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Investigating the effect of fluctuations of economic variables affecting the profitability of IranKhodro Manufacturing Company

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Abstract

Today, the automotive industry is considered as one of the strategic options for economic development. This industry plays an important role in the economic cycle of countries and has a special place in the world financial services industry. One of the most important competitive tools in this industry is the impact of macro variables on production profitability. The purpose of this study is to investigate the effect of fluctuations in economic variables affecting the profitability of IranKhodro Manufacturing Company. In this study, to test the hypotheses, the information of IranKhodro's high-circulation cars in the period between 2013-2019 was used. Independent research variables include exchange rate, inflation rate, order price and imported cars. After calculating the required variables, a composite data regression model was used to test the hypotheses. To choose between the methods of combined regression patterns and panel data pattern, the Limer F test was used. The panel data method was selected and it was necessary to perform Hausman test, which also confirmed the use of fixed effects pattern. The results of the research hypotheses showed that there is a significant relationship between exchange rate trends, inflation rate, mandatory (mandatory) pricing and imported cars and the profitability of IranKhodro's high-volume products.

Keywords: Macroeconomic variables, Profitability, Orderly pricing, Inflation rate, IranKhodro Manufacturing Company

Introduction

The nature of industrial marketing can be considered as creating value for customers by providing goods and services that meet their organizational needs and goals. The process of discovering, translating the demands of industrial customers and their needs and requirements to specific products and services to effectively communicate distribution methods, pricing, after-sales service, convincing more customers to use these products and industrial marketing services continuously. (Intermediary) is that

it does not reach the final consumption of consumers but is in the process of producing other products. In fact, the customers of industrial products are not the final consumers, but the institutions and organizations that buy industrial products for their commercial, production and organizational activities. (Pramod-Kumar, N. and Puja, P. 2012). This very important feature (non-final consumption) causes industrial products to have a very different nature from consumer products and, consequently, these two products have different markets (Okamoto, Y. and Sjoholm, F. 2019). The motivation to buy for industrial products is to use them in the production process and in other commercial activities. While the motivation to buy for consumer products is the final and personal consumption of products by consumers. In the industrial market, factors such as quality, reputation and credibility of the manufacturer, after-sales service, and flexibility of product uses, timely delivery, technical assistance and customer complaints have a great impact on the decision of industrial consumers to buy (Jafari et al, 2018) Price is the most flexible factor in a marketing mix because it can change quickly. Although price competition is one of the major problems that companies face, many companies cannot solve this problem in a great way. With the quality of goods of different companies being equalized and competition intensifying, the price element has become one of the most important factors affecting the retention and attraction of customers and their loyalty and satisfaction (Ahmadi, 2020)

Theoretical fundamentals of research

In the meantime, the automobile industry has enjoyed an important position in the industrial development planning of countries (especially developing countries over a century, which has led to the title of "Industry Industry" (especially developing countries), which makes it the title of " Industry" (Gholipour et al.,2017). the automotive industry, after the oil and banking industry, is considered the world's third industry and is considered one of the most important sources of income tax in the
As one of the most competitive industries, the industry forms a very high volume of national economy. In Iran, It was among the first steps in the development of the automobile industry (Bhargava & Alok, 2014). Iran was forced to withdraw the car and import the car due to its inability to build the car. In this regard, the owners of the automobile industry were planning to produce cars locally as possible, and by encouraging and encouraging industry owners and lending loans, they were gradually established under the Ministry of Economy, mills, buses and trucks and began operation. In 1973, there were 13 production units in the automobile industry, 38 % of the total units produced. The production of the car fell sharply after the Islamic Revolution's victory due to the problems caused by the war. In these years, certain policies were not designed to produce cars in the country, and imports did not take place in this regard; besides, it was not provided to produce an internal car. (Mushtaq et al., 2011). The bulk of the car production turmoil in the years was attributed to a decline in the exchange

