Institutional Ownership, Business Cycles and Earnings Informativeness of Income Smoothing: Evidence from Iran

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ARTICLE INFO	ABSTRACT
	Managers engage in income smoothing either to communicate private information about future earnings to investors (informativeness hypothesis) or to distort financial performance for opportunistic purposes (opportunism hypothesis). Business cycles and the monitoring role of institutional ownership may affect the earnings informativeness of income smoothing. The purpose of this research is to examine the effect of business cycles and institutional ownership on the earnings informativeness of income smoothing. 140 firms listed on the Tehran Stock Exchange are selected as the sample over the period 2010-2016. The results showed that, during recession, income smoothing does not effectively communicate information about future earnings and thus earnings are less informative. Moreover, higher levels of institutional ownership are associated with a decrease in their monitoring role and decrease in the earnings informativeness of income smoothing. Finally, the results suggested that the relationship between institutional ownership and the earnings informativeness of income smoothing is not significantly affected by business cycles.

1 Introduction

Investors rely on public information such as financial statements and reported earnings for decision making. Investors generally believe that smooth earnings ensure higher dividend payout than volatile earnings. Earnings volatility is an important measure of a firm's overall risk and firms with smoother earnings are perceived to be less risky. Therefore, investors tend to invest in firms with smoother earnings. Income smoothing is an attempt to portray a more stable earnings stream. Managers use various smoothing techniques such as speeding or delaying the shipment of and billing for products, increasing or reducing inventory at the end of the period, and changing depreciation method [23]. The issue of income smoothing has received increasing attention in the accounting community in recent years. Graham et al. [19] found that about 96% of managers prefer income smoothing since it is perceived as less risky by investors. Previous studies have shown that there are two incentives for income smoothing by

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managers: communicating private information about future earnings to investors, i.e. the informativeness hypothesis [48], and intentionally distorting financial performance for their opportunistic purposes, i.e. the opportunism hypothesis [3, 18, 22, 49, 50, 51]. The informativeness hypothesis states that income smoothing not only increases earnings informativeness, but also improves earnings predictability. Institutional ownership can play an important role in monitoring management behavior and could influence incentives for income smoothing. Given the high percentage of institutional and state ownership in firms listed on the Tehran Stock Exchange (TSE) [40], the effect of institutional ownership on income smoothing and earnings informativeness of Income Smoothing is a key question. Moreover, economic conditions such as prosperity (expansion) and recession may influence managers' incentives to smooth income as well as the monitoring role of institutional investors. Therefore, the present study tries to determine whether earnings informativeness of income smoothing is affected by business cycles and/or institutional ownership.

Business cycles are the circular pattern of prosperity and recession characterized by fluctuations in production, trade, and general economic activity [27]. During recession, firms are expected to make bigger adjustments in their operating policies or make accounting changes to overcome the consequences of recession and paint a more favorable picture of their financial performance. Graham et al. [19] reported the tendency of managers to delay bad news and manage earnings during recession. Sadka [46] found that financial crisis has a significant effect on a firm's earnings reporting. Kim and Yi [28] argued that during times of economic recession, managers tend to engage more in opportunistic earnings management in order to hide their poor performance and avoid adverse consequences such as technical violation of contracts. Therefore, managers' tendency to manipulate earnings is expected to increase during recession. During recession, managers are motivated to use discretionary accruals for earnings manipulation rather than effective signaling to influence contractual outcomes and alleviate investors' concerns about the quality of financial statements. Thus, earnings informativeness of income smoothing could vary between periods of recession and periods of prosperity. Institutional investors can limit management's ability to manage earnings through continuous and effective monitoring [35]. Brous and Kini [7] provided evidence that active monitoring role of institutional investors is associated with improvement in stock price performance, firm profitability, and earnings management.

Also, institutional investors are able to analyze financial statements more accurately and proficiently than individual investors. Bushee [9] stated that monitoring by institutional investors can occur either through governance activities or by gathering implicit information and correctly pricing the impact of managerial decisions. The most common ways institutional investors leverage their power include public announcements, shareholder proposals, direct negotiations with managers, and proxy contests. Velury and Jenkins [49] found that high levels of institutional ownership discourages managers from providing noisy financial reports. Ramalingegowda and Yu [44] showed that higher level of ownership by institutions that monitor managers is associated with more conservative financial reporting. On the other hand, Bhide [4] argued that frequent trading by institutional investors discourages them from playing an active role in corporate governance. According to this view, investment strategies of institutional investors are inherently short-term.

