

The relationship between audit components and audit market adaptability

Audit
components

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Abstract

Purpose – This study aims to study the relationship between audit components and collusion in the audit market.

Design/methodology/approach – The statistical population of the study includes 130 listed firms on the Tehran Stock Exchange from 2012-2017. The data tested using multivariate regression.

Findings – The findings of the study indicate that there is a positive and significant relationship between Rank A audit firms, competition and audit fees and audit market adaptability. The relationship standard fees and audit market adaptability, however, is negative and significant. Moreover, the results of the study show that there is no significant relationship between opinion shopping, type of audit report, audit market concentration, and agency costs with audit market adaptability.

Originality/value – The current study fills the gap in this area, and the results of the study may give direction to researchers and policy makers.

Keywords Audit fee, Agency costs, Audit firms, Type of audit report, Audit market adaptability, Audit market concentration, Audit market competition, Opinion shopping

Paper type Research paper

1. Introduction

After the separation of management from ownership, the demand for high-quality financial reports has increased drastically to lower the information asymmetry between manager and owner (Bushman and Smith, 2003). The need for assurance, which is made through surveillance and auditing, is obvious in cases where ownership is separated from management (Xu, 2007). The role of an independent auditor is to show that financial statements are provided based on authorized accounting principles. Auditor or audit quality is not tangible intrinsically, and evaluating that is a cumbersome, time-consuming and costly (De Angelo, 1981). Hence, De Angelo (1981) defines the size of audit firm as a representative for audit quality, based on which the quality of presented audit services by large audit firms is more than that of the smaller ones. Although there are various regulatory groups for the audit market, audit firms may prefer to reach an agreement to set



prices higher than normal (Government Accountability Office (GAO), 2003, 2008; Financial reporting council, 2009; Comisión Europea, 2010; Competition Commission, 2013). There are several pieces of evidence for high concentration in the market that may cause the audit firms to ask for higher costs from their customers. As such firms have complete dominance on the market, they are more likely to benefit from market power to reach their objectives (Hay *et al.*, 2006; Ferguson and Scott, 2014). One of the aspects with the most interest among theorists of industrial organizations is the probability that certain firms with relative significance in the market may use their influence to incur some costs more than what is existing in competitive structure of the market, which is referred to as the market power. The underlying hypothesis is that market competition level relies on high-number presence of competitors and the amount of similarity of their share in the market. This indicates why in exclusive markets of goods, where a group of firms gather a relatively high proportion in the market, the pioneer firms prefer to collaborate with each other instead of competing. Such agreements cause the market power to be sized by firms. Thus, firms that are present in such space receive all resultant incomes from their exclusive rights. The collaboration hypothesis has studied experimentally in different projects to assess the relationship between market concentration levels and costs (Maudos, 2001).

The use of structural evaluations, however, like concentration, is the main objective of experimental and theoretical criticisms (Dedman and Lennox, 2009). Theoretically, there is no solid conceptual support to show why concentrated markets motivate pioneer firms to collaborate with them. There are some empirical evidence showing that high level of concentration is not compatible with fierce competition among pioneering firms. In other words, severe competition is identified among highly concentrated pioneering firms, and this will cause the outbreak of skepticism whether concentration in the market can be considered as an appropriate scale for firm capacity for collaboration or not.

Accordingly, the other branch of the theory of industrial organization emphasizes on the significance of evaluating competition in concentrated structures, like monopoly in limited companies, and persists on the integrity of dynamic evaluations of adaptability based on change in audit firms' rank in the market as a method for assessing the nature of competition (Koster *et al.*, 2010). This research branch suggests that market adaptability is the result of competition among firms, so it reflects the current behavior in the market and competition among firms. The result of this branch is that in highly concentrated markets, where a group of firms collect a relatively higher share, the pioneer firms prefer to collaborate with one another instead of competing to maximize their own profit, so their best choice in monopoly may be signing collaboration or cooperation agreements (Scherer and Ross, 1990).

In the previous studies, concentration has been used for measuring such collaboration, but because the variable of "concentration" may not be a good agent for collaboration behavior. In this paper, in contrast to other studies, we use market adaptability to assess competition and signing collaboration (collusion) contracts. Hence, considering the significance of the above said facts, we assess whether there is a relationship between audit components, including audit firm rank, opinion shopping, type of audit report, audit fee, standard fee, competition in the audit market, audit market concentration, and agency costs and audit market adaptability or not.

2. Theoretical framework, literature review and hypothesis development

2.1 Audit market adaptability

High-quality financial reports provide useful information for sound decision-making and investment. Although different factors contribute to financial reporting quality, auditing by

independent auditors can lead to the increase of trust in financial reports (Lungeanu, 2015). The quality of audit services, however, proposed by auditors is not the same. Despite the presence of different definitions of audit quality, the well-established definition of De Angelo (1981) considers the audit quality the ability of auditor in exploring and reporting significant existing distortions in financial reports. De Angelo (1981) defines the size of audit firm a representative of audit quality.

