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RESEARCH ARTICLE

The Effect of Family Ownership on the Adjustment Speed of Financial Leverage towards Optimal Leverage

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Abstract

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Faster attainment of optimal financial leverage guarantees the company's survival and the growth of shareholders' interests. This paper investigates the effect of family ownership on the speed of adjustment of financial leverage toward optimal leverage. The data of 133 companies listed on the Tehran Stock Exchange, selected according to the systematic exclusion pattern, was collected for 10 years from 2012 to 2021 to achieve the research objectives. A multivariate linear regression model was used to test the research hypotheses. In order to measure the speed of adjustment of financial leverage, the partial adjustment pattern model of Öztekin (2015) has been used, and to evaluate the Family Ownership, Chen et al. (2008) method was used. The results showed that the speed of adjustment of financial leverage towards optimal leverage in family companies is faster than in non-family companies. Therefore, family owners in companies with a higher sense of responsibility towards the company's capital can create a safe environment for investors and ensure a return on their investment.

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1. Introduction

The most important task of financial managers in achieving companies' goals is to optimally combine financial resources in the capital structure (Oino and Ukaegbu, 2015). As much as companies choose an optimal combination of debt and equity in their financing methods to minimize financing costs, according to risk and return, the result of this action will be to maximize the interests of the shareholders. Therefore, it is necessary to discuss the speed of adjusting the financial leverage towards the optimal leverage because one of the main reasons for the failure of companies is insufficient investment and inappropriate financing. The speed of adjustment of financial leverage is the length of time that the company adjusts its capital structure and moves towards the optimal leverage that has already been targeted and achieved (Amin and Liu, 2020). The importance of optimal leverage is such that the growth and survival of companies depend on this factor, which affects the risk and expected returns of companies. The study of financing decisions and achieving the optimal leverage of companies is of great importance because it may affect companies' bankruptcy probability and is somehow related to the company's credit risk (Rostami et al., 2022). On the other hand, the major owners in the companies, in terms of having high voting rights, can influence the managers' decisions, especially in family companies, where the owners themselves are the managers of the companies. Family companies are essential in the economy because about 35% (175 companies) of the 500 largest American companies are family companies. For this purpose, several indicators have been presented in many countries to define such companies. Researchers have conducted various studies on these companies in recent years due to their importance (Amin and Liu, 2020). Examining financing decisions and achieving optimal leverage is necessary for family companies because certain conditions that affect their financing decisions prevail in family companies. On the other hand, family owners, to maintain the company's reputation and their conservativeness, fearing the risk of bankruptcy and liquidation of the company and the loss of all capital and family heritage, have less desire to increase debt in the capital structure of their company and prefer to finance with internal funds is more than borrowing through debt. On the other hand, combining the capital structure of family companies from the point of view that such companies do not want to lose supervision and control over the performance and decisions of the company through the issuance of new shares and adding new shareholders, this factor may be contradictory to their first request to use less debt in the capital structure and force them to increase the debt in the capital structure. They can ignore this case to the point that it does not endanger their control and authority (Bas et al., 2022). Hence, the non-economic characteristics and the desire to maintain their power and supervisory characteristics may be decisive for the managers of such companies to adjust the leverage and achieve optimal leverage (Poletti-Hughes and Martinez Garcia, 2022). On the other hand, companies should seek to achieve the optimal level of leverage that leads to maximum value for shareholders, so this question will play a role in the mind of whether family ownership affects the company's achievement of the optimal level of leverage and the speed of its adjustment. Is it effective? In the continuation of the research structure, the development of the theoretical foundations, hypotheses, and experimental foundations are presented, followed by the methodology and operational definitions of the research variables. Finally, the findings and conclusions will be discussed.

