Audit Market Concentration in Turkey: An Empirical Study of the Relationship between the Audit Firm Characteristics

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ABSTRACT

The aim of this study is to analyze the characteristics of the auditing firms operating in Turkey and analyze the relationship between the firm characteristics.

In this study, using data obtained from the 2014 transparency reports of audit firms operating in Turkey, the following variables were analyzed with correlation analysis method;

- *The number of partners of the audit firm*
- *The number of audited companies*
- *Total income of audit firm*
- *The number of auditors in the firm*
- *The percent of income from financial statement audits*
- *The number of junior auditors in the firm*
- *The percent of income from tax audits*
- *Duration of the training at firm*

There were 80 audit firms which must have published a transparency report in 2014. This study was performed by benefitting from 80 transparency reports published by the said 80 audit firms.

Keywords: *Auditing, Transparency report, Turkish Audit Market.*

Jel Classification*: M41, M42, M30.*

Türkiye Denetim Pazarının Yoğunluğu: Denetim Firmalarının Yapısal Özellikleri Arasındaki İlişkiler Üzerine Ampirik Bir Araştırma

ÖZET

Bu çalışmanın amacı, Türkiye'de faaliyet gösteren denetim şirketlerinin iç yapısını analiz etmek ve şirket iç dinamikleri arasındaki ilişkiyi incelemektir.

Bu çalışmada, Türkiye'de faaliyet gösteren denetim şirketlerinin şeffaflık raporlarından elde edilen 2014 yılı verileri kullanılarak aşağıdaki değişkenler korelasyon analizi yöntemi ile analiz edilmiştir;

- *Ortak sayısı*
- *Denetlenen şirket sayısı*
- *Toplam gelir*
- *Denetçi sayısı*
- *Finansal tablo denetimi gelirlerinin toplam gelir içindeki payı*
- *Denetçi yardımcısı sayısı*
- *Vergi denetimi gelirlerinin toplam gelir içindeki payı*
- *Şirkette düzenlenen eğitimlerin süresi*

2014 yılında şeffaflık raporu yayınlaması gereken toplam 80 denetim şirketi bulunmaktadır. Bu çalışma, 80 denetim şirketinin şeffaflık raporundan elde edilen veriler ile gerçekleştirilmiştir.

Anahtar Kelimeler: *Denetim, Şeffaflık raporu, Türkiye Denetim Piyasası.*

JEL Sınıflandırması: *M41, M42, M30.*

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1. INTRODUCTION

Audit profession provides the community to reach reliable financial reports and provides great service to the national economy. In Turkey as of the year 2014, there have been 5,173 companies subject to independent audit. In addition, 77% of the total amount of corporation taxes in Turkey is paid by these companies. (Saglam, 2015: 38)

Audit firms are also regarded as organizations. These firms have different characteristics and are influenced by each other. In this study, some characteristics such as the number of audit partners, the number of audited companies, total revenue, audit team, tax audit revenues and training coordinated in firm and relation among them are analyzed.

At the same time, the concentration of Turkish audit market measured by examining audit firms' revenues.

While the related body of literature is being analyzed, with any study which measures relation among characteristics of audit firms could not be encountered. Therefore, this study is a unique one.

2. LITERATURE REVIEW

Beattie and Fearnley (1995) examined the importance of audit firm characteristics and the factors motivating auditor change. They made a questionnaire to 210 listed firms in the UK. They determined 29 characteristics for audit firms. They found large companies cared about several characteristics such as including technical competence, quality issues, and specialist industry knowledge. Small companies cared about absolute audit fee.

Beattie, Goodacre and Feanley (2003) studied audit market concentration in the UK. They analyzed The extent and nature of concentration within the UK listed company audit market in the year 2002 and predicted future after the collapse of Arthur Andersen. They found the Big Four held 90 percent of the market in 2002, and this ratio will rise to 96 percent with the collapse of Arthur Andersen.

Gramling and Stone (2001) have analyzed the relationships among the market share of the audit firm, audit fees, audit quality and sector profession in their study. In the study, it is concluded that other market strategies and market performances of firms have influence in audit firms' sector experiences.