According to trusted audit firms ranking guideline of the Securities and Exchange Organization, “first-class” audit firms are more likely to have higher quality than audit firms of other classes because they benefit from sufficient and experienced human resources (audit partners and staff), appropriate quality control system, well-organized organizational structure and higher audit independence. Given the findings of the conducted studies in other countries, auditors with such characteristics are expected to have a higher quality than other firms.

Craswell *et al.* (2002) show that large audit firms are more cautious in delivering a plausible report. Li *et al.* (2008) reveal that there is a significant relationship between auditor’s size and conditional report in China. Francis and Yu (2009) analyze the relationship between the size of four large audit firm and audit quality and discover that large firms issue more conditional inactivity report and earnings management is considerably low by the employers of large branches of four audit firms. The findings of most of scholars based on the theory of auditor’s size show that audit quality of large audit firms is higher than that of the smaller ones (Behn *et al.*, 2008). Lawrence *et al.* (2011) declare that the impact of four large audit firms is significantly different from the impact of small firms relative to audit quality criteria. The findings of Xu *et al.* (2013) reveal that, compared with other audit firms, the large big international audit firms respond more quickly to global financial crisis by issuing conditional report for discontinuity of activity. The results of Eshleman and Guo (2014) suggest that financial restatement occurs less frequently for the employers of four large audit firms than that of the smaller ones. The results of He *et al.* (2014) show that there is a positive relationship between auditor’s industry expertise and issuing conditional audit report (the problem of continuing activity) for employers with inappropriate financial status. Wong *et al.* (2018) perceive that audit quality is higher in larger audit firms. In contrast, by assessing the relationship between the ranking of audit firms, audit quality and audit cost, MohammadRezaei *et al.* (2016) figure out that the quality of the presented services by Rank A audit firms is not higher than small audit firms. Moreover, Rank A audit firms ask for higher fees than other audit firms.

As mentioned previously, there is no large international audit firm in Iran, so Iranian scholars attempt to assess the relationship between auditor size and financial reporting quality. In general, we can say that the findings of Iranian scholars concerning the auditor size and financial reporting quality are contradictory.

According to the above said facts, the following hypothesis is formulated:

- H1. There is a relationship between Rank A audit firms and adaptability in audit market.

2.2 Audit market competition

For competing on a basis other than quality and differentiating services, audit firms try to optimize their fees and the best offer for themselves, to the point that in addition to maximizing their profit, to not lose the market in competitive condition (Joseph and Chad, 2015). Some professional accountants are concerned about the decline of quality, especially where competition on price is about professional contracts.

Kallapur *et al.* (2010) observe that competition less frequently leads to the increase in audit quality. They also notice that lack of competition would lead to an increase in the audit fee. Velte and Stiglbauer (2012) conclude that the share of four big audit firms, in terms of audit fee, in the audit market of European Union member states has declined due to presence of competition in this market. Carson *et al.* (2012) assess the impact of competition in the audit market in large audit firms and discover that competition causes the decrease of fee of industry specialized audit firms.

Francis *et al.* (2013) believe that within a concentrated audit market, auditors are less motivated to enhance the quality of services, and it is more likely for them to be overconfident and satisfied with what they are doing that can lead to the decline of audit quality. By contrast, in case the competition is less severe within an audit market, the fear of losing a client is not significant because selection options are limited to audit firms. Therefore, the chance of reaching a compromise between auditors and employers and damaging their independence is extremely low, and less competition causes the increase of audit quality (Newton *et al.*, 2013; Kallapur *et al.* (2010). The results of MohammadRezaei *et al.* (2016) indicate that competition in the audit market can only lower the audit fee, does not help the improvement of audit quality and increases the auditor change. The results of Heliodoro *et al.* (2016) reveal that the income of four big audit firms from total income of Portugal audit market has declined from 87 to 77 per cent in 2014. The reason for the decrease in income of large audit firms is the increase in competition in the audit market and also the increase of competition in production market of employers. More adaptability in market may be a sign of more severe competition in the market, and consequently, lack of collaboration agreements among pioneer firms in the market (Scherer and Ross, 1990). Given the aforesaid facts, we design the following hypothesis:

H2. There is a relationship between competition in the market and audit market adaptability.

