Governments' Economic Performance and Earnings Management Methods:
Evidence from Tehran Stock Exchange

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Abstract

Governments always affect the economic environment as legislators in the field of business. The economic conditions governing the market and business require different conditions and contexts for decision making and corporate execution practices. Companies and managers administering them under environmental conditions, achieve their goals by employing various earnings management methods. Hence, the present study examines the effect of governments' economic performance on the earnings management methods used in listed companies of Tehran Stock Exchange (2004-2016) for a sample of 16 industries and 271 companies. To test the hypotheses, multivariate regression model was used. The results showed that during the research period, companies managed earnings, and while more than 70% of companies used the accrual earnings management method, there was a relationship between annual economic indicators and real earnings management, and the change in general level of prices and the political connections of states have affected the relationship. Also, the accruals-based earnings management method occurred independent of annual economic indicators and there is a significant relationship between governments changes and earnings management methods.
Keywords: Earnings Management, Economic Indicators, Political Connections, Inflation

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1. Introduction

The economic conditions and environment have a considerable impact on the financial position of companies, and in the literature of financial economics, the importance of this issue has been mentioned repeatedly. The study of Ball and Brown (1968) showed that the reported earnings of companies are largely influenced by changes in economic conditions. Available statistics also indicate that advanced securities exchanges exist in the best-performing economies, which prove the impact of the country's economic situation on companies.

Earnings is one of the most important accounting indicators that has always been considered for a variety of purposes, such as stock valuation, and the performance of company's management and so on, especially by users in Iran. Until recently, most research conducted regarding the effect of accounting earnings on stock prices or returns has not considered much importance for earnings management. But in recent years, the bankruptcy of large companies, and the lack of prior knowledge on this issue, has led researchers and analysts to focus on earnings quality rather than earnings figure, and also to identify the earnings management review methods.

The reported earnings quality is very important for financial information users due to the efficient allocation of resources in the capital market. Investors, financial analysts, institutional investors and legal authorities are very interested in the quality of reported earnings in order to make decisions about the evaluation and investment in listed companies of capital markets. But does the information provided to shareholders have a desirable qualitative level, or is the information provided to them capable of reliance and prediction? For this reason, maintaining public interest, observance of shareholders' rights, enhancing transparency of information and the requirement of companies to commit their social responsibilities are among the most important aspirations that have been considered more than before by various supervisory and executive organizations. A fundamental factor in testing the earnings management in the companies is the estimation of the credibility and application of the opinion of managers in determining the earnings. Reviewing the literature of earnings management shows that there are different approaches in estimating and measuring the ability of management to determine the amount of earnings, which in many cases, the efficiency of the models in measuring the amount of earnings management is questioned and challenged by the experts of the accounting profession.

Earnings management is defined as doing targeted actions in the process of external financial reporting in order to achieve specific goals. The amount of earnings and its fluctuation is important from the perspective of the company's shareholders and affects its stock value.

One of the primary goals of earnings management is to maintain the company's credibility, because the credibility makes the company to look dynamic. Acquiring an appropriate place among competitors and the capital markets will lead investors and creditors to have a more favorable opinion to the company, and the company will not be required to spend more on competition with other similar companies and will receive loans and credits at a lower cost. The most important motive for earnings management is the belief that companies with an appropriate earnings trend not experiencing major changes in their earnings, are more valuable than similar companies.

Financial reporting in entities reflects the information needs and expectations of different groups of users of financial statements that need this information in order to realize their goals and needs, so that they can rely on the quality of the provided information.

On the other hand, the probability of earnings manipulation due to the conflict of interests, as well as some of the inherent limitations of accounting such as: (1) shortcomings in the process of future estimates and predictions, and (2) the possibility of using multiple accounting methods by enterprises make the real earnings of the companies to be different from reported earnings.

Earnings management can be done in a variety of ways. An examination of the earnings management process indicates that many accounting researchers are trying to understand the cause of the manipulation of the outcome of the company's normal operations and often seek to determine how the outcome of the operation can be fundamentally affected. Most researchers seek to identify the ways to discover the cases of earnings management provided by companies.

Earnings management is also done in order to achieve different goals due to external reasons, such as changes in general level of prices, political connections, and macro conditions affecting the economical markets.

The financial reporting environment specifies the level of discretion in reporting and imposes limitations on the ability of enterprises in reporting. The effectiveness of these constraints has two dimensions: first, this environment should provide an instrument to determine when a reporting fraud occurs and, second, when a fraud is detected, the environment should have an important consequence for the offender. The lack of guidance, supervision, or proper implementation in each of these two dimensions, in the opinion of corporate executives, increases the permissible use of reporting discretions to achieve functional goals.

In this study, the effect of environmental factors affecting financial reporting and the importance of quality of earnings have been investigated to assess the

effect of government's economic performance on earnings management as an indicator that affects the quality of earnings. Focusing on macroeconomic issues in annual targeting can improve the transparency of the capital markets. On the other hand, applying the policies that govern the rules of corporate governance and determining the policies that are needed to reduce the effects of changes in the general level of prices on companies can lead to increased quality and transparency of financial reports, and consequently leads to the companies' economic prosperity.

