

# The Impact of Non-Audit Services on Earning Response Coefficient

## El impacto de los servicios distintos de los de auditoría en el coeficiente de respuesta de ingresos

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## Summary

The present study aims to investigate the impact of non-audit services on earnings response coefficient. It is a library and analytical-scientific research and is based on panel data analysis. In this study, the financial data of 74 companies accepted in Tehran Stock Exchange during the period 2011-2016 have been reviewed. The results demonstrate that non-audit services have a significant negative relationship with earnings response coefficient. Although non-audit services will have benefits such as increased financial statements understandability, auditors' knowledge-sharing, better relationships between managers and auditors and reduced agency costs, this type of services threatens auditor independence and subsequently, earnings quality will be affected. Thus, the findings of the present study confirm the view that by providing non-audit services, auditor independence is affected, resulting in a negative reaction to earnings.

**Keywords:** Audit, non-audit services, earnings response coefficient

## Resumen

El presente estudio tiene como objetivo investigar el impacto de los servicios distintos de la auditoría en el coeficiente de respuesta de los ingresos. Es una biblioteca e investigación analítico-científica y se basa en análisis de datos de panel. En este estudio se han revisado los datos financieros de 74 empresas aceptadas en la Bolsa de Valores de Teherán durante el período 2011-2016. Los resultados demuestran que los servicios que no son de auditoría tienen una relación negativa significativa con el coeficiente de respuesta a los ingresos. Si bien los servicios que no son de auditoría tendrán beneficios como una mayor comprensión de los estados financieros, el intercambio de conocimientos de los auditores, mejores relaciones entre gerentes y auditores y menores costos de agencia, este tipo de servicios amenaza la independencia del auditor y, posteriormente, la calidad de las ganancias se verá afectada. Por lo tanto, los hallazgos del presente estudio confirman la opinión de que al proporcionar servicios distintos de los de auditoría, la independencia del auditor se ve afectada, lo que genera una reacción negativa a las ganancias.

**Palabras clave:** auditoría, servicios distintos de la auditoría, coeficiente de respuesta a los ingresos

## Introduction

In today's investment world, the decision-making process requires accurate, timely and relevant financial information. Financial information is useful for investors to estimate the expected value and risk of return on securities. Thus, they have to compromise the complex relationship between cost and benefit in order to be able to balance the interests of different stakeholder groups. The output of the audit process, including the auditor's report on financial status and performance, sends signals to the market for the decision-making of users, investors, etc. Therefore, it is among the most important financial information. Today, in many countries of the world and to some extent in our country, audited financial statements are regarded as an appropriate means of transmitting and communicating accurate and timely financial information about institutions, companies, banks and even government agencies (Noravesh & Ramezani, 2010).

Increasing growth of companies and increased demand of these companies from audit firms to provide non-audit services have made professional associations faced with the issue of whether or not non-audit services provided by audit firms to their employers affect financial

reporting quality since the numerous services provided by audit firms to their employers are themselves an integral part of corporate audit. Most companies need non-audit services and the general theme of conflicts of interest will be of particular importance in auditing and accounting. On the other hand, according to the code of professional conduct of conflict of interest arising from expectations inside and outside the unit under consideration, the relationships and interests affecting the auditors' work and the provision and dissemination of misleading information that is contrary to professional principles and to the benefit of the employer are all defined as unlawful acts. The code of professional conduct requires the auditors to be neutral and they should not allow any prejudice, bias, conflict of interest or influence of others to impair their impartiality in providing professional services (Nikbakht & Mehrbani, 2006).

Since accounting information is beneficial to investors and helps them estimate the risk and expected value of return on securities and also based on the assumption of the efficiency of the securities market, this fact is considered that the market will react to useful information from any source (including financial statements). When the usefulness of information equals the change in the price of securities, it is possible that if accountants make their decisions based on what information to include in financial statements according to which they consider market reaction to information, they will be better off financially. The market reaction is that the good or bad news presented in net profit is assessed compared to investor expectations. If the reported earnings are in line with investor expectations, it is rarely possible that these earnings contain a lot of information and investors may reconsider their beliefs based on prior information. But if the reported earnings are higher than expected, this good news causes positive revision of investor beliefs.

Non-audit services provided by auditors can, on one hand, lead to enhanced financial statements understandability, auditors' knowledge-sharing, better relationships between managers and auditors and also reduced agency costs. But on the other hand, this type of services threatens auditor independence and will consequently affect earnings quality. Hence, the point is that based on which view, this issue has been evaluated by the market that reacts to it. Further, given that investors' perception may be different from lawmakers' perception of non-audit services and the interests may not be aligned, earnings response coefficient can be considered as the basis of investors' perception. Therefore, the purpose of this study is to investigate the effect of non-audit services on earnings response coefficient.

