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Corporate Life Cycle, Family Firms and Real Activities Management

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Abstract
One of the factors that should be considered in important management decisions is corporate life cycle; Accordingly, the purpose of this paper is to examine the effects of corporate life cycle on real activities management by considering the role of family ownership. For statistical analysis, data from 106 firms listed on Tehran Stock Exchange from 2013 to 2022 was used. The results of regression analysis of the study showed that firms in the growth stages engage in a higher levels of real activities management via sales management and production cost management than mature firms. However, in the growth stages, they are engage in a lower levels of real earnings management via discretionary expense management than mature firms. Also, the findings suggest that firms in the decline stages engage in a higher levels of real activities management than mature firms. In addition, family firms can be more aggressive in real activities management than non-family firms. The findings of this paper can be used and interest to investors, auditors, regulators, and academics concerning financial reporting quality and financial statement analysis. They can consider the corporate life cycle in their decisions about evaluating real activities management.
Keywords: *Earnings management, Real activities management, Life cycle, Family ownership*

Introduction

Based on the previous literature (Liu, 2006; Cohen et al., 2010; Choi et al., 2016), earnings management in companies should be examined in the framework of the company's life cycle. Some studies have documented the widespread prevalence of real activity management (eg, Graham et al., 2005; Cohen et al., 2008; Chi et al., 2011; Couriteau et al., 2015). From the view of Xie et al. (2022), companies face different opportunities and challenges at different stages of their life cycle. Hence, the question arises whether companies have different preferences for alternative real activity management mechanisms during their life cycle. If the answer is yes, what mechanisms do companies use to manage specific real activities at different stages of the life cycle?

In general, the development of strategies that are placed at different stages of the life cycle is very important for the success of companies (Salmani Danglani et al., 2019). In the early stages, companies develop strategies to gain competitive advantage, market share (Ramaswamy et al., 2007) and innovation (Audretsch and Feldman, 1996). It is possible that companies compete to attract customers and at the same time manage earnings by offering more discounts and increasing credit in order to retain and attract investors. However, management faces many costs and limitations associated with the management mechanisms of certain real activities, including the reduction of

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discretionary costs and capital expenditures; Because these mechanisms can work against their strategies (Xie et al., 2022). In addition, these companies face less costs and constraints to manage accruals due to underdeveloped internal controls and lack of adequate analysts, and are likely to have higher accounting flexibility and lower recognition costs. Therefore, this group of companies is less involved in the real activities management than the companies that are in the final stages of their life cycle. On the other hand, companies in the final stages of the life cycle follow a cost minimization strategy (Jenkins et al., 2004), which reduces the cost and limitations associated with cost management. However, if late-stage companies seek opportunities in new products or markets to change their fortunes, they may be reluctant to cut costs for this purpose. Xie et al. (2022) also believe that companies in the early stages have more sales management but less production cost management, while companies in the final stages may have more real activity management compared to mature companies.

Family firms are recognized as one of the important and dynamic contributors to the global economy (La Porta et al., 1999). Due to their specific ownership structure, family firms make different strategic decisions for earnings management based on accruals (Wang, 2006; Ali et al., 2007; Salvato and Moores, 2010; Hajamiri et al., 2014; Achleitner et al., 2014). Kreiser et al. (2006) showed that family firms have stronger family control in the early stages of the life cycle than in the later stages. Previous literature showed that different expectations about the level of earnings management in family firms versus non-family firms (Paiva et al., 2016). Therefore, based on the view of Xie et al. (2022), it can be expected that the management behavior of real activities in family and non-family firms is different at the life cycle stages. However, there is no evidence in this regard in Iran, and therefore, another issue for which the current research seeks to find an answer is to investigate this issue.

Our paper is important in several aspects; First, it provides important evidence regarding the role of different life cycle stages of Iranian companies in managing real activities. Second, it adds important evidence to the existing literature by studying the role of family ownership in the extent and choice of actual activity management mechanisms at different stages of the firms' life cycle. These findings can potentially help investors in analyzing financial statements and in making investment decisions when they compare companies at different stages of the life cycle and the type of family and non-family ownership.