2. Literature
2.1. Theoretical Fundamentals
2.1.1. Earnings Management
When companies are under increasing pressure in an unfavorable economic situation, their directors ask the accounting department to improve the final line of income (loss) statement, that is, earnings; thereby changing its information content. Despite all its flexibility, the accounting profession does not seem to be able to provide useful data for management in such circumstances (Hope and Hope 1996).

The concept of earnings management has been investigated from various angles and different definitions have been proposed. For example, according to Gordon et al., when managers choose a particular method of accounting and reduce the fluctuations in reported earnings, the result is earnings smoothing or management. They also mention that managers have the potential to influence the reported earnings in the limits of their power, which results from the freedom of action in the framework of accepted accounting principles and procedures.

Generally, earnings management is defined as the impact on the earnings of a company, in such a way as to realize the interests and desires of the company and its managers. There are various hypotheses and incentives for earnings management, some of which are: the mechanical hypothesis and the efficient-market hypothesis, positive theories in earnings management,   bonus plan hypothesis, debt covenant hypothesis, political costs hypothesis, incentives related to initial public offering (IPO), tax incentives, and incentives related to management replacement.

2.1.2. Changing General Level of Prices
Changing the general level of prices (inflation) is one of the macroeconomic variables. This variable has a higher social sensitivity than other macroeconomic variables (unemployment and national production). Usually inflation is an interesting topic of dialogue among people. Individuals deal with

prices through daily purchases. In fact, prices are a part of people lives which directly affect their well-being. Everyone knows the price of the goods as they are buying and paying for them. On the other hand, an increase in the general level of prices leads to a change in financial reporting, and consequently affects the decisions and results in companies. Influencing the financial reporting by changes in the general level of prices leads to the adoption of methods by managers to achieve specific goals in financial reporting.

Generally, capital market players are paying too much attention to inflation, since the net benefits of their investment depend on the inflation rate. In other words, whenever in the interval between an investment and its exploitation, prices increase, the amount that the investor earns as investment earnings has less purchasing power and, therefore, the real return on the investment is less than the expected return. Alternatively, any increase in inflation will increase the expected return on investment for investors. In other words, with an increase in the general level of prices, market interest raise is inevitable, and as a result, the expected return of shareholders will encounter a positive change.

2.2. Empirical Studies
2.2.1. Background on Earnings Management Test
During their studies on earnings management by using accruals to explore earnings management, Healy, De Anjelo and Jones (1991) have introduced models that have been tested repeatedly in subsequent studies. Dechow et al. (1995) proposed a model which was called the modified Jones model, and they compared this model with Jones model and the industry model, and concluded that their modified model had a better predictive power.

Mashayekhi et al. (2005) tested earnings management for listed companies in Tehran Stock Exchange through the use of the modified Jones model and concluded that earnings management was used by the selected companies.

Dari Sadeh et al. (2015) have investigated the accruals-based earnings management and real earnings management before and after the approval of Securities Market Act of The Islamic Republic of Iran and concluded that the enforcement of the new laws led to a change in the method of earnings management from accruals-based to normal-items method.

Degeorge et al. (1999) concluded the greatest impact of accruals earnings management and real earnings management results from the harmonic use of both tools. Corporate managers are aware that achieving goals motivates them to understand the benefits of choosing one earnings management strategy among other strategies (Samuelson & Zucker 1988, Barto et al. 2002). In circumstances in which the probability of using both methods of earnings management is equal, previous articles show that in these situations, managers

use both accruals-based earnings management and real earnings management alternatively on the basis of their relative costs and benefits (Cohen and Zarowin 2010, Zang 2012).

2.2.2. Economic Variables and Financial Reporting

According to the capital asset pricing model, stock prices are affected by two different set of factors. First, a set of macro factors such as economic growth, inflation rate, interest rate and exchange rate. Second, a set of micro factors that relates to the company internal issues, such as dividends and the company plans (Sharp, 1964). Also, the effect of macroeconomic news on stock prices was examined by Poitras (2004) in the United States and the results indicated that except the discount rate, other economic variables had some explanatory power for changes in the stock price index.

In another study, Gan et al. (2006) examined the interactive effects between the New Zealand's stock price index and a set of seven macroeconomic variables. The results showed that there is a long-term relationship between the New Zealand's stock price index and the macroeconomic variables tested.

Erman et al. (2008) examined the effect of macroeconomic variables on stock prices in Turkey's stock market, and the findings showed that the economic indicators influence stock prices through inflation.

Bhargawa (2014) tested the impact of corporate fundamental variables, such as total assets and long-term debts, as well as macroeconomic variables such as unemployment rate and interest rate on seasonal prices. The research findings indicated that the fundamental accounting variables and macroeconomic variables considerably predict the stock prices. There is also a mutual relationship between long-term debts and interest rate.

Rahnama Roodposhti et al. (2005) investigated the relationship between stock return of investment companies and macroeconomic variables. The results indicate that non-oil exports and liquidity have a positive effect on stock returns of investment companies, and the consumer price index and imports have a negative effect on its returns.

Abbasian et al. (2008) examined the effect of macroeconomic variables on the total index of Tehran Stock Exchange. Findings showed a long-term and positive effect of the exchange rate and balance of trade on total index, and

also a negative effect of inflation, liquidity and interest rate on total index of the stock market.