Caramanis and Spathis (2006) examined the extent to which combinations of financial information with non-financial variables, such as audit fees and type of audit firm, can be used in predicting qualified and unqualified audit reports. They analyzed the data of 185 companies listed on Athens Stock Exchange. They found audit fees and the type of audit firm do not affect auditors' propensity to qualify their opinions.

Bigus and Zimmermann (2008) analyzed audit firms' market shares and audit market concentration in Germany on the basis of audit fees. They found that Audit firms in Germany specialize in different industries or stock market segments. In addition, audit market concentration in Germany increases over time.

Turel et al. (2015) examined financial statement audit reports of Turkish listed companies. They analyzed market shares and types of audit opinions for Big Four and non-Big Four audit firms. They also investigated causes of modified audit opinions. They found Big Four holds more than a half market share in Turkish audit market. Also, they found, non-Big Four's audit quality is higher than Big Four.

Huang, Chang and Chiou (2016) analyzed the effects of audit market concentration on audit fees and audit quality in China for the period 2001 to 2011. They found audit market concentration improves audit quality indirectly. According to their findings, audit market concentration increases audit fees and this situation positively effects audit quality.

3. DESIGN/METHODOLOGY

In this study, characteristics of audit firms operating in Turkey are analyzed by using correlation analysis method. Accordingly;

- The number of audit partners and the number of auditee companies,

- Total revenue and the number of audit team members,

- The percentage of financial statement audit revenues in total revenues and the number of junior auditors,

- The percentage of tax audit revenues in total revenues and the number of auditee companies,

- The period of training coordinated in firm and relation between total revenue are analyzed.

By analyzing the distribution of the income obtained by the audit firms, a concentration analysis of the Turkish audit market will be carried out. The results of the concentration analysis will be compared to the results of a previous study in Germany.

Data used in the study are obtained from transparency reports of audit firms published in 2014. In order to analyze the data IBM SPSS Statistics 22 program is used.

3.1. Absolute Concentration Measures

In this study, we used two models to measure the market concentration. The models are; Concentration Rate (CR) and Herfindahl Index.

Concentration rate is the fraction of the market size held by the largest firms (Hall & Tideman, 1967, p.165). CR(3) is the market share of three largest firms in the market. CR(4) is the market share of four largest firms in the market, and CR(8) is the market share of eight largest firms in the market.

Herfindahl Index is a mostly affirmed measure of market concentration. Herfindahl index is an inverse function of the number of firms in the market and a direct function of the

variance in their sizes. (Kwoka Jr., 1985, p. 922). Herfindahl index is a function that can range from 0 to 1. Calculation of both methods are summarized in Table 5.

3.2. Composition of Auditor's Fees

According to Public Oversight Accounting and Auditing Standards Authority's arrangements, audit firms operating in Turkey are required to set out their income distribution in transparency reports. Analysis results of audit firms are accordingly as in Table 1.

Table 1. Composition of Auditor's Fees in 2014, n=80, fees in € million

	Total	Audit fees	Non-audit fees	For tax consultancy	For other consultancy + attestation services	For other services
Mean	2.23	1.45	0.91	1.03	0.52	0.25
Median	0.48	0.15	0.27	0.62	0.08	0.01
Maximum	35.35	25.55	9.80	7.05	9.08	4.98
Sum	178.70	105.68	73.02	26.69	23.92	19.91
Share of total revenues in %		59.1%	40.9%	14.9%	13.4%	11.1%

As it is seen from the Table 1, total revenue of the market has realized as €178.70. €105.68 (%59.1) million of the total revenue consists of audit fees whereas €73.02 (%40.9) million of that consists of non-audit fees. Concurrently, the average of total revenues is as €2.23 million and of audit fees as €1.45 calculated. Comparison results with the study by Bigus and Zimmermann (2008) in Germany are summarized in Table 2. This study was chosen for comparison because it is the closest study to our study.