2. Literature Review and Theoretical Principles

The speed of adjustment of financial leverage indicates the movement of companies toward the optimal capital structure. The two primary sources of financing in companies are debt and equity issuance (Akbari et al., 2019; Arikawa and Hoang, 2022). In a public company, equity is a type of financing that shows the number of shares issued. In the hands of the company's small and significant

shareholders, this can somehow monitor and control the company owners based on the amount of stock ownership (Ghorbani and Salehi, 2020) because the wide dispersion of shares among shareholders will divide their supervisory power among different groups (Bas et al., 2022). Thus, the owners who are against losing control over the affairs and decisions of the companies and the composition of their capital structure will be more affected (Farhangdoust et al., 2020). In such companies, as far as possible, the financing needs of the company's operations will be done through debt, which is far from justice. This is due to personal interests and a way to expropriate ownership from minority shareholders. In the case of separation of ownership, the level of control of the company's big owners will decrease (Morresi and Naccarato, 2016). In family companies, in general, a large part of the shares is owned by one or more real shareholders, the majority of whom are family members, and family members are employed in managerial and operational positions. According to the studies, it has been determined that if the number of managers' shares is more than a specific limit, it can motivate them to provide better financial status and performance. Also, significant shareholders can influence the company's decisions and activities by controlling the managers' behavior (Moradi et al., 2020).

In family companies, due to the specific ownership structure, protecting the family's interests may be preferable to the protection of the interests of the shareholders (Salehi et al., 2020). As a result, since the shareholders have less access to the essential and basic information of the company, there is always a risk that the interests of this group, especially in the long term, be exposed to danger. Family companies have longer-term horizons than non-family companies, creating long-term plans in the business unit. This occurs because the owner and manager of these companies are from the same family, consider the company as their own, and try to create value in their long-term goals (Amore et al., 2022; Seifzadeh et al., 2022). Companies controlled by their founding families' founders or heirs are often called family companies. Most private companies are family-owned, but this ownership structure also exists among large publicly traded companies. Family companies are significant from an economic point of view because they are the main drivers of most economies (Amin and Liu, 2020). Family firms place more value on the firm's survival than on maximizing shareholder wealth. Company survival has become a primary goal for family businesses, as it is a legacy to pass on to the next generation. From the long-term perspective of the business, family firms are more concerned about building a good reputation than non-family firms. Company reputation is an essential strategic asset for family businesses. Maintaining a low level of debt-to-equity ratio and the effect of family companies on financial performance is a unique feature of such companies. Family-controlled firms use less debt to mitigate risk, generally have a long-term perspective, and are less risk-averse than non-family firms. Family companies often prefer internal financing to prevent the increase of foreign capital and have more liquidity than other companies, with an average difference of 2.3% of total assets. Another group of researchers believes that family companies may use more debt than non-family companies because they aim to grow the company without reducing ownership, control, and authority over decisions (Salehi et al., 2022). Sometimes, family companies tolerate the loss of financial performance to achieve non-financial goals, such as maintaining family control over the company, which may increase family companies' financial leverage (Morresi and Naccarato, 2016; Shafeeq Nimr Al-Maliki et al., 2022). This action of family companies is for two main reasons. First, family owners usually invest their wealth in the business, so they have an emotional connection to their investment, which gives family members a longer horizon than other shareholders (for example, institutional investors). Second, family owners act with more compassion and sensitivity at work due to more belonging to the company because managers and owners are often one, which will create more belonging in work and lead the company to higher commitment (Bas et al., 2022).