Baharmoghadam and Quarvei (2012) studied the effect of days and months of the year, and macroeconomic variables such as GDP and inflation on stock returns in Tehran Stock Exchange. Findings showed that there is no significant relationship between macroeconomic variables and seasonal abnormal returns.

Daei Karimzadeh et al. (2013) studied the effect of macroeconomic variables on the stock price index of banks. Based on the findings of this research, the exchange rate and the inflation rate have a negative effect, and the bank interest rate, liquidity, and the GDP have a positive effect on the stock price index of banks.

Mohammadrezae`i et al. (2016) investigated the effect of inflationary recession on real earnings management and accruals earnings management and concluded that there is a positive and significant relationship between inflationary recession and real and accruals earnings management. Also, Baghomiyan et al. (2017) investigated the relation between the economic recession and earnings management in Tehran Stock Exchange. The results demonstrated that there is a direct and significant relationship between the economic recession and earnings management.

Samadi and Bayati (2011) investigated the relationship between macroeconomic variables and stock returns in Tehran Stock Exchange and concluded that the gold price, inflation rate and exchange rate are factors influencing stock returns and liquidity and oil prices have an impact on returns. The results also showed that there is a leverage effect on the stock market in Tehran.

Seyed Shakari and Factori (2012) examined the relationship between inflation and economic growth, and concluded that there was a negative relationship between them.

Fadaeinejad and Farahani (2017) studied the effects of macroeconomic variables on the total stock market index in the framework of the arbitrage pricing theory. The researchers studied eight macroeconomic variables, including consumer price index, bank interest rate, gold price, industrial production index, oil price, volatility, stock price, exchange rate and money supply as effective variables on Tehran Stock Exchange's Index, and concluded that the change in the growth rate of money had a negative effect on stock returns, and the index of industrial production, oil prices, stock price volatility, and price levels had a positive effect on stock returns. On the other hand, exchange rate and gold price had no significant effect on stock returns.

2.3. Research Hypotheses

In order to explain the research question, the following hypotheses were defined:

Major hypothesis: There is a significant relationship between the annual economic indicators and the earnings management method.

First sub-hypothesis: There is a significant relationship between the annual economic indicators and the real earnings management.

Second sub-hypothesis: There is a significant relationship between the annual economic indicators and the accruals earnings management.

3. Research Method

From the result view, this research is classified in the applied research group and from the view of execution process, it is categorized as quantitative research and the logic of its implementation is a deductive-inductive logic and the purpose of doing it is to perform correlation analysis. From another dimension, this research is a kind of post-event research. In field research, the purpose is to review the cause-and-effect relationships by studying the results and the previous background in order to find causes of the events (Naderi & Seif Naraghi, 1999). In the present study, by using the same approach, the relationship between the change in the general level of prices and the methods of earnings management is studied.

3.1. Population and Statistical Sample

The statistical population is all of elements that are at the same time desirable for us and have one or more common attributes (Hafez Nia, 2003).
The statistical population includes all of the listed companies in Tehran Stock Exchange that have the following characteristics:

-In order to homogenize the sample of the research, companies must have been listed in TSE before 2004.
-Their data should be available.
-The number of companies in the relevant industry should have a normal distribution.
With regard to the above mentioned items, the statistical population of this research is all of the listed companies in Tehran Stock Exchange that by

defining the above criteria, we have studied 16 industries including 271 companies as our sample.

3.2. Operational Definition of the Variables and their Measurement
3.2.1. Measuring Real Earnings Management
This kind of earnings management is done by influencing the actual activities. That is why it is called real earnings management. Influencing the actual activities is a deviation from normal practices of operations and one of the motives of managers is to mislead the stakeholders, so that they believe that the financial reporting objectives are achieved through normal activities. In this research, in order to show the real earnings management, the modified model of Roychawdhary (2006) is used.

First Model: Operating cash flow

$$CFO_t / A_{at} = \beta_0 + \beta_1 1 / A_{at} + \beta_2 \, Sales_t / A_{at} + \beta_3 \, \Delta Sales_t / A_{at} + \varepsilon$$

In this model, the CFO_t represents the operating cash flow, $Sales_t$ represents total sales revenue and $\Delta Sales_t$ represents the change in sales revenue of the current year compared to the previous year, and ε reflects the errors of the model which is considered as the abnormal cash flows. To balance the data, the variables of the models are divided by the average assets of the company. A_{at} represents the average of the assets at the beginning and the end of the year.

Second Model: Production Costs

$$CGS_t/A_{at} = \beta_0 + \beta_1 1/A_{at} + \beta_2 \, Sales_t/A_{at} + \beta_3 \, \Delta Sales_t/A_{at} + \beta_4 \, \Delta Sales_{t-1}/A_{at} + \varepsilon$$

In this model, CGS_t represents the cost of goods or services sold, and $\Delta Sales_{t-1}$ represents changes in the sales revenues of the previous year compared to the two previous years.