quotas of the auto companies that were linked to the country “s oil revenues. In those years, the automotive industry had a recession and recession, and a movement in the early years of 1981 was related to the production of pickup cars, buses, trucks and minibuses (Salimian, 2017). Since the end of the war, Iranian auto companies began operating with the government's support. This led to the expansion of domestic production in the country and a good growth in car production was created by the attitude of domestic markets. As well as scientific and scientific cooperation of Iran with supranational companies, it has been revived and it has been able to renovate the production lines and production of better and newer products. Meanwhile, the automobile industry has been able to move the Piece making industry by deepening its link with upstream industries. (Shu, Yan, Broadstock, 2013). Auto companies enter the market due to the special status they have in the country's economy along with the establishment of the Stock Exchange in Iran. Statistics on the stock market show that in 2010 the growth of the total index of stock efficiency was 5/84 percent and industry efficiency index was 5/86 percent. (Salehi, Mehdi, et al, 2015)

Whereas the automobile industry, which is one of the most attractive sectors for capital market actors, has a higher productivity rate than the stock index and the industry total index. This represents the high potential of this industry, for growth and investment. Therefore, the main objective of this study is to investigate the effect of fluctuation of effective economic variables on the profitability of irankhodro products in addition to that sub - objectives of the impact of duty pricing process, rate of exchange, inflation rate and import of foreign cars on irankhodro products (Salimian, 2016).

Finally, we test the meaning of research hypotheses.

Method and Methodology

Based on the study of the effect of fluctuation of effective economic variables on profitability, irankhodro products are based on studies on the relationship between research variables and profitability. (Karimi, F., et al, 2014) the present study examines the variables of the research variables and their relations in the studied society and the relationship between variables is analyzed based on the purpose of the research in the form of cause and effect relationship (effect analysis); therefore, it is applied in terms of research method in descriptive - survey research. Furthermore, the findings in the study of the effect of the fluctuation of the effective economic variables on the profitability of irankhodro products are applicable in terms of the purpose of the research.

Multivariate regression model is used to analyze the data in the present study. so first, the data are collected and have entered software Excel after the collection. Then, in order to obtain the relevant variables after performing the required calculations in the year - vehicle, we look at their classification

finally analysis of data using Eviews.10 software.

because of this research data for six years in the period of 1392 to 1398 is related to, Cars of IranKhodro so in the above data the data is visible in the year - vehicle, which is divided into two data models and panel data to test the hypotheses of this kind of data. prior to the regression of the regression to test the hypotheses in order to determine, in the test data from the accumulative model used or the panel data model, we use the F - Limer test Chua. in the definition of accumulative model, if all the firms are identical, considering that individual effects are not present in the same firms, the same width of origin can be used for all groups in the regression equation. Whereas the panel data models are assumed to be in the panel data model, there are individual differences and they are not identical, so a separate source of origin should be used for each firm in the regression equation. The conclusion that the result in the Chua test makes the use of the accumulative data model indicates In contrast, if the result of the Chua test identifies the appropriateness of the panel data model, it represents the null hypothesis of the null hypothesis and the acceptance.

Moreover, in order to test the hypotheses, in order to test the hypotheses, in order to determine the suitability of the model, if the test selects the panel data model (panel), it will be used to determine the suitability of the random model or the fixed effects of a Hausman test. In a Hausman test, the null hypothesis shows the appropriateness of the random effects model (error component model). And if the fixed effects model is detected appropriately, the effects and results of the null hypothesis and the acceptance of the opposite hypothesis.

The descriptive statistics of the variables

To investigate the general and basic characteristics of variables in order to estimate the model, their detailed analysis and the recognition of the statistical community are required to meet the descriptive statistics of the variables related to the variables. The indicators describe the data, including central indicators, distribution indices and distribution indices, calculated for the individual variables of the research. These statistics provide a general schema of each of the models of the models. The descriptive statistics of the variables studied in this study are collected in Table (1).