Table 2. Composition of Auditor's Fees Compared to Recent Study, Fees in € Million

	Our Study	Bigus&Zimmermann (2008)
Data basis	n=80, actual fees paid in 2014	n=175, actual fees paid in 2005
Mean audit fees	1.45	1.02
Median audit fees	0.15	0.23
Share of non-audit fees to total revenues	40.90%	41.90%

In the former study (Bigus & Zimmermann, 2008) revenues in 2005 of 175 audit companies and in our study revenues in 2014 of 80 audit companies are analyzed. While the average of audit fees is €1.02 million in the former study, it is calculated as €1.45 million in our study. Median of audit fees is €0.23 in the former study, while it is calculated as €0.15 million in our study. The share of non-audit fees to total revenues has approximate values in

both studies. The share of non-audit fees to total revenues ranging from Big Four audit firms is seen in Table 3.

Table 3. Proportion of Non-Audit Fees to Total Fees, For Turkey and Germany

	Our study for 2014, 80 firms	Bigus & Zimmermann for 2005, 200 listed firms
PwC	18.8%	47.9%
KPMG	30.5%	28.4%
Ernst&Young	7.9%	55.6%
Deloitte	27.7%	27.8%

As it is understood from the table, Turkey agencies of Big Four audit firms produce the large part of their revenues from financial statement audit. The interesting point in the table is that while the audit firm (Ernst&Young) has the highest share (55.6%) in non-audit revenues in Germany, it has the last place (7.9%) in Turkey. This could be interpreted as the focus of the relevant firm in Turkey on financial statement audits. Market shares of audit firms according to audit revenues are summarized in Table 4.

Table 4. Market Shares Measured by Auditor's Fees

Fee Category & Number of Clients	Total (Fees in € million)	Market Share and Rank
Total fees	178.70	1. Deloitte 19.8% 2. PwC 14.8% 3. KPMG 14.7% 4. Ernst&Young 10.4%
Audit fees	105.68	1. Deloitte 24.2% 2. PwC 20.4% 3. KPMG 17.3% 4. Ernst&Young 16.2%
Non-audit fees	73.02	1. Deloitte 13.9% 2. Baker Tilly 13.8% 3. KPMG 11.4% 4. PwC 7.1%
For tax consultancy	26.69	1. Baker Tilly 26.4% 2. Grant Thornton 9.4% 3. PKF 7.8% 4. Prime Global 6.9%

For other consultancy and non compulsory attestation services	23.92	1. Deloitte 38.0% 2. KPMG 22.2% 3. Baker Tilly 11.3% 4. Moore Stephens 4.2%
For other services	19.91	1. PwC 25.0% 2. KPMG 13.6% 3. Ernst&Young 6.8% 4. DFK 6.0%
Number of clients	1.093	1. PwC 12.0% 2. Deloitte 11.9% 3. KPMG 11.3% 4. Ernst&Young 7.7%

As it is seen from the table, Deloitte is the leader both in audit and non-audit fees. It is seen that Big Four audit firms are located at the peak in total revenues and audit fees. Baker Tilly comes in the second place in non-audit fees. Ernst&Young, having the fourth place in total revenues and audit fees, cannot rank among the top four. Considering tax audit fees none of the Big Four audit firms can rank among the top four. Baker Tilly has the market leadership in tax audit fees. Deloitte and KPMG are the first and the second in consultancy revenues, while Baker Tilly takes the third, and Moore Stephens takes the fourth place. When other services are analyzed, it is seen that PwC is the market leader. DFK stands at the fourth place, while Deloitte has no place among the top four. In rating done according to the number of audited companies; PwC, Deloitte and KPMG are situated in the top three and Ernst&Young come in the fourth place.

While the Big Four audit companies obtain the large part of audit fees in Turkey's audit market, it is confirmed that the Big Four are not active in the tax audit. It draws attention that the Big Four come out on top in all revenue groups except tax audit.

