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The Causal Relationship between Auditor Turnover and Audit Fees－Evidence in Japan

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Discussion Paper

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ABSTRACT

This study investigates the causal relationship between auditor turnover and audit fees. The aim of this study is to accurately identify the real relationship between auditor turnover and audit fees. The analysis in this study is based on the counterfactual model provided by Rosenbaum and Rubin (1983). The propensity score is estimated using logistic regression, which generates a matched treatment sample and a control (counterfactual) sample. The matched dataset containing 486 firm-years is analyzed using liner regression to identify the causal relationship between auditor change and audit fees. The clearly significant result shows that low-balling exists in real audit contracts. As an additional study, the sample is divided using the auditor size variable (Dummy of Big 3 or not) into four parts. The additional results show that, after an auditor change from a Non-Big 3 auditor to Big 3 auditor, the contract exhibits low-balling. This suggests that clients who change auditors from a non-Big 3 firm to Big 3auditor do not receive an adequate audit because of the auditors' cost cutting.

The coefficient of the auditor change from non-Big3 to Big 3 auditor is significant and relatively higher than the coefficients of the other parts. Audit fees need to cover the costs of the audit practice to maintain audit quality. The results of this study can serve as an alert for Japanese auditing practice quality issues.

1. Introduction

Generally, auditors seeking new clients are frequently discounting their fees for the first-time audit. This price cutting phenomena is called “low-balling.” DeAngelo (1981) is the first analytical study of this phenomenon and is observed in many aspects of economic relationships. This first-time price cutting is not confined to auditing; as such, there is a need to expand our research. For example, Roychowdhury (2006) examines earnings management using price cutting (“sales manipulation”).[1] The expected future quasi-rents induce this initial price cutting by auditors. Quasi-rents, which refer to the excess of revenues in a period over avoidable costs (including the opportunity cost of auditing), is a very complicated concept. Simply speaking the auditor will benefit from the quasi-rents when becoming the incumbent. Lack of auditor independency will decrease the audit fees.

A contrary theory to low-balling, where the audit fee for the first-time auditing will be higher than other periods because the auditor will manage the risk associated with taking on new client companies, should be examined. Auditors will require high-level audit fees to cover these additional risk adjusting activities (Simunic 1980). This opinion from Simunic also indicates that other factors associated with these higher fees should be considered, such as auditing firm size, auditor reputation.

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[1] However, the sales manipulation in real earnings management is to take the cash flow in short term.

This study formulates two opposing theoretical hypotheses for analyzing the state of audit fees with a change from the incumbent auditor.

Mandatory auditor rotation has emerged as a popular accounting topic in the current decade. Effective June 2016, the European Union adopted legislation for mandatory audit firm rotate. In addition, in Japanese audit market, from 2004 the rules of standard audit pricing is abundant. The new environment may give something new to the audit contract respectively.

This study confirms the effect of auditor turnover by setting up a treatment effect using the Neyman-Rubin “Potential Outcomes Framework” to develop the empirical results. The relationship between regression and causal effect analysis is presented in Graph 1.

The significance of the proposed research is to show the causal relationship between auditor turnover and level of audit fees. In the previous studies, the researchers only demonstrated the correlation of the two phenomena. This study provides evidence that auditor turnover is not only correlated, but also causes the changes in audit fees. Theoretically, the initial audit fees reduction (low-balling) will be introduced at the first-time auditing. DeAngelo (1981) insists that an auditor’s independency is impaired with low-balling; however, she does not show the empirical evidence in her thesis. Deis and Giroux (1996) provide some evidence but low-balling has not been observed in Japan until this proposed work. This study conjectures whether low-balling is observable, and if so, under what settings.

Auditor independency is very beneficial and essential to an audit practice. However, Deis and Giroux (1996) suggest that a low-balling (low-independence, in this audit) setting does not correlate to a low-quality audit. The quality of audit is maintained even if low-balling is observed. For this research, the exact cause of the low-balling, if observable, needs to be defined. Low-balling has been evidenced in many industries and economic relationships.

This paper is organized as follows: First, previous works regarding audit fees and independency are reviewed. Next, the research design is provided, followed by the data analysis details and results. Finally, the conclusions, implications, and limitations of this study are presented.

2. Background and Previous Works

The theoretical research of DeAngelo (1981) is the first research regarding low-balling relating to auditors. She elucidates the theoretical background of low-balling and insists that low-balling is not connected to impairment of auditor independency.[2] The quasi-rent will be awarded to the selected auditor; therefore, auditors conduct low-balling to win the bid. The strong independency induces the benefit between auditor and client companies. Simon and Francis (1988) analyze the real conditions of low-balling and their relationships to auditor independence.