2.3 Opinion shopping

The supervisory board for auditing public companies by emphasizing on opinion shopping considers the frequent use of auditors by firms as one of the major contributing factors for the outbreak of such a phenomenon (Ashton, 1990). Restatement is a type of awareness and public confirmation that reported financial statements are not in accordance with accepted accounting principles and present the most evident observations about incorrect accounting. Financial restatements introduce some doubts about management integrity, internal control sufficiency of the firm, audit committee effectiveness, auditor's independence effectiveness and audit quality (Gleason Jenkins and Johnson, 2008). Financial restatements would lead to the decline of investors' trust in financial reporting and decrease investment efficiency (Vivek and Myungsoo, 2013). The dismissal of independent auditor after reporting financial restatement is a tangible measure the firms can do to return the trust of the capital market and improve auditing supervision on financial reporting process (Hennes *et al.*, 2014) perceive that the chance of dismissal of auditors of small audit firms after financial restatement is more than that of the large audit firms. Mande *et al.* (2013) notice that there is a positive relationship between restatement and auditor change, especially when restatements are more severe and corporate governance structure is more powerful. The results of their study are indicative of the positive view of the stock market to auditor change after financial restatement.

Newton *et al.* (2016) indicate that firms are successful in purchasing plausible opinion about internal controls. Moreover, opinion shopping occurs more probably when the

dismissal of the auditor is close to the end of financial reporting period and the competition in market is high. [Chen et al. \(2016\)](#) also show that firms are successful in purchasing auditor opinion. By comparing the published audit reports by the partner of the new auditor and the previous one, they figure that firms improve their audit reports by changing auditor partner, which is indicative of the willingness of new partners for issuing plausible audit reports, compared with that of the previous partners. Given the aforesaid facts, the third hypothesis is as follows:

H3. There is a relationship between opinion shopping and adaptability in the audit market.

2.4 Audit fees

Decreasing regulations in audit labor market allow the audit firms to follow more the economic objectives and be in search of income growth and cost decrease in each audit labor ([Healy and Palepu, 2003](#)). Under such circumstances, that auditor is successful who is able to have the best estimation of his/her fee considering the characteristics of the unit under study to, in addition to preserving the quality, implement that with the minimum cost. Audit fees are reflective of audit quality for external users of financial statements. Employers are very hopeful to lower the cost of reporting systems, and in contrast, the auditors are hopeful to gain plausible profit from auditing and audit fee is the result of maximizing the benefits of both parties ([Gonzalez Saez and Lopez, 2015](#)). Along with the growth of competition in the profession, audit firms more realized the necessity of presenting high-quality services and paying lower fees to the market. Audit firms for competing on a basis other than quality and differentiating services try to optimize their fees and present the best suggestions to both maximize the income and do not lose the project in the competing condition ([Joseph and Chad, 2015](#)).

The results of [Griffin and Lont \(2011\)](#) are indicative of a significant relationship between audit fee and some factors like audit report, auditor change, type of industry and employer size. [Hariss \(2012\)](#) declares that mandatory turn of audit firms can increase the audit fee, because initial auditing is time-consuming, and lower the market share of large audit firms. The results of [Huang et al. \(2015\)](#) show that when firms change their audit institutions and their audit partners change in proportion to the previous year, audit cost will decrease for the first year that under such circumstances, the chance of occurrence of earnings management is higher. Besides, [Mohamarezaei et al. \(2016\)](#) observe that audit change can decline the audit cost. Most of the scholars propose the theory that there is a direct relationship between audit quality and audit fee, and if big audit firms incur higher fees to the employer, this means that the quality of their audit services is favorable. [Johnstone et al. \(2014\)](#) show that firms with more specialized auditors, compared with other firms, benefit from higher audit quality and lower fee. By analyzing the relationship between audit market structure of America and audit price and quality, [Dunn et al. \(2013\)](#) declare that audit market equality (more intense competition) causes the decline of audit cost and the increase of quality. Given the aforesaid facts, the following hypotheses are formulated:

H4. There is a relationship between auditor's fee and audit market adaptability.

H5. There is a relationship between standard fee and audit market adaptability.

2.5 Type of audit report

Type of plausible opinion can increase the firm access to credit resources outside the organization ([Niemi and Sundgren, 2012](#)). On the other hand, capital market responds

positively to good news. Good news means the decline of information asymmetry and favorable opinion is considered as good news, so it motivates the capital market that causes the increase of stock price and transaction volume. Hence, a failed opinion or no opinion exacerbates the gap in information asymmetry in the market and consider as bad news (Abad *et al.*, 2013).

Wallace (2004) suggests that auditing in form of its final opinion can play different roles; the auditor can be a supervisor, source of information and/or insurer for the firm. Both the empirical and archival studies show that auditor opinion provides some information for decision-making, and the real behavior of financial markets toward audit report is significant. In other words, market responds to the type of auditor's opinion. The results of the study of Moradi *et al.* (2011) illustrate that there is no significant relationship between plausible opinion, return and stock price. Chen *et al.* (2010) perceive that auditor change causes the increase of issuance of plausible audit reports. Sallah and Jasmani (2014) show that small audit firms issue more conditional reports. Darezereshki *et al.* (2014) declare that lack of quick transactions and fast response of investment volume in the capital market are among the reasons for the withdrawal of firms from the list of active firms in the stock exchange. They analyze the type of opinion in the year prior to firm withdrawal for the stock exchange and realize that more than 81 per cent of the reports is about problems before the withdrawal of data error. Mohammadrezaei *et al.* (2016) believe that after the liberation of audit market, issuance of implausible audit report and number of conditional terms of audit report have declined. Given the aforesaid facts, the following hypothesis is proposed:

H6. There is a relationship between type of audit report and audit market adaptability.