Literature Review

Earnings management

An extensive literature on earnings management suggests that managers use both accruals and real activities to manage earnings (e.g., Healy, 1985; Graham et al., 2005; Roychowdhury, 2006; Gunny, 2010; Zang, 2012; Kothari et al., 2016). Real activities management occurs when managers deviate from optimal business decisions through real activities. For example, managers reduce R&D or advertising expenses, which has a negative impact on the company's future profitability (Mousavi Hanjani and Iranban, 2019). The cost of managing real activities has a potentially negative effect on the firm's long-term operational performance and thus future firm value (Taylor and Xu, 2010; Gunny, 2010; Zang, 2012; Filip et al., 2015; Kothari et al., 2016; Vorst, 2016; Sadeghnia and Setayesh, 2020). Vorst (2016) showed that the negative effects of real activity management on future operational performance differ significantly depending on the different motivations of real activity management.

Real activities management is constrained by higher tax rates, poor financial conditions, high institutional ownership and low market share in the industry (Roychowdhury, 2006; Zang, 2012; Abernathy et al., 2014). When companies increase earnings by cutting discretionary spending or by producing

excess inventory to reduce cost of goods sold, they incur a higher income tax expense. Firms with poor financial conditions and low working capital have limited flexibility to manage earnings (Roychowdhury, 2006). Previous literature suggests that institutional investors are able to identify and reduce management's real activities (Roychowdhury, 2006; Abernathy et al., 2014). Zang (2012) suggests that managing real activities is costly for companies facing intense competition in the industry; Because deviating from optimal performance can reduce their status in the industry.

Life Cycle Stages

Previous studies of the company's life cycle in the investigation of the anomaly of accruals (Tasso et al., 2010; Haribar and Yehuda, 2015), analysts' forecasts (Taso et al., 2009), cost of capital (Hasan et al., 2015), value correlation of expenses capital and R&D (Chin et al., 2005), value relevance of earnings components (Anthony and Ramesh, 1992; Jenkins et al., 2004), earnings quality (Chen et al., 2010; Srivastava, 2014; Chen, 2016; Choi et al., 2016; Hoseini Rad et al., 2023) and tax avoidance (Hasan et al., 2017). The literature shows that the life cycle is an important factor in many areas of accounting research. For example, Srivastava (2014) suggests that young firms exhibit lower earnings quality than more experienced firms. Choi et al. (2016) showed that companies in the growth stage are more motivated to manage earnings than companies in the maturity stage. On the other hand, Hansen et al. (2018) found that unconditional conservatism decreases across life cycle stages, but found no evidence that conditional conservatism is related to life cycle stages. Further studies on the role of life cycle stages in corporate financial reporting and earnings quality can explain the mixed results obtained by previous studies.

However, the literature on the role of the corporate life cycle in the real activities management behavior is relatively limited. Cohen et al. (2010) showed that companies in the final stages of their life cycle increase advertising costs to reach revenue criteria, but reduce in the early stages. On the other hand, Nagar and Radhakrishnan (2017) have documented that companies reduce discretionary spending in the maturity stage, while companies in the early stages do not.

Real activities management includes sales management through increased discounts or more lenient credit terms to accelerate sales or create additional but unsustainable sales, production cost management through overproduction to reduce cost of goods sold, and cost management to the means of reducing costs is optional. Investing in real operations management includes reducing R&D costs and selling long-term assets for profit (Roychowdhury, 2006). Based on the life cycle theory, company managers compare the expected costs and limitations of different earnings management methods when making decisions about replacing different earnings management mechanisms (Zang, 2012).

Hypothesis Development

In our paper, maturity stage is used as an index stage. Mature firms are characterized by maximum efficiency, stable sales growth, high profit margins, greater analyst coverage and investor favorability, greater debt and equity financing, greater risk aversion, lower cost of capital, and bureaucratic organizational structures (DeAngelo et al., 2006; Hasan et al., 2015; Habib and Hasan, 2017). In the maturity stage, companies are highly competitive and have their own trademarks. As the maturity stage progresses, firms need to invest more in research and development to accelerate their technical innovation (Tushman and Nadler, 1986).