In this vein, many studies [10,52] have shown that transient institutional investors have a preference for near-term earnings. These studies suggest that the monitoring role or opportunism of institutional investors is largely dependent on their investment horizon and trading strategies. In other words, long-term (short-term) investment strategy of institutional investors increases (decreases) monitoring performance, thus leading to an increase (decrease) in earnings informativeness of smoothed income. Deng et al. [15] showed that high levels of monitoring and advising by institutional investors during economic recession are associated with lower risk. Therefore, the monitoring (opportunistic) role of institutional

investors is expected to increase (decrease) during economic recession. In the Iranian context, agency problems are less frequent due to high levels of institutional ownership and active presence of institutional investors in firms' board of directors [32,36], and institutional investors play an active role in monitoring firms' activities. Therefore, it is expected that these investors would prevent any opportunistic behavior by the management. The most of TSE-listed firms are state-owned and semi-state-owned. In Iran, controlling shareholders generally control firms' critical decisions and ownership concentration in the TSE-listed firms is very high [17]. Minority shareholder rights are very limited and there are few laws to protect them [36]. Due to this this motivation of research, the present research investigates the effect of the monitoring role of institutional investors and business cycles on earnings informativeness of income smoothing in Iranian context with low agency cost costs [34].

This paper contributes to accounting and finance literature by various ways. Previous studies have examined various factors that affect income smoothing, but there is a lack of empirical evidence on the effect of business cycles and institutional ownership on earnings informativeness of income smoothing. To our knowledge, this is the first research that investigates these effects and contributes to the literature on income smoothing. Moreover, the present research is one of the first studies on the role of institutional ownership in the effect of income smoothing on stock price in Iran as an emerging economy. In the next section, first the theoretical framework and literature review are provided and the hypotheses are developed. Then, the research methodology, including sample and models, is presented. In addition, research findings, including descriptive statistics and main findings are provided. The last section provides the conclusions.

2 Theoretical Framework and Literature Review

2.1 The Iranian Capital Markets

In Iran, the history of stock exchange goes back to 1966. the Stock Exchange Act was promulgated by the Iranian parliament and the Tehran Stock Exchange (TSE) officially began its operations [32]. In 2005, the Securities Market Act founded the legal framework for creating new financial instruments, financial markets and institutions. Following this act, the number of non-financial firms and financial firms increase and four markets are operating under supervision of Tehran Stock Exchange organization: 1) TSE 2) Iran Fara bourse (OTC market) 3) Iran Mercantile Exchange, and (4) Iran Energy Exchange. Iranian capital markets have distinguished featured such as governmental ownership, high ownership concentration, low agency problem, bank financing. Due to government intervention in economy in Iran, most of TSE firms are owned by government directly and indirectly. Tehran Stock Exchange (TSE) companies have high ownership concentration, and high state and semi-state ownership lead to low information asymmetry. According to Mohammad Rezaei et al. [37] and Mohammad Rezaei and Faraji [38], the majority of corporate financing in Iran is through governmental banks at a fixed rate. It should be noted that institutional ownership contaminated with governmental ownership in Iran. Most of institutional owners in Iran are government or government-affiliated firms.

2.2 Hypotheses developments

Income smoothing refers to the conscious behavior to reduce periodic income fluctuations. Investors tend to prefer firms with steady profit streams and perceive smoother earnings as less risky. This motivates firms with profit variations to engage in income smoothing within the framework of Generally

Accepted Accounting Principles (GAAP) to paint a picture of stable streams and high returns. Fudenberg and Tirole [18] argued that managers' concern about job security creates an incentive to smooth earnings. There is evidence that when current earnings are poor, managers are incentivized to borrow earnings from the future for use in the current period to reduce the risk of dismissal. In addition, when current earnings are relatively high, managers may make accounting choices that decrease current year earnings and transfer to future [14]. Prior research has shown that there are two competing arguments on managers' income smoothing decisions: informativeness vs. opportunism. Tucker and Zarowin [48] provide strong evidence of the positive association between income smoothing and earnings informativeness. They argue that income smoothing is a way of communicating private information about the firm to investors, which increases earnings informativeness. On the other hand, the opportunism hypothesis states that firms may try to mislead investors through opportunistic altering of accounting numbers, which decreases earnings informativeness.

Burns and Mitchell [8] define business cycles as follows: "Business cycles are a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises: a cycle consists of expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions, and revivals which merge into the expansion phase of the next cycle; in duration, business cycles vary from more than one year to ten or twelve years; they are not divisible into shorter cycles of similar characteristics with amplitudes approximating their own" [8]. Recession is an exogenous shock that drains liquidity from firms, significantly affects their operating capability, and may influence their earnings reports [24]. During periods of recession, managers are motivated to use discretionary accruals for short-term purposes instead of focusing on long-term decisions. Choi et al. [12] reported a decrease in the value relevance of discretionary accruals during the Asian financial crisis of 1997-1998. According to DeFond and Park [14], current performance is associated with income smoothing, but this association is more powerful when expected future relative performance is also considered [6]. Uncertain future performance during recession creatives incentives for opportunistic earnings management through shifting future earnings into the current period to improve earnings performance. Therefore, during periods of recession, income smoothing may decrease the usefulness and informativeness of earnings. In addition, when economic recession threatens the survival of the firm, it provides extraordinary incentives for risk taking since there is nothing to lose and taking risks could be the way out [6]. The heightened propensity for risk taking under these conditions is consistent with the tendency for opportunistic income smoothing, which in turn decreases the informativeness of current earnings compared to future earnings. Based on these arguments, the first hypothesis is developed as follows:

H1. Earnings informativeness of income smoothing is significantly different across business cycles.