2.6 Audit market concentration or audit market size

In developed countries, audit markets are under the control of the four big audit firms. This has brought about audit market concentration (Huang *et al.*, 2016). The legislators, accounting standards practitioners and audit customers are increasingly concerned about the level of concentration in audit markets (Eshleman and Lawson, 2017; Knechel, 2015; Francis *et al.*, 2013). One of the reasons for such concerns is the chance of increase in audit fee for customers by changing audit market concentration (Huang *et al.*, 2016). In contrast to such concerns, some of the scholars believe that high audit market concentration causes scale-based saving and also sever competition among other audit firms and consequently lowers the audit fee (Pearson and Trompeter, 1994). On the other hand, audit market concentration has a significant impact on the quality of independent auditor (Francis *et al.*, 2013; Kallapur *et al.*, 2010; Boone *et al.*, 2012). According to Newton *et al.* (2013), the increase in audit market concentration causes the decline of auditors' risk from lack of employer and ensures the auditors to perform the audit activity with a higher quality.

Eshleman (2013) shows a positive and significant relationship between audit market concentration and audit quality. On the other hand, audit firms benefit from the limited selection right of their employers, and within a large and highly concentrated market, auditors gain access to an economic equilibrium, and this would cause more efficient services to be presented and audit quality to be increased. Regarding the literature and because there is a negative relationship between audit market concentration and audit market competition (Boone *et al.*, 2012; Kallapur *et al.*, 2010), we can conclude that by increasing the audit market size, audit quality may increase under competitive condition. The results of the study of Eshleman and Lawson, (2017) show that audit quality surges by increasing audit market concentration. Huang *et al.*, (2016) conclude that concentration increase causes the enhancement of audit quality, and need for adjusted opinion by auditors

will decrease by increasing the audit fee. They also show that concentration improves audit quality directly by increasing the audit fees.

In highly concentrated markets, the pioneering firms prefer to collaborate with one another instead of competing for maximizing the profit, so the best choice for them in monopoly may be signing collaboration or cooperation agreements (Scherer and Ross, 1990).

Given the aforesaid facts, the following hypothesis is proposed:

- H7. There is a relationship between audit market concentration and audit market adaptability.

2.7 Agency costs

Audit costs upsurge due to the separation of ownership from management. Under such circumstances, the presence of a controlling mechanism that relatively guarantees the transparency of reported information in financial statements is vital. Such a mechanism presents a form of auditing by independent auditors (Kouki and Guizani, 2009). According to the literature of the agency theory, by increasing agency conflicts, the willingness of economic firms for selecting an independent audit firms will go up (Fan and Wong, 2005). Gul *et al.* (1998) assess the impact of management authorities, as a criterion of agency cost, on audit service pricing and claim that agency costs contribute to the pricing of such services. Fan and Wong (2005) perceive that when ownership structure of firms guarantees the agency costs, it is more likely for them to employ auditors from the five big audit firms. By increasing the agency costs, the economic firms are more willing to use independent audit services. Anwer *et al.* (2008) posit that firms with large auditors have lower agency costs than those firms not using such auditors. The results of Cai *et al.* (2015) reveal that audit committee, by decreasing the agency costs helps internal management systems. Nirosha Hewa and Stuart (2011) declare that ownership concentration has the maximum impact on the corporate governance system and agency costs. Edelen *et al.* (2011) declare that transparency in presenting financial information is major determining factor in lowering agency costs derived from assigning investment management. Huang and Zhang (2012) show that extensive disclosure of information lowers the power of exploiting individuals inside the organization (managers) for using the firm resources to their benefit and consequently lower the agency costs. The results of Luo *et al.* (2018) indicate that firms with more transparent financial reports experience lower agency costs; moreover, they find a negative relationship between reports transparency and agency costs, especially in firms with higher audit quality and internal control. Guariglia and Yang (2016) argue that firms with low cash flow are less (more) willing to invest due to agency costs. Chen *et al.* (2011) show that firms' powerful shareholder rights have lower capital cost. Further, such an effect is considerably more for firms with agency costs related to free cash flows. Therefore, from agency cost's point of view, the shareholder also uses the information as the main management control mechanism for separating the role of ownership from management and decreasing the agency costs.

Given the aforesaid facts, the following hypothesis is proposed:

- H8. There is a relationship between agency costs and audit market adaptability.