Firms in the growth stage are characterized by profit maximization, large investments, positive operating cash flows, more debt financing, low cost of capital, and a developing internal control system (DeAngelo et al., 2006; Hasan et al., 2017; Hansen et al., 2018). These companies tend to expand their product lines by adapting existing products to new markets through significant innovation and heavy investment

in research and development (Miller and Friesen, 1984). Jenkins et al. (2004) found that when companies are in the growth stage, the value relevance of sales changes is relatively higher than in mature companies. Therefore, it is expected that companies in the growth stage, compared to mature companies, will manage less profit through reducing advertising, R&D and capital expenditures, but more than increasing discounts and suitable credit terms for earnings management. They are used to increase market share and improve short-term performance. In addition, companies in the growth stage may have resources to increase production in order to reduce their cost of goods sold (Xie et al., 2022). Therefore, these companies may not differ from mature companies in terms of managing production costs.

Generally, a company that is in the growth stage replaces the founders with professional managers, creates a more formal organizational structure, and moves towards more transparency and more monitoring and control by external shareholders (Filatotchev et al., 2006). This issue increases the cost of identification and reduces the flexibility of accounting. Additionally, companies in the growth stage begin to build reputation. However, compared to mature firms, growth stage firms still have lower detection costs due to less complex internal control systems. Based on this prediction, the first hypothesis can be proposed for companies in the growth stage as follows:

First hypothesis: Firms in the growth stage exhibit more real activities management in terms of sales management but less real activities management via discretionary expense management than firms in the mature stage.

The decline stage is characterized by less investment, less liquid assets, less debt and equity issuance, few analysts and high cost of capital (Dickinson, 2011; Hasan et al., 2015; Hansen et al., 2018). In the decline stage, products begin to lose attractiveness and it becomes more difficult to maintain sales volume, which makes it necessary to conserve resources by avoiding innovation and reducing prices (Miller and Friesen, 1984). Therefore, Xie et al. (2022) believe that companies in the decline stage manage earnings more by reducing discretionary costs including advertising and R&D, increasing sales by offering discounts and selling long-term assets. In the decline stage, companies do not increase their production to reduce the cost of goods sold; Because this is in conflict with the resource conservation strategy. However, Cohen et al. (2010) have stated that companies in the final stages of their life cycle may increase their advertising costs in order to increase their short-term sales and managing earnings upwards. Companies in the decline stage have high accounting flexibility and low identification cost; Because at this stage, few analysts have followed the company and institutional ownership is also low, and this issue provides the company with the opportunity to manage profits through accruals. But these companies are likely to have used their tools to manage earnings through accruals and therefore rely more on tools to manage real activities (Xie et al., 2022). Accordingly, it cannot be determined whether firms in the decline stage have more or less real activity management than mature firms. Based on this argument, the second hypothesis is proposed as follows:

Second hypothesis: Firms in the decline stage exhibit more real activities management in terms of sales management, production cost management, and discretionary expense management than firms in the mature stage.

As mentioned earlier, the existence of a family ownership structure can play an important role in the relationship between the life cycle stages and the real activities management. According to Iran's Accounting Standard No. 20, companies that have at least 20% of their shares in the hands of family members are considered family companies (Ghaderzadeh and Alavi, 2021). In our paper, the same definition is used to define family companies. Based on previous literature (Wang, 2006; Achleitner et al., 2014; Paiva et al., 2016) two characteristics of family

firms can determine the extent of earnings management: ownership concentration and governance by family owners and the opportunity to deploy executive managers. These two features are related to type I and type II agency problems, respectively. The first type of agency problem is about the separation between ownership and control, which leads to a divergence between management and owner interests. The second type of agency problem arises from the conflict between controlling and minority shareholders. The literature based on American and European companies shows that family companies exhibit lower levels of earnings management than non-family companies (Paiva et al., 2016). These studies argue that family firms face fewer first-type agency problems than non-family firms. However, literature in other countries has documented the opposite (Xie et al., 2022). In these countries, type II agency problems are likely to play a large role in reporting practices. Due to the fact that compared to non-family companies, family companies face a more severe second-type agency problem, and manage profits to a greater extent. The existence of two conflicting expectations about earnings management in family companies and the prevalence of these companies in the world economy and Iran as well, turns this issue into an important empirical question. Based on this, the third and fourth hypotheses of the research can be stated as follows:

Third hypothesis: Family firms in the growth and decline stages exhibit different levels of real activities management than family firms in the mature stage.