Modern firms emphasize the separation of management and ownership to reduce conflicts and seek to monitor management decisions in addition to increasing the number of shareholders. Institutional investors have a great deal of influence over the management. Institutional ownership is the percentage of a firm's outstanding shares held by institutional investors such as insurance companies, financial institutions, banks, state-owned firms, and government agencies [1,16,31]. Institutional investors are major players in financial markets and have a key role in corporate governance [2]. They have the potential to influence management's activities directly through their ownership, and indirectly by trading their shares [47]. There are two opposing perspectives about the presence of institutional investors and management behavior, which complicates the monitoring of accounting choices made by the management: the active monitoring hypothesis and the private benefits hypothesis. Velury and Jenkins [49]

argue that intuitional investors are more proficient in analyzing financial statements compared to individual investors, and they are more likely to manage their investment due to the magnitude of wealth invested. Institutional investors have the incentive to actively monitor the financial reporting process. When the level of institutional ownership is sufficiently high, such active monitoring discourages managers from providing misleading financial information. Institutional investors concerned about the long-term effects of management decisions on their investment can encourage more effective managerial earnings reporting. Consistent with this perspective, previous studies have shown that institutional investors with long investment horizons are more likely to monitor managers and that firms with high levels of institutional ownership have lower tendency for earnings management [9,25,44]. Black [5] suggests that in firms with multiple owners and with no majority shareholders, managers have more incentives for earnings management, since minority shareholders typically cannot afford to gather and interpret information and thus have to rely on the information reported by the management. Therefore, higher institutional ownership facilitates the interpretation of earnings informativeness of income smoothing. On the other hand, some recent studies have noted the shortsighted behavior and short-term horizons of institutional investors in the study of the relationship between institutional ownership and reporting of managed earnings [9,29,49,52].

These studies argue that institutional investors have private benefits such as access to private information, which can be exploited for insider-trading purposes. According to Porter [43], institutional investors tend to be overly focused on short-term earnings at the expense of long term equity value, which increases the likelihood of earnings management. Matsumoto [33] found that firms with higher transient institutional ownership are more likely to manage earnings to meet or exceed earnings target. Given these discussions, the relationship between institutional ownership and earnings informativeness of income smoothing depends on the monitoring role or opportunism of institutional investors. Under the active monitoring hypothesis, high levels of institutional ownership are expected to increase the earnings informativeness of income smoothing. On the other hand, under the opportunism hypothesis, high levels of institutional ownership are expected to decrease the earnings informativeness of income smoothing. In Iranian firms, we could not predict positive or negative relationship. Because in some firms, institutional investors could play monitoring role with long-term horizons, but they could play opportunistic role and seek short-term benefits. Institutional investors pressure firms to distribute high dividend (due to recognize dividend income in consolidated financial statements) and manipulate profits for the purposes of their insider-trading purposes. Thus, the second hypothesis is developed as follows:

H2. There is a significant relationship between institutional ownership and earnings informativeness of income smoothing.

Higher levels of monitoring and advising by institutional investors could reduce firm risk during periods of recession. That is, institutional investors can strengthen their monitoring role in the operating decisions of the firm at the time of economic recession. As such, institutional ownership could have a positive effect on the earnings informativeness of income smoothing during recession [15]. Therefore, under the active monitoring hypothesis, the positive effect of institutional ownership on the earnings informativeness of income smoothing is expected to increase during recession. On the other hand, under the opportunistic behavior hypothesis, the negative effect of institutional ownership on the earnings informativeness of income smoothing is expected to increase during recession. Chen et al. [11] found the earnings informativeness of income smoothing decreased following the global financial crisis. In

addition, they found that, consistent with the opportunism hypothesis, high levels of institutional ownership decrease the earnings informativeness of income smoothing. In Iranian context due to economic sanctions, the economy is mostly in recession and high uncertainty [17], thus we predict that high level of institutional investors could not increase earning informativeness in recession period. The results were more prominent when institutional ownership was held by foreign rather than local institutional investors and in Iran the level of foreign investors is very low. Given these discussions, the third hypothesis is developed as follows:

H3. The relationship between institutional ownership and earnings informativeness of income smoothing is significantly different across business cycles.

3 Research Methodology

3.1 Sample

The population of this research consists of all the firms listed on the Tehran Stock Exchange (TSE) over the period 2010-2016. In Table 1, we explain about sample selection procedures. The data for all the variables are manually collected from the financial statements of companies listed on the TSE between 2011 and 2017. Financial statements and audit report were obtained from the Comprehensive Database of All Listed Companies. A total of 2,748 firm-year observations were gathered, of which 342 were excluded because of financial distress, bankruptcy or failure to comply with disclosure requirements, changed activities and delisting from TSE. In total, 360 firm-year observations were excluded, as they were related to financial institutions, such as banks, insurance companies and investment and holding companies. Also, 1,386 firm-year observations were removed because of incomplete information about the research variables (for example, changing fiscal year, missing data about stock price because of halted trading, delisting). Finally, 980 firm-year observations were selected to test the research hypotheses. It must be noted that 2017 and 2018 data are used for some variables in the model (X_{it3} and R_{it3}).