Two main conflicting views regarding the choice of capital structure in family companies (Salehi et al., 2023). On the one hand, it is expected that family companies tend to increase their financial leverage less than non-family companies. The reason for this is the risk aversion of family members because a large part of their financial and human capital is dependent on the future and performance of this company. For this reason, family companies tend to maintain a low level of debt to reduce the risks of bankruptcy. It may jeopardize the long-term goal of handing over the company to the heirs (Murro and Peruzzi, 2019). Also, in the second point of view, it is stated that in family companies, compared to non-family companies, it is possible that such companies do not have a great desire to issue a lot of shares. They will probably maintain a balance in this field to minimize the risk of reducing the amount of stock ownership among family members and the controlling role of the family. According to behavioral theory, this tendency to maintain control comes from the entrepreneur's preference for independence, especially in the case of smaller companies, and it is more in companies that do not desire to involve foreign shareholders (Amin and Liu, 2020). According to agency theory, family firms retain control to remain private. However, all these studies seem to ignore that most companies that rely on increased control mechanisms are likely to be controlled by a single family and that the greater use of debt occurs in companies with a higher level of separation between voting rights. Cash flow may be related to the family personality of the largest shareholder (Bas et al., 2022). From a dynamic point of view and assuming the existence of a target leverage, the debt ratio of family companies converges to the target leverage at a slower speed due to higher adjustment than non-family counterparts. Still, non-family companies have a higher debt level than family companies. Also, in family companies, the use of debt is a tool to gain more control over the company's affairs, and this increases the target leverage in family companies, so the costs of achieving the optimal leverage will be reduced (Morresi and Naccarato, 2016; Zimon et al., 2022).

Do et al. (2022) conducted a study on product market threats and leverage adjustment and stated that the effect of product market threats on leverage adjustment is more evident for companies with weak governance quality exposed to product market threats. Finally, achieving the target capital structure increases the value of the company. Arikawa and Hoang (2022) stated that the speed of capital structure adjustment was investigated using a partial adjustment model. The results showed that the speed of adjustment in emerging markets is very slow, and Vietnamese companies do not adjust their capital structure with high flexibility toward optimal value. Also, Vietnamese companies mainly use debt as external financing. Amore et al. (2022) assessed the performance of family companies during the COVID-19 era and posited that family companies showed higher market performance and operating profit than other companies during the epidemic period. This result is stronger for firms without related minority investors and with multiple family shareholders. By examining the mechanisms, it was shown that the better performance of family firms is due to the more efficient use of labor and less loss of income. Minh et al. (2022) analyzed the effect of family ownership on the performance of companies and observed that the relationship between family ownership and the performance of Vietnamese companies is negative. Tobin's Q decreases with family ownership. Firm performance is lowest during family ownership, and financial performance declines as family ownership increases. Rostami et al. (2022) assessed the effect of managers' short-sightedness on the speed of adjustment of financial leverage towards optimal leverage and expressed that managerial myopia has had an opposite effect on the speed of adjustment of financial leverage, so in the companies with myopic managers, the speed of adjusting the financial leverage towards the optimal leverage is lower.

Vo et al. (2021) stated that, on average, companies tend to adjust their capital structure more quickly after the outbreak of COVID-19. In addition, countries where COVID-19 is causing more severe damage adjust their target leverage faster than those in less affected countries. An et al. (2021)

indicate a positive relationship between foreign institutional ownership and the speed of adjustment of companies' leverage. Foreign institutional investors have an essential regulatory role in reducing agency conflicts between shareholders and managers. [Murro and Perozzi \(2019\)](#) stated that the adverse effect of family ownership on credit allocation is more relevant, especially for small companies. This is while this factor decreases in companies with closer lending relationships. Finally, evidence suggests that family firms with high ownership concentration are more likely to be rationed by banks. [Bacci et al. \(2018\)](#) stated that the relationship between the level of debt and the dispersion of ownership within the family is moderated by the generation's involvement, which reverses it in the next generations. By focusing on family ownership and capital structure, [Ramalho et al. \(2018\)](#) stated that when the company is large or located in an urban area, family ownership has a positive effect on the financial leverage of companies. For small firms located outside urban areas, no effect was found. On the other hand, the proportion of debt held by leveraged family firms decreased for micro and small firms but increased for large firms. In general, the financial crisis affects small and large family companies in terms of financial leverage. [Fitzgerald and Ryan \(2019\)](#) stated that small companies with high growth and low-paid dividends adjust the target leverage faster than large companies with low growth and high-paid dividends. According to the stated content and because in family companies, due to the presence of owners in management positions and their sense of belonging and responsibility more than the managers of non-family companies, the speed of adjustment of the financial leverage towards the optimal leverage will be more. So, the research hypothesis is presented as follows:

Research hypothesis: In family companies, compared to non-family companies, the financial leverage moves faster towards the optimal leverage.