Fourth hypothesis: Non-family firms in the growth and decline stages exhibit different levels of real activities management than non-family firms in the mature stage.

Research method

The nature of the current research is in a way that seeks theory testing and intends to provide evidence for strengthening, confirming or improving the shortcomings of a theoretical framework that has already been tested elsewhere, in a new field or geography. Also, this research is among applied researches in terms of its purpose. In this research, the library method is used to collect data and information. To be more precise, the data of this research is based on the financial statements of all companies active on Tehran Stock Exchange. In this regard, the data of all the active companies whose financial year ended at the end of Esfand and which are not classified as financial and investment companies were used. According to the results of searches and surveys, 106 companies were selected as research samples and the data collected through Rahavard Novin software and the official website of the Stock Exchange Organization in the period between 1391 and 1400 were used for analysis. became; It should be noted that according to the method of measuring some variables, the data of the year before the investigated period were also used. Research analyzes were also done using Eviews-9 software.

Statistical analysis was carry out by multi-variable regression in panel data structure with Eviwes-7 software. In this regard, the following regression model has been used to check the research hypotheses and achieve the purpose of the study. The model takes the following form:

$$DEP\_RAM_{it} = \beta_0 + \sum_{i=1}^{2} \beta_1{}^{k} Life\_Cycle\_Dummy_{it}{}^{k} + \beta_2 DA_{it} + \beta_3 Big\_Audit_{it} + \beta_4 Lev_{it-1} + \beta_5 LMVE_{it-1} + B_6 MTB_{it-1} + \beta_7 \Delta E_{it-1} + \beta_8 ROA_{it-1} + \sum Industry + \sum Year + \varepsilon_{it} \quad (1)$$

Where DEP_RAM- denoting an alternative measures of real activities management including the abnormal level of operating cash flows (StdR_CFO), the abnormal level of production costs (StdR_PROD) and the abnormal level of discretionary expenses (StdR_DISX), Life_Cycle_Dummy- also denoting the corporate life cycle, which refers to the two stages of growth (GROWTH) and the stage of decline (DECLINE) of the life cycle, and the others are control variables includes a series of firm specific characteristics, including discretionary accrual (DA), auditor size (Big_Audit), leverage ratio (Lev), the

natural log of market value of equity at the beginning of the year (LMVE), market to book value ratio (MTB), the change in a firm's annual earning, deflated by lagged assets (ΔE). the return on assets ratio (ROA). and Industry and Year are the dummies of industry and year effects.

Regarding the measurement of the management of real activities similar to the research of Braam et al. (2015), the models used in the research of Roychowdhury (2006) were used as follows. In sum, following previous research (for example, Roychurdhari, 2006; Cohen and Zarowin, 2010; Xie et al., 2022) managing real activities through three indicators of the abnormal level of operating cash flows (Model 2), the abnormal level Production costs (Model 3) and the abnormal level of discretionary costs (Model 4) are measured.

$$CFO_{it}/TA_{it-1} = \beta_1(1/TA_{it-1}) + \beta_2(Sales_{it}/TA_{it-1}) + \beta_3(\Delta Sales_{it}/TA_{it-1}) + \varepsilon_{it} \quad (2)$$

$$PROD_{it}/TA_{it-1} = \beta_1(1/TA_{it-1}) + \beta_2(Sales_{it}/TA_{it-1}) + \beta_3(\Delta Sales_{it-1}/TA_{it-1}) + \beta_3(\Delta Sales_{it}/TA_{it-1}) + \varepsilon_{it} \quad (3)$$

$$DISX_{it}/TA_{it-1} = \beta_1(1/TA_{it-1}) + \beta_2(\Delta Sales_{it}/TA_{it-1}) + \beta_3(Sales_{it}/TA_{it-1}) + \varepsilon_{it} \quad (4)$$