Table 1: Sample selection procedure

Description	Observations
Total observations of TSE-listed firms	2520
Firm-years whose fiscal year-end does not correspond to calendar year-end	(567)
Investment, banking, insurance, leasing and holding firms	(441)
Firms that have halted trading for more than three months and information remains inaccessible information, or are delisted	(532)
Number of sample firms (firm- year observations)	980

3.2 Model

The models are estimated using panel data and ordinary least squares (OLS) regression with robust standard errors and industry and year fixed effects. Following Chen et al. [11], the hypotheses are tested using the following equations. Equations (1), (2), and (3) test the first, second, and third hypothesis respectively:

$$R_{it} = \beta_0 + \beta_1 X_{it-1} + \beta_2 X_{it} + \beta_3 X_{it3} + \beta_4 R_{it3} + \beta_5 IS_{it} + \beta_6 IS_{it} \times X_{it-1} + \beta_7 IS_{it} \times X_{it} + \quad (1)$$
$$\beta_8 IS_{it} \times X_{it3} + \beta_9 IS_{it} \times R_{it3} + \beta_{10} BusinessCycle + \beta_{11} BusinessCycle \times IS_{it} +$$

$$\beta_{12}BusinessCycle \times X_{it3} + \beta_{13}BusinessCycle \times IS_{it} \times X_{it3} + \beta_{14}LEV_{it} + \beta_{15}LOSS_{it} + \beta_{16}SIZE_{it} + \sum Industry + \varepsilon_{it}$$

$$R_t = \beta_0 + \beta_1 X_{it-1} + \beta_2 X_{it} + \beta_3 X_{it3} + \beta_4 R_{it3} + \beta_5 IS_{it} + \beta_6 IS_{it} \times X_{it-1} + \beta_7 IS_{it} \times X_{it} + \beta_8 IS_{it} \times X_{it3} + \beta_9 IS_{it} \times R_{it3} + \beta_{10}INST_{it} + \beta_{11}INST_{it} \times IS_{it} + \beta_{12}INST_{it} \times X_{it3} + \beta_{13}INST_{it} \times IS_{it} \times X_{it3} + \beta_{14}LEV_{it} + \beta_{15}LOSS_{it} + \beta_{16}SIZE_{it} + \sum Industry + \sum Year + \varepsilon_{it} \tag{2}$$

$$R_t = \beta_0 + \beta_1 X_{it-1} + \beta_2 X_{it} + \beta_3 X_{it3} + \beta_4 R_{it3} + \beta_5 IS_{it} + \beta_6 IS_{it} \times X_{it-1} + \beta_7 IS_{it} \times X_{it} + \beta_8 IS_{it} \times X_{it3} + \beta_9 IS_{it} \times R_{it3} + \beta_{10}INST_{it} + \beta_{11}INST_{it} \times IS_t + \beta_{12}INST_{it} \times X_{it3} + \beta_{13}INST_{it} \times IS_{it} \times X_{it3} + \beta_{14}LEV_{it} + \beta_{15}LOSS_{it} + \beta_{16}SIZE_{it} + Business\ Cycle \times (\gamma_0 + \gamma_1 X_{it-1} + \gamma_2 X_{it} + \gamma_3 X_{it3} + \gamma_4 R_{it3} + \gamma_5 IS_{it} + \gamma_6 IS_{it} \times X_{it-1} + \gamma_7 IS_{it} \times X_{it} + \gamma_8 IS_{it} \times X_{it3} + \gamma_9 IS_{it} \times R_{it3} + \gamma_{10}INST_{it} + \gamma_{11}INST_{it} \times IS_{it} + \gamma_{12}INST_{it} \times X_{it} + \gamma_{13}INST_{it} \times IS_{it} \times X_{it3} + \gamma_{14}LEV_{it} + \gamma_{15}Loss_{it} + \gamma_{16}SIZE_{it}) + \sum Industry + \varepsilon_{it} \tag{3}$$

The variables are described in the following paragraphs. Other variable definitions are provided in Appendix 1.