3. Methodology

The statistical population of the present study includes all listed firms on the Tehran Stock Exchange during 2012–2017 with the following qualifications:

- not being affiliated with investment firms, banks, insurance, financial intermediaries and holding due to difference in nature and classification of financial statement items, compared with productive firms;
- be deprived of transaction halt for more than three months; and
- their financial year being ended in March.

Given the said conditions, a total number of 130 firms is selected for years 2012–2017 as the statistical population.

4. Research model and variables

In this paper, the variable of adaptability is evaluated by assessing the change in firms ranking (Méndez and González, 2003). Any change in audit firm rank is in (0 and 1) interval. 0 in ranking never changes, while 1 has all definitive changes in all ranking positions. A high ratio of adaptability is reflective of the competitive market and incompatible collaboration agreements, while a low ratio is indicative of low competition among firms and the possibility of reaching an agreement for applying market power (Baldwin and Gorecki, 1989).

The effect of audit firms ranking components, audit fee, standard fee, opinion shopping, competition, concentration, type of report and agency costs will be assessed on adaptability in the audit market. So, we have the following regression model:

$$\begin{aligned} MOBILITY_{it} = & \alpha_0 + \alpha_1RAF + \alpha_2COM + \alpha_3Shop + \alpha_4ADfee + \alpha_5Infi \\ & + \alpha_6Opinion + \alpha_7MKTSIZE + \alpha_8Deal\ cost + \alpha_9CATA_{it} \\ & + \alpha_{10}QUICK_{it} + \alpha_{11}DE_{it} + \alpha_{12}ROI_{it} + \alpha_{13}LOSS_{it} + \varepsilon_{it} \end{aligned} \quad (1)$$

4.1 Research variables and their calculation method (Table 1)

5. Research findings

5.1 Descriptive statistics

As can be seen in Table 2, descriptive statistics are mean, median, minimum, maximum, standard deviation, skewness and kurtosis. Accordingly, we can see that among the variables, natural logarithm of total assets (LZA) with value of 14.2236 has the maximum mean, and the long-term debt to total assets ratio (DE) with the value of 0.0719 has the minimum mean. Moreover, competition in the audit market (COM) with the value of 9.786 has more standard deviation and more extensive scope, which shows the competition in the audit market of most of the firms is far from the mean, and the long-term debt to total assets ratio (DE) with the value of 0.1042 has the lowest standard deviation and scope.

Table 3 illustrates that among 780 statistical population samples, 614 samples have no adaptability in the audit market, and 166 samples have adaptability in the audit market. In Table 3, among 780 statistical population samples, 655 samples have had no restatement and did not change their auditor, and 115 samples did the restatement but not changed their auditor.

As the dependent variable of the study has double value, the present study has used the logit analysis in data. The indices used for the goodness of fitting of logistic regression are as follows:

No.	Variable	Latin name	Calculation method
1	Audit market adaptability	MOBILITY	Change in audit firm ranking, 0 if audit firm ranking never changes; otherwise, 1 (audit firm ranking is adaptable)
2	Audit firm ranking	RAF	Based on the Official Accountants Association ranking, if audit firm is A, 1, B, 2, C, 3 and if it is D, 4 will be assigned.
3	Audit market competition	COM	Is difference between audit fee of the current year and audit fee of the previous year divided by the fee of the previous year. Newton et al. (2016) and Numan and Willekens (2012) have also used the criteria
4	Opinion shopping	SHOP	In case the firm has had a restatement and did not change its auditor: 1; otherwise, 0
5	Audit fee	ADfee	Natural logarithm of audit fee
6	Standard fee	In fi	Standard fee is calculated as follows (Hoitash et al., 2007): $LAF_{it} = \beta_0 + \beta_1 LTA_{it} + \beta_2 CATA_{it} + \beta_3 QUICK_{it} + \beta_4 DE_{it} + \beta_5 RPI_{it} + \beta_6 LOSS_{it} + \varepsilon LAF_{it}$ natural logarithm of audit fee LTA: natural logarithm of total assets CATA: current assets to total assets ratio QUICK: current assets to current debt ratio DE: long-term debt to total assets ROI: earnings before tax deduction and interest to total assets LOSS: in case the firm is losing 1; otherwise, 0
7	Report type	OPINION	If the audit report is conditional 1; otherwise, 0
8	Audit market concentration or audit market size	MKZSIZE	Is the scaling rank of audit market size (Eshleman, 2013). For this purpose, first, audit market size is calculated as follows: $\sum_{i=1}^k a_i$ i: employer in the related industry a: total assets of current employers in industries in the following, the scaling rank of audit market size, which is between 0 and 1, is calculated as follows (Schliman, 2013): $rank = \frac{a - min}{max - min}$ Min: minimum total assets value in related industry Max: maximum total assets value in related industry

(continued)

Table 1. Research variables and their calculation method

Table 1.

