framework for research should be designed; these models reflect the purpose of the research and indicate the issues, angles and dimensions of the problem that must be studied (Hafeznia, 2013, 122).

The model used to test the is as follows:

$$PERFORM_{it} = \beta_1 + \beta_2 PERFORM_{it-1} + \beta_2 CS_{it-1} + \beta_3 LNTA_{it} + \beta_4 ADVER_{it} + \beta_5 DDOWN_{it} + e_{it}$$

Where in:

- **Dependent Variable:**

PERFORM: Corporate Performance

- **Independent variable:**

CS: Capital structure

LNTA: size of the company

DDOWN: The trade cycle indicator (1 for years with a recession and 0 for otherwise). To determine the years of recession, we first calculate GDP for the entire realm of research time. Then we compare GDP (GDP) of each year of the realm of time with the obtained average. If the GDP of that year is less than the standard deviation of the average of the whole period, then that year is considered to be a year

of recession and the DDOWN variable is set to 1, otherwise it is 0.

- **Control variable:**

ADVER: Advertising intensity

In this research, the total amount of shares owned by banks, pension funds and mutual funds, insurance companies, investment companies, etc. is considered as the amount of institutional shareholder.

DESCRIPTIVE STATISTICS

In general, the descriptive statistics are called the methods by which they can process and summarize the information collected. This kind of statistics merely describes the society with the sample and aims to compute the parameters of society or sample of research (Azar and Momeni, 2010). In the present study, the sample was investigated during the period from 2011 to 2015, including 51 companies. In this section, the mean, median (central criteria), standard deviation, maximum and minimum (dispersion criteria) of the variables used are calculated and are presented in Table 1. A summary of the status of the descriptive statistics of the research variables after the screening and deletion of data is presented in Table 1.

Tab.1.Descriptive indexes of the studied variables

Variable	Average	Midle	Standard deviation	Maximum	Minimum	Sample size
Capital Ratio	1.42	1.26	1.07	9.95	0.19	255
Business Cycle	0.80	1.00	0.40	1.00	0.00	255
Lnage	3.21	3.17	0.62	3.98	1.79	255
Logarithm of Total Assets	5.95	6.02	0.60	7.36	4.44	255
Price to Book Ratio	3.06	2.77	1.70	8.96	0.58	255
Firm Performance	0.21	0.18	0.14	1.11	0.01	255
Profit	0.11	0.87	0.10	0.59	0.00	255
Sales	0.96	0.86	0.51	2.69	0.11	255
Tangibility Total Assets	0.74	0.73	0.35	3.58	0.14	255

According to Table (1), we can examine all the variables according to the relevant indicators from the statistical point of view and determine which characteristics of the research variables are. The average is the central index and represents the average of the data so that if the data are rotated on a regular basis, the mean value is exactly the point of

equilibrium or the center of gravity distribution. We see it in the first row and for the capital structure variable it is 0.60. And the second column represents the intermediate variables, indicating that 50% of the data is less than the middle number of the set and 50% of the data is greater than the middle number of the set.

The median value for the capital structure variable is 0.62. We see the third column of the standard deviation, which is one of the most important criteria for dispersion. In general, scattering measures are criteria that scan and compare the distributions of observations around the mean. According to the above table, this value for the capital structure is 0.16.

The fourth and fifth columns represent the highest and lowest data observations, which according to the above table, the largest and lowest data in the capital structure are 0.88 and 0.11, respectively. Finally, in the last column of the table, we see the total number of data (51 companies for 5 fiscal years).

The qualitative features of other main variables of the present study are also evident in the above table.

NORMAL TEST OF DEPENDENT VARIABLE

In this research, the least squares method is used to estimate the pattern parameters. The ordinary least squares method is based on the assumption that the dependent variable of the study has a normal distribution, and their abnormal distribution leads to a violation of the assumptions of this method for estimating the parameters, therefore, the normal distribution of the dependent variable of the research is to be tested. In this study, this issue is examined through Jarque and Bera statistics. The zero assumption and the opposite assumption in this test are as follows:

H0: The variables under study have a normal distribution

H1: The variables under study have a normal distribution

If the significance level of the test statistic is more than 0.05% (prob> 0.05), the H0 hypothesis is based on the normal distribution of the variable. The results of the Jarque test are presented in relation to the dependent variable of the research in the following table.

