Investigating the impact of competition in the product market on the relationship between investment opportunities and capital structures of listed companies in the Tehran stock exchange

Abstract

The present study primarily aims to investigate the effects of competition in the product market on the relationship between investment opportunities and capital structures at listed companies in the Tehran stock exchange during 20142018. For this purpose, the capital structure was treated as the dependent variable, while investment opportunities were considered as the independent variable. Also, the product market competition was selected as the moderating variable. The operation cycle, company size, accrual ratio, and operational cash flow ratio were employed as control variables. The statistical population consisted of 132 companies that were selected by the systematic removal method. The present study employed a descriptive-correlation methodology with a practical approach. The library data collection method was utilized to collect data, while the statement document mining method was applied to test the research hypotheses. Statistical techniques employed for data analysis were correlation and multiple regression methods.

The testing results of the hypotheses revealed an inverse and significant relationship between investment opportunities and the capital structure. It was also found that competition in the product market improved the inverse relationship between investment opportunities and the capital structure. The results of the control variables suggested an inverse and significant relationship between the company size and capital structure. Furthermore, the operation cycle and accrual ratio were observed to have direct and significant relationships with the capital structure. [1]

Keywords: *competition, investigating, investment opportunity, capital structure*

Thus, the present study aims to close up this gap. Based on the mentioned points, it was necessary to conduct such a study in the Tehran

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1 Introduction

For the survival and growth of the companies, they must consider their capital structure and abilities such that to identify suitable financial resources. Management should take into account the wealth maximization of the stockholders as their objective and select resources that minimize the finance cost based on the costs of different finances and their impacts on the efficiency and risk of the company. For this reason, the capital structure that can maximize the value of the company or minimize the total capital cost is known as the optimal capital structure (Kordestani and Najafi-Omran 2013).

Additionally, investment opportunities available to companies account for an important part of the value of a company. The development and influences of young companies and the economic conditions have triggered a high interest in understanding the role of such investment opportunities at companies. The investment opportunities of a company deeply affect the attitudes of the managers, owners, investors, and creditors of the company (Hung and song 2006).

Investors seek for using investment opportunities and obtaining high efficiency. Also, managers properly allocate resources and make effective decisions to achieve the success of their companies and boost the wealth of the stockholders. Thus, it has been of interest to beneficiaries, such as managers and investors, to find a solution to identify suitable investment opportunities and prevent the waste of resources (Lashgari and Shahrestani 2018). Moreover, considering that the current economic environment is complicated and dynamic, companies have to identify opportunities and threats to their companies by investigating different dimensions of their industries so they can make rational reactions to the environmental changes.(adam , 2018) stock market.

2 Problem statement

The wealth maximization of stockholders is the most important objective of companies. The optimal determination of financial resources is an essential objective that should be considered by financial managers in maximizing the wealth of stockholders (Torosian et al., 2011).

The capital structure plays an essential role at companies to achieve their main objective, i.e., the wealth maximization of the stockholders, particularly in the current market conditions in which the businesses are rapidly moving toward competitiveness. Companies must be able to select the best finances to increase earnings and survive. As a result, this ability is a basic factor for their growth. Achieving an optimal capital structure is a complicated task that appears in obtaining the best efficiency and utility in the best conditions. In this

respect, financial managers seek for identifying the relationships between important factors in their companies, including investment decisions, as financial managers carry the main responsibility for making such decisions (Torosian et al., 2011).