In the above models, CFO represents the cash flows from the company's operating activities in the current year, Sales represents the company's sales in the current year, PROD represents the company's production cost in the current year (equal to the total cost of goods sold in current year and changes in inventory in the current year compared to the previous year), DISX indicates the discretionary costs of the company in the current year (equal to administrative and selling expenses), ΔSALES indicates changes in sales between the current year and the previous year and TA represents the total assets. The residual value in the above patterns represents, respectively, the abnormal level of operating cash flows (Sales Management) (Model 2), production costs (Model 3) and discretionary costs (Model 4). It should be mentioned that in the regression models related to the testing of research hypotheses, the absolute value is taken from all the residuals of the models mentioned above.

Life_Cycle_Dummy also represents the life cycle stages, which refers to the two stages of growth (GROWTH) and the stage of decline (DECLINE) of the life cycle; Because in our paper, maturity stage is used as an index stage. So far, different models have been presented in the accounting and financial literature to measure the life cycle stages; One of the most common models is presented by Anthony and Ramesh (1992). In this regard, the research framework of Anthony and Ramesh (1992) was used in our paper to measure the different stages of the life cycle. The mentioned model divides the companies into three categories of growth stage, maturity stage and decline stage by using four variables of sales growth, capital expenditure, dividend ratio and age. Separation of companies into stages of growth, maturity and decline using the four mentioned variables and according to the methodology of Park and Chen (2006) is as follows:

- If the total score is between 16 and 20, it is in the GROWTH stage.
- If the total score is between 9 and 15, it is in the MATURE stage.
- If the total scores are between 4 and 8, it is in the decline stage (DECLINE).

Table 1.
Life cycle stages model

Quintiles	Age	CEV	SG	DPS
First quintile	5	1	1	5
Second quintiles	4	2	2	4
Third quintiles	3	3	3	3
Fourth quintiles	2	4	4	2
Fifth quintiles	1	5	5	1

The definition of variables in the table above is as follows:

$SG_t = ((SALES_t - SALES_{t-1})/(SALES_{t-1}))*100$

$CEV_t = (CE_t / VALUE_t)*100$

$DPS = (DPS_{it} / EPS_{it}) * 100$

Age = CYEAR - FYEAR

In which, SG growth firm; CEV change in capital expenditure; AGE Omar Company; SALES company sales; CE capital expenditures (increase or decrease in fixed assets during the period); DPS dividend per share; EPS is earnings per share and VALUE is the market value of equity plus the book value of long-term liabilities per year.

Other variables of model 1 are as follows:

DA represents discretionary accruals as a proxy for accrual-based earnings management (Cohen and Zarvin, 2010; Kothari et al., 2016). Big_Audit is a fictitious variable that indicates the size of the auditor, which is set to one if the company's auditor has been audited by A-level audit institutions, and zero otherwise. Lev represents the financial leverage ratio, which is obtained by dividing the total liabilities by the total assets of the company. LMVE indicates the natural logarithm of the market value of equity at the beginning of the year and MTB also indicates the ratio of market value to book value. In addition, ΔE represents the change in the annual earnings of a company, which is divided by the assets of the previous year, and ROA is the return on assets, which is calculated through the ratio of net earnings to total assets at the beginning of the period. to be Finally, Industry and Year represent dummy variables for industry and year effects, respectively.

According to the prediction made when sales management (StdR_CFO) and production cost management (StdR_PROD) are dependent variables, the $\beta 1^k$ coefficient for the growth stage (GROWTH) is positive and significant. Also, according to the theoretical basis of the research, when sales management (StdR_CFO), production cost management (StdR_PROD) and discretionary cost management (StdR_DISX) are dependent variables, the $\beta 1^k$ coefficient for the decline stage (DECLINE) is positive and significant.

