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The Effect of Exchange Rate Volatility on Marketing and Profitability of Companies Agricultural

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Abstract

The stock exchange market is a subset of the economy and a component of the capital market. The economy, especially the Iranian stock market, has been affected more deeply than other countries due to US sanctions because concerns about capital devaluation are associated with fears due to economic instability. Variations in return on investment risk caused by volatility in macroeconomic variables might alter investment options. This research aimed to evaluate the exchange rate volatility on financial leverage and profitability of companies listed in the Tehran stock exchange. Therefore, a model was estimated to examine the research objectives using annual data of companies listed in the Tehran stock product in 2015-2020 through panel data regression method and *Eviews* software. The results indicated that exchange rate volatility positively and significantly affected financial leverage. In addition, stock product volatility had a negative and significant effect on the profitability of companies.

Keywords: Financial leverage, Profitability, Stock Product

Introduction

Investment and related issues are the essential elements in countries' economies, which are inevitable due to being a factor for the economy production, occupation, and mobility. The profitability of its investments determines a company's value. Therefore, managers should interact shareholders' expectations with the company's desired investment opportunities by identifying factors affecting the investment level to maximize shareholders' wealth. Therefore, managers do not lose opportunities for profitable investment, which can satisfy shareholders.

Financial leverage in Iran has attracted much attention from a financial perspective over the past two decades. Companies' credit rating is significantly dependent on their financial leverage, and the production basis and service production are associated with supplying and spending funds (Smith et al., 2008). In many instances, financial leverage has served as an indicator of a company's financial state, and financial analysts have never disregarded its importance.

Financial leverage is one of the primary profitability indicators in companies (Zubairi, 2009) and occurs when a company finances its business by borrowing with interest. The financial leverage analytics of a

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company determines the ability of the management to acquire more liability-related funds than its costs. Profit is considered a critical topic in economic decisions, which is permanently used by investors, managers, and financial analysts as Dividend a guide to dividend payment, a tool for measuring management effectiveness to evaluate decisions (Rezapour, 2010).

The impact of company size on its financial structure is important; the larger and wider the size of the company, the more credible the company will be, and consequently the company will have more and better access to the capital markets to obtain the loans and funds needed. A direct and positive relationship is expected between the size of the company and the financial structure (debt ratio) (Free and Johns, 1979).

Literature Review

Developing countries to solve their economic problems need appropriate solutions to better use their facilities and wealth. In this regard, one of the most important tools to achieve this goal is to expand the stock market and make it more dynamic. By looking at the economic structure of each country and the different markets in each economy, it can be seen that one of the most basic markets in any economy are capital markets. The stock market is one of the components of the capital market and as a part of the economy, it is a function of it. In developing countries, the impact on the economy due to stock market shocks is deeper than in developed countries. Because concerns about the devaluation of capital are accompanied by concerns about apparent instability in the economy. Changes in return on investment risk due to fluctuations in macroeconomic variables can affect investment options (Piraei and Shahsavar, 2020).

Financial markets, through financial institutions and special techniques, collect community savings and make them available to entrepreneurs and borrowers. The various financial instruments traded in these markets are divided into short-term (less than one-year) and long-term according to their maturity. Short-term bonds are traded in the money market and long-term bonds are traded in the capital market. Obviously, the more the efficiency of these markets increases, the more efficient the mechanism of equipping and allocating capital in the country will be, and the greater the possibility of economic growth and development, and consequently of increasing the welfare of the society. Capital market indicators in any economy, in the form of thermometers, show how the economy works and quickly reflect the effects of various decisions of policy makers on the country's economy, even before the implementation of those policies. The relationship between stock price indices and business cycles can predict a boom and bust (Bayati, 2020).

One of the important issues that all financial experts and financial managers agree on is the issue of financial structure (financial leverage). A company that has no debt is a company with a completely capital structure, but in the real world we do not know of such a company and all companies use leverage in different proportions. Financial knowledge activists have

developed numerous theories, methods, patterns, and models to achieve their goals of achieving organizational goals. Capital budgeting O, corporate governance, agency issues, capital structure theory, etc. are issues and topics that aim to maximize the value of the company. Meanwhile, the theory of capital structure is the source of a wide range of research in the field of financial knowledge, and following the studies of Miller and Modigliani (1963), many studies have analyzed the capital structure of companies.

One of the main decisions of financial managers in public companies is to determine the composition of debt and stocks that these decisions should be made in order to maximize the wealth of shareholders (Pour Zamani et al., 2010). Knowledge and awareness of the capital structure of companies Shareholders and potential investors are important and on the other hand, information about the capital structure is used by creditors. (Kurdistani and Pirdavari, 2019)

In each company, different areas of the company's activities are affected and can lead to issues such as inefficiency in product marketing, inefficiency and inability to properly employ manpower and the like.