According to the mentioned points, the main problem of listed companies in the Tehran stock exchange is the intensive competition and struggle for survival in the market. Thus, the companies that cannot adapt to the market will have to leave it. For this reason, it is particularly important to consider the capital structure, finances, and competitive market. The present study seeks to investigate whether the industry environment plays a role in the relationship between investment opportunities and capital structures at listed companies in the Tehran stock exchange. (diyanati and moradi, 2020)

3 Literature review

Lashgari and Haghighat-Shahrestani (2018) studied the relationship between investment opportunities and cash value added (CVA). They suggested that investors are willing to be aware of the success of the managers in utilizing their capitals. They wish to understand how much value is created by their investments. Analyzers seek for a criterion to maximize the company value and increase the wealth of the stockholders by considering the capital cost and investment return rate. To determine investment opportunities, they employed the factor analysis of the investment intensity, the market value growth rate of total assets, and the ratio of the market value to the book value of total assets by investigating 102 listed companies in the Tehran stock exchange. They concluded that investment opportunities at companies with high and low investment opportunities and companies with high investment opportunities had a positive and significant relationship with the CVA, while the investment opportunities at companies with low investment opportunities had no significant relationship with the CVA. (shabani , 2019)

Ricardo et al. (2017) evaluated the relationship between product market competition and earnings management by considering competitive dimensions. The market size, engagement cost, and concentration were employed as three factors to measure product market competition. They carried out regression analyses on 44 listed companies in the Tehran stock exchange at five industrial levels during 2002-2011. They concluded the engagement cost and industry concentration are directly related to earnings management, while the relationship between the market size and earnings management was not verified.(foroughi and mirzaee, 2022)

Chang et al. (2016) analyzed the company product market competition and dynamic capital structure to investigate the impacts of market competition on the relationship between corporate governance and capital structure dynamism. They found that product market competition enhanced the motivation of companies with weak supervision structures to maximize the wealth of the stockholders and, consequently, it increased the speed toward the targeted leverage. Moreover, differences were observed in the speed between companies with weak supervision structures and those with strong supervision structures in intensively competitive industries. (Brayan and henry, 2020)

4 Hypotheses

The hypotheses of the present study are as follows:

Hypothesis 1: There is a significant relationship between investment opportunities and capital structures at listed companies in the Tehran stock exchange.

Hypothesis 2: The industry environment (product market competition) affects the relationship between investment opportunities and capital structures at listed companies in the Tehran stock exchange.

5 Methodology

The present correlation study is practical in terms of objectives, retrospective in terms of time, and outcome-oriented in terms of the results. It is a time series in terms of investigation method and accuracy that investigates the statistical population for only a specific period of 2014-2018 to collect data. [2]

Conceptual definition: The financial leverage evaluates the relationship ratio of the financial resources in terms of debts or rights of stockholders; indeed, it investigates their combinations (Aghaei and Chalaki, 2006).

Operational definition: The present study measures the financial leverage by dividing the book value of long-term debts by the total assets. (Li- zhan, 2020)

Book value of Iona—term debts

***Financial leveraqe*:**

Total assets

C) Moderating variable: Industry environment (product market competition)

Conceptual definition: Competitiveness refers to the ability of a company, an economic sector, or a country to sell products and goods in a market over other companies, sub-sectors, and countries in the market. In the Tehran stock exchange, the competition index of a company in the product market is the share of the company in the total sales of the industry (Ricardo, 2017).

Operational definition: This study employs the HII to measure competition in the product market (Adams and Mehran, 2014).

2

$$HHI = \sum_{i=1}^{n} \left(\frac{P_i}{P} \times 100\right)^2$$

where n is the number of companies doing business in the market, P is the total share of the companies in the market, and P_t is the share of company i from the sales.(ahmadpour , 2021)

6 Defining variables

Investment opportunities were treated as the independent variable while the capital structure was considered as the dependent variable. Also, the industry environment (i.e., product market competition) was employed as the moderating variable while the operation cycle, company size, operational cash flow ratio, and accrual nation were used as control variables.

A) Independent variable: Investment opportunities

Conceptual definition: Investment opportunities represent those conditions that companies are engaged to grow and have a high profit for their investment (Noravesh et al., 2015).

Operational definition: Although various criteria, such as P/E and M/B, have been proposed for explaining the growth and investment opportunity ratios, Adam and Gouyal (2008) and Lopez and Vicente (2010) believed that the M/B ratio (i.e., the market value to book value ratio) offers the highest information content on growth opportunities. Thus, the present study employed the M/B ratio as the main criterion of investment opportunities since it not only is an efficient index but also allows for comparing the present work to previous studies (Noravesh et al., 2015).