Income Smoothing

Following Tucker and Zarowin [48], income smoothing (IS) is measured using the negative correlation between changes in discretionary accruals (ΔDA) and changes in non-discretionary earnings (ΔNDE). The modified Jones model of Kothari, Leone and Wasley [30] is used to estimated discretionary accruals:

$$\frac{TA_{jit}}{Assets_{ji,t-1}} = \frac{\alpha_1}{Assets_{ji,t-1}} + \alpha_2 \frac{\Delta REV_{jit}}{Assets_{ji,t-1}} + \alpha_3 \frac{PPE_{jit}}{Assets_{ji,t-1}} + \alpha_4 ROA_{jit} + \varepsilon_{jit} \tag{4}$$

Where:

- TA = total accruals
- $Assets$ = total assets at the beginning of the year
- ΔREV = changes in annual revenue
- PPE = gross property, plant, and equipment
- ROA = return on assets
- ε = the error term

Total accruals (TA) is measured using the following equation:

$$TA_{jit} = Earn_{jit} - OCF_{jit} \tag{5}$$

Where:

- $Earn$ = net earnings
- OCF = operating cash flow

Next, discretionary accruals is estimated using the following model:

$$NDA_{jit} = \frac{\hat{\alpha}_1}{Assets_{ji,t-1}} + \hat{\alpha}_2 \frac{\Delta REV_{jit} - \Delta REC_{jit}}{Assets_{ji,t-1}} + \hat{\alpha}_3 \frac{PPE_{jit}}{Assets_{ji,t-1}} + \hat{\alpha}_4 ROA_{jit} \qquad (6)$$

Where:

- NDA = non-discretionary accruals
- ΔREC = changes in accounts receivable

Finally, discretionary accruals (DA) is calculated as follows:

$$DA_{jit} = TA_{jit} - NDA_{jit} \qquad (7)$$

Non-discretionary earnings (NDE) is calculated as the difference between net earnings and discretionary accruals. Income smoothing (IS) is the (Pearson) correlation between changes in discretionary accruals (ΔDA) and changes in non-discretionary earnings (ΔNDE), which is calculated using data for the current year and the past four years.

Business cycle (BusinessCycle) is an indicator of the overall state of an economy. In the present research, EViews and the Hodrick-Prescott Filter are used to calculate business cycles. In this approach, the assumption is that the real GDP of Iran consists of three components: long-run trend, cyclical variations, and irregular movements. The Hodrick-Prescott Filter separates these components in two stages. In the first stage, the long-run trend and in the second stage, the remaining components are extracted. The trend component is calculated using the following estimation method [26]:

$$Min\{\sum_{t=1}(Y_t - T_t)^2 + \lambda \sum_{t=1}[(T_t - T_{t-1}) - (T_{t-1} - T_{t-2})]^2\} \qquad (8)$$

In the equation above, the parameter λ is used to control for the smoothness of the trend component, and the larger the value of λ, the smoother is the trend [20]. A controversial issue in using this filter is the choice of λ. According to its developers, the value of λ must be set based on past information and the average length of the business cycles, which is 10 years in the present research. The default value of λ in EViews is 100. The same value is used here given the length of the business cycles. Subsequently, the recession (downward part of the diagram) and prosperity (upward part of the diagram) periods are determined. This variable is measured using a dummy that takes the value of 0 for a period of economic prosperity and the value of 1 for a period of economic recession.

Institutional Ownership (INST) = the total number of shares held by institutional investors (shareholders such as banks, investment company, insurance company, pension funds and et … with higher than 5 percent of total number of shares) divided by the total number of shares outstanding [43].

4 Findings

4.1 Descriptive Statistics

The mean annual stock return in the sample firms is 37%, indicating that on average, firms pay 37% dividends to investors. This is consistent with Collins et al. [13] and Nazemi et al. [41]. In addition, past year and current year earnings per share (EPS) are 31% and 32% respectively, and the sum of EPS for the next three years is 1.02%. The slow EPS growth indicates that EPS has small variations over time, which is consistent with the results of Hashemi and Samadi [21]. Table 2 shows that the mean institutional ownership is about 40%, indicating the high concentration of institutional investors in TSE-listed

firms. This is consistent with the discussions of Mohammadrezaei et al. [39] on the ownership structure of Iranian firms. Mean leverage is 63%, indicating that on average, 63% of firms' financing is done through borrowing, which is consistent with the arguments of Zhong et al. [53]. Mean firm size, calculated as the natural logarithm of total assets, is 13.6, and its standard deviation is 1.25, indicating the low dispersion of the data. Untabulated results show that 40% of the business cycle studied in the present research have been periods of recession, and 14% of the sample have been loss firms.

Table 2: Descriptive statistics

Variables	Mean	Median	Max.	Min.	SD
R_t	0.373	0.141	2.768	-0.955	0.973
X_{it-1}	0.315	0.154	1.374	0.000	0.384
X_{it}	0.325	0.150	1.423	0.000	0.408
X_{it3}	1.021	0.422	4.400	0.000	1.309
R_{it3}	1.065	0.930	4.949	-1.486	1.802
IS_{it}	0.006	0.003	0.026	0.002	0.006
$INST_{it}$	0.415	0.351	0.941	0.080	0.338
LEV_{it}	0.632	0.642	1.002	0.259	0.204
$SIZE_{it}$	13.681	13.590	16.282	11.640	1.250
Notes: R_t = annual stock return in year t; X_{it-1} = EPS in year $t-1$; X_{it} = EPS in year t; X_{it3} = sum of EPS for year $t+1$ through $t+3$; R_{it3} = sum of annual stock returns for year t+1 through t+3; IS_{it}= income smoothing; $INST_{it}$= percentage of shares held by institutional investors; LEV_{it} = leverage; $SIZE_{it}$ = natural logarithm of total assets in year t.					