No.	Variable	Latin name	Calculation method
9	Agency costs	Deal cost	Operational costs to total sales of the firm
10		CATA	Current assets to total assets ratio
11		QUICK	Current assets to current debt ratio
12		DE	Long-term debt to total assets ratio
13	Assets profitability ratio	RIO	Earnings before tax deduction and interest to total assets
14	Loss	LOSS	In case the firm is losing, 1; otherwise, 0

Table 2.
Descriptive statistics of model variables

Variable	Audit market adaptability	Opinion shopping	Type of report	Audit market concentration	Loss	Natural logarithm of total assets	Current assets to total assets ratio	Current assets to current debt ratio
Mean	0.2133	0.148	0.511	0.601	0.126	14.224	0.670	1.557
Median	0.000	0.000	1.000	1.000	0.000	14.020	0.698	1.275
Standard deviation	0.40982	0.3553	0.500	0.489	0.332	1.548	0.222	2.104
Skewness	1.402	1.985	-0.046	-0.415	2.254	0.755	4.643	19.969
Kurtosis	-0.034	1.945	-2.002	-1.832	3.085	0.808	83.820	511.393
Minimum	0.000	0.000	0.000	0.000	0.000	10.350	0.143	0.233
Maximum	1.000	1.000	1.000	1.000	1.000	19.750	0.431	3.249

Variable	Long-term debt to total assets ratio	Assets profitability power ratio	Agency costs	Audit market competition	Audit firm rank	Natural logarithm of audit fee	Standard fee
Mean	0.2133	0.148	0.511	0.601	0.126	14.224	0.670
Median	0.000	0.000	1.000	1.000	0.000	14.020	0.698
Standard deviation	0.40982	0.355	0.500	0.489	0.332	1.548	0.222
Skewness	1.402	1.985	-0.046	-0.415	2.254	0.755	4.643
Kurtosis	-0.034	1.945	-2.002	-1.832	3.085	0.808	83.820
Minimum	0.000	0.000	0.000	0.000	0.000	10.350	0.143
Maximum	1.000	1.000	1.000	1.000	1.000	19.750	0.431

Variable	Sign	Total (%)	Current (%)	(%)	No.	Variable
Audit market adaptability	MOBILIZY	78.7	78.7	78.7	614	0
		100	21.3	21.3	166	1
		100	100	100	780	Total
Opinion shopping	SHOP	85.2	85.2	85.2	665	0
		100	14.8	14.8	115	1
		100	100	100	780	Total
Report type	OPINION	48.9	48.9	48.9	381	0
		100	51.1	51.1	399	1
		100	100	100	780	Total
Audit market concentration	MKZSIZE	39.9	39.9	39.9	258	0
		100	60.1	60.1	522	1
		100	100	100	780	Total
Loss	LOSS	87.4	87.4	87.4	679	0
		100	12.6	12.6	101	1
		100	100	100	780	Total

Table 3.
Variables frequency

- McFadden's R^2 coefficient of determination for assessing the goodness of fitting; and
- evaluating model forecast power using the test data.

Table 4 indicates the used sample in this paper, which is obtained from all 780 sample observations (company-year), 614 observations related to dependent variable with 0 value and 166 observations with 1 value. So, prediction using the estimation probability model for

614 observations with 0 value for audit market adaptability is correct for 535 observations and incorrect for 79 observations. Hence, for firms with audit market adaptability, 87.19 per cent of the predictions are correct, and in total, according to Table 4, about 68.75 per cent of the observations are predicted correctly.

5.2 Testing research hypotheses

In the regression model, we decide about the rejection and acceptance of the null hypothesis, given the probability values.

If the probability of the z-statistic for the variable:

$$(RAF_{it}, COM_{it}, Shop_{it}, ADfee_{it}, lnfi_{it}, opinion_{it}, MKZSIZE_{it}, Deal\ cosz_{it})$$

Is less than 0.05 error level, the null hypothesis is rejected; otherwise, the null hypothesis is not rejected.

The following regression Model (1) is used to test the research hypotheses.:

$$MOBILITY_{it} = \alpha_0 + \alpha_1RAF + \alpha_2com + \alpha_3Shop\ iz + \alpha_4ADfee\ iz + \alpha_5lnfi\ iz + \alpha_6opinion\ iz + \alpha_7MKZSIZE + \alpha_8Deal\ cosz + \alpha_9CATA_{it} + \alpha_{10}QUICK_{it} + \alpha_{11}DE_{it} + \alpha_{12}ROI_{it} + \alpha_{13}LOSS_{it} + \varepsilon_{iz}$$

Given Table 5, the LR statistic is used to test the significance of the total model, and t-statistic is used to test the significance of regression coefficients. Moreover, McFadden’s R² coefficient of determination is used for testing the goodness of fit. The obtained results from Model (1) fitting are presented in Table 5.