It should be noted that according to Chi et al. (2011) and Xie et al. (2022) variables of auditor size, ratio of market value to book value, natural logarithm of market value of equity, financial leverage ratio, changes in annual profit and ratio Return on total assets are included as control variables. Previous literature (Cohen et al., 2008; Chi et al., 2011; Xie et al., 2022) relates these variables to corporate earnings management. Also, Cohen et al. (2008) and Zang (2012) believe that in the study of real activities management, the relationship between accrual-based earnings management should be controlled with it. Based on this, in our paper, earnings management based on accruals has also been controlled, and the modified Jones model was used to measure it. It should be noted that this model is modified according to the approach of Kothari et al. (2005) based on financial performance. This pattern is as follows:

$$TAC_{it}/TA_{it-1} = \beta_0 + \beta_1(1/TA_{it-1}) + \beta_2(\Delta REV_{it}/TA_{it-1}) + \beta_3(PPE_{it}/TA_{it-1}) + \beta_4(ROA_{it-1}) + \varepsilon_{it} \quad (5)$$

In above model, TAC represents the total accruals that are earned through the difference between net income minus cash flows from operating activities. ΔREV represents changes in the company's sales excluding changes in accounts receivable and PPE represents the net value of property, plant and equipment excluding land.

Empirical Results

In this section, the results related to the research findings and analyzes are presented. Table 2 shows the results related to the test of the first and second hypotheses to investigate the effects of the life cycle on the real activities management. According to the information in this table, companies in the growth stage (GROWTH) compared to the maturity stage (MATURE) have a greater tendency to manage real activities through sales management (StdR_CFO) and production cost management (StdR_PROD),

but their desire to manage real activities is lower through discretionary cost management (StdR_DISX). Also, the evidence in Table 2 indicates that companies in the decline stage (DECLINE) compared to the maturity stage (MATURE) more real activities management through sales management (StdR_CFO), production cost management (StdR_PROD) and managing discretionary costs (StdR_DISX) show. The results of further investigations regarding the comparison of the results listed in Table 2 using the Paternoster test showed that the coefficient related to the variable of the growth stage (GROWTH) and the decline stage (DECLINE) regarding the real activities management through sales management (StdR_CFO) to the arrangement is more robust than production cost management (StdR_PROD) and discretionary cost management (StdR_DISX). In addition, the relationship between accrual-based earnings management variable (DA) and real activities management through sales management (StdR_CFO) and production cost management (StdR_PROD) is positive and significant, but its relationship with discretionary cost management (StdR_DISX) despite being positive, it is not significant; This positive coefficient is a kind of complementary tool for earnings management through real activities and is in accordance with previous researches (Xie et al., 2022). The evidence related to other control variables also shows that the variable coefficient of financial leverage (Lev) and the natural logarithm of the market value of equity (LMVE) are positive and significant; This means that companies with more debt and equity are likely to have looser credit terms, produce more, and reduce their discretionary costs.

Table 2.
Regression results related to the first and second hypotheses

	StdR_CFO	**StdR_PROD**	**StdR_DISX**
INTERCEPT	0.259 (1.837***)	-0.678 (-3.414*)	0.104 (0.891)
GROWTH	0.211 (6.867*)	0.139 (3.187*)	-0.110 (-3.466*)
DECLINE	0.216 (10.334*)	0.121 (4.065*)	0.060 (4.466*)
DA	0.088 (2.899*)	0.087 (2.029*)	0.028 (1.103)
Big_Audit	-0.047 (-2.308*)	-0.037 (-1.281)	-0.031 (-1.847*)
Lev	0.110 (3.217*)	0.249 (1.925***)	0.159 (4.427*)
LMVE	0.020 (2.213**)	0.067 (5.205*)	0.009 (1.253)
MTB	0.019 (3.102*)	0.004 (0.522)	-0.0009 (-0.192)
ΔE	-0.002 (-1.186)	-0.001 (-0.756)	-0.0006 (-0.516)
ROA	-5/326 (-4.647*)	-2.247 (-5.490*)	-1.998 (-2.085**)
Year	Yes	Yes	Yes
Industry	Yes	Yes	Yes
R^2_{adj}	0.397	0.253	0.093

Numbers in parentheses represent t-values. Also, ***, **, * indicate significance at the 1%, 5% and 10% level, respectively (two-tailed).