Tab.2.Test results of normality of the dependent variable

Variable	Jarque's statistics	The significance level
Perform (company performance)	641.17	0.00

According to Table 2, based on this test, since the significance level is less than 0.05, the distribution of the dependent variable is not normal and the assumption of H0 is not accepted on the normal distribution of the variable, the assumption H0 is rejected and the assumption H1 is accepted. But since the sample size is greater than 30, it does not disrupt the research.

TEST OF HYPOTHESES

Regarding the theoretical framework and the research background, the research model is a multivariate regression

model. To test the first hypothesis of the research, the following model is used:

Hypothesis 1: The business cycle affects the performance of companies active in the automotive industry and components.

$$PERFORM_{it} = \beta_1 + \beta_2 PERFORM_{it-1} + \beta_3 CS_{it-1} + \beta_4 LNTA_{it} + \beta_5 ADVER_{it} + \beta_6 DDOWN_{it} + e_{it}$$

Tab.3. Results of regression analysis of the first hypothesis

Variable	Coefficient	Statistics t	Significance factor
Width from origin	-0.26	-4.04	0.00
Capital Structure	0.02	2.82	0.00
Business cycle	0.16	1.38	0.02
Size of the company	0.07	3.33	0.00
The coefficient of determination	0.24	F statistics	2.32
Adjusted coefficient of determination	0.22	Significance level of F statistics	0.00
		Durbin- Watson	1.64

In the review (Table 3), the significance of the whole model is confirmed given that if the significance level of the f statistic is less than 0.05 (0.00), with a confidence of 0.95, the significance of the whole model is confirmed. The coefficient of model determination also indicates that 0.24% of the changes in the dependent model (firm performance) are explained by the independent variable (business cycle) entered into the model. This value indicates the severity of the relationship between the variables. It can be claimed that the whole model has a meaningful value.

Also, with respect to the adjusted coefficient obtained for the model, which is 0.22%, it can be stated that in the aggregate, the independent and control variables of the research explain the changes of the dependent variable. Also, in this study, Durbin-Watson test was used to test the residual correlation, which is one of the assumptions of regression analysis and is called self-correlation. According to the preliminary results of the model estimation, the value of the Watson camera statistic is 1.64% and since it is between 1.5 and 2.5 and values close to 2 indicate the lack of self-correlation remains, it can be concluded that the remainders are independent of each other.

Second hypothesis: The business cycle affects the performance of companies active in the pharmaceutical industry.

Tab.4. Regression analysis results of the second hypothesis

Variable	Coefficient	Statistics t	Significance factor
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Width from origin	-0.19	-2.28	0.02
Capital Structure	-0.22	-2.60	0.01
Business cycle	0.01	0.41	0.18
Size of the company	0.08	1.35	0.00
The coefficient of determination	0.51	F statistics	11.42
Adjusted coefficient of determination	0.47	Significance level of F statistics	0.00
		Durbin- Watson	1.78

In the review (Table 4), the significance of the whole model is confirmed given that if the f significance level of is less than 0.05 (0.00), with a confidence of 0.95, the significance of the whole model is confirmed. The coefficient of model determination also indicates that 0.51% of the changes in the dependent model (firm performance) were entered by the independent variable (business cycle). The model is explained in the model. This value indicates the intensity of the relationship between the variables. It can be claimed that the whole model has a meaningful value. Also with respect to the adjusted coefficient for the model, which is 0.47%, it can be stated that in total, the independent and control variables of the research explain the changes of the dependent variable. Also, in this study, Watson's camera test was used to test the residual correlation, which is one of the assumptions of regression analysis and is called self-correlation. According to the preliminary results of estimating the model, the value of the Watson camera is 1.78% and since it is between 1.5 and 2.5 and values close to 2 indicate the lack of self-correlation remains, it can be concluded that the remainders are independent of each other.

Hypothesis 3: The business cycle has a significant effect on the performance of companies active in the chemical industry.