Third Model: Operational Costs

$$DISE_t / A_{at} = \beta_0 + \beta_1 1 / A_{at} + \beta_2 \, Sales_t / A_{at} + \varepsilon$$

In this model, $DISE_t$ represents the sum of operational costs (distribution & sales, and general & administrative).
Following Roychawdhary, other researchers such as Cohen and Zarowin (2010) and Zang (2012), in order to calculate an integrated measure of real earnings management components, added the residuals of all three models with each other. In this research, also this method is done:

REMt = - (RM-CFOt) + (RM-CGSt) - (RM-DISEt)

In this model, REMt represents real earnings management and RM-CFOt represents the residual of net operating cash flow model and RM-CGSt represents the residual of production costs model and RM-DISEt reflects the residual of operational costs model. In order to calculate the residual of each model, the data is categorized based on the industry and year differentiation in a cross-sectional structure. The higher REMt, the greater is real earnings management in the company.

3.2.2. Measuring Earnings Management of Accruals

To measure earnings management through accruals, Jones (1991) model is used in the following format:

TACCt / Aat = β0 + β11 / Aat + β2 ΔREVt / Aat + β3 PPEt / Aat + ε
TACCt = (ΔCAt - ΔCasht) - (ΔCLt - ΔSTDt)

In this model, TACCt represents total accruals, PPEt represents gross fixed assets (before depreciation), ΔREVt represents the change in total sales revenue of the company compared to the previous year, ΔCAt represents the change in current assets, ΔCasht represents the change in the cash flow of the current year, ΔCLt indicates change in current liabilities and ΔSTDt reflects the change in the current portion of long-term debts in current year that are calculated compared to the previous year. The variable AEMt represents the earnings management through accruals, which is calculated based on the absolute values of the residuals of total accruals.

AEMt = | RM-TACCt |

In this model, RM-TACCt is the remainder of the total accruals model that represents discretionary accruals.

3.2.3. Political Connections

The measure of political connections is taken from the article by Faccio (2006). A dummy variable called Connect is created that if during the years 2004 to 2017 the company is politically-connected, its value will be 1, and if the company is not politically connected, the value of the variable will be zero. A company is defined as politically-connected if at least one of its major

shareholders (anyone controlling at least 10 percent of the voting shares) or one of its board members is a member of governmental agencies.

3.2.4. Change in General Level of Prices (Inflation)
For the general level of prices, the Inflation variable is used which is based on the general level of prices published by the Central Bank of the Islamic Republic of Iran for each year.

3.2.5. Economic Indicators
The selection of macroeconomic variables in this research is based on relevant studies in this area, including Shu et al. (2013), Stock and Watson (2002), Chen and Ross (1986), Taqavi and Janani (2000).

The following macroeconomic variables are used in this research: government petroleum revenues in million dollar, liquidity, current budget of government, government expenditures, non-oil GDP at current prices, total exports, per capita income at current prices, economic growth and GDP at current prices, which are collected from the data published by the central bank for each year, and the reliability of the data related to these variables is examined by using the Dickiy Fuller test. In order to balance the economic indicators, the annual ratio of each of   the indicators to GDP (at current prices) was used. An integrated economic index derived from the sum of the ratio of economic indicators for each year, which is shown by EcoIndex symbol.

3.2.6. Control Variables
In analyzing the multivariate data, several control variables and random effects are considered at the company level. In order to use the regression models in the panel data structure, in addition to conducting different tests, applying control variables is necessary. So, in order to obtain reliable results, four effective factors of year, industry, government policy and company characteristics are controlled. Since the data in the structure of panel data are affected by political conditions of the economy among different years, industries and companies, therefore, in order to control the effect of these changes on the relationship among the main variables, these variables are used in the models. The dummy variables YearControl and IndustryControl are used to control the specific effects of time and the type of activity.

The following method was used to define the company's control variable (FirmControl):
Debt to asset ratio: $Leverage_t = L_t / A_t$

Where Lt represents the company's debts and At represents the assets of the company.

Natural Logarithm of ROA (LNROA):
LNROAt = Log (NIt / Aat)
Where NIt represents the net income of the company and Aat represents the average of the assets at the beginning and the end of the period.

Governmental policy
To illustrate the status of macro politics for the presidential periods, each period is assigned an ordinal scale and is displayed with GPtControl symbol.

Table (1). Model Variables

Row	Variable Name	Variable Type	Variable Symbol
1	Real Earnings Management	Dependent variable	REM_t
2	Accruals Earnings Management	Dependent variable	AEM_t
3	Change in General Level of Prices	Mediator variable	$INFSales_t$
4	Economic Indicators	Independent variable	$EcoIndex_t$
5	Political Connections	Mediator variable	$Connect_t$
6	Company Variable	Control variable	$Firm_{Control}$
7	Year Variable	Control variable	$Year_{control}$
8	Government Policy	Control variable	GP_t
9	Industry Variable	Control variable	$Industry_{Control}$

3.2.7. Hypotheses Testing Model
Since the measurements were repeated at the level of listed companies in Tehran Stock Exchange for the 13-year period, the multi-level regression analysis of the data was used to test the hypotheses. Multivariate analysis is a suitable method to simultaneously take into account the descriptive variables at different levels. In order to test the hypotheses, the following multivariate general regression model was used (Braam et al.) :

REMHigh & AEMLow i, t OR REMLow & AEMHigh i, t = β0 + β1EcoIndex i, t + β2 EcoIndexi, t × INFi, t + β3 EcoIndexi, t × Connecti, t + β4EcoIndexi, t × INFi, t × Connect i, t + β5 Connect i, t + β6 Leverage, t + β7 LNROA i, t + β8YearControl + β9 GPControli + β10IndustryControlt + εi, t

4. Results
4.1. Descriptive Statistics of Research Variables
In the descriptive statistics section, data analysis was performed by using measures of central tendency such as mean and measures of dispersion such as standard deviation, skewness, and kurtosis.