### **Research theoretical foundations**

The non-audit services provided by audit firms in advanced industrialized countries are very diverse and one can say with certainty that a significant portion of the audit firms' revenues in these countries comes from these diverse services. Today, in addition to management consulting services, design and implementation of accounting systems and accounting and bookkeeping services traditionally considered among the activities of large and medium audit firms, services such as court audit, business evaluation for a variety of purposes such as merging, acquisition and calculation of the deceased or excluded partner's portion and the like and also assistance in the establishment of corporate governance projects in large firms and creation of effective internal control systems and audit of these systems and even internal auditing have been added to traditional activities of audit firms. Further, operations such as liquidation management of companies, trust-building operations for the banks giving credits to economic agencies, business, tax and insurance consultation and many such operations are among the activities of large and medium audit firms and even today, providing tax and insurance services to individuals such as completing a tax return and preparing and submitting value-added tax information to the Tax Organization and the like are performed by medium and small audit firms. Given that the services of certified accountants deal with public interests and the realism and integrity of certified accountants are the basis of public trust, audit firms should have a quality control system for the services they provide in the field of auditing (Noravesh & Ramezani, 2010).

Moreover, non-audit services are an integral part of auditing, some of which are as follows:

A) Account adjustment services; B) bookkeeping services or any services related to accounting records or financial statements; C) services of design and implementation of information systems; D) services of commenting on shareholders' in kind contribution; E) insurance consulting services; F) internal audit services; G) managerial tasks services (decision-making instead of management); H) human resources services of executive staff recruitment; I) brokerage or consulting services or investment advice; J) legal consulting services; K) management letter services; L) product analysis and marketing.

Auditors, while providing non-audit services, should satisfy investor confidence in the accuracy of financial statements quality and non-audit services should be based on rules and standards. According to Sarbanes-Oxley Act, non-audit services that require approval by the Audit Committee should be disclosed in periodic reports for investor use (Ansari, 2011). Section 201 of the Sarbanes-Oxley Act considers non-audit services as the services whose provision compromises the independence of audit firms. The US Securities and Exchange Commission has also banned the provision of a part of these services for certified accountants (Ruddock et al., 2006). According to the final act of the US Securities and Exchange Commission (2000), the scope of non-audit services whose provision to the employer has been simultaneously banned includes the following: Bookkeeping, financial information systems, assessment, insurance, actuarial system, internal auditing, role of management, human resources, agency services, legal services, audit-related services.

In 2002, Sarbanes-Oxley Act by the US Securities and Exchange Commission required, for the first time, the independent oversight of the audit profession. From 2004 onwards, all audit firms that issued audit reports should have been overseen by the Accounting Supervisory Authority of Public Joint Stock Companies. This institution periodically conducts inspections to determine the audit quality of firms and its most important topics are as follows: Bookkeeping, financial information systems, assessment, insurance, actuarial system, internal auditing, role of management, human resources, agency services, legal services, audit-related services. According to Sarbanes-Oxley Act (2000) and based on the final act of the US Securities and Exchange Commission (2003), the approval of the Audit Committee is also required to provide authorized non-audit services. Such services should be disclosed to investors in financial reports.

In Iran, according to the Executive Regulations of Disciplinary Boards of Iranian Association of Certified Public Accountants subject to Article 41 of the Amendment Statute dated June 26, 2011 and the related tables, (1) the existence of any interest leading to a breach of honesty and impartiality in the acceptance of work, (2) having any business relationship with the employer, (3) acceptance and performance of activities incompatible with or contrary to the profession's dignity and (4) acceptance of professional non-audit services from non-member institutions of the association are considered as violations and disciplinary punishments have been determined for them in the mentioned regulations.

In addition to legal issues, experimental research also shows that non-audit services affect the quality of information and investors' perceptions of it. Krishnan et al. (2005) found that non-audit services lead to improved audit quality and better understanding of financial statements and increased management accountability. Erah and Izedonmi (2012) came to the conclusion that non-audit services were attractive to auditors and should be performed in accordance with legal mechanisms so as not to impair auditor independence (Sajjadi et al., 2016). Schmidt (2012) concluded that providing non-audit services makes the audit dependent on the employer and has a negative impact on auditor independence. Thus, the provision of non-audit services has long been a controversial issue among lawmakers of the audit profession. One of the key issues for non-audit services is the potential threat of these services to auditor independence. It can be mentioned that providing non-audit services does not necessarily impair auditor independence, especially when the cost of non-audit services is much less than the audit cost, and only a small portion of the auditor's income comes from non-audit services. Hence, simultaneous provision of audit and non-audit services enhances awareness-increasing effect of earnings and operational performance of management.