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[2] Tseng, R. P. M. M. C. (1990) is another analytical study for seeing “first audit effects (effects of incumbency)”. They say the effects of incumbency will damage the independency of auditors.

Casterella et al. (2004) show the correlation between audit fees and auditor specialization. Their findings reveal that premiums paid for auditor specialization only relate to smaller clients. Carcello et al., Nagy (2005) also find the audit quality remediates for only small clientele after the clients will change their auditor from Arthur Andersen. In contrast with this research, Deis and Giroux (1996) conclude that audit quality is not changed after an auditor turnover.

Abbott et al. (2003) see a positive relationship between audit fees and audit committee characteristics (independence, financial expertise, and meeting frequency).

Carcello and Neal (2000) provide some evidence of a relationship between audit committee composition and going concern opinion. They suggest that the probability of adding the going concern opinion will be lesser when some affiliated audit committee members are part of the committee. They selected 223 samples for the test (from only select financially distressed companies), which supported their hypothesis.

Carcello and Neal (2003) added some evidence to their previous study (Carcello and Neal, 2000) and showed the relationship between auditor dismissal and audit committee characteristics. They suggest that the auditor will be protected by the audit committee even if the auditor discloses unfavorable financial situations (such as going concern issues) when audit committee members are independent from company managers or the board of directors. Their study shows the expected result that independent audit committee members protect the external auditor

from dismissal.

Evidence exists that shows that internal company conditions will affect the external audit and that audit fees correlate with auditor independence. Out of the ordinary or atypical (too large or too small) audit fees may also relate to auditor independence. Though evidence can be shown of the effect of damaged auditor independence, this study shows the impact of the auditor-management internal condition on the external audit.

The independence of the auditor with respect to its first audit changes relative to other auditors. Hence, this study states two opposing hypotheses on auditor independence. The null hypotheses are as follows,

H1. The audit fees will not be higher-level with a turnover in auditor due to the auditor's risk adjustment than the others.

H2. The audit fees will not be low-level with a change in auditor because of lack of independency.

3. Research Design

Data Category

This study categorizes the auditor turnover data as follows:

1. Full sample
2. Big 3 auditor to Big 3 auditor

3. Big 3 auditor to non-Big 3 auditor

4. Non-Big 3 auditor to Big 3 auditor

5. Non-Big 3 auditor to non-Big 3 auditor

I just confirm the full sample case as a main study. First, I conduct the full sample analysis using single regression. Then, following Hoshino (2009), I run a multiple regression.

Analysis policy

Causality, not just correlation, will be generated from the regression analysis. This analysis requires the use of counterfactual data and uses propensity score matching. Why we need to see the causality? Correlation does not prove causality; however, correlation is a part of causality. David Hume[3] suggests that we cannot always observe causality but it exists in the real world. We have known that we can see the causality if we reproduce the effect of treatment. This approach is based on the Neyman-Rubin counterfactual model.

To ensure accurate results regarding the causality, this study selected the propensity matching approach.

Data

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[3]I refer to the Stanford Encyclopedia of Philosophy (available on https://plato.stanford.edu/entries/hume/).

1) This study selects samples that contain data from Japanese listed companies, and exclude financial institutions
2) exclude double-listed Securities and Exchange Commission (SEC) or other stock markets in foreign country
3) exclude the samples which conduct joint audit
4) include only the sample fiscal year end is March
5) include necessary data from databases

This study generates data from the Nikkei Data CD-ROM and Nikkei Kigyo Kihon Data. To exclude the effects of internal control audit bubble, I collect data from March 2011 to March 2016. I have observed the 10,919 firm-year observations and those of the switching firm under 243.

Model

Most studies use the regression model and only observe correlations, which is not adequate for investigating accurate and real conditions.

This study uses the following logistic regression model for formulating the propensity score.

$$\mathrm{CHA} =$$

$$\alpha_0 + \alpha_1 LNAsset + \alpha_2 Leverage + \alpha_3 RecInv + \alpha_4 GC + \alpha_5 Big3 + \alpha_6 Dsales + yeardummy + inddummy + \varepsilon$$

（equation 1）

This model consists of the determinants of auditor turnover.