Table (2). Description of Variables of Sample Companies during 2004-2017

Statistical Parameters	Dependent Variables		Mediator Variable	Control Variables	
	Accrual Earnings Management	Real Earnings Management	Change in General Level of Prices	Financial Leverage	Ln of ROA
	REM	AEM	INF	LEV	LNROA
Mean	0.0056	0.0049	17.742	0.6136	-0.7144
Median	-0.0047	0.0046	14.80	0.6251	-0.8448
Maximum	0.5738	1.1244	34.789	1.9410	6.9221
Minimum	-0.6047	-1.2054	9.0110	0.0048	-5.0814
Standard Deviation	0.1811	0.3685	7.9274	0.2588	0.9330
Skewness	-0.1767	-0.1574	0.9592	0.5721	1.0381
Kurtosis	2.6135	2.2365	2.6389	5.0717	6.2161

The amount of skewness for the dependent variables is ($3\pm$), which indicates the normal distribution of data, but for some other variables, the amount of kurtosis is approximately greater than 3, but due to the large size of the sample, we could reference to central limit theorem and we may suppose that the distribution of data is close to the normal distribution and it does not generate any obstacle in testing the hypotheses.

Table (3). Description of Variables Measuring the Economic Indicators of Sample Companies Studied during 2004-2017

Statistical Parameters	Economic Indicators								
	Exchange Rate	Total Exports (Million Rial)	Gross Domestic Production Based on Current Prices	Per capita income Based on Current Prices	Liquidity	Current Government Budget	Government Expenditures	Gross Fixed Production 83	Gross Domestic Production Excluding Oil (Current Prices)
	MER	MEXPRIAL	MGDP	MPCI	MLIQ	MGOVCURBDG	MGOVEXP	MGDP83	MGDPNOIL
Average	9.655	20.862	15.419	11.114	14.924	13.491	13.736	14.483	15.196
Mean	9.2687	20.876	15.371	11.065	14.896	13.399	13.678	14.514	15.147
Maximum	10.503	21.692	16.358	11.978	16.343	14.543	14.728	14.653	16.227
Minimum	9.0764	19.761	14.265	10.041	13.438	12.354	12.625	14.265	14.015
Standard deviation	0.5845	0.5483	0.6731	0.6270	0.8842	0.6361	0.5887	0.101	0.7183
Skewness	0.4336	-0.2702	-0.1364	-0.1235	0.002	-0.0014	-0.0867	-0.6208	-0.0759
Kurtosis	1.3236	2.2303	1.7545	1.7697	1.8871	2.0231	2.1902	2.8257	1.7462

Since there was a high correlation among economic variables, it caused severe multicollinearity; therefore, these variables were entered into the factor analysis and were factorized.

Table (4). Primary and Extracted Factor Loads according to the Sum of Squares Method

Economic variables	Primary Commonalities	Extracted Commonalities
MLIQ	1	0.965
MGOVCURBDG	1	0.984
MGDP83	1	0.700
MGOVEXP	1	0.979
MEXPRIAL	1	0.951
MGDPNOIL	1	0.9890
MGDP	1	0.988
MPCI	1	0.987
MER	1	0.899

The results of the above table show that all 9 factors have a factor load of above 0.7, and so no variable needs to be eliminated and all variables need to be included in the factor analysis. As a result, no variable was eliminated, and all variables were included in the factor analysis and they were categorized in one factor named (ECOINDEX). This factor explains %93.791 of the total variance of the changes related to the economic indicators which is a considerable amount.

4.2. Correlation of Variables

Correlation test is required to determine if the model has a multicollinearity problem or not. Multicollinearity means that there is a linear relationship among independent variables and mediator variables (change in general level of prices, control policy of government and economic indicators) and control variables (financial leverage and natural logarithm of return on assets). One way of identifying the multicollinearity is to review the correlation of the variables and provide a correlation matrix. If there is not a severe correlation among the variables, it implies that multicollinearity will not exist in the model. In this study, Pearson correlation coefficient was used in order to examine this relationship. The results are displayed in table (5). According to the table, the correlation coefficient among the variables is less than 0.3. This result indicates a weak correlation among the variables of the model. According to the extracted results, we may claim that there is no multicollinearity in the models.

Table (5). Correlation Matrix among Independent and Control Variables

	INF	ECOINDEX	LEV	LNROA	GP
INF	1				
ECOINDEX	-0.2974	1			
LEV	-0.0219	0.0098	1		
LNROA	0.0148	0.0342	0.2038	1	
GP	0.0889	0.235	0.008	0.0439	1

4.3. Reliability of Variables

The reliability of the research variables means that mean and variance of the variables over the time and the covariance of them have been constant among different years. For this purpose, we can use the Fisher, Levin-Lin-Chu, Dicky Fuller and ... tests. In this study, in order to do this analysis, the Levin-Lin-Chu test was used. The results of this test indicate that with regard to the level of significance of the research variables, all variables are reliable by considering the amount of the intercept.