3. Research Methodology, Model and Variables, Population and Sample

In order to achieve the objectives of the research similar to previous research, the mathematical model of the research was developed and presented as follows:

$$\begin{aligned} \text{Actual Leverage}_{it} &= (\lambda\beta) + \beta_1 \text{BTM Ratio}_{it} + \beta_2 \text{Profitability}_{it} + \beta_3 \text{SIZE}_{it} + \beta_4 \text{TANG}_{it} \\ &+ \beta_5 \text{ Selling Expenses}_{it} + \beta_6 \text{AGE}_{it} + \beta_7 [(1 - \lambda) \text{Actual Leverage}_{i,t-1}] \\ &+ \beta_8 [(1 - \lambda) \text{Actual Leverage}_{i,t-1}] \times \text{Family} + \varepsilon_{it} \end{aligned}$$

Model (1)

Family ownership: To identify family companies as an independent variable, according to researchers such as [Amore et al. \(2022\)](#), family ownership is considered according to the following conditions:

The real shareholder is the owner of at least 20% of the company's ordinary shares, or one of the members of the board of directors alone owns at least 5% of the ordinary shares, or the total shares of the real member of the board of directors and his family members are at least 5% of the total of the company's ordinary shares. Finally, the companies that meet the above conditions will be assigned as family companies with code (1), and the rest will be assigned code (0).

The speed of adjustment of financial leverage (SL):

The partial adjustment model is used to measure the speed of adjustment of financial leverage as a dependent variable ([Flannery and Rangan, 2006](#)). In the partial adjustment model, actual and optimal leverage should be measured in the first step. Still, since optimal leverage cannot be measured directly, its value must be obtained by replacing other variables. In this research, those apparent characteristics of the company that influence financing decisions are considered, and other characteristics, such as the economic situation and unobservable (uncontrollable) effects that affect

financing decisions, are not easily measured and considered as the estimator's error. The optimal leverage is estimated using the following model:

$$\text{Model (2)} \quad L^*_{it} = \beta' x_{it} + u_{it}$$

Where:

L^*_{it} optimal leverage; x_{it} is a vector of characteristics of the i th company at time t , which is related to the benefits and costs of the activity under different leverage ratios, β' is the estimated coefficient of this vector and u_{it} is the model error component.

The variables most used in the company's capital structure research are used to select the company's characteristics.

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1. **Growth opportunities (BTM Ratio):** divided by the market value of equity divided by the book value of the company's total assets.

2. **Company profitability (profitability):** the ratio of annual profit before interest and taxes to its total assets at the end of the year.

3. **Company size (SIZE):** natural logarithm of assets.

4. **Fixed Assets (TANG):** dividing fixed assets by total assets.

5. **Sales Growth:** Sales minus the previous period's sales divided by the previous period's sales.

6. **Life of the company (AGE):** the natural logarithm of the year of establishment of the company to the year of the research time horizon.

The current research is applied, and from the methodological point of view, correlation is causal type (retrospective). The statistical population under investigation includes all the companies listed on the Tehran Stock Exchange, and the period under investigation is from 2012 to 2021. The listed companies on the Tehran Stock Exchange with the following conditions have been selected as samples. To make the information comparable, the end of the companies' financial year should be the end of March. They have not changed the financial period under review during the (10-year) period. Information about the selected variables in this research should be available. Do not affiliate with banks, insurance companies, and investment companies. Finally, 133 companies have been selected as the study's final sample. Data analysis was done using the data panel approach, Eviews 10 software, and the powerful standard tool to test the hypotheses.

4. Findings

In order to provide an overview of the statistical population and to better understand the research data, Table 1 of the research shows the statistics related to the central indicators and dispersion.