Market value of total assets

MIKTBKASS —

Book value of total assets

B) Dependent variable: Capital structure

The present study employed financial leverage as the capital structure criterion according to Petacchi (2015).

D) Control variables

i) Operational cycle

Conceptual definition: The operational cycle can be described as the time interval between the cash payment for the raw materials and the collection of payments received for selling the final product. The cash conversion cycle (CCC) reduces by reducing the inventory conversion time through the more rapid processing and selling of products, reducing the time of collecting received accounts through accelerating the collection operation or extending the maturity dates of accounts payable (AP) by slowing down payments to vendors (Kashanipour and Naghinejad 2009).

Operational definition: The operational cycle is calculated as

$$operation\ cycle = \left(\frac{\frac{Ar_t + Ar_{t-1}}{2}}{\frac{Sales}{360}}\right) + \left(\frac{\frac{Inv_t + Inv_{t-1}}{2}}{\frac{COGS}{360}}\right) + \left(\frac{\frac{Ap_t + Ap_{t-1}}{2}}{\frac{Purchases}{360}}\right)$$

where *AR* is the accounts receivable, *Inv* is the inventory, *AP* is the accounts payable, *sales* is the net sales, *COGS* is the final price of the sold product, and *Purchase* is the final price of the sold product plus the closing inventory minus the beginning inventory.(haghani , 2015)

ii) Company size

Conceptual and operational definition: The company size is calculated by different methods, including assets. The present study calculates the company size through assets; i.e., the natural logarithm of the total assets as a criterion for the calculation of the company size (Hajipour and momeni 2010).

Company size — Log(total assets)

iii) Accrual ratio

Conceptual definition: Accruals do not include cash items in statements and they can be manipulated by managers such as the depreciation cost (Chen, 2004).

Operational definition: The total accrual TAi,t is calculated by the difference between the income before extraordinary items EARNi,t and the cash flows of operational activities CFOi,t. The accrual ratio is calculated by dividing the total accruals to the total assets (khodami pour and amiri 2020).

iv) Operational cash flows

Conceptual definition: Operational activities are the main activities generating the operating income of a commercial unit. They ensure the production and selling of products and services. Moreover, their associated costs and incomes are incorporated in the determination of operational gains or losses. The cash flows of essential operational activities involve the cash inflows and outflows associated with the operational activities. An operational cash flow involves the cash inflows and outflows of operational activities (i.e., main activates generating operational incomes) and cash flows that naturally cannot be directly linked with the other cash flow levels of the statement of cash flows (khodami pour and amiri 2020).

Operational definition: The operational cash flow is calculated as

CFO = NI + NCC + AWC

where NI is the net income and NCC is the non-cash cost that should be added to the net income; because such costs reduce the net income but induce no cash payment such as depreciation (Ricardo, 2012).

7 Data analysis

7.1. Descriptive statistics of the variables

Table 1. The descriptive statistics of the variables

Variable	No. of Observations	Mean	Standard Deviation	Minimum	Maximum	Skewness	Kurtosis
Capital structure	660	0.2549	0.1672	0.0109	0.5159	3.123	4.890
Product market competition	660	0.4265	0.2411	0.1658	0.7151	1.666	0.5531
Investment opportunities	660	0.2154	0.1252	0.1437	0.6235	3.003	3.212
Company size	660	12.1218	0.0536	9.5107	17.2965	1.002	4.211
Operational cycle	660	0.2956	0.0419	0.0931	0.4879	2.593	7.177
Accrual ratio	660	0.5924	0.1304	0.3316	0.6482	2.337	4.172
Operational cash flow ratio	660	0.3009	0.1869	0.0868	0.6614	4.376	3.219