Tabe 1. Descriptive statistics of research models

Variables	Mean	Median	Minimum	Maximum	Deviation	Skewness coefficient
Profitability	12880764-	15070883	178000000	784099030	77161922	726 /0-
exchange rate	67/46568	5/25470	21839	103378	25829	724 /1
Inflation	95/17	75/13	9	7/34	698/9	0/732
Grammatical price	323000000	305000000	246000000	547000000	83348051	481/1
Imported cars	67/65871	73395	15000	103918	74/27748	615/0-

Source: Research Finding

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Unit root test (static variables)

In this section, the reliability of variables and their tests in composite data are discussed. The reliability of the research variables means that the mean and variance of the variables have been constant over time and the covariance of the variables has been constant between different years; As a result, the use of these variables in the model does not cause false regression. For this purpose, in this research, Levin, Lin and Chou tests are used. Levin, Lin, and Chou showed that in composite data, using a single root test to combine data has more power than using a single root test for each section separately. In this test, the null hypothesis indicates the existence of a single root in the series. The results of Levin, Lin and Chu tests are presented in the table. As can be seen from Table (2), all research variables are at the level of static.

Table 2. Static test results

symbols variables	variables	Levin, Lin and Chu test	F.Fisher.Chi Squars	PP.Fisher.Chi Squars	result	prob
Profit	Profitability	***694/80-	***864/10-	***190/2-	Static	0/000
EX	exchange rate	***860/69-	***922/7	***079/6-	Static	0/000
INF	Inflation	***671/8-	***049/3-	***245/1-	Static	0/000
Price	Grammatical price	***692/22-	***253/6-	***300/111-	Static	0/000
Nex	Imported cars	***342/180-	***62/327	***04/378-	Static	0/000

*Source: Research Findings ** ,*** and * mean level at 1, 5 and 10%, respectively

As can be seen from Table (2), all research variables are at the static level. It can be concluded that all data are reliable (do not have a single root) and the reliability of the data indicates the non-false estimation of the regression model in later stages.

F-Limer (Chao) Combined Data Type Determination Test

First, in composite data, the F-Limer test should be used to choose between panel and integrated data methods. Hypothesis zero and the opposite hypothesis in the data type test are defined as follows.

The panel data model is suitable: H0

The integrated model is suitable: H1

How to judge: If the F-statistic calculated from the regression equation at the 95% confidence level (5% = α) is smaller than the F-value obtained from the table, hypothesis H0 is acceptable, otherwise H0 is rejected and the opposite hypothesis is accepted

Table3. F-Limer test results

Test result	Compared to 0.05	prob	F statistic
Accept assumption zero - panel data model	Bigger	0/01	4/493

Source: Research Findings

For the regression models of the research, according to Table (3), the significance level of F statistic is less than 0.05. In this way, it can be concluded that the H1 hypothesis (integrated model) is rejected and the data panel model is confirmed.

Combined regression detection test with random or fixed effect (Hausman test):

Due to the unequal width of the origin for different years, the Hausman test is used to determine the method of use in model evaluation (fixed or random effects). Hypothesis zero and the opposite hypothesis also represent the following models.

Suitability of the integrated model with random effects: H0

Suitability of the integrated model with fixed effects: H1

The evaluation method is that if in Hasman test the significance level is greater than 0.05, the model with random effect is selected and if in this test the significance level is less than 0.05, the combined model with fixed effect is used.

Table4. Hausmann test results

Test result	prob	x^2
Rejection of the null hypothesis - a integrated model with fixed effects	0/000	0/001

Source: Research Findings

In Table (4), after using Hausman test in regression models of this research, using the evaluation of the hybrid data model, it can be concluded that the integrated model with fixed effects will be appropriate

Analysis of results from model estimation

In this part of the research, an attempt is made to design and estimate an appropriate model that can reasonably explain the changes of the dependent variable. Then, the information will be analyzed and the hypotheses will be tested according to the research method presented in the third chapter.

What is certain is that all the issues raised in the previous chapters will be of great importance when the information collected in this chapter is carefully and correctly examined and the results of the analysis of the information are interpreted correctly. Therefore, choosing the right method of information analysis in this chapter is of particular importance. The results of testing the above hypotheses with the panel method

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(fixed effects model) are presented in Table (6).