In Table 5, the significance value of the model is equal to 0.000 (the obtained probability value for LR statistic) that has a value lower than 0.05, so H₀ is rejected, and this shows that all regression coefficients are not 0 simultaneously. So, at 95 per cent confidence level, we can claim that: “the fitted regression in logistic method is significant for the model.”

Moreover, in Table 5, the value of the McFadden’s R² is equal to 0.4492, and the closer the figure to 1, the more is the compatibility of the model to reality or the fitting goodness. So, the model fitting is appropriate.

According to Table 5, the coefficient of the variable of audit firm ranking (RAF) is 0.1008, i.e. positive, and t-statistic probability for audit firm ranking is 0.0004. This probability value is less than 0.05 error level, so the null hypothesis is rejected. Hence, audit firm ranking has a positive and significant effect on audit market adaptability. So, H₁ of the study is accepted at 95 per cent confidence level.

According to Table 5, the coefficient of the variable of audit market competition (COM) is 0.104502, i.e. positive, and t-statistic probability for audit firm competition is 0.0485. This

Table 4.
Evaluating the prediction of the model

	Y = 1	Y = 0	Total
P(y = 1) <= C	55	79	134
P(y = 1) > C	111	535	646
Total	166	614	780
Correct	55	535	590
% correct	32.97	87.190	68.750
% incorrect	67.030	12.810	31.250

Table 5.

The results of data analysis for hypothesis testing

Variable	Coefficient	Standard error	t-statistic	Significance
Intercept (c)	-26.00388	45.36226	-0.573249	0.5665
Audit firm rank (RAF)	0.100829	0.028545	3.532269	0.0004
Audit market competition (COM)	0.104502	0.052978	1.972555	0.0485
Opinion shopping (SHOP)	0.070412	0.130674	0.538834	0.5900
Audit fee (ADFEE)	0.186218	0.097783	1.904404	0.0453
Standard fee (LNFI)	-1.454671	0.303266	-4.796688	0.0000
Type of auditor's report (OPINION)	0.016042	0.096438	0.166348	0.8679
Audit market concentration (MKZSIZE)	-0.182919	0.094831	-1.928902	0.0537
Agency costs (DEALCOSZ)	0.511153	0.388873	1.314448	0.1887
Current assets to total assets ratio (CATA)	5.622676	9.742922	0.577104	0.5639
Current assets to current debt (QUICK)	0.440259	0.723591	0.608436	0.5429
Long-term debt to total assets (DE)	-3.172721	5.917960	-0.536117	0.5919
Assets profitability power (ROI)	-4.383386	5.957793	-0.735740	0.4619
Loss (LOSS)	-0.231657	0.568089	-0.407783	0.6834
McFadden's R^2	0.4492	Standard deviation of dependent variable		0.4103
LR statistic	49.2294	Level of significance of LR statistic		0.0000

probability value is less than 0.05 error level, so the null hypothesis is rejected. Hence, audit firm competition has a positive and significant effect on audit market adaptability. So, $H2$ of the study is accepted at 95 per cent confidence level.

According to Table 5, the coefficient of the variable of audit fee (ADFEE) is 0.186, i.e. positive, and t -statistic probability for audit fee is 0.0453. This probability value is less than 0.05 error level, so the null hypothesis is rejected. Hence, audit fee has a positive and significant effect on audit market adaptability. So, $H4$ of the study is accepted at 95 per cent confidence level.

According to Table 5, the coefficient of the variable of standard fee (LNFI) is -1.454, i.e. negative, and the t -statistic probability for audit fee is 0.0000. This probability value is less than 0.05 error level, so the null hypothesis is rejected. Hence, standard fee has a negative and significant effect on audit market adaptability. So, $H5$ of the study is accepted at 95 per cent confidence level.

According to Table 5, the coefficient of the variable of type of auditor's report (OPINION) is 0.016, i.e. positive, and the t -statistic probability for type of auditor's report is 0.8679. This probability value is more than 0.05 error level, so the null hypothesis is accepted. Hence, type of auditor's report has a positive but no significant effect on audit market adaptability. So, $H6$ of the study is accepted at 95 per cent confidence level.

According to Table 5, the coefficient of the variable of agency costs (DEALCOSZ) is 0.5111, i.e. positive, and the t -statistic probability for agency costs is 0.1887. This probability value is more than 0.05 error level, so the null hypothesis is accepted.

According to Table 5, the t -statistic probability for control variables is more than error level of 0.05. Hence, control variables have no significant audit market adaptability.