The determinants shown above are the characteristics of auditees. The results are represented on Table 2. In the model, I have identified the auditee's size and associated risks as well as the following variables:

(1) Size Variable: Natural Logarithm of Total Assets

An auditee's size is the basic characteristic. Sizable auditees incur higher audit costs and auditor charges determine auditor change. In fact, this study includes the variables and examines the complexity of the operation (Simunic 1980) in the model; however, the correlation between these two factors is very high. Therefore, I have excluded the complexity variable from the analysis as the characteristic of the auditee.

(2) Inherent Risk: Level of Receivables, Inventory, and Leverage

Inherent risk reveals the potential risks to companies. I have selected receivables, inventory, and leverage. Higher accounting receivables and inventory potentially expose the auditee to more risky conditions, and high leverage instigates detrimental conditions in companies. This study refers to the work of Simunic (1980), which is an audit pricing study focusing on auditors' characteristics for determining audit fees.

(3) Default Risk: Going Concern Opinion Dummy Variables

The default is a basic concern for the auditor that can lead to his relinquishing his role. The going concern opinion reveals financial distress, and therefore, this factor is not connected to the default directly.

(4) Auditor size: Big 3 or not dummy variables

Auditor size is very important in auditor selection. Essentially, the Big3 firms in Japan (AZSA KPMG LLP, EY Shinnihon LLP, and Deloitte Tohmatsu LLP) have strong brand power and prior studies confirm this (e.g., Oikawa 2013). I have observed the differences between the Big3 and non-Big3 firms, and based on the results have divided the samples.

(5) Internal Control Risk: Rate of Growth of Sales

I have focused on the internal controls of high-growth companies, based on the Committee of Sponsoring Organizations of the Treadway Commission (COSO) framework 1992[4]. A company that has an excessive growth rate poses an internal control risk. Since fiscal year 2009, internal control reporting is mandated for all the listed and big companies. This study necessarily examines internal control risks. If this logic is applied, a material weakness dummy variable is needed. However, companies exhibiting material weakness are not included in the examined sample.

[4] The COSO Internal Control framework was updated on 2013. However, I see the basic concept on 1992 framework.

(Table 2 here)

While the full sample analysis did not present any problems, the divided samples did with regard to matching. Therefore, I have shown the results of the full sample with divided dummy variables and full sample result.

4. Results

This study observes the relationship between audit fees and auditor turnover and clarifies that auditors discount their fees for the first audit.

Descriptive statistic and correlation

Table 3 and 4 show the descriptive statistic and correlation. There are 243 matched samples. I matched the samples using one to one nearest neighborhood matching. See the Graph 2 and Table 2 for the details of matching

The treatment sample's audit fees are little bit smaller than the control sample's audit fees. In addition, the treatment sample received Going Concern Opinion more very often and growth of sales is bigger. For GC variables and the growth of sales variables are not able to be matched between the two groups. The other variables are almost same between treatment sample and control sample.

(Table 3 and 4 here)

Regarding the correlation, I cannot recognize significantly higher correlation number, so

do not concern about multicollinearity.

(Graph 2 here)

Main Analysis

The final examination model is as follows,

LNAF$=\alpha_0+\alpha_1 CHA+\varepsilon$ (equation 2)

$$\text{LNAF} = \alpha_0+\alpha_1 CHA+\alpha_2 LNAsset+\alpha_3 Leverage+\alpha_4 InvRec+\alpha_5 GC+\alpha_6 Big3$$

$$+\alpha_7 Dsales+\varepsilon$$ （equation 3）

This analysis sets up auditor turnover as a treatment sample, and estimates the propensity scores. I matched the treatment sample with the control sample using propensity scores. Hoshino (2009) states that multi-regression analysis using matched data by propensity score is the method used by some medical studies. This research is based on the method introduced by Hoshino (2009).

This analysis is conducted using full sample. The full sample analysis shows a highly significant causal relationship between audit fees and auditor turnover in multiple regression model. However, single regression is not shown significant results. I think the endogeneity of the model is modified by the control variable. The control variable is significant at appropriate level on the multiple model.

(Table 5 and 6 here)

5. Interpretation of the results

The level of audit fees is lower than control samples. This indicates the same condition as DeAngelo. This result is important because audit cost is not covered by the audit fees completely.[5]

Low-balling may have become prevalent after the introduction of the internal control reporting institution (based on the Company Law and the Financial Instruments Exchange Law), the extent of which varies with auditor size. Had I rejected the Big3 dummy variable from the model, the result would have changed (not tabulated). To investigate the details of the effects of the Big3 dummy variables, I have divided the sample and have analyzed it in depth.