4.4. Results of Testing Earnings Management Methods

In order to distinguish between the use of ordinary items and the accruals, the following two dummy variables have been used.

First, dummy variable RM_DUMMYit: if the REMt of a company in year t is greater than the mean of the industry, number 1 is assigned to it, otherwise zero. Second, dummy variable AM_DUMMYit: if the AEMt is greater than the industry average in the relevant year, it will be one, otherwise it will be zero. According to the previous articles, the mean is used as the threshold of distinguishment. (Cohen et al. 2008, Cohen and Zarrowin 2010). Then, by combining these two variables, another two dummy variables were created.

First, RMHigh&AMLow, which is a dummy variable and its value is 1 if RM_DUMMYit is equal to 1 and the variable AM_DUMMYit is equal to zero; otherwise, the zero number will be assigned to it. This variable represents the companies that have used the high levels of real earnings management. Second, the variable RMLow & AMHigh, is the opposite of this strategy. The results of the analysis of earnings management methods imply that the listed companies of Tehran Stock Exchange perform earnings management. The method of earnings management for each industry is as follows:

Table (6). Earnings Management Methods in TSE Listed Companies

Industry	High Real Earnings Management & Low Accruals Earnings Management	Low Real Earnings Management & High Accruals Earnings Management	Observations	Number of Companies Active in Industry	Percent of High Real Earnings Management	Percent of High Accruals Earnings Management
Metal Ores Extraction	33	71	104	8	32%	68%
Real Estates	29	114	143	11	20%	80%
Cars & Parts	92	311	403	31	23%	77%
Pharmaceuticals	124	240	364	28	34%	66%
Electric Appliances	41	76	117	9	35%	65%
Investments	35	134	169	13	21%	79%
Cement, Lime & Plaster	122	255	377	29	32%	68%
Chemistry	129	209	338	26	38%	62%
Foods Except Sugar	62	237	299	23	21%	79%
Essential Metals	70	216	286	22	24%	76%
Sugar	59	123	182	14	32%	68%
Tiles & Ceramics	25	79	104	8	24%	76%
Non-metal Ores	56	139	195	15	29%	71%
Tires & Plastics	34	109	143	11	24%	76%
Machines & Equipment	46	136	182	14	25%	75%
Metal Products	38	79	117	9	32%	68%
Total	995	2,528	3,523	271	28%	72%

Based on the information extracted from the earnings management test, the method of earnings management through accruals has been used in more than 70% of the companies in the study period.

4.5. Results of Statistical Analysis of Research Hypotheses
To determine the efficiency of the method and the way of presenting the data in the estimation of the model, we used the F-Limer test. The results of the F-Limer test showed that the probability of the F statistic is not significant at the alpha level of 0.05, so the zero hypothesis (equality of the intercepts) is not rejected at the confidence level of 0.95. Therefore, the models related to these hypotheses are presented as Pool method.

4.5.1 Results of First Sub-hypothesis
There is a significant relationship between annual economic indicators and real earnings management (Braam et al., 2015) :

REM i, t = β0 + β1EcoIndex i, t + β2 EcoIndexi, t × INFi, t + β3EcoIndexi, t × Connecti, t + β4EcoIndexi, t × INFi, t × Connect i, t + β5 Connect i, t + β6Leverage, t + β7 LNROA i, t + β8Year Control + β9 GPControl + β10IndustryControlt + εi, t

Table (7). The First Sub-hypothesis Test

Dependent Variable : REMt					
Variable	Coefficient	Standard Error	T	Significance Level	Result
GPIndexit	-0.0322	0.0107	-3.007	0.0027	Significant
β2GPIndexit*INFit	-0.0049	0.0020	-2.4592	0.0084	Significant
β3GPIndext*Connectit	0.0178	0.0152	1.1712	0.2418	Not Significant
β4GPIndexit* INFSalesit*Connectit	0.0003	0.0001	-1.5627	0.1184	Not Significant
Connecti	-0.0801	0.0928	-0.8627	0.3885	Not Significant
Leverageit	0.0307	0.0086	3.5532	0.0004	Significant
LNROAit	-0.003	0.0030	1.0963	0.2730	Not Significant
GPit	-0.0211	0.0056	-3.7468	0.0002	Significant
Industryit	-0.0032	0.0011	-2.8460	0.0045	Significant
C	0.3910	0.0838	4.6634	0.0001	Significant
AR (1)	0.2636	0.0324	8.1321	0.0001	Significant
AR (2)	0.0877	0.0324	2.7028	0.0070	Significant
$R^2 = 0.1485$ $Adj.\ R^2 = 0.1387$		F=15.132 Prob= 0.001		DW=2 (Durbin & Watson)	

According to the results of table (7), there is a significant relationship among the economic indicators and the real earnings management. The effect of interaction between the economic index and the inflation with real earnings management is negative and significant, but the effect of interaction between the economic index and the political connection with the real earnings management, and the effect of interaction between the economic index with inflation and political connection are not significant. With respect to the significant relation between real earnings management and the economic indicators, the above hypothesis is verified.