4.2 Data Analysis

OLS regression is used to estimate the models. To avoid potential problems such as heteroscedasticity and autocorrelation, regression models are estimated by controlling for fixed industry and year effects using robust standard errors [42]. To test the first hypothesis, first we need to determine the business cycles in the studied period. Using the Hodrick-Prescott Filter, Figure 1 is generated for the period 2010-2016, which shows the periods of recession (2012, 2013, and 2015) and prosperity (2010, 2011, 2014, and 2016).
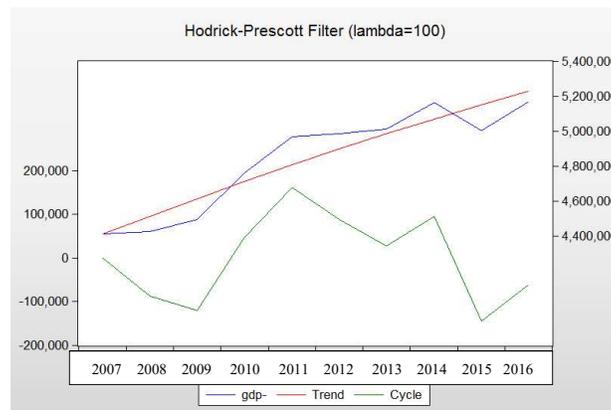

Fig. 1: Business cycles.

After determining the business cycle variable (a dummy that takes the value of 1 for periods of recession and 0 for periods of prosperity), the first hypothesis is tested and the results are provided in Table 3. As shown, the p-value of the F test is near zero and the model is statistically significant. In addition, the

variance inflation factor (VIF) indicates the absence of multicollinearity. The coefficient for the interaction $BusinessCycle \times IS_{it} \times X_{it3}$ is -10.153, and the p-value of the t-test indicates the significance of this coefficient. These results show that earnings informativeness of income smoothing decreases during periods of recession. In other words, income smoothing does not effectively communicate information about future earnings during recession and thus earnings are less informative. Therefore, the first hypothesis is true and earnings informativeness of income smoothing is significantly different across business cycles.

Table 3: Results of the first hypothesis

Variable	Coefficient	Std. Error	t-statistic	VIF
X_{t-1}	-0.770	0.135	-5.69*	3.180
X_t	0.681	0.158	4.3*	3.640
X_{t3}	-0.121	0.037	-3.29*	2.480
R_{t3}	-0.079	0.025	-3.19*	1.860
IS_t	-1.141	9.711	-0.120	3.710
$IS_t \times X_{t-1}$	36.218	16.827	2.15**	4.940
$IS_t \times X_t$	-28.685	18.163	-1.580	4.520
$IS_t \times X_{t3}$	10.210	2.670	3.82*	2.000
$IS_t \times R_{t3}$	-1.583	2.968	-0.530	2.240
$BusinessCycle$	1.119	0.349	3.20*	4.570
$BusinessCycle \times IS_t$	0.050	0.045	1.100	2.440
$BusinessCycle \times X_{t3}$	21.880	9.626	2.27**	2.640
$BusinessCycle \times IS_t \times X_{t3}$	-10.153	2.191	-4.63*	1.600
LEV_t	0.533	0.207	2.58**	1.650
$SIZE_t$	0.068	0.032	2.14**	1.350
$LOSS_t$	-0.256	0.104	-2.48**	1.430
β_0	-0.580	0.454	-1.280	-
Industry	Included			
Adjusted R^2	0.279			
F statistic	10.360			
p-value	0.000			
Notes: * significant at the 0.01 level , ** significant at the 0.05 level, *** significant at the 0.10 level				

The results of testing the second hypothesis are provided in Table 4. The second model is statistically significant and there is no multi collinearity problem. The coefficient for the interaction $INST_{it} \times IS_{it} \times X_{it3}$ is -14.170, and the p-value for the t-test indicates that this coefficient is significant. These result show that institutional ownership decreases the earnings informativeness of income smoothing. This is consistent with the opportunism hypothesis. Therefore, the second hypothesis is true and there is a significant relationship between institutional ownership and earnings informativeness of income smoothing. The results of testing the third hypothesis are provided in Table 5. The model is statistically significant and there is no problem of multi collinearity. Based on these results, the coefficient for the interaction $BusinessCycle \ INST_t \times IS_t \times X_{t3}$ is not significant. This indicates that the relationship between institutional ownership and informativeness of income smoothing is not affected by business cycles. Therefore, the third hypothesis is rejected and the relationship between institutional ownership and earnings informativeness of income smoothing is not significantly different across business cycles.