But based on another view, investors' attitude to non-audit services is influenced by the laws of the audit profession, legal oversight and restrictions on non-audit services in each

country. Auditor oversight enhances investor confidence and information quality (Schmidt & Feldmüller, 2014). By the same token, the disclosure of four types of non-audit services has become mandatory since 2009: A) Legal audit costs; B) assurance services costs other than legal audit; C) costs of tax services; D) cost of other consulting services. But overall, it can be stated that researchers and lawmakers in the audit profession have come to the conclusion that non-audit services potentially affect auditor independence (DeAngelo, 1981; Francis, 2008). Bundestag believes that professional audit uncertainty requires lawmakers to impose restrictions on the provision of non-audit services (Bundestag, 2016). But investors and corporate executives may have received different non-audit services to safeguard investor interest. There is evidence about the impact of non-audit services such as tax advice on investor perceptions and earnings response coefficient (Krishnan & Visvanathan, 2013). As a consequence of the 2008 financial crisis, non-audit services such as tax advice, management consulting and system consulting have negatively affected the auditor's credit and have led to the weakening of investor confidence in financial statements. Therefore, strict rules for the provision of non-audit services were developed and implemented by audit firms (Kwon, Park & Yu, 2017).

### Research background

Alisfan (2018) conducted a study entitled “Non-audit services and investor reaction to earnings”. Given that investors’ perception may be different from lawmakers’ perception of non-audit services and the interests may not be aligned, earnings response coefficient can be considered as the basis of investors' perception. So, it can be concluded that non-audit services have a significant effect on earnings response coefficient. Besides, depending on the circumstances and management motivation to receive non-audit services, earnings response coefficient may increase or decrease.

Betty and Hsu (2017) carried out a study entitled “Non-audit services and audit quality”. By using conservatism in accounting, financial reporting quality has been applied as audit quality in order to examine the impact of non-audit services. The results revealed that non-audit services reduce audit quality and Sarbanes-Oxley rules have not been sufficient in this regard.

Blandon and Melino (2017) conducted a study entitled “Non-audit services and auditor tenure” and concluded that non-audit services can be provided by audit firms with ten years (or more) of experience. Additionally, non-audit services constantly reduce audit quality. Hence, auditors who do not have a continuous tenure in a company can provide non-audit services.

Mironiuc et al. (2014) performed a study entitled “Ethics in providing non-audit services and financial reporting transparency”. Auditors with professional ethics requirements can provide consulting services while observing independence in appearance and independence in mind, professional principles and code of professional conduct to earn surplus income. Their research embraced a sample of New York stock exchange companies that received non-audit services. The results demonstrated that non-audit services affect auditor independence and reduce financial reporting transparency.

Guiral and Ruiz (2014) conducted a study entitled “Content of audit report information and provision of non-audit services: Evidence about decisions on giving a loan in Spain”. This study investigates whether or not auditor independence affects the content of audit report information and the continuity of activity in European companies. A statistical sample of 80 Spanish companies applying for loans from the second largest European bank was selected and two conditions had to be specified in the financial statements in order to be able to use the banking facilities. The first condition is the auditor's opinion on continuity of activity and the second condition is the auditor's opinion in financial statements. The results suggested that continuity of activity is moderated by receiving non-audit services and auditor independence will be affected negatively.

Nam and Ronen (2012) carried out a study entitled “The impact of non-audit services on New York capital market”. According to the results, the ratio of non-audit service fees increases cash flow forecast. Consequently, the cost of capital is reduced, financial reporting quality improves and information asymmetry decreases.

Koouin et al. (2011) conducted a study entitled “Investigating the relationship between non-audit services and financial reporting quality”. They concluded that auditor independence is

significantly compromised when performing audit and non-audit services by an audit team; but if these services are provided by two independent teams, the views on the threat to auditor independence change. Therefore, non-audit services have a negative impact on financial reporting quality and the higher the non-audit service costs, the greater the dependency and the lower the audit quality will be.

In a study entitled “Non-audit fees, audit features and representation of earnings”, Bloomfield and Schuckman (2008) came to the conclusion that there is limited evidence regarding the relationship between non-audit fees and representation of earnings.