6. Additional analysis using categorical dummy variables

This analysis provides the details of the effects of the auditor change seeing Big3 or not 4

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[5] This analysis cannot provide evidence to prove whether auditor independence gets eroded. We can observe auditor independence using methods like discretionally accruals. However, these methods are not accurate. To examine audit quality or independence, we need to analyze the real process of audit, which involves substantial procedures, using real audit data.

pattern variables (b. to e.).[6]

$$\text{LNAF} = \alpha_0 + \alpha_1 Big3toBig3 + \alpha_2 Big3toNBig3 + \alpha_3 NBig3toBig3 + \alpha_4 NBig3toNBig3 + \alpha_5 LNAsset + \alpha_6 Leverage + \alpha_7 InvRec + \alpha_8 GC + \alpha_9 Big3 + \alpha_{10} Dsales + \varepsilon$$

(equation 4)

b. The analysis using auditor data changed from the Big 3 to Big3

Big 3 to Big3 samples suggest insignificant results. This suggests that the Big3 to Big3 line does not affect audit fees. Big3 to Big3 poses some problems, and therefore, clients see no advantage in hiring an auditor, who has to be paid some audit fees. This insignificance shows that the auditee needs to compromise and the auditor has the advantage of earning some audit fees.

c. The analysis using auditor data changed from the Big3 to non-Big3

Big3 to non-Big3 data is not significant, suggesting that non-Big3 firms charge the same audit fees from all client companies. There is no change in the results. Generally, Big 3 firm require the higher level of audit fees and this analysis suggest the same results (See the ***Big3*** coefficient) however non-Big 3 firm requires the same amount of fees. It suggests risk adjustment is occurred.

d. The analysis using auditor data changed from the non-Big 3 to Big3

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[6] This study provides matching samples for four parts (using the Big3 dummy), but some of their probabilities are either 0 or 1. Therefore, I do not generate the matched samples for each category.

Non-Big3 to Big3 data is highly significant. It shows that high-growth companies have the advantage of determining the audit contract and requesting the auditor to discount his or her fees. This result shows the low-quality audit will be conducted in these samples. In fact, as the Big3 audit firms have internal system rigidly, a proportion of the expenses will be covered by the non-additional costs (with the auditee's rapid growth).

e. The analysis using auditor data changed from the non- Big 3 to non- Big3

This data set shows not significant results of the relationship between the audit fees and auditor turnover. When non-Big3 sample moves to another non-big firm, client company required to pay same fees. I conjecture that this type is not associated with the discount or risk adjustment of audit fees.

(Table 7.1 and 7.2 here)

7. Conclusion

This study investigates the causal relationship between auditor turnover and audit pricing. Specifically, the black box regarding auditor turnover has been resolved in this study. The black box of auditor turnover either diminishes auditor independence, which decreases the level of audit fees, or it places auditors at additional risk, which increases the level of audit fees. Both these scenarios

are theoretically possible. These hypotheses have been tested using an accurate method that provides the causal inference between auditor turnover and audit fees and produces counter-factual samples to compare the facts (treatment samples) and analyze the relationship between the two sample groups. This study constructs a matching database and conducts re-regression using the matched sample. Hoshino (2009) suggests this approach is popular in some medical studies.

The results of our analysis are clear; audit fees is low level when the auditor changes. These results make it easy to interpret real-life conditions. So, H2 is rejected.

This study only shows a causal relationship, and does not help interpret the length of tenure of auditors. Johnson et. al. (2002) show the incomplete results of the relationship between auditors' tenure and audit quality. We need to replicate the findings of Johnson et. al. (2002) regarding the use of audit fees. According to the authors, a medium length of audit tenure positively correlates with the audit quality. They denied the possibility that auditor rotation is effective in maintaining audit quality. The European Union's assumptions may not be the same as the research outlook in this study or as the assumptions in Johnson et. al.'s (2002) study. The European Union's perception is that "mandatory rotation" will result in the achievement of high-quality audit. The competitive condition of auditors emerged from the 2004 de-regulation of the "standard audit fees rule" in Certified Public Accountant (CPA) law. The competition between auditors may be more intense than in the 2004–2011 fiscal-years because of the end of the internal control-bubble and

some cases of scandal-related accounting. A decline in audit fees results in low-quality audits. Although audit fees consist of other components, a large proportion of it goes toward workers' costs.

In addition, on the analytical policy, I do not have used adequate treated samples making the 4-divided sample (using Big3 or not dummy variables). Moreover, I just see the low-balling in limited samples. This kind of study must enlarge the samples and confirm more accurate audit quality changes when the auditor turnovers.