According to Table 1, the mean, maximum, and minimum capital structures of the companies were 0.2549, 0.0109, and 0.5159, respectively. To have a normal distribution for the capital structure, the skewness and kurtosis of this variable are required to be 0 and 3, respectively. Distribution normality of the dependent variable

Table 2. Normality results of the dependent variable

Variable	No.	K-S	Sig
Capital Structure	660	4.616	0.000

According to Table 2 Since the significance level of K-S should be less than 0.05 for the capital structure, the null hypothesis that the capital structure has a normal distribution is rejected at a confidence level of 95%, suggesting that the capital structure is not of a normal distribution. Regression models require a normal distribution of the dependent variable. Thus, it is required to normalize the variable before testing the hypotheses. The present study employed the Johnson transformation function to normalize the data, analyzing the results by Minitab v.16. Table 3 presents the K-S test results after data normalization. (khodamipour, 2021)

Table 3. The dependent variable normality results after normalization

Variable	No.	K-S	Sig.
Capital Structure	660	0.670	0.761

According to Table 3, since the Kolmogorov-Smirnov significance level of the dependent variable is greater than 0.05, the null hypothesis is approved, implying a normal distribution for the capital structure after normalization.

7.2 Correlations between the variables

Table 4. The Pearson correlation results

Variable	Capital structure	Product market competition	Investment opportunities	Company size	Operational cycle	Accrual ratio	The operational cash flow ratio

Capital structure	1	-0.176	-0.385	-0.489	0.336	0.188	0.291

		Sig, (563)	Sig. (001)	Sig. (021)	Sig. (000)	Sig. (002)	Sig. (083)
Product market competition		1	0.238 Sig. (563)	0.410 Sig. (338)	0.012 Sig. (098)	0.332 Sig. (199)	0.164 Sig. (0.83)
Investment opportunities			1	0.583 Sig. (225)	0.428 Sig. (153)	0.117 Sig. (115)	0.003 Sig. (083)
Company size				1	0.238 Sig. (063)	0.478 Sig. (173)	0.319 Sig. (216)
Operational cycle					1	0.511 Sig.	0.001 Sig.
Accrual ratio						1	0.240 Sig.
The operating cash flow ratio							1

7.3 Multicollinearity test

Table 5. The multicollinearity results

Variable	**Eigenvalue**	**Status Index**
Product market competition	2.121	3.832
Investment opportunities	2.109	4.217
Company size	2.214	4.217
Operational cycle	2.658	5.773
Accrual ratio	2.789	5.988
The operational cash flow ratio	2.928	6.376

According to Table 5 As can be seen, the near-zero eigenvalues of the internal correlations of the predictions are high, and a small change in the data induces large changes in the regression coefficient estimate. Eigenvalues represent the probability of an internal correlation between variables. A status index above 15 stands for the possibility of multicollinearity between independent variables, while a status index of larger than 30 represents a serious problem in the use of regression for the existing situation (Hassas-Yeganeh et al., 2009). The entire status indexes were obtained to be below 15, implying the lack of multicollinearity between the independent variables.

7.4 Testing the hypotheses

7.4.1 Testing Hypothesis 1

Table 6. The multivariate regression analysis results of Hypothesis 1

Variable Type	**Symbol**	**Variable**	**Coefficient**	**T-value**	**sig**
Dependent variable	Y	Capital structure			
Fixed value	*a*	Alpha	-1.744	-2.648	0.025

Independent variable	XI	Investment opportunities	-0.440*	-2.788	0.001
Control variables		Company size	0.627*	-2.995	0.020
		Operational cycle	0.722*	2.904	0.000
		Accrual ratio	0.587*	2.854	0.009
		Operational cash flow ratio	0.265	1.795	0.101
		Durbin-Watson	2.421	-	-
		F	3.742	-	0.000
R			0.543	-	-
R-square			0.294	-	-
Adjusted R-square			0.293	-	-

* The significant level was 0.005.