Table 4: Results of the second hypothesis

Variable	Coefficient	Std. Error	t-statistic	VIF
X_{t-1}	-0.760	0.143	-5.3*	3.260

X_t	0.671	0.165	4.07*	3.680
X_{t3}	-0.256	0.047	-5.4*	4.190
R_{t3}	-0.088	0.025	-3.58*	1.850
IS_t	5.100	12.012	0.420	4.840
$IS_t \times X_{t-1}$	20.905	19.823	1.050	5.500
$IS_t \times X_t$	-15.556	21.571	-0.720	5.100
$IS_t \times X_{t3}$	13.168	3.202	4.11*	2.980
$IS_t \times R_{t3}$	-0.864	3.101	-0.280	2.350
$INST_t$	-0.534	0.175	-3.05*	2.960
$INST_t \times IS_t$	6.181	22.289	0.280	5.390
$INST_t \times X_{t3}$	0.274	0.079	3.48*	5.410
$INST_t \times IS_t \times X_{t3}$	-14.170	7.537	-1.88***	4.690
LEV_t	0.518	0.207	2.510	1.670
$SIZE_t$	0.069	0.033	2.13**	1.360
$LOSS_t$	-0.301	0.102	-2.95*	1.410
β_0	-0.428	0.472	-0.910	0.442
Industry and Year	Included			
Adjusted R^2	0.270			
F statistic	7.320			
p-value	0.000			
Notes: * significant at the 0.01 level , ** significant at the 0.05 level, *** significant at the 0.10 level				

5 Discussion and Conclusion

Income smoothing is an attempt to portray a more stable earnings stream. Many scholars are of the opinion that investors prefer firms with steady profit streams and perceive smoother earnings as less risky [48]. Investors also believe that smoother earnings indicate lower risk and are of higher quality. This has motivated firms with profit variations to engage in income smoothing under GAAP to paint a picture of stable streams and high returns. Tucker and Zarowin [48] provide strong evidence of the positive association between income smoothing and earnings informativeness. They argue that income smoothing is a way of communicating private information about the firm to investors, which increases earnings informativeness. Earnings informativeness of income smoothing is affected by a variety of factors, and the present research focused on business cycles and institutional ownership. Massive losses and uncertainty about future performance during recession could motivate managers to make opportunistic accounting choices and try to improve current earnings by shifting future earnings into the current period. Hence, earnings informativeness of income smoothing could decrease during recession. In addition, the effect of institutional ownership on the earnings informativeness of income smoothing depends on whether institutional investors play a monitoring or an opportunistic role. That is, long-term (short-term) investment strategies of institutional investors increase (decrease) their monitoring function and thus increase (decrease) the earnings informativeness of income smoothing [11]. The results of testing the first hypothesis of the present research show that earnings informativeness of income smoothing decreases during periods of economic recession.

Table 5: Results of the third hypothesis

Variable	Coefficient	Std. Error	t-statistic	VIF

X_{t-1}	-0.542	0.194	-2.79**	6.14
X_t	0.379	0.230	1.73	7.48
X_{t3}	-0.201	0.050	-4.03*	5.31
R_{t3}	-0.071	0.030	-2.33**	3.33
IS_t	-3.406	13.09	-0.26	6.9
$IS_t \times X_{t-1}$	8.695	28.911	0.3	17.6
$IS_t \times X_t$	5.798	31.713	0.18	9.08
$IS_t \times X_{t3}$	10.842	3.9603	2.74**	3.87
$IS_t \times R_{t3}$	0.836	3.859	0.22	4.94
$INST_t$	-0.642	0.193	-3.32*	3.6
$INST_t \times IS_t$	8.591	20.345	0.42	6.57
$INST_t \times X_{t3}$	0.252	0.0824	3.07*	6.27
$INST_t \times IS_t \times X_{t3}$	-0.991	0.399	-2.48**	5.44
LEV_t	0.223	0.244	0.91	2.27
$SIZE_t$	0.058	0.039	1.48	2.14
$LOSS_t$	-0.197	0.125	-1.58	2.18
$BusinessCycle$	0.643	0.981	0.66	8.02
$BusinessCycle \times X_{t-1}$	-0.132	0.286	-0.46	7.65
$BusinessCycle \times X_t$	0.386	0.282	1.37	7.9
$BusinessCycle \times X_{t3}$	0.095	0.051	1.86***	3.99
$BusinessCycle \times R_{t3}$	0.0152	0.0505	0.300	3.63
$BusinessCycle \times IS_t$	28.712	10.921	2.63**	4.42
$BusinessCycle \times IS_t \times X_{t-1}$	33.508	36.506	0.92	5.9
$BusinessCycle \times IS_t \times X_t$	-47.76	36.35	-1.31	4.95
$BusinessCycle \times IS_t \times X_{t3}$	-5.091	2.106	-2.42	1.97
$BusinessCycle \times IS_t \times R_{t3}$	-4.624	5.760	-0.8	4.91
$BusinessCycle \times INST_t$	0.4212	0.221	1.9***	3.64
$BusinessCycle \times INST_t \times IS_t$	-17.92	14.32	-1.25	3.58
$BusinessCycle \times INST_t \times X_{t3}$	-0.094	0.059	-1.59	3.79
$BusinessCycle \times INST_t \times IS_t \times X_{t3}$	-3.209	3.153	-1.02	3.87
$BusinessCycle \times LEV_t$	0.379	0.358	1.06	9.76
$BusinessCycle \times SIZE_t$	-0.013	0.0598	-0.22	8.08
$BusinessCycle \times LOSS_t$	-0.205	0.188	-1.09	2.80
β_0	-0.048	0.573	-0.08	
Industry	Included			
Adjusted R^2	0.326			
F statistic	8.75			
p-value	0.000			
Notes: * significant at the 0.01 level , ** significant at the 0.05 level, *** significant at the 0.10 level				