Table 5. The results of estimating the fixed effects model to test the hypotheses

symbols variables	variables	coefficient	deviation	t- statistic
EX	exchange rate	***947/19	114 /4	848 /4
INF	Inflation	***405 /12-	085/1	429 /11-
Price	Grammatical price	*** 903/0	124/0	244/7
Nex	Imported cars	*** 634 /19-	560/2	668/7-
D.W = 1/95		**F= 96/053 (0/000)**	**R^2= 0.89**	

Source: Research Findings

Test of the first hypothesis: There is a significant relationship between the process of mandatory (mandatory) pricing and the profitability of IranKhodro's high-volume products.

According to the results obtained for the grammatical pricing variable which is equal to (0.903) and the significance level of t-statistic at the level of 1% of the first hypothesis is confirmed. In other words, it can be said that there is a significant relationship between pricing and profitability. Given the positive coefficient of pricing variables, it can be said that this relationship is direct and significant.

Test of the second hypothesis: There is a significant relationship between the exchange rate trend and the profitability of IranKhodro's high-volume products.

According to the results obtained for the exchange rate variable which is equal to (19.947) and the significant level of t-statistic at the level of 1% of the second hypothesis is confirmed. In other words, it can be said that there is a significant relationship between exchange rate variability and profitability. Given the positive coefficient of the exchange rate variable, it can be said that this relationship is direct and significant.

Test of the third hypothesis: There is a significant relationship between inflation rate and profitability of IranKhodro high-volume products.

According to the results obtained for the inflation rate variable which is equal to (-12.405) and the significant level of t-statistic at the level of 1% of the third hypothesis is confirmed. In other words, it can be said that there is a significant relationship between inflation and profitability. Due to the negative coefficient of inflation rate, it can be said that this relationship is inverse and significant.

Test of the fourth hypothesis: There is a significant relationship between the import of foreign cars and the profitability of IranKhodro's high-volume products.

According to the results obtained for the foreign car import variable which is equal to (-19.634) and the significance level of t-statistic at the level of 1%, the fourth hypothesis is confirmed. In other words, it can be said that there is a significant

relationship between the variable of foreign car imports and profitability. Given the negative coefficient of the import of foreign cars, it can be said that this relationship is inverse and significant.

Results

The automotive industry, due to its critical role in the life cycle of society, high profitability, employment and wide turnover, is the interest and competition of many countries and large international companies and is one of the most important industries that add value in the economy of any country. . This industry is considered as a parent and strategic industry in some countries due to its anterior and posterior rings and its wide supply chain. Various industries are directly and indirectly related to the automotive industry.

In most countries, the technology coefficient in this industry has changed drastically over time and its research and development department is very active in some companies. One of the important features of this industry is creating high added value and creating significant employment, and for this reason, this automotive industry is known as the locomotive and propulsion engine of many industries. Production of about 96 million vehicles, turnover of more than 3,000 billion dollars and employment of about 60 million people directly and indirectly in the world in 2018 in this industry speaks for itself. The automotive industry in Iran, after the oil industry, has the largest share in GDP, and is one of the main and most profitable groups in the stock market. In the early nineteenth century, Iran was forced to spend foreign currency and import cars due to its inability to build cars, so that for the first time in 1920 a number of cars entered Iran and in the following years car production and assembly factories were formed.

In August 1341, IranKhodro Company was registered in the Companies Registration and Industrial Property Office of Tehran and in October 1342, it was officially put into operation. The initial production was a bus company known as LP, whose chassis was imported from Germany and assembled in IranKhodro. In 1346, after signing a contract with Roots England, IranKhodro factory was able to assemble 10 Peykan cars and 7 buses and trucks daily. This amount of production in the 90s, despite all the problems in the automotive industry, increased significantly and at the end of this decade reached the production of more than half a million vehicles.

From 1349 to the end of 1356, car production had a high domestic market due to the economic prosperity of the country due to the abundance of currency and high purchasing power.