Table 3 shows the results related to the third hypothesis test to investigate the effects of the life cycle of companies on the management of real activities in family firms. According to the information in this Table, in family firms in the growth stage (GROWTH)

rather than the maturity stage (MATURE), they tend to manage their earnings through sales management (StdR_CFO) and production cost management (StdR_PROD), and are less inclined to use the discretionary cost management (StdR_DISX). The evidence regarding the decline stage (DECLINE) also shows that family firms tend to manage their earnings through sales management (StdR_CFO) and production cost management (StdR_PROD), and are less inclined to use discretionary cost management (StdR_DISX); To be more precise, the evidence of decline stage (DECLINE) and growth stage (GROWTH) are similar to each other. Findings related to control variables regarding family firms are also presented in Table 3.

Table 3.
Regression results related to the third hypotheses: family firms

	StdR_CFO	**StdR_PROD**	**StdR_DISX**
INTERCEPT	0.948 (4.849*)	-1.948 (-7.104*)	0.067 (0.382)
GROWTH	0.237 (5.749*)	0.153 (2.211**)	-0.101 (-1.004)
DECLINE	0.195 (8.732*)	0.329 (6.847*)	0.029 (0.851)
DA	1.427 (4.593*)	0.347 (3.892*)	0.017 (0.763)
Big_Audit	-0.032 (-1.898***)	-0.084 (-1.847***)	-0.041 (-1.903***)
Lev	0.293 (5.503*)	0.283 (2.467**)	0.207 (4.397*)
LMVE	0.031 (0.978)	-0.068 (-3.792)	-0.008 (-1.194)
MTB	0.027 (1.102)	0.003 (0.598)	-0.001 (-0.259)
ΔE	-0.023 (-1.059)	0.006 (0.693)	0.018 (0.894)
ROA	-4.859 (-4.482*)	-3.740 (-6.007*)	-2.491 (-3.538*)
Year	Yes	Yes	Yes
Industry	Yes	Yes	Yes
R^2_{adj}	0.429	0.248	0.053

Numbers in parentheses represent t-values. Also, ***, **, * indicate significance at the 1%, 5% and 10% level, respectively (two-tailed).

Table 4 shows the results related to the test of the fourth hypothesis to investigate the effects of the life cycle on the real activities management in non-family firms. According to the information in this Table, there was no evidence that non-family firs in the growth stage (GROWTH) have more or less real activities management than in the maturity stage (MATURE); More precisely, the relationship between growth stage (GROWTH) and real activities management through sales management (StdR_CFO), production cost management (StdR_PROD) and discretionary cost management (StdR_DISX) is not significant for non-family firms. Regarding the decline stage (DECLINE), it should be said that non-family firms in this stage try to managing real activities through all three ways: sales management (StdR_CFO), production cost management (StdR_PROD) and discretionary cost management (StdR_DISX). The results of further investigations regarding the comparison of the results listed in Tables 3 and 4 using the Paternoster test showed that the coefficient related to the variable of the decline stage (DECLINE) in Table 4 (non-family firms) for the real activities management through management sales (StdR_CFO) (Peternoster

statistic equal to 4.283) and production cost management (StdR_PROD) (Peternoster statistic equal to 5.639) are weaker than the coefficient of the same variable in Table 3 (family firms). Evidence related to control variables regarding non-family firms can also be seen in Table 4.