According to Table 6, the significance levels of investment opportunities, company size, accrual ratio, and operational cycle were lower than 0.05. Thus, they were significantly related to the capital structure. The investment opportunities and company size had inverse significant relationships with the capital structure, while the accrual ratio and operational cycle had direct significant relationships with the capital structure. Furthermore, no significant relationship was found between the operational cash flow ratio and capital structure.

Since the significance level of the F-value was below 0.05, the fitted regression pattern was found to be statistically significant. Considering the coefficient of determination, these variables explained 29.4% of changes in the capital structure. However, the Durbin-Watson value was obtained to be between 1.5 and 2.5. Thus, it can be concluded that no autocorrelation problems existed between the variables. The negative value of investment opportunities (i.e., - 0.440) represents an inverse relationship between investment opportunities and the capital structure. So, a 1 unit increase in investment opportunities resulted in a 0.44 unit decrease in the capital structure. Therefore, it can be concluded that there was an inverse significant relationship between investment opportunities and capital structure.

7.4.2 Testing Hypothesis 2

Table 11 shows the multivariate regression analysis results of Hypothesis 2.

Table 7. The multivariate regression analysis results of Hypothesis 2

Variable Type	**Symbol**	**Variable**	**Coefficient**	**T-value**	**Sig.**
Dependent variable	Y	Capital structure			
Fixed value	*a*	Alpha	0.765	2.944	0.002
Independent variable	XI	Investment opportunities	-0.793*	-2.731	0.001
	X2	Product market competition	-0.436*	-2.781	0.000

Moderating variables		Product market competition*investment opportunities	-0.254*	-2.633	0.025
Control variables		Company size	-0.328*	-2.034	0.001
		Operational cycle	0.618*	2.775	0.009
		Accrual ratio	0.538*	2.825	0.032
		Operational cash flow ratio	0.318	0.936	0.143
		Durbin-Watson	2.154	-	-
		F	14.002	-	0.003
R			0.699	-	-
R-square			0.488	-	-
Adjusted R-square			0.486	-	-

* The significant level was 0.005.

According to Table 7, the significance levels of investment opportunities, product market competition, company size, accrual ratio, and operational cycle were below 0.05. Thus, they are significantly related to capital structure. Investment opportunities, product market competition, and company size had inverse significant relationships with the capital structure, while the accrual ratio and operational cycle had direct significant relationships with the capital structure. Also, no significant relationship was found between the operational cash flow ratio and capital structure. Since the significance level of the F-value is smaller than 0.05, the fitted regression pattern is found to be significant. Considering the coefficient of determination, these variables explained 48.8% of changes in the capital structure. Also, the Durbin-Watson value was observed to be between 1.5 and 2.5. Therefore, it can be stated that no autocorrelation problems existed between the variables. The negative coefficient of investment opportunities (i.e., -0.793) implies an inverse relationship between investment opportunities and the capital structure. So, an increase in investment opportunities by 1 unit reduced the capital structure by 0.793.

7.4.3 The test results of the control variables

Since the t-value was smaller than 0.05 for the company size, operational cycle, and accrual ratio, the relationships of the company size, operational cycle, and accrual ratio with the capital structure are verified at a confidence level of 95%. The negative coefficient of the company size suggests an inverse relationship between the company size and capital structure. Furthermore, the positive coefficients of the operational cycle and accrual ratio imply their direct relationships with the capital structure. Finally, no significant relationship exists between the operational cash flow ratio and capital structure.

7.5 Summary of the results

Table 8. Summary of hypothesis results

No.	Hypothesis	Result
1	There is a significant relationship between investment opportunities and capital structures at listed companies in the Tehran stock exchange	Supported An inverse significant relationship was found.
2	The industry environment (i.e., product market competition) affects the capital structures of listed companies in the Tehran stock exchange	Supported A stronger inverse relationship was found.