Calculation of "Concentration Rate" and "Herfindahl Index" formulas used related to distribution of market share is set out in Table 5. (Bigus & Zimmermann, 2008, p.171)

Table 5. Measures of Concentration and Interpretation

Measure of Concentration	Formal Definition	Low Market Concentration	Medium Market Concentration	High Market Concentration
Concentration Rate (CR)	$$CR(g) = \frac{\sum_{i=1}^{g} xi}{\sum_{i=1}^{n} xi}$$	CR(3) < 10% 35 ≤ CR(4) < 50% 45 ≤ CR(8) < 70%	10 ≤ CR(3) < 25% 50 ≤ CR(4) < 65% 70 ≤ CR(8) < 85%	CR(3) ≥ 25% CR(4) ≥ 65% CR(8) ≥ 85%
Herfindahl Index	$$H = \sum_{i=1}^{n} \left(\frac{xi}{\sum_{i=1}^{n} xi} \right)$$	H < 0,1	0,1 ≤ H ≤ 0,18	H > 0,18
x: represents a firm's characteristic value of the auditor's fees or proxies g: stands for the g largest market participants (e.g. g=4 means the largest four audit companies) n: number of all audit companies				

Results of Concentration Rate and Herfindahl Index calculated by using formulas in the Table 5 are set out in Table 6.

Table 6. Concentration Measures for the Turkish Audit Market

Data Basis	Total Income	Audit Fees
CR(3)	49.37	61.88
CR(4)	59.75	78.03
CR(8)	72.56	86.81
Herfindahl Index	0.10	0.16

Results of Concentration Rate and Herfindahl Index calculated by using formulas in Table 5 are set out in Table 6.

Market concentration rates in Turkey's audit market are set out in Table 6. CR(3) at the high-density level, CR(4) and CR(8) at medium density level are calculated based on total revenue. In the present case, it can be said that three companies having the high market share have high market concentration. Medium market concentration is confirmed in the analysis done based on four companies having the highest market share and eight companies having the highest market share.

Herfindahl Index calculated based on total revenue is confirmed as 0.1. This coefficient implies medium market density. It is confirmed that there is medium market density in Turkey's audit market according to Concentration Rates and Herfindahl Index.

All density rates calculated based on audit fees indicate high market concentration. According to Herfindahl Index calculated as 0.16, medium market concentration exists. By taking into consideration that all concentration rates are at high level and Herfindahl Index is

very close to high level, it can be said that there is the high market concentration in Turkey's audit market according to audit fees.

Table 7. Correlations Between the Number of Audit Partners and The Number of Audited Companies

Correlations		Partners	AudComp
Partners	Pearson Correlation	1	,537[**]
	Sig. (2-tailed)		,000
	N	80	80
AudComp	Pearson Correlation	,537[**]	1
	Sig. (2-tailed)	,000	
	N	80	80
**. Correlation is significant at the 0.01 level (2-tailed).			

As is seen from the Table 7, there is a positive correlation at 0.01 significance level between the number of audit partners and auditee companies. 0.54 coefficient of correlation indicates that the number of partners and auditee companies change interdependently. In the present case, it is possible to say that the firms having more audit partners audit more companies.

Table 8. Correlations Between Total Income and The Number of Audit Employees

Correlations		Total Income	Num Auditors
Total Income	Pearson Correlation	1	,863[**]
	Sig. (2-tailed)		,000
	N	80	80
Num Auditors	Pearson Correlation	,863[**]	1
	Sig. (2-tailed)	,000	
	N	80	80
**. Correlation is significant at the 0.01 level (2-tailed).			

As is seen from Table 8, there is a high positive correlation at 0.01 significance level between total revenue and the number of audit team members. 0.86 coefficient of correlation indicates that the number of audit team members and total revenue change interdependently. In the present case, it is possible to say that audit firms having large audit team monetize more.

Table 9. Correlations Between the Percent of Income from Financial Statement Audits and The Number of Junior Auditors

Correlations		FSIncome	JunAuditor
FSIncome	Pearson Correlation	1	,870[**]
	Sig. (2-tailed)		,000
	N	80	80
JunAuditor	Pearson Correlation	,870[**]	1
	Sig. (2-tailed)	,000	
	N	80	80
**. Correlation is significant at the 0.01 level (2-tailed).			