After the victory of the Islamic Revolution, car production suffered a sharp decline due to the problems caused by the war. The main part of the car production turmoil in these years was related to the reduction of foreign exchange quotas of car companies, which was related to fluctuations in the country's oil revenue. The dependence of Iran's industrial sector on foreign exchange earnings from oil and gas exports to supply raw materials, intermediate goods,

machinery and spare parts has caused exchange rate fluctuations to play a decisive role in the cost of industrial units. One of the important economic sectors of the country that responds to the shocks of economic variables such as inflation rate, exchange rate, production growth is the sector, industry, and considering that about 52% of the country's production is industrial production and many Industrial producers in their production chain need to import raw materials, intermediate goods and capital goods, so changes and fluctuations in exchange rates and inflation affect the behavior of many industrial producers and the supply and demand of products and services produced and the amount Affects profitability in these sectors.

In the industrial market, factors such as quality, reputation and credibility of the manufacturer, after-sales service, and flexibility of product uses, timely delivery, technical assistance and customer complaints have a great impact on the decision of industrial consumers to buy. Price is the most flexible factor in a marketing mix because it can be changed quickly. Price is literally a measure, evaluation, size and standard. Market price is the exchange value of goods and services expressed in monetary terms. Accordingly, pricing simply means determining the price for a good or service. Pricing is an activity that needs to be repeated and is an ongoing process. This continuity is due to environmental changes and instability of market conditions, which necessitates price adjustments. Although price competition is one of the major problems that companies face, many companies cannot solve this problem in a great way. With the quality of goods of different companies being equalized and competition intensifying, the price element has become one of the most important factors affecting the retention and attraction of customers and their loyalty and satisfaction.

The purpose of this study was to investigate the effect of fluctuations in economic variables affecting the profitability of IranKhodro Manufacturing Company. For this purpose, after a brief review of the theoretical foundations and research conducted in this field, several variables of exchange rate, inflation rate, order price and imported cars were examined. The panel model is also used to test the hypotheses. Combined data regression model was used to test the hypotheses. To choose between the methods of combined regression patterns and panel data pattern, the Limer F test was used. The panel data method was selected, and it was necessary to perform the Hausman test, which also confirmed the use of the fixed effects pattern. The results show that the effect on profitability in the surveyed companies and this effect is a direct relationship for exchange rate variables, order price and inverse for inflation rate variables and imported cars. The results of this research can play an important role in future research in the automotive industry.

Suggestions

1. Ordering pricing is the process by which sellers are notified of a certain amount in which to offer the price of goods to applicants. This method is one of the strategies used to control inflation. This is the exact opposite of the way products are priced in a competitive market. That is, price competition is the opposite of grammatical pricing. Pricing will have consequences for several ranges. The consequence is an absolute loss for the manufacturer and in a situation where the car market also suffers from mandatory pricing. The price gap between the factory and the market has caused dealers to be drawn to the car market. Improving the pricing method and handing over this process to the board of directors of car companies can save the car industry to some extent.
2. Among the production inputs and raw materials related to the automotive industry, steel, copper, rubber, aluminum, zinc, lead and cast iron have a more prominent role in production. In addition to these inputs, some auto parts companies have to meet their needs through imports because they have no economic justification for domestic production. Even the most domestic production cars in the country still need foreign exchange resources to be able to be completed and marketed in the production lines of automakers, while we see a growth of 500 to 800 percent of production inputs related to automobiles, which statistics show close to 60 to 80 Percentage of the cost price of the car, according to the amount of internalization of products, is the cost of raw materials supply.
3. Pay more attention to setting tariffs for imported cars and amending its laws.
4. Increasing the exchange rate and constant fluctuations increase and change the prices of inputs and imported parts of the automotive industry, thus preventing exchange rate fluctuations and inflation and at least stabilizing them paves the way for lowering the prices of products.
5. Based on the results of this study, managers, investors and creditors of companies are advised to pay more attention to policies and macro variables in order to have better and more complete information on how to manage and combine financial resources of companies.

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