Havangh et al. (2007) conducted a study entitled “Types of non-audit fees and financial reporting quality” and found that there is little evidence that financial reporting is biased when the ratio of non-audit service fees such as tax and other services is high.

In a research entitled “Non-audit services and audit quality”, Hay et al. (2006) examined the effect of non-audit services on auditor independence and concluded that auditor independence is impaired when auditors provide non-audit services.

Tanani (2017) performed a study entitled “The role of forecasted abnormal return growth in earnings response coefficient”. One of the information that investors value most is the information and signals that come from the future value of the company. Companies’ abnormal return growth forecast is one of the factors affecting these signals. In this study, the impact of forecasted abnormal return growth on earnings response coefficient is analyzed. In order to achieve this goal, the information of 67 companies accepted in Tehran Stock Exchange for the period 2010-2014 was studied. To test the research hypotheses, multivariate regression was employed using panel data. The research results indicate that there is a significant positive relationship between forecasted abnormal return growth and earnings response coefficient. Thus, it can be argued that abnormal return growth forecast is an important factor in determining the rate of earnings response coefficient and earnings quality of companies.

Sani et al. (2016) conducted a research entitled “The effect of non-audit services in audit firms on auditor independence” and arrived at the conclusion that providing some non-audit services by audit firms to their employers creates an impression among financial statement users that auditors do not seem independent in society. It is obvious that if auditors do not seem independent in public opinion, the audit reports cannot be relied on.

In a research entitled “The effect of non-audit services of audit firms on the type of the auditor's report”, Noravi Fard and Feizpour Aqdam (2011) argued that considering the formation of the Iranian Association of Certified Public Accountants and the selection of audit firms trusted by the society, competition among audit firms increases and these firms try to increase their income by offering different services and provide services other than auditing financial statements to their employers. Their findings show that when non-audit services are provided simultaneously with financial statements auditing by audit firms, auditors are less inclined to provide unconditional reports.

Sajjadi (2007) conducted a study entitled “The impact of non-audit services and the auditor's economic dependence on the employer on auditor independence”. In this research, the impact of non-audit services and the auditor's economic dependence on the employer on auditor independence was examined from the viewpoint of auditors who are members of the Iranian Association of Certified Public Accountants. The research results indicated that in these auditors' view, non-audit services and the auditor's economic dependence on the employer are among the factors that reduce auditor independence.

In the research done by Nikbakht and Mehrbani (2006) entitled “Investigating the impact of audit firms' non-audit services and fees on auditor independence”, it was concluded that offering non-audit services of account adjustment and bookkeeping or any services related to accounting records or financial statements, internal audit services and managerial tasks services (decision-making instead of management) by audit firms to their employers in the same year when they have been responsible for the company audit impairs auditor independence.

## Research hypothesis

To test the hypotheses, returns.earnings response regression and its relationship with

non-audit services are used (Campa & Donnelly, 2016; Eilifsen & Knivsflå, 2013; Holland & Lane, 2012; Chen & Jung; 2010; Ghosh et al., 2010; Lai & Krishnan, 2009). As previously stated, there are different opinions on non-audit services: On one hand, it can be said that non-audit services cause financial dependence on the employer and audit risk increases and earnings response coefficient decreases. On the other hand, the provision of non-audit services by audit firms leads to enhanced quality of financial statements and knowledge-sharing of investors (Taylor, 2006; Zhang & Emanuel, 2008; Sharma, 2012). A similar study was first carried out in Germany, whose results displayed that non-audit services have a significant negative relationship with earnings response coefficient, which may threaten auditor independence and affect earnings quality (Quick & Warming, 2015). Thus, the research hypothesis is as follows: There is a significant negative relationship between non-audit services and earnings response coefficient.

## Methodology

The present study is an applied research in terms of purpose and a descriptive research (involving cases studies) in terms of data collection method. It is among applied studies with regard to the research goal and nature of the subject because its results can be used in the decisions of managers, investors and analysts. In the current research, using a descriptive-correlational method and document mining (financial statements of companies listed in the Stock Exchange), the data required to test the research hypotheses are obtained. The research method is correlational since the purpose of the hypothesis is to investigate the relationship between independent and dependent variables. Further, this study is an ex-post facto research (using past information).