One of the goals of the business unit is to maximize the shareholders' equity and increase the company's stock value, and shareholders and the company's management prefer policies that increase the company's stock market value. The value of the stock depends on the profit of the company. From the perspective of investors, stakeholders, creditors and customers, the company's profitability is also considered as one of the influential factors in decisions (Trunel and Solano, 2006).

Investors consider the profitability of a company. Unfortunately, just paying attention to a company's net income and profits can be very tempting and will not always provide an accurate picture of the company's performance, and relying on these values alone can have dire consequences. (Delph and Mark, 2005)

evaluates the profitability of each organization's performance in terms of revenue and expenses. Profitability is a function of income and expenses. Revenues are a function of price and amount of sales and expenses are a function of the value of resources used and their amount over a specific period of time. The optimal capital structure will be achieved when the market value of each share is maximized. Determining the optimal capital structure in real conditions is a difficult task and its inclusion is beyond purely theoretical issues (Nikomram et al., 2019). The optimal debt ratio (target) is determined based on the balance between benefits and costs of financing through debt. The dynamic version of this theory, which has been the subject of much research in the last decade, suggests that adjustment costs may prevent companies from constantly moving toward their target leverage. Therefore, companies may only adjust their leverage only once. That the benefits of adjustment outweigh the costs. (Hashemi and Keshavarz, 2019)

Investment development will attract inefficient capital and direct it to productive sectors of the economy and optimal allocation and ultimately will lead to the

promotion of macro indicators of economic development. On the other hand, investment is related to many components and various factors that affect its quality & quantity and shape its free flow. The main component should be considered as the investor's incentives to make a profit. In fact, the investor does not invest without assurance of profitability and without knowing the costs and capital return possibilities.

According to the presented issues, the main question of this research is that if exchange rate fluctuations have a significant effect on the financial leverage and profitability of listed companies on Tehran Stock Exchange?

Methods and Methodology

In this research, from the method of collecting data in a library manner, through databases, computer networks and studying and reviewing the research achievements of local and foreign researchers, specialized scientific books and journals as well as scientific articles related to the research topic available on the website of reputable electronic journals and database of electronic journals of higher education centers in country, specialized think tank, research centers and reputable foreign universities have been used.

After collecting data related to the research model variables using combined data regression and F-limer and hausman statistical tests and selecting one of the regression methods of common effects or fixed effects or random effects, we analyze the relationship between model variables in the statistical society.

Hypotheses

1.Exchange rate fluctuations have a significant effect on the financial leverage of companies.
2.Exchange rate fluctuations have a significant effect on the profitability of companies.

Research scope

The scope of research depending on its dimensions in three different areas is examined as follows:
The subject scope of the research is the study of exchange rate fluctuations on the financial leverage and profitability of companies listed on Tehran Stock Exchange, which is one of the considered topics in the field of financial management.
The spatial scope of the research is Tehran Stock Exchange.

Population and sampling

The research population consisted of all companies listed in the Tehran stock exchange whose financial statements were reviewed over a 5-year period (2015-2020). The companies were not selected by a statistical sampling method, but a systematic exclusion using the following criteria:

- Lack of change in the fiscal year during the studied period
- Lack of operation stop during the studied period
- Excluded companies during the studied period
- Companies entered the stock market during the studied period

Agricultural Marketing and Commercialization Journal
6(2), 66-77, 2022, ISSN Print: 2676640X, ISSN online: 2676-7570

- Companies did not end on March 20 during the studied period (homogenization)

Based on the available data of companies, there were 471 companies in the Tehran stock exchange during the data collection period, of which 106 companies were selected as a sample from 2015 to 2020.

Hypothesis test model

Models developed by Abdoli et al. (2020) and Khaneghah and Zeinali (2018), as well as Fakhari and Kabiri (2017), and Bahmani Oskouei et al. (2015) are used in this study.

1- $Leverage_{it}=\beta_0+\beta_1 VOL\_REX_{it}+\beta_2 SIZE_{it}+\beta_3 LOSS_{it}+\beta_4 CASH_{it}+\beta_5 CFO_{it}+€$

2- $Profitability_{it}=\beta_0+\beta_1 VOL\_REX_{it}+\beta_2 SIZE_{it}+\beta_3 LOSS_{it}+\beta_4 CASH_{it}+\beta_5 CFO_{it}+€$

Dependent variable

Financial leverage: Financial leverage is measured by the ratio of total debt to total assets.

Profitability: Return on Equity is used to measure profitability, calculated from the ratio of net profit to book value of equity.

Independent variable

Exchange rate volatility (VOL_REX): the standard deviation of the last three years for each year is used to calculate exchange rate volatility based on Bahmani Oskouei et al. (2014).