In Table 9, the relation between the percentage of financial statement audit revenues in total revenues and the number of junior auditors is analyzed. As is understood from the table, there is a high positive correlation (0.87) between these two parameters. In the present case, it can be said that the number of junior auditors working in the firm influences income distribution linearly in the same direction.

Table 10. Correlations between the Percent of Income from Tax Audits and the Number of Audited Companies

Correlations		Tax AudRate	Aud Comp
Tax Aud Rate	Pearson Correlation	1	-,211
	Sig. (2-tailed)		,060
	N	80	80
Aud Comp	Pearson Correlation	-,211	1
	Sig. (2-tailed)	,060	
	N	80	80

In Table 10 in which the percentage of tax audit revenues in total revenues and the number of auditee companies is analyzed, any correlation could not be found. In the present case, it can be said that the number of auditee companies and the percentage of tax audit revenues in total revenues are independent. 0.06 significance level between two parameters also supports this conclusion.

Table 11. Correlations Between the Duration of the Training at Firm and Total Income

Correlations		Training	TotalIncome
Training	Pearson Correlation	1	,681**
	Sig. (2-tailed)		,000
	N	80	80
TotalIncome	Pearson Correlation	,681**	1
	Sig. (2-tailed)	,000	
	N	80	80
**. Correlation is significant at the 0.01 level (2-tailed).			

As is seen Table 11, there is a high positive correlation between the duration of training coordinated in the firm and total revenue. 0.68 coefficient of correlation indicates that firms which give more importance to the training of auditors monetize more.

4. RESULTS AND CONCLUSION

In this study, the relation among characteristics of audit firms operating in Turkey is analyzed with correlation analysis method. In consequence of the analysis;

• Medium-high positive correlation between the number of audit partners and the number of auditee companies,

• High positive correlation between total revenue and the number of audit team members,

• High positive correlation between the percentage of financial statement audit revenues in total revenues and the number of junior auditors,

• Medium-high positive correlation between the duration of training coordinated at audit firm and total revenue are confirmed,

• While any meaningful relationship between the percentage of tax audit revenues in total revenues and the number of auditee companies is not observed.

When the relation between the number of audit partners and auditee companies is analyzed, it is seen that two parameters change in the same direction. In the present case, it can be said that audit firms having more partners audit more companies. Similarly, while the number of audited companies increases, the number of partners in the audit firm also increases.

A relation close to linear between total revenue and the number of audit team members is observed. In this case, it is possible to say that the audit firms having large audit staff monetize more.

A relation close to linear between the percentage of financial statement audit revenues in total revenues and the number of junior auditors is observed. Junior auditors compose the large part of the audit team, especially at Big Four audit firm. Taking into account this case, the relation between two parameters is at the expected level.

When the relation between the duration of training coordinated in the firm and total revenue is analyzed, it is seen that two parameters change in the same direction. Continuing training of auditors has an important role both in the orientation of new auditors and career development of present auditors. It is seen that when the importance given to continuing training increases, total revenue also increases. It is confirmed that the percentage of tax audit revenues in total revenue and the number of auditee companies change independently. This hypothesis, formed by regarding the possibility of tax audit and financial statement audit matters can influence each other in terms of duration and labor, is not affirmed. In this case, it can be said that audit firms in Turkey allocate separate time to each matter such as tax audit and financial statement.

Conclusions obtained in this regard are as follows:

•   The more audit partners, the more auditee companies

•   The larger audit team, the more revenue

•   The more junior auditors, the more revenue obtained from financial statement audit

•   The more importance is given to continuing training, the more revenue

•   Tax audit and financial statement audit matters do not influence each other in terms of duration and labor.

The number of partners, the size of the audit team, the number of auditors and the training held at the firm positively affect factors such as the number of the audited company, the training held at the firm, and income. This can be interpreted as the institutionalization contributing to the audit firms.

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