The research statistical population comprised all companies accepted in Tehran Stock Exchange from 2011 to 2016. In this study, a purposive sampling method was employed to determine the statistical sample as follows: In each step, of all the companies at the end of 1389 SH (2010), companies that did not meet the following requirements were removed and the remaining companies were chosen for the test:

- Companies should be active during the period under study
- The statistical sample should not include banks and financial intermediaries
- The companies' fiscal year should end on the last day of Esfand (March 19)
- The audit fee of the companies should be disclosed separately

In the end, after these steps, a sample of 74 companies was selected to test the research hypotheses.

In this research, various books, articles published in prestigious journals and Latin articles have been applied to collect data on theoretical concepts and research literature. Data on existing variables have been extracted from corporate financial statements. After sample selection, data were analyzed using independent, dependent and control variables and with the aid of multivariate regression and EViews 10 software.

## Research model

Considering the theoretical framework and research background, the research model is of a multivariate regression type. Hence, the following model has been applied to perform the test. To measure the earnings response coefficient, the regression model in Alisfan's (2018) study which measures investors' perception of profit ratio was used. Using Easton and Harris's (1991) model based on earnings response coefficient, the impact of earnings reports on stock returns is described in Model (1). From the combination of models (1), (2) and (3), the regression model for the relationship between non-audit services and earnings response coefficient is extracted.

Model (1)

$$RETURN = \beta_0 + \beta_1 * EARN + \varepsilon$$

Model (2)

$$ERC = \frac{\partial RETURN}{\partial EARN} = \beta_1$$

Model (3)

$$\text{RETURN} = \beta_0 + \beta_1 * \text{EARN} + \beta_2 * \text{NAF} + \sum_{l=1}^m (\beta_{3+l} * X_l) + \sum_{l=1}^m (\beta_{m+3+l} * \text{EARN} * X_l) + \varepsilon$$

The regression model in Alisfan's (2018) study is a combination of the above three models as follows:

$$\text{RETURN}_{i,t} = \alpha_0 + \alpha_1 \text{EARN}_{i,t} + \alpha_2 \text{NAF}_{i,t} + \alpha_3 \text{NAF}_{i,t} * \text{EARN}_{i,t} + \alpha_4 \text{LEV}_{i,t} + \alpha_5 \text{ERET}_{i,t} + \alpha_6 \text{MB} + \alpha_7 \text{LOSS} + \alpha_8 \text{SIZE} + \alpha_9 \text{AU}_{i,t} + \alpha_{10} \text{LEV}_{i,t} * \text{EARN}_{i,t} + \alpha_{11} \text{ERET}_{i,t} * \text{EARN}_{i,t} + \alpha_{12} \text{MBV} * \text{EARN}_{i,t} + \alpha_{13} \text{LOSS} * \text{EARN}_{i,t} + \alpha_{14} \text{SIZE} * \text{EARN}_{i,t} + \alpha_{15} \text{AU}_{i,t} * \text{EARN}_{i,t} + \varepsilon_{i,t}$$

Dependent variable:

RETURN: Stock returns are one of the performance indicators of a company, which include the ratio of the total earnings from investment in a given period to the investment consumed during that period:

$$R_t = \frac{(P_t + 1 - P_t) + \text{DPS}_t}{P_t}$$

R<sub>t</sub>: Common stock return in period t

P<sub>t</sub>: Common stock price in period t

P<sub>t+1</sub>: Common stock price in period t+1

DPS<sub>t</sub>: Cash dividend on common stock in period t

Independent variable:

NAF: The ratio of non-audit service fee to total audit fee

Control variables:

Lev: Corporate financial leverage has been defined as the ratio of the book value of the company's total debts to its total assets.

Expected Returns: Expected stock return of company i in year t, which includes the estimated return on production that investors expect to gain in the next period (Easton, 2005). In his studies that have led to the provision of a model for calculating the actual cost of production, Sharp proved that market orientation derives from the expected returns of a unique security which is equal to return on a risk-free asset plus the relative risk of securities (β) multiplied by market portfolio return difference minus risk-free asset return as the following (Diavatopoulos et al., 2012):

$$E_{ri} = r_f - \beta_i (r_m - r_f)$$

In which:

E<sub>ri</sub>= Expected returns

r<sub>f</sub>= Risk-free asset return

β<sub>i</sub> = Relative risk of securities

r<sub>m</sub>= Market portfolio return rate

Portfolio return rate (total return rate) is obtained from the sum of changes in price and cash dividend while considering the amount paid as capital:

$$rm = \frac{\sum c_{i,t} \cdot D_{i,t} - \sum x_i p_i}{c_{i,t} p_{i,t} - 1} + \frac{TEP_t - TEP_{t-1}}{TEP_{t-1}}$$

In which:

TEP<sub>t</sub> = Stock index at the end of the day

TEP<sub>t-1</sub> = Stock index at the beginning of the day

X<sub>i</sub>P = Shareholders' cash contribution in capital increase

C<sub>i</sub> = Number of shares in the period

D<sub>it</sub> = Cash dividend per share

P<sub>it</sub> = Stock prices in the period



t= The period under study

Corporate size (Size): It is the natural logarithm of total assets of a company.