Table 1. The descriptive statistics of quantitative research variables

Variable	Mean	Max.	Min.	S. dev.	Skewness	Kurtosis
Leverage finance	0.540	0.990	0.090	0.200	-0.047	2.420
Growth opportunities	4.360	15.900	1.000	3.870	1.750	5.330
Profitability	0.140	0.590	-0.220	0.150	0.610	3.400
Company Size	14.700	20.800	10.490	1.630	0.710	3.760
Fixed Assets	0.260	0.790	0.0240	0.180	0.860	3.110
Sales growth	0.350	1.880	-0.360	0.440	1.100	4.720
Omar Company	3.600	4.240	2.300	0.370	-0.630	2.630

The main centrality index is the mean, which indicates the distribution's balance point and center of gravity and is a good indicator to show the centrality of the data. For example, the average value for the financial leverage variable is equal to (0.54), which shows that most data are concentrated around this point. In general, dispersion parameters are a measure to determine the degree of

dispersion from each other or their degree of dispersion compared to the average. One of the most important dispersion parameters is the standard deviation. The value of this parameter is Growth opportunities (3.87) and profitability (0.15), which shows that these two variables have the highest and lowest standard deviation, respectively.

Table 2. The frequency distribution of qualitative research variables

Description	Sign	Value	Frequency	Frequency percentage
Family companies	Family	1	220	16.540
Non-family companies	Un Family	0	1110	83.460
Total	-	0	1330	100.000

Table (2) shows that the family ownership variable is a two-valued qualitative variable (0 and 1), with descriptive statistics in the frequency distribution. The total number of surveyed companies is 1330 cases, of which 220 cases, equivalent to 16.54% of the companies, are family companies, and 1110 cases, equivalent to 83.46%, are non-family companies.

Table 3. The results of classical regression hypothesis tests

Test type	Test statistic	D.f	Sig. level	Result
F-Limer	5.120	132	0.000	Acceptance of panel data model (panel data)
Hausman	588.600	8	0.000	Fixed width effects from the origin
White	279.820	0	0.000	Existence of serial autocorrelation in model disruptive sentences
Breusch-Godfrey	34.860	0	0.000	Existence of variance heterogeneity in model disruptive sentences

According to Table (3), the significance level of the Chow (F-Limer) and Hausman tests is below 5%, confirming the pattern of panel data with fixed effects. Also, White's test with a significance level below 5% indicates the existence of serial autocorrelation in model disruption sentences. Finally, Godfrey's test, which had a significance level below 5%, showed that variance heterogeneity also exists in model disruption sentences. Finally, to solve the heterogeneity of the variance, the command (gls) and to solve the serial autocorrelation, the features of the standard instrument have been used in Econometric software. In the first stage, it was observed that the level of the Durbin-Watson is between 1.50 and 2.50, and the autocorrelation in the model has been lifted.

Research hypothesis: In family companies, compared to non-family companies, the financial leverage moves faster towards the optimal leverage.

The results of Table (4) show that the interaction of the leverage of the previous period with family companies with a positive coefficient (0.001) and a significance level below 5% (0.021) has a direct and significant relationship with the financial leverage of the current period. Family companies are able to increase the speed of adjusting the leverage towards the optimal leverage by a factor of (0.99). Somehow, in family companies, the speed of adjusting the financial leverage towards the optimal leverage is faster than in non-family companies. Therefore, the research hypothesis is accepted at the error level of 5%. The coefficient of determination is equal to 91%, which shows that the independent and control variables in the model have been able to cover 91% of the changes in the dependent variable. Also, the Durbin-Watson value is equal to 1.62, which shows no serial autocorrelation between the sentences of the disruption model. The test statistic with a significance level below 5% shows that the research model is a good fit.