Also, the adjusted R^2 is equal to 0.1387. This level of R^2 means that 13.87 percent of the changes in real earnings management are explained by the variables within the model, which is a weak predictive power. All in all, with

regard to F statistic which is 15.132, the whole model is significant at the alpha level of 0.05. In addition, the Durbin-Watson statistic is 2, which implies that there is no autocorrelation among the error terms.

Table(8). Model Assumptions

LM Test		Glejser Test		Breusch-Pagan-Godfrey Test	
F-Statistics	Significance Level	F-Statistics	Significance Level	F-Statistics	Significance Level
0.0434	0.9575	1.3163	0.2238	1.3989	0.1839

Glejser test was used to determine the heterogeneity of variances. The results showed that the probability of the test statistic is greater than 0.05, which indicates the homogeneity of variances. Also, the probability of Breusch-Pagan-Godfrey test and the LM test is greater than 0.05, which indicates that there is no autocorrelation.

4.5.2. Results of Second Sub-hypothesis
There is a significant relationship between annual economic indicators and accruals-based earnings management (Braam et al., 2015):

$AEM_{i,t} = \beta_0 + \beta_1 EcoIndex_{i,t} + \beta_2 EcoIndex_{i,t} \times INF_{i,t} + \beta_3 EcoIndex_{i,t} \times Connect_{i,t} + \beta_4 EcoIndex_{i,t} \times INF_{i,t} \times Connect_{i,t} + \beta_5 Connect_{i,t} + \beta_6 Leverage_{,t} + \beta_7 LNROA_{i,t} + \beta_8 Year\ Control + \beta_9 GPControl + \beta_{10} IndustryControl_t + \varepsilon_{i,t}$

Table (9). The Second Sub-hypothesis Test

Dependent Variable : AEMt				Period : 2004-2017	
Variable	Coefficient	Standard Error	T	Significance Level	Result
EcoIndexit	0.0171	0.0153	1.1160	2645	Not Significant
β2EcoIndexit*INFit	0.0002	0.003	0.0894	0.9287	Not Significant
β3EcoIndexit*Connectit	-0.0201	0.0165	-1.2112	0.2259	Not Significant
β4EcoIndextit*INFit*Connectit	-0.0002	0.0002	-1.0477	0.2948	Not Significant
Connecti	0.1195	0.1018	1.1740	0.2405	Not Significant
Leverageit	-0.6771	0.0204	-33.037	0.0001	Significant

Dependent Variable : AEMt					Period : 2004-2017
Variable	Coefficient	Standard Error	T	Significance Level	Result
LNROAit	0.0092	0.0056	1.6485	0.0994	Not Significant
GPit	0.0235	0.0084	2.8008	0.0051	Significant
Industryit	0.0124	0.0009	12.542	0.0001	Significant
C	0.2689	0.1275	2.1086	0.0351	Significant
AR (1)	0.7151	0.0141	50.687	0.0001	Significant
$R^2 = 0.3367$ $Adj. R^2 = 0.3343$		F=141.68 Prob= 0.001		DW=1.75 (Durbin & Watson)	

According to the results of table (10), there is no significant relationship between economic indicators and accruals earnings management. Moreover, in this hypothesis, none of the interaction effects is statistically significant. As a result, the above hypothesis is rejected. Also, the adjusted R^2 is equal to 0.3343. This level of R^2 indicates that 33.43 percent of the changes in accruals earnings management are explained by the variables within the model, which has a moderate predictive power. In sum, the whole model is significant at the alpha level of 0.05 with respect to F function (F=141.68). Moreover, the Durbin-Watson statistic is 1.75, which shows that there is no autocorrelation among the error terms.

Table (10). Model Assumptions

An Average of Zero for Residuals		Loon		Jarque-Bera		DW
Statistics	Probability	Statistics	Probability	Statistics	Probability	1.5<1.88<2.5
0.8807	0.3785	1.917	0.0579	5.7197	0.0572	

The results of regression assumptions in this model showed that in testing the average of zero for the error terms, the probability of t statistical is greater than 0.05. The homogeneity of variances test showed that the probability of F statistic is greater than 0.05. The non-existence of autocorrelation among error terms (errors have linear independence of each other) was measured through the Durbin-Watson test, which is equal to 1.88 in the presented model. If this statistic is between 1.5 and 2.5, it means that there is no autocorrelation. If D-W is greater than 2.5, it implies that there is negative autocorrelation and if it is less than 1.5, it means that there is positive autocorrelation. In order to test the

normality of the residuals, the normal distribution graph test was used. The results of this test showed that the probability of the Jarque-Bera statistic is greater than 0.05. That is, the residuals of the model follow the normal distribution.

5. Conclusions

One of the major issues in financial reporting is its related environment, as it is always paying special attention to the issue of reporting in the formulation of standards for the quality of financial reporting, so as to formulate relevant frameworks and laws rather than identify and control Effective factors on the quality of financial reporting.

Economic variables and, in particular, macroeconomic variables, as described in the economic literature, are the hallmark of the general conditions of a society. So that it can be seen in the crystallization of the effects of other social and political environmental features. The conditions and economic environment have a significant impact on the financial position of companies and in the literature of financial economics; the importance of this issue has been mentioned many times.