Tab.5. Results of the Rogers analysis of the third hypothesis

Variable	Coefficient	Statistics t	Significance factor
Width from origin	-0.12	-0.98	0.32
Capital Structure	-0.12	-1.74	0.08
Business cycle	0.02	0.82	0.41
Size of the company	0.06	3.36	0.00
The coefficient of determination	0.51	F statistics	4.20
Adjusted coefficient of determination	0.47	Significance level of F statistics	0.00

 Durbin- Watson 1.79

In the review (Table 5), the significance of the whole model is confirmed given that if the significance level of the f statistic is less than 0.05 (0.00), with a confidence of 0.95, the significance of the whole model is confirmed. The coefficient of model determination also indicates that 0.51% of the changes in the dependent model (firm performance) were entered by the independent variable (business cycle). The model is explained in the model. This value indicates the intensity of the relationship between the variables. It can be claimed that the whole model has a meaningful value. Also with respect to the adjusted coefficient for the model, which is 0.47%, it can be stated that in total, the independent and control variables of the research explain the changes of the dependent variable. Also, in this study, Watson's camera test was used to test the residual correlation, which is one of the assumptions of regression analysis and is called self-correlation. According to the preliminary results of the model estimation, the value of the Watson camera is 1.79% and is between 1.5 and 2.5 and values close to 2 indicate the lack of self-correlation remains, it can be concluded that the remainders are independent of each other.

DISCUSSION AND CONCLUSION

In the significance analysis of the coefficients according to the presented results, a significant level for the business cycle variable whose level of significance is equal to (0.02). As a result, a significant relationship between business performance and business cycle is confirmed at 95% confidence level. The positive coefficient of this variable, equal to (0.16), is the direct relationship between firm performance and business cycle. As a result, there is a significant relationship between capital structure and business cycle. That is, the level of significance is less than the error level of 5%. It can be seen that the variable has a significant relationship with the dependent variable and if the change in the business cycle increases by 16 hundred units, then the first hypothesis is confirmed.

In the meaningful study of the coefficients according to the presented results, the significance level for the business cycle variable is equal to (0.18), which is more probable than 0.05. As a result, there is no significant relationship between firm performance and business cycle at 95% confidence level. The positive coefficient of this variable, which equals (0.01), is the direct relationship between the firm's performance and the business cycle. As a result, there is no significant relationship between capital structure and business cycle. Therefore, according to the analysis, the second hypothesis is rejected.

In the significance analysis of the coefficients according to the presented results, the significance level for the trade cycle variable is equal to (0.41), which is more probable than 0.05. As a result, there is no significant relationship between firm performance and business cycle at 95% confidence level. The positive coefficient of this variable, which is equal to (0.02), is the direct relationship between firm performance and business cycle. As a result, there is no

significant relationship between capital structure and business cycle. Therefore, according to the analysis, the third hypothesis is rejected.

• Suggestions for Future Research:

1. Due to the relationship between capital structure and performance, users should interpret and evaluate the results of this research with consideration of the above relationship.
2. Investigate the relationship between company's business cycle and the life cycle of the company in different time periods
3. Investigate the relationship between capital structure and business financial performance with respect to different business cycles
4. Investigate the relationship between company life cycle and capital structure and liquidity of shares of different companies based on different models
5. Investigate the relationship between company life cycle and company value.

• Limitations:

In all investigations, constraints are an integral part of the research. Because these limitations provide the basis for future and future research. This research was no exception.

1. One of the major research constraints that are based on inferential statistics is the generalization of their results to the entire statistical society in different time and space conditions. So, in generalizing the results of this research and practical application of these results, we should consider caution.
2. According to the conditions considered for sample size, a limited number of firms were selected from each industry as sample size. Therefore, caution should be taken in generalizing the results to the industry concerned.
3. The same assumption of accounting practices in companies: In this research, it is assumed that the same accounting procedures have been used in financial calculations to select the variables and their associated performance data. While this assumption is often incorrect, there is no consistency of procedures and doubts about the ability to compare corporate performance.
4. Other variables such as technology and economic and political conditions in the whole economy may have an impact on the research regression models that have not been studied in their research.
5. The inability of the Iranian capital market as an intervening factor can affect the results of the research that can not be controlled by the researcher. This issue is one of the bottlenecks in conducting research based on the capital market, including the present research.

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