Audit type (AU): It is a dummy variable which is 1 if the company's independent auditor is the Audit Organization; otherwise, it is zero.

Ratio of market value to book value (MB): Ratio of market value to book value of assets

LOSS: It is a dummy variable which is 1 if the company makes losses; otherwise, it is zero.

In the descriptive statistics section, data analysis was performed using central indicators such as mean, median and dispersion indices of standard deviation. Moreover, panel data regression model has been used for hypothesis testing. To select between hybrid regression model and panel data with fixed effects model, F-Limer test has been used. If in F-Limer test, hybrid data method is applied, it is all done. But if panel data with fixed effects model is chosen, the Hausman test is also required. This test is used to determine the use of fixed effects model versus random effects model.

## Results

### Descriptive statistics

As can be seen, the results of the descriptive statistics of the research variables are shown in Table (1).

**Table 1**  
**Descriptive statistics of the model variables**

Variable	Variable name	Mean	Median	Maximum	Minimum	SD
Stock returns	RETURN	32.7633	17.8818	205.3977	-34.4629	0.7922
Net profit	EARN	0.1048	0.0945	0.2999	-0.0512	0.0700
Non-audit services related to financial information regulation	NAF1	0.0920	0.0886	0.4289	0.0004	0.0666
Audit firm size	AU	0.1895	0.0000	1.0000	0.0000	0.3929
Financial leverage	LEV	0.6385	0.6451	0.9764	0.2926	0.1728
Corporate loss	LOSS	0.1263	0.0000	1.0000	0.0000	0.3331
Ratio of market value to book value	MB	1.8354	1.5125	4.4938	0.5322	0.9784
Corporate size	SIZE	13.9723	13.9143	16.8167	11.6708	0.2028
Expected stock return	ERET	0.0683	0.0625	0.1621	0.0249	0.0318

\*Source: Research findings

As can be observed in Table (1), the average net profit is 32.7633. Also, average non-audit services related to financial information regulation is 0.0920, meaning that approximately 9% of the studied companies' fees are the costs of non-audit services related to financial information regulation.

On average, 638% of the assets of the companies under investigation have been debt-financed. Thus, based on the results obtained from descriptive statistics of the research variables, it can be stated that all variables are well distributed.

**Study of the linear regression model assumptions**

**Constant variance of error term (residuals)**

Another linear regression assumption is that all residual terms have equal variances. In this study, the assumption of homogeneity of variance of residuals was examined by the White test whose results have been presented in Table (2). In the model, the null hypothesis indicating the existence of variance homogeneity is rejected. In other words, it can be mentioned that in the research model, there is variance heterogeneity. Hence, to eliminate variance heterogeneity in the model, we use generalized least squares (GLS) regression.

**Table 2**  
**The results of testing the constant variance of error term**

Assumptions	F statistic	Probability	Result
Regression model	3.264794	0.0017	Heterogeneity of error term variance

**Lack of error term autocorrelation (residuals)**

This classical linear regression model assumption states that there is no correlation between the residual regression terms. To check the independence of residuals, Breusch-Godfrey serial autocorrelation test has been applied. In this test, the null hypothesis suggests that there is no autocorrelation and the opposite hypothesis indicates that there is a serial autocorrelation between errors. The test results show that since at a 95% confidence level, the probability value of F statistic in the model is more than 5%, the null hypothesis in the model can be confirmed. So, there is no reason to reject the lack of autocorrelation between the residual terms. In other words, the assumption that there is no error term autocorrelation in the model used is established in the research.

**Table 3**  
**Results of testing the lack of error term autocorrelation**

Assumptions	F statistic	Probability	Result
Regression model	0.100331	0.4046	Lack of error term autocorrelation

**Study of the reliability of variables**

In this section, we examine the reliability of the research variables. To this end, Dickey Fuller test has been used. The results of this test are shown in Table (4). After computing this statistic, the null hypothesis is rejected if the calculated statistic value is lower than the statistic of the table and the opposite hypothesis indicating the existence of the unit root (reliability) is accepted. According to the reliability test results, since the P-value for all variables is less than 0.05, these variables have been reliable during the research period and the variables are at the level of reliability each year of the research period.