That is, at times of economic recession, managers are motivated to engage in opportunistic manipulation of earnings to hide their poor performance, influence contractual outcomes, and alleviate investors' concerns about the quality of financial statements, thus reducing the informativeness of earnings. Therefore, the earnings informativeness of income smoothing is significantly different across business cycles,

which is consistent with the results of Bowman [6] and Chen et al. [11]. As for the second hypothesis, the results suggest that high levels of institutional ownership decrease the earnings informativeness of income smoothing. This supports the opportunism hypothesis.

In other words, institutional investors exploit private benefits such as access to information for trading purposes. In Iranian context, we could justify this finding in focusing institutional ownership on earnings and dividend. Therefore, they want to recognize high earnings from stock dividend in their financial statements and pressure firm managers to target beating and recognize earnings. Also, some institutional investors want to sell some portions of their stock in stock markets and increase the stock price to recognize some profits from stock selling. This finding is also consistent with Porter [43], who argued that institutional investors tend to be overly focused on earnings target beating, which increases the likelihood of earnings management. That is, short-term strategies of institutional investors undermine their monitoring function and thus decreases the earnings informativeness of income smoothing. Therefore, there is a significant relationship between institutional ownership and earnings informativeness of income smoothing. This is consistent with Bushee et al. [9] and Chen et al. [11]. Finally, the results do not support the third hypothesis. Therefore, the effect of institutional ownership on the earnings informativeness of income smoothing does not significantly change from periods of recession to periods of prosperity. In other words, institutional investors did not change their monitoring or opportunistic role based on the business cycle. Based on the present findings, legislative and regulatory bodies such as the Securities and Exchange Organization (SEO) of Iran are recommended to establish stricter laws for overseeing the activities of institutional investors in order to achieve their main goal, which is maximizing the wealth of shareholders and stakeholders.

That is because institutional investors can play an opportunistic role and thus reduce the earnings informativeness of income smoothing. In addition, investors, creditors, and capital market analysts are recommended to consider different perspectives regarding institutional ownership as well as the effect of economic recession on decisions to smooth income. One of the limitations of the present research is the accuracy and reliability of financial statements that is audited by auditors and is not indexed in novel and global database. In addition, it was impossible to measure certain control variables due to unavailable data. Also, the contamination of institutional investors with state ownership and endogeneity of institutional investors are limitations of this study. MohammadRezaei and Faraji [38] suggest that market efficiency in Iran is in low level and research about earnings informativeness should pay attention to this issue.

The following are suggestions for future research:

1. Given the important role of independent auditor and board of director's quality in the performance of firms, future research could examine their effect on the relationships studied here.
2. The effect of political connections on the relationship between institutional ownership and earnings informativeness of income smoothing could be further explored in future studies.
3. The moderating role of tax avoidance in the relationship between state ownership and the earnings informativeness of income smoothing could be an interesting topic for future research.

Appendix 1: Variable Definitions

Variable	Measurement
R_{it}	Annual stock return for firm i in year t
X_{it-1}	Earnings per share for firm i in year $t-1$
X_{it}	Earnings per share for firm i in year t

X_{it3}	Sum of earnings per share for firm i in years $t + 1$ through $t + 3$
R_{it3}	Sum of annual stock returns for firm i in years $t + 1$ through $t + 3$
LEV_{it}	Leverage, measured as total debts divided by total assets for of firm i at the end of year t
$LOSS_{it}$	A dummy that takes the value of 1 if firm i has negative income in year t, and 0 otherwise
$Size_{it}$	Size, measured by the natural logarithm of total assets of firm i at the end of year t
IS_{it}	Income smoothing for firm i in year t, measured by the negative correlation between changes in discretionary accruals (ΔDA) and changes in non-discretionary earnings (ΔNDE)
$BusinessCycle$	A variable that takes the value of 1 for economic recession and 0 for economic prosperity
$INST_{it}$	Total number of shares held by institutional investors divided by the total number of shares outstanding
$\sum Industry$	Industry dummy
$\sum Year$	Year dummy

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