Table 4.
Regression results related to the forth hypotheses: non-family firms

	StdR_CFO	**StdR_PROD**	**StdR_DISX**
INTERCEPT	-0.104 (-1.014)	-0.210 (-0.793*)	-0.095 (-0.217)
GROWTH	-0.095 (-0.598)	0.145 (0.995)	0.104 (1.041)
DECLINE	0.158 (2.447**)	0.079 (2.216**)	0.048 (1.859***)
DA	0.101 (3.693*)	0.096 (3.437*)	0.053 (1.019)
Big_Audit	-0.046 (-2.279**)	-0.055 (-2.311**)	-0.060 (-2.733**)
Lev	0.207 (4.376*)	0.319 (2.610**)	0.127 (3.958*)
LMVE	0.038 (3.729*)	0.059 (4.893*)	0.013 (1.194)
MTB	0.010 (0.994)	0.011 (0.722)	-0.001 (-0.319)
ΔE	-0/0001 (-0.647)	-0.004 (-0.908)	-0.0003 (-0.369)
ROA	-8.105 (-5.984*)	-3.350 (-4.297*)	-3.449 (-3.749*)
Year	Yes	Yes	Yes
Industry	Yes	Yes	Yes
R^2_{adj}	0.401	0.226	0.097

Numbers in parentheses represent t-values. Also, ***, **, * indicate significance at the 1%, 5% and 10% level, respectively (two-tailed).

Conclusion

One of the most important criteria and indicators of development in any country is information development. This is important because the information that is provided to the users is necessary for every decision. Companies are also aware of this issue and sometimes earnings management in line with specific goals. This action is usually done through discretionary accruals management or real activities management. This is despite the fact that earnings management through discretionary accruals is limited and can be identified and reported by auditors in many cases. Therefore, companies turn to earnings management through real activities as a complementary method. Accordingly, in this study, the real activities management in different stages of their life cycle has been investigated. In addition, the role of family ownership has also been analyzed.

The evidence obtained from our paper showed that companies in the growth stage compared to the maturity stage of their life cycle are more inclined to manage real activities through sales management and production cost management. However, in the growth stage, they are less inclined to manage real activities through the discretionary costs management than in the maturity stage. Also, the evidence of this study showed that companies in the decline stage show more real activity management than in the maturity stage. It should be said that the evidence obtained is in line with the results of the research of Xie et al. (2022) and previous literature (Liu, 2006; Cohen et al., 2010; Choi et al., 2016). These findings show that depending on the different costs and

limitations of the real activities management mechanisms at different stages of the company's life cycle, managers adopt different strategies for earnings management at different stages of the life cycle. To be more precise, they mainly prefer to use sales management to manage real activities in other stages of the life cycle (growth and decline stage) compared to the maturity stage.

Other evidence of our paper showed that family firms can be more aggressive in managing real activities than non-family firms; This issue shows the importance of considering the type of family versus non-family ownership structure for the analysis of earnings management, which leads to the expansion of existing literature in this field. The literature has presented conflicting expectations about the extent of earnings management in family firms compared to non-family firms (Xie et al., 2022), but there is little documentation regarding this comparison at different stages of the firms' life cycle. The evidence of our paper in this regard indicates that family firms do more sales management and production cost management in the growth stage than in the maturity stage, but in the case of non-family firms, there is a difference in the amount of real activities management in the different life cycles stages were not observed. Also, in the decline stage, despite the fact that both groups of family and non-family firms try to manage real activities through all three methods of sales management, production cost management and discretionary cost management, but its intensity is more for the family firms. Overall, the results of our paper showed that the main evidence reported in Table 2 is mainly driven by family firms. It can be said that the obtained evidence is in line with previous results and literature (Paiva et al., 2016; Xie et al., 2022).

The evidence of our paper can potentially be useful for investors in analyzing financial statements and in making investment decisions when they examine companies at different stages of life cycle and according to the type of family or non-family ownership. Also, these findings should be important for auditors, legislators and academics regarding the understanding and identification of managers' earnings management strategies at different stages of the life cycle. Finally, it should be said that this research has faced some limitations. Among these limitations, we can mention the variable measurement of real activities management; Although the most frequent measurement criteria of real activity management have been used to measure this variable, these criteria may be subject to measurement error. Another thing is that this study is based on active companies on Tehran Stock Exchange, and caution should be observed in generalizing the results to all companies. Despite these limitations, the findings of this paper can provide useful insights for investors, auditors, and regulators regarding the expected earnings management practices of firms at different stages of life cycle in family and non-family firms.

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