**Table 4**  
**Unit root test**

Variables	Symbol	Levin, Lin and Chu test		Results
		Statistic	Probability	
Stock returns	RETURN	-32.5204	0.0000	Reliable

Variables	Symbol	Levin, Lin and Chu test		Results
		Statistic	Probability	
Earnings	EARN	-16.8541	0.0000	Reliable
Non-audit services	NAF	-40.0680	0.0000	Reliable
Non-audit services related to financial information regulation and earnings response	NAF*EARN	-22.20525	0.0137	Reliable
Audit firm size	AU	-34.36711	0.0000	Reliable
Financial leverage	LEV	-52.46562	0.0068	Reliable
Corporate loss	LOSS	-83.2355	0.0000	Reliable
Ratio of market value to book value	MB	-24.7700	0.0000	Reliable
Corporate size	SIZE	-21.3129	0.0000	Reliable
Stock return fluctuation	ERET	-52.4905	0.0000	Reliable
Audit firm size and earnings response	AU*EARN	-10.1561	0.0000	Reliable
Financial leverage and earnings response	LEV*EARN	-36.0385	0.0000	Reliable
Corporate loss and earnings response	LOSS*EARN	-4667.84	0.0000	Reliable
Ratio of market value to book value and earnings response	MB*EARN	-26.1135	0.0000	Reliable
Corporate size and earnings response	SIZE*EARN	-25.0772	0.0000	Reliable
Stock return fluctuation and earnings response	ERET*EARN	-23.1091	0.0000	Reliable

### Normality of the error term

One of the important assumptions about the residual term is that the distribution of its terms be normal. In order to test the normality of the error term, Jarque-Bera test statistic has been used. According to the results, the probability value of Jarque-Bera test statistic is more than 5% in the research model. Therefore, in the model, the null hypothesis indicating the normality of the error term is accepted. In other words, in the research model, the assumption of the normality of the error term is approved.

**Table 5**  
**Results of the normality of the error term**

Assumptions	Jarque-Bera statistic	Probability	Result
Regression model	70.519	0.0543	Normality of the error term

**F-Limer test and Hausman test**

Before estimating the model, it is necessary to perform F-Limer test in order to evaluate the use of panel data with fixed effects method versus hybrid data method for the above model. Hypotheses of this test are as follows:

H<sub>0</sub>: Common hybrid data

H<sub>1</sub>: Panel data with fixed effects

The results of F-Limer test are presented in Table (6).

**Table 6**  
**Results of F-Limer test**

Accepted method	Error level	Statistic
Panel data method	0.000	1.954

\*Source: Research findings

As can be observed in Table (6), the results suggest the rejection of H<sub>0</sub>. As a result of the model, panel data with fixed effects is the preferred method. Now, it is also necessary to carry out the Hausman test in order to choose between panel data with fixed effects versus panel data with random effects. The hypotheses of this test are as follows:

H<sub>0</sub>: Panel data with random effects

H<sub>1</sub>: Panel data with fixed effects

The results of the Hausman test are displayed in Table (7).

**Table 7**  
**Hausman test results**

Accepted method	Error level	Statistic
Panel data with fixed effects	0.0122	17.645

\*Source: Research findings

As can be seen in Table (7), the results indicate the rejection of H<sub>0</sub>. As a result of the model, panel data with fixed effects is the preferred method. Now, in the following, the results of the research model estimation are shown in Table (8) with panel data with fixed effects.

**Table 8**  
**Research model estimation results**

Variable name	Variable	Variable coefficient	Error level	T-statistic	Probability
Operating profit	EARN	0.2662	0.1168	2.2785	0.0239

Variable name	Variable	Variable coefficient	Error level	T-statistic	Probability
Non-audit services related to financial information regulation	NAF	-0.0021	0.0010	-2.1008	0.0360
Interaction between non-audit services and earnings response	NAF*EARN	0.0008	0.0005	1.4900	0.1366
Audit type	AU	2.8969	0.3579	8.0946	0.0000
Financial leverage	LEV	-0.0862	0.0514	-1.6771	0.0948
Corporate loss	LOSS	0.6042	0.4521	1.3364	0.1826
Ratio of market value to book value	MB	-0.0053	0.0066	-0.8064	0.4211
Corporate size	SIZE	0.0010	0.0008	1.3332	0.1842
Stock return fluctuation	ERET	0.0720	0.0130	5.5176	0.0000
Audit type	AU*EARN	-0.0069	0.0020	-3.3773	0.0009
Financial leverage	LEV*EARN	-0.0041	0.0014	-2.8584	0.0047
Corporate loss	LOSS*EARN	0.5291	0.0314	16.8480	0.0000
Ratio of market value to book value	MB*EARN	-0.0017	0.0019	-0.8636	0.3886
Corporate size	SIZE*EARN	0.0057	0.0042	1.3709	0.1716
Stock return fluctuation	ERET*EARN	0.0305	0.0154	1.9844	0.0483
Constant coefficient	C	0.0433	0.0179	2.4276	0.0156
F-statistic (P-Value)		0.0000 (32.7631)			