6. Conclusion

The results of the study indicate that there is a positive and significant relationship between Rank A audit firms and audit market adaptability. As the presence of adaptability is equal to severe competition and lower chance of collusion, Rank A audit firms are less willing to sign collaboration (collusion) contract. Given the guideline of audit firms ranking developed by the Securities and Exchange, Rank "A" audit firms have the highest audit quality. In other words, it is expected that audit quality of authentic Rank "A" audit firms to be higher

than audit quality of authentic audit firms of other classes. [Mayhew and Wilkins \(2003\)](#) believe that large audit firms with larger proportion in the market should pay more attention to quality. Hence, there is a significant relationship between Rank A audit firms and audit firm adaptability.

The results of the study show a positive and significant relationship between competition in audit market and audit firm adaptability. Thus, the presence of competition among audit market firms hinders collaboration (collusion) contracts. In other words, active audit firms in competitive markets always try to preserve their portfolio and more importantly their employers. In this regard, audit firms attempt to maintain and develop their portfolio either by improving pursuing speed or by flexibility in their relations with their employers. In addition to competition in the product market, mandatory rotation of audit firms, according to Securities and Exchange guideline, can have a significant effect on the audit market and enhance the efficiency and effectiveness of audit services. The result of this hypothesis is in line with that of the [Heliodoro et al. \(2016\)](#), [MohammadRezaei et al. \(2016\)](#), [Newton et al. \(2013\)](#) and [Velte and Stiglbauer \(2012\)](#).

The results of the study reveal that there is no significant relationship between opinion shopping and audit market adaptability. As mentioned previously, opinion shopping is measured via financial restatement and the Securities Committee of America declares that restatement lowers severely the credit of financial statements for users because independent auditors have a leading role in controlling management and forcing them to the application of appropriate accounting methods to not restate. Thus, to prevent the problem, mandatory rotation of audit services is proposed.

The results of the study show a positive and significant relationship between auditor's fee and audit market adaptability. So, those audit firms that receive higher fees (Rank A firms) are less willing to sign collaboration contract. As the growth of competition in audit profession leads to the presentation of high-quality services and lower price in the market, audit firms try to optimize the fee and propose the best offer to preserve the competitive market and maximize their income and do not lose the project in competitive conditions. The Iranian market is not an exception to the case, so there is a relationship auditor's fee and audit market adaptability because, on the one hand, large audit firms incur more fee to the employer, which means the quality of their audit services is more favorable, and on the other hand, larger firms, because of more experience and more appropriate structure, can transfer a proportion of economic benefit to the employer and ask for lower fee from the employer. The results of this hypothesis are in line with that of the [Griffin and Lont \(2011\)](#) and [Huang et al. \(2015\)](#).

The results of this paper reveal a negative and significant relationship between standard fee and audit market adaptability. As numerous factors, including firm size, complication, internal control, corporate governance, auditor's quality, auditor tenure and auditor's spatial position, as auditor-specific factors, contribute to audit fee, mandatory rotation of audit firms can lead to the increase of audit fee, as initial auditing is time-consuming, and lower the market share of large audit firms. On the other hand, as mentioned previously, larger firms, because of more experience and more appropriate structure, can transfer a part of their economic benefit to the employer and ask for lower fee. So, the results of this hypothesis are in line with those of [Hariss \(2012\)](#).

The results show no significant relationship between type of auditor's report and audit market adaptability. One of the contributing factors to the auditor change among the listed firms on the stock exchange is the type of auditor report. In other words, auditor change is directly associated with issuing a plausible audit report. Furthermore, audit privatization has led to the increase of auditor change, and in line with the increase in auditor change, type

of auditor's opinion in audit reports has changed toward plausible opinion. Accordingly, managers change their auditors to show the firm performance favorable to receive plausible audit report and pretend firm performance favorable by using this method. Investors always prefer plausible audit opinions, and such opinions are good for the firm. Hence, the result of this hypothesis is in contrast with that of the [Chen et al. \(2010\)](#), because auditor change has been a criterion in their studies, but this paper has focused on audit rank.

The results of this paper show no significant relationship between audit market concentration and audit market adaptability. As mentioned previously, in highly concentrated markets, the pioneering firms prefer to collaborate instead of competing for maximizing their profit. Hence, the best choice for them is to sign collaboration agreements. The results of this hypothesis are in contrast with those of the [Scherer and Ross \(1990\)](#) because economic conditions in Iran are different, especially because of the presence of sanctions, and this has caused the market to not be concentrated. On the other hand, there are some experiential evidence showing that high level of concentration is not compatible with severe competition among pioneering firms ([Baldwin and Gorecki, 1989](#)).

The results of the study show no significant relationship between agency costs and audit market adaptability. As the separation of ownership from management results in the conflict of interests between owner and manager, we can conclude that managers do not always work to the benefit of owners, and they may use firm properties implausibly. The presence of the conflict of interest between shareholders and managers can bring about agency problems that are costly based on the agency theory. Under such circumstances, the presence of a controlling mechanism is vital to relatively guarantee the transparency of financial statements. This mechanism is in form of auditing and is presented by the auditors ([Kouki and Guizani, 2009](#)).

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