8 Discussion and conclusion

The main important objective of most companies is to maximize the wealth of the stockholders. To this end, financial managers need to determine optimal finance, which is known as the capital structure for their companies (Torosian 2011). The capital structure makes an important contribution to companies to achieve their main objective, i.e., stockholder wealth maximization. This particularly important in the current conditions in which the business arena is rapidly moving toward competitiveness. The companies must be able to select the best combination of finances to improve profitability and survive. As a result, such an ability is an integral factor for their growth. Achieving an optimal capital structure is a complicated task that has been considered by many financial economists for a long time. It still triggers numerous discussions on its roots (Torosian 2011).

With the development of the quality of activities and economic affairs, the financial decisions of companies are among complicated tasks that appear for obtaining the highest efficiency and utility in the best conditions. In this respect, since they are responsible for such decisions, financial managers seek for identifying relationships between important factors in their companies such as investment decisions

Market competitiveness represents a condition in which different companies intensively compete for manufacturing and selling products while their products offer no significant advantages over those of the other companies; otherwise, the market would move toward monopoly or multi-side monopoly (Khodamipour and Bazraei 2014). Product market competition forces companies to better perform their tasks by reducing the unused management capacity. Thus, product market competition encourages the owners of companies with fewer investment opportunities to more (less) strongly motivate the managers to maximize the wealth of the stockholders. As a result, the moderation of the capital structure into an optimal one is accelerated (slowed down). The acceleration (deceleration) reduces (increases) the gap in the moderation rate between companies with more investment opportunities and those with fewer investment opportunities.

The important findings of this research are provided below:

According to the results of Hypothesis 1, there was an inverse, significant relationship between investment opportunities and capital structure at companies listed in the Tehran stock exchange during 2014-2018. This suggests that companies with more investment opportunities and investments experience lower financial leverage. Companies that enjoy higher opportunities for growth and investment and exploit them experience higher profitability and performance, as well. Because of their high profitability, such companies have lower financial leverage since they less often demand bank loans and thus are less often exposed to bankruptcy.

This is consistent with Yhon Peng (2011) and Vishvanatan (2012), while it is inconsistent with Jean (2014), Aghaei, and Chalaki (2009), Moradzadehfard and Hoseini (2014), and Moradi (2015).

The results of Hypothesis 2 indicated that product market competition strengthened the inverse relationship between investment opportunities and capital structure at companies listed in the Tehran stock exchange. According to the findings of Hypothesis 1, exploiting investment opportunities improves profitability and thus reduces financial leverage in the capital structure. A company that outperforms competitors in the industry environment and possesses a larger share of the market experiences greater profitability and lower financial leverage and debts. This result is consistent with Shellifer and Vishni (2015) but inconsistent with Moradzadehfard and Hoseini (2014) and Moradi (2015).

The operational cycle was found to have a direct significant relationship with financial leverage. This implies that companies with delayed investment returns and debt collection experience higher capital costs and losses, which forces them to finance through loans, leading to higher financial leverage.

The company size was observed to have an inverse, significant relationship with financial leverage, indicating that banks with higher assets and capital and skilled managers have higher performance than small companies in performance and profitability. As a result, they reduce the risk of bankruptcy, losses, and financial leverage.

9 Founding

No founding

10 thanks to :

I dedicate this article to my parents who have helped ,e a lot in this way and have always supported me.

11 Suggestions

According to the results of Hypothesis 1, which proposed an inverse significant relationship between investment opportunities and the capital structure, company managers are recommended to identify growth opportunities by analyzing the capital market and exploiting expert and experienced managers. As a result, they can make use of the opportunities to improve profitability since this reduces the risk of bankruptcy, loss, and financial leverage. Based on the results of Hypothesis 2, which suggest that product market competition improves the inverse relationship between investment opportunities and the capital market, company managers are recommended to enhance their competitive advantages over competitors by improving the quality of products, utilizing expert human force, deploying modern equipment, and using advanced information technology, and boost their market share by employing satisfactory marketing over competitors since this diminishes the risk of bankruptcy, loss, and financial leverage.

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