Variable name	Variable	Variable coefficient	Error level	T-statistic	Probability
R- Squared		0.6725			
Adjusted R- Squared		0.6219			
Durbin – Watson Stat.		1.9170			

\*Source: Research findings

To test the hypotheses, in the fixed effects regression model using the generalized least squares method, the dependent variable (stock returns) and independent (non-audit services) and control variables were investigated.

According to the results shown in Table (8) and with respect to the obtained F-statistic (32.7631) and its error level (0.000), it can be stated that at a 99% confidence level, overall the research model enjoys a high significance. Further, given the adjusted coefficient of determination obtained for the model, which is 67%, it can be maintained that overall, the research independent and control variables account for more than 62% of the dependent variable changes. Additionally, based on Durbin-Watson statistic value which is equal to 1.917, one can say that there is no first-order autocorrelation between the model residuals. According to the results in Table (8) obtained from the estimation of the research model and coefficient of non-audit services related to financial information regulation (-0.0021) and its error level (0.0360), it can be mentioned that at an acceptable error level of 5%, the variable of non-audit services has a significant relationship with earnings response coefficient and the type of relationship is negative with regard to the variable coefficient. Hence, based on the obtained result, it can be said that non-audit services have a significant negative relationship with earnings response coefficient.

## Conclusion

Due to the expansion of corporations and the separation of owners from managers, the need for the audit profession is also increasing. Provision of accreditation audit services is an integral part of today's common processes. But increased corporate demand from audit firms to provide non-audit services has also made professional associations faced with difficulties as to whether or not the non-audit services provided by audit firms to employers affect the impartial financial reporting. Provision of non-audit services by auditors, on one hand, can lead to enhanced financial statements understandability, auditors' knowledge-sharing, better relationships between managers and auditors and also lower agency costs and, on the other hand, threatens auditor independence and subsequently affects earnings quality. Consequently, investors have different expectations concerning the net profit with respect to previous information and their ability to evaluate financial statement information. Thus, investors' reaction to non-audit services was questioned. The results of hypothesis testing of this study showed that non-audit services related to financial information regulation have a significant negative relationship with earnings response coefficient. Since providing some non-audit services by audit firms to their employers creates an impression in society that auditors do not seem independent in society, the quality of earnings approved by them is questioned by users. It is obvious that if auditors do not seem independent in public opinion, the audit reports cannot be relied on. Findings of this research are consistent with the studies by Alisfan (2018) who also found that non-audit services have a significant effect on earnings response coefficient. Another example is the research by Betty and Hsu (2017) who argued that non-audit services reduce the audit quality and ultimately the quality of profitability information. Further, we can refer to the study by Koouin et al. (2011) who concluded that when offering non-audit services by an audit team, auditor independence is significantly compromised. Hence, it can be negatively related to earnings response coefficient. In internal studies, we can mention the findings obtained by Sani et al. (2016). They believed that providing some non-audit services by audit firms to their

employers creates an impression among financial statements users that auditors do not seem independent. Congruent with the findings of this study is the research done by Akbarpour et al. (2016) who found that simultaneous provision of audit and tax and bookkeeping services and design and implementation of accounting information system by independent auditor to the employer affects financial reporting quality. Or based on the study conducted by Sajjadi (2007), the provision of non-audit services and financial dependency of the auditor on the employer are among the factors that reduce auditor independence. This is congruent with the findings of this research.

Given that the legislative and standard formulation body is the certified accountants association, a systematic framework with a strict supervisory mechanism for non-audit services has not yet been developed and only some items have been stated in brief in the disciplinary regulations and auditing standards. Therefore, it is recommended that adequate and explicit policies be set for the control and oversight of non-audit services by the independent auditor. Full disclosure of non-audit services, whether accredited or non-accredited, will help users make appropriate decisions. Thus, the issue of disclosing more details of non-audit services can be addressed in accounting standards.

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