Control variables

Company Size (*SIZE*): Natural Logarithm of Total Assets.
Cash ratio (*Cash*): Cash divided by total assets.
Company loss (*LOSS*): 1 is assigned for a company with loss; otherwise 0.
Cash flow from operating activities (*CFO*): Cash flow of operations divided by total assets.

Research findings

Descriptive statistics of research variables

Table 1. Descriptive statistics

	Average	Middle	The most	The least	Standard deviation	Number of observations
Leverage	0.031357	0.051357	0.993136	0.00922	0.095582	636
Profitability	0.003406	-0.04113	3.451296	-3.16541	0.987442	636
VOL_REX	0.119968	0.133732	0.892423	0.092295	0.388244	636
LOSS	0.218623	0	1	0	0.338726	636
CASH	0.558366	0.567215	0.938195	0.17652	0.467176	636
SIZE	2.903258	3.515	7.62	2.0127	4.119813	636
CFO	1.119562	1.55535	2.014837	0.521544	0.876582	636

Source: Researcher Software Calculations

The mean, median, max, min, standard deviation, and quantity of observations are calculated for the whole variables of the model.

The Levin-Lin-Chu Stationarity Test

According to the root unit test, if the p-value of the test statistic is less than 0.05, the research variable throughout the research period is stationary. The following table shows the results obtained from stationarity analysis of the research variables using this test (Table 2).

Table 2. Summary of the meaning test of research variables

Meaningful	Test statistics	Research variables
0.0000	18.08633	Leverage
0.0000	8.113349	Profitability
0.0000	-5.706638	VOL_REX
0.0000	-2.172435	SIZE
0.0000	7.786100	CASH
0.0000	-4.785652	LOSS
0.0000	-14.01528	CFO

Source: Researcher Software Calculations

As It can be observed, all the research variables in the stationarity test have a p-value of less than 5% which indicates that all the variables are reliable.

This means that the mean and variables variance over time and covariance's variables have had fixed values over different years. Consequently, the companies examined, have not undergone a structural change and the employment of the variables in the model would not result in a non-stationary regression.

Correlation analysis

Table 3. Correlation coefficient between the variables of the first model

	Leverage	*VOL_REX*	SIZE	CASH	LOSS	CFO
Leverage	1.000000					
VOL_REX	0.265529	1.000000				
SIZE	-0.199844	0.026826	1.000000			
CASH	0.005727	0.008342	0.147230	1.000000		
LOSS	-0.034945	0.066162	0.016791	0.003907	1.000000	
CFO	-0.104683	0.281087	0.386514	0.070253	0.075219	1.000000

Source: Research Findings

Agricultural Marketing and Commercialization Journal
6(2), 66-77, 2022, ISSN Print: 2676640X, ISSN online: 2676-7570

Table 4. Correlation coefficient between the variables of the second model

	Profitability	***VOL_REX***	**SIZE**	**CASH**	**LOSS**	**CFO**
Profitability	1.000000					
VOL_REX	0.522948	1.000000				
SIZE	0.001185	0.265529	1.000000			
CASH	-0.064881	-0.199844	0.026826	1.000000		
LOSS	-0.000692	0.005727	0.008342	0.147230	1.000000	
CFO	-0.013093	-0.034945	0.066162	0.016791	0.003907	1.000000

Source: Research Findings

Based on the results of Table 4, It was found that there were no observable correlation coefficients with very high or very low values (close to +1 or 1) which could have an impact on the regression analysis. Therefore, there is no collinearity between variables.

F-Limer test

Sometimes data contains time-series and cross-sectional data. The dataset is generally referred to as panel of data or panel data.

To estimate the model of panel data, there would be two general modes. In the first mode, the y-intercept is the same in all the sections which in this case is called pooled data. In the second mode, the y-intercept is different which is called panel data. To identify the above two modes, a test named F-Limer is used. Accordingly, the F-Limer test is used to choose between pooled data regression(combined) and fixed effect regression.

If the p-value of the test is higher than %5, then the panel data method is rejected, and pooled data method is accepted.

If the p-value of the test is less than %5, then the panel data method is accepted.

Hausman test

In summary, zero theory in Hausman test recommends on Using a random method and hypothesis one and Using the fixed effects method (Table 5).

Table 5. F-Limer test results

Test result	**The significance level**	**Test statistics**	**Type of test**
Data panel method	**0.000**	1.969707	F-Limer

Source: Research Findings

Due to the obtained "F" For the desired model with the amount 1.969707 and an error of less than 5%, the zero theory has been rejected and the use of OLS method is not compatible and has no use. we have to use the fixed effects method or random effects, so we suppose to use the Hausman test.

Furthermore, considering that the general model with a width of common origin cannot be used for all sections then It is necessary to use Hausman test to choose between fixed

effects patterns and random effects The result of using this test is as follows(Table6).