Political economy is an important field in the scientific study of social phenomena. This method considers the formation of social phenomena as a result of political and economic components. Based on the theory of political economy, in most market-oriented economies, business units are centers of economic, social, and political interaction between different groups. Therefore, it is necessary to understand the relationships between economic, social and political groups in order to understand the changing characteristics of commercial units. Based on this theory, accounting information is only provided to support influential groups in social, political and economic spheres; information which helps the power owners use it in their own interest (Abskra, 2003).

Earnings management is defined as doing targeted actions in the process of external financial reporting in order to achieve specific goals. The amount of earnings and its fluctuation is important from the perspective of the shareholders of the company and affects the stock value of the company.

Earnings management can be done due to external reasons such as change in general level of prices, in order to achieve different goals. On the other hand, the macroeconomic conditions dominating the economic market also affect the decisions of users and financial information providers of.

The financial reporting environment specifies the level of discretion in reporting and imposes limitations on the ability of enterprises in reporting. The effectiveness of these constraints has two dimensions: first, this environment

should provide an instrument to determine when a reporting fraud occurs and, second, when a fraud is detected, the environment should have an important consequence for the offender. The lack of guidance, supervision, or proper implementation in each of these two dimensions, in the opinion of corporate executives, increases the permissible use of reporting discretions to achieve functional goals.

Taking into account the macroeconomic issues in annual targeting can help us improve the transparency of capital markets. On the other hand, enforcing the policies that govern the rules of corporate governance and determining necessary policies to reduce the effects of change in general level of prices on companies can lead to increase the quality and transparency of financial reports and consequently result in economic prosperity of companies.

With regard to the comprehensive effect of economic policy-making of the government on the economic environment, in this study, the relationship between the annual economic indicators and the methods of earnings management for listed companies of Tehran Stock Exchange is tested during a 13-year period. On the other hand, the annual economic indicators being influenced by changes in governments and their strategies affect all companies and change the results of their operations.

Directors of the companies use different methods to carry out the operations of their entities with regard to political connections and economic conditions.

The relationship between annual economic indicators and earnings management methods are investigated. Earnings management is calculated in two ways which are accruals earnings management and real earnings management and are considered as earnings management methods. In order to explain the effect of factors resulting from reporting environment in the results of the methods used by the financial report providers, the influential annual economic indicators are considered as effective environmental factors on companies' earnings management method. The existence of a relationship between economic variables and accounting output variables necessitates the attention to environmental factors in financial reporting quality. With regard to the dependence of economic indicators on the political conditions of governments and political connections of companies, the modifying effect of these items is also considered in this study.

The results of this research show that earnings management was used by the studied companies and more than 70% of them used the accruals method for earnings management in the studied period. The results of the first sub-hypothesis test regarding the existence of a relationship between annual economic indicators and actual earnings management imply that there is a significant relationship between economic indicators and real earnings

management, and so this hypothesis is verified. On the other hand, the variable "government policy" has been considered in order to take into account the effect of government change on companies. The results of the analysis indicate that there is a significant relationship between government change and real earnings management. Also, according to the analysis of the second sub-hypothesis regarding the existence of a significant relationship between annual economic indicators and accruals-based earnings management, the results of the second hypothesis test demonstrate that there is not a significant relationship between economic indicators and accruals-based earnings management. This means that earnings management through accruals is independent of the changes occurred in the economic indicators. On the other hand, according to the results of the first sub-hypothesis, there is a significant relationship between the change of government and the accruals-based earnings management method.

Imani Barandagh and Hashemi (2018) studied the effect of political factors on earnings management and concluded that the earnings management conducted in different political periods had a significant difference with each other. That is, earnings management could be affected by political factors in Iran. Also, the results of their research are in line with the results of our study regarding the relationship between government change and the method of earnings management. On the other hand, Braam et al. (2015) studied the relation between real earnings management, accruals earnings management and political connections and explained the relationship between the studied variables.

With regard to the importance of political conditions as effective frameworks in financial reporting environment, it seems that further studies by considering other aspects, will help clarify the issue of the impact of economic conditions on the quality of financial reporting. What is suggested is as follows:

1. Reviewing other effective economic factors in financial reporting quality
2. Reviewing the effect of economic factors on other areas of financial reporting
3. Investigating the political factors affecting the formulation of standards and requirements in the field of financial reporting
4. More supervision and emphasis by the Securities and Exchange Organization and the Auditing Organization as controlling authorities to regulate supervisory standards to make reported information transparent and to increase the quality of financial reporting.
5. Increasing the awareness of financial statements' users regarding the quality of disclosure of financial statements by related organizations.

The identification of effective variables on the quality of earnings, as well as the usefulness of the information provided by companies have always been an important part of studies carried out over the past years. Therefore, the issue of earnings management is also important. Continuing research in this field can lead to models with lower risk and higher generalizability. According to the findings of this research, the suggestions of the researcher for further studies are proposed as follows:

1. To carry out this research in the coming years with a different period of time, using the methodology of this research to add to the validity and credibility of the estimating models;

2. Identifying other economic variables that affect the method of earnings management;

3. Comparison of the results of domestic research with foreign studies.

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