Table 4. The result of the research hypothesis test

$$\begin{aligned} \text{Actual Leverage}_{it} &= (\lambda\beta) + \beta_1\text{BTM Ratio}_{it} + \beta_2\text{Profitability}_{it} + \beta_3\text{SIZE}_{it} + \beta_4\text{TANG}_{it} \\ &+ \beta_5\text{ Selling Expenses}_{it} + \beta_6\text{AGE}_{it} + [(1 - \lambda)\text{Actual Leverage}_{i,t-1}] \\ &+ [(1 - \lambda)\text{Actual Leverage}_{i,t-1}] \times \text{Family} + \varepsilon_{it} \end{aligned}$$

Variable	Coefficient	S. D	t statistic	Sig.	VIF
Growth opportunities	0.005	0.000	5.530	0.000	1.600
Profitability	-0.720	0.031	-22.800	0.000	1.020
Company Size	0.011	0.005	2.100	0.035	1.260
Fixed Assets	-0.370	0.033	-11.150	0.000	1.040
Sales growth	0.005	0.006	0.760	0.440	1.610
Age	-0.230	0.059	-3.880	0.000	1.110
Actual leverage t-1	0.350	0.054	6.560	0.000	1.370
Family Ownership × Actual leverage t-1	0.001	0.0004	2.290	0.021	1.130
Intercept	1.190	0.170	6.680	0.000	-
Coefficient of determination			0.910		
Durbin-Watson			1.620		
F statistic			88.214		
Significance level			0.000		

5. Conclusion and Suggestions

The movement of the companies' capital structure towards the targeted or the same optimal lever is one of the basic and important requirements to reach the highest value and corporate benefit and guarantee the company's future survival. Since in family companies, the goal of the owners and managers is to preserve and survive the company, achieving the optimal leverage faster is of special importance. Family companies have special conditions compared to non-family companies due to the type, structure, and arrangement of shares between owners, the distribution of corporate officials to owners and family members, and their sensitivity to their human and emotional capital, such that these conditions are specific to family companies. There are two general theories in family companies; firstly, these companies are not interested in increasing the company's debt level because this factor may cause the risk of liquidation and bankruptcy for the company in the future. And this can take their personal and family wealth out of their hands. On the other hand, theories state that in family companies, by increasing the level of debt in their capital structure, they try to focus more on the equity sector and not disperse ownership among minority shareholders to maintain their supervisory power. Therefore, in the present study, by examining this case, the speed of adjustment of financial leverage towards optimal leverage is higher in family companies than in non-family companies. In the final hypothesis test results, it was observed that the speed of adjusting the leverage towards the optimal leverage is faster in family companies. This is in line with the second theory, which states that from a dynamic point of view and assuming the existence of a target lever, the debt ratio of family companies converges on the target lever at a slower speed due to higher adjustment compared to non-family counterparts. However, non-family companies have a higher level of debt than family companies; also, in family companies, debt is a tool to control the company's affairs more, increasing the target leverage in family companies and, therefore, the cost. The achievement of the optimal leverage will decrease its. Therefore, financial leverage is a tool in the hands of the family owners to maintain their level of power over the affairs of the company. On the other hand, the company's debt will not increase because achieving the optimal leverage will happen faster due to the higher actual and target leverage. The obtained results are somehow in line with the studies of [Poletti-Hughes and Martinez Garcia \(2022\)](#), [Bas et al. \(2022\)](#), and [Morresi and Naccarato \(2016\)](#) and can complement the studies done in this field. These studies stated that family companies have a higher level of financial leverage and debt than non-family companies, which can reduce adjustment costs.

According to the results, family companies are suitable for investors to invest due to the managers' sensitivity to maintaining the principal capital and the company's reputation. Also, financial institutions have provided financial support to such companies. The cooperation of the stock exchange organization has provided a wider field of activity for such companies in the stock exchange so that investors can benefit from the benefits of these companies in the capital market. Moreover, according to the capabilities of these companies, it can cause growth and competition with other companies in the capital market of Iran. It is suggested that future researchers investigate the impact of the quality of corporate governance on the relationship between family ownership and the speed of financial leverage adjustment.

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