Table 6. Hausmann test results

Test result	The significance level	Test statistics	Type of test
Fixed effects method	0.000	14.219503	Hausmann

Source: Research Findings

Estimation results of the first model

Hausman error level is zero, so the appropriate method for estimating the regression model is the same as the fixed effects method.

The results of estimating the research model using the fixed effects method on the statistical samples of the research are performed in the table below (Table 7).

Table 7. Estimation results of the first model

Dependent variable: Leverage financial leverage			
Possible levels	**Statistics t**	**Coefficient**	**Independent and control variables**
0.0000	10.93374	0.024	C
0.0000	9.303027	0.96	*VOL_REX*
0.3730	-0.891517	-0.0003	SIZE
0.0067	-2.722830	-3.4	CASH
0.5504	0.597532	5.64	LOSS
0.4696	-0.723703	-8.69	CFO
0.399999			Adj R2
38.62201			F-statistic
0.00			Prob(F-statistic)
2.090018			Durbin-Watson

Source: Research Findings

According to the table, the value of the adjusted coefficient of determination is equal to 0.399999 which indicates that 39% of the changes in the dependent variable are explained by independent and control variables. The level of significance of F statistic is equal to 0.0000, which indicates the significance of the whole model.
Exchange rate fluctuations with a coefficient of 0.96 at an error level of less than 5% have a positive and significant effect on corporate profitability.

Agricultural Marketing and Commercialization Journal
6(2), 66-77, 2022, ISSN Print: 2676640X, ISSN online: 2676-7570

Check the second model

According to the obtained "F" for the model with the 2.916177 value and an error of less than 5%, the zero theory has been rejected and the use of OLS method is not compatible and has no use. we have to use the fixed effects method or random effects, so we suppose to use the Hausman test.

Furthermore, considering that the general model with a width of common origin cannot be used for all sections then It is necessary to use Hausman test to choose between fixed effects patterns and random effects The result of using this test is as follows (Table 8).

Table 8. Hausmann test results

Test result	The significance level	Test statistics	Type of test
Fixed effects method	0.000	14.534802	Hausmann

Source: Research Findings

Hausman error level is zero, so the appropriate method for estimating the regression model is the same as the fixed effects method. Estimation results of the second model

The results of estimating the research model using the fixed effects method on the statistical samples of the research are performed in the table below (Table 9).

Table 9. Model estimation results

Dependent variable: Profitability: Profitability			
Possible levels	**Statistics t**	**Coefficient**	**Independent and control variables**
0.0000	11.90120	0.017	C
0.0000	-5.89718	-0.12	*VOL_REX*
0.3650	-0.906543	-0.0002	SIZE
0.0000	-4.389126	-3.47	CASH
0.2616	1.123702	6.58	LOSS
0.6773	-0.416345	-3.10	CFO
0.39995			Adj R2
35.47588			F-statistic
0.00			Prob(F-statistic)
2.131633			Durbin-Watson

Source: Research Findings

According to the table of values, the adjusted coefficient of determination is equal to 0.379995 which indicates 37% of the changes of the dependent variable.

Explained by transfer and control variables, the significance level of F is equal to 0 which indicates the whole model being significant.

Exchange rate fluctuations with a coefficient of -0.12 at an error level of less than 5% have a negative and significant effect on corporate profitability.

Conclusion

The results of hypothesis testing were analyzed using information about companies listed on the Tehran Stock Exchange from 2015 to 2020 using research variables and the following results are available:

The first hypothesis: Exchange rate fluctuations have a significant effect on the financial leverage of companies.

Exchange rate fluctuations with a coefficient of 0.96 at the error level of less than 5% deposits. It has a positive and significant effect on the financial leverage of companies. So with that Increasing exchange rate fluctuations increase the financial leverage of companies. If the fluctuations of the exchange rate of a unit increase, the financial leverage of companies will increase, indicating a direct relationship between the two variables.

The second hypothesis: Exchange rate fluctuations have a significant effect on corporate profitability.

Exchange rate fluctuations with a coefficient of -0.12 with an error level of less than 5% have a negative and significant effect on corporate profitability. So if exchange rate fluctuations increase, the profitability of companies decreases. if exchange rate fluctuations increase by one unit, Profitability of the companies will decrease 0.12 unit. indicating an inverse relationship between the two variables.

The results of this research are in line with: Jamal Zoubayeri (2020), Dang and Sou (2019), Ramachandran and Jana Kiraman (2019), Ilgili and Ishouzer (2018), Esergi (2018), Mahmoud and Rouzimah (2015), Serinis and Tesonis (2013), Pourheidari (1398), Bagherzadeh (1397), Sajjadi and co-workers (1396) Namazi (1395).

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