The mandatory auditor rotation will be the big issue in the audit market from now on. Changing auditors has many reasons in the selective change of auditor. So, the basic situation is not same with mandatory rotation, but low-cost audit may be emerged with rotation by low-balling and low quality audit may be occurred. The turnover issue is the big and important one in this audit market.

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Table and Graphs

Table 1 Definition of variables

Variables		Definition
CHA	=	1 in case of auditor turnover and a brand-new audit firm signs a contract with a sample client, otherwise 0.
LNAsset	=	Natural logarithm of audit fees
Leverage	=	Total liability on total asset
InvRec	=	Inventory and accounting receivable on total asset
GC	=	1 if manager declares going concern opinion, otherwise 0.
Big3	=	1 if the audit firm is AZSA KPMG LLP, EY Shinnihon LLP, or Deloitte Tohmatsu LLP, otherwise 0.
Dsales	=	$(Sales_t – Sales_{t-1})$ on $Sales_{t-1}$
Big3toBig3	=	1 if the audit firm is changed from one Big3 firm to another, otherwise 0.
Big3toNonBig3	=	1 if the audit firm is changed from a Big3 firm to a non-Big3 firm, otherwise 0.
NonBig3toBig3	=	1 if the audit firm is changed from a non-Big3 firm to a Big3 firm, otherwise 0.
NonBig3toNonBig3	=	1 if the audit firm is changed from one non-Big3 firm to another, otherwise 0.
Yeardummy	=	Year dummy variable
Inddummy	=	Industry dummy variable

Table 2

Logistic Regression Results: For estimating the propensity scores

DV=CHA	[-/+]	Coeff.	Z-value
Intercept		-0.7161	-1.004
LNAsset	-	-0.273	-5.368***
Leverage	+	0.716	2.163*
InvRec	+	-0.917	-2.169*
GC	+	-0.121	-0.320
Big3	-	-1.788	-11.517**
Dsales	+	0.096	1.538
Yeardummy	Included		-
Industrydummy	Included		
Number of Obs.=		10,919	
Treatment sample Obs.=		243	
AIC=		2102.2	

This table represents the result of logistic regression analysis for estimating the propensity scores. The significance of coefficients is shown that *** is 0.1 percent level, ** is 1 percent level, * is 5 percent level, and ‘. is 10 percent level. The definitions of variables are on the Table 1.

Table 3

Descriptive Statistics (n=486)

	Minimum		Maximum		Average		Standard Deviation	
	Treat	**Control**	**Treat**	**Control**	**Treat**	**Control**	**Treat**	**Control**
LNAF	1.609	2.197	5.215	4.804	3.189	3.258	0.516	0.478
LNAsset	6.006	4.844	14.739	13.945	9.835	9.783	1.555	1.490
Leverage	0.053	0.043	1.231	1.535	0.521	0.498	0.213	0.224
InvRec	0	0	0.720	0.779	0.216	0.202	0.172	0.175
GC	0	0	1	1	0.040	0.020	0.199	0.156
Big3	0	0	1	1	0.260	0.270	0.441	0.446
Dsales	-0.590	-0.855	24.786	1.218	0.142	0.042	1.608	0.206

This table shows the descriptive statistics of the propensity matched sample. ‘Treat’ means treatment sample that auditor’s turnover is happened, and ‘Control’ means the control samples matched using propensity scores. Regarding the definition of the variable you can see them on the Table 1.

Table 4

Correlation (n=486)

	CHA	***LNAF***	***LNAsset***	***Leverage***	***InvRev***	***GC***	***Big3***	***Dsales***
LNAF	-0.069	1						
LNAsset	0.017	0.663	1					
Leverage	0.052	-0.005	-0.044	1				
InvRec	0.040	0.026	0.041	0.062	1			
GC	0.046	-0.129	-0.302	0.122	-0.099	1		
Big3	-0.009	0.311	0.238	-0.084	0.005	-0.111	1	
Dsales	0.044	-0.059	0.054	0.083	-0.054	-0.031	-0.015	1

This table represents the correlation between variables. The definitions of variables are on the Table 1.

Table 5

Liner Regression Result: Single regression using matched sample.

DV=LNAF	[-/+]	Coeff.	Std. Error	t-value
(Intercept)		3.258	0.032	102.113***
CHA	?	-0.069	0.045	-1.527
Number of Obs.=		486		
Multiple R-squared=		0.005		
Adjusted R-squared =		0.003		
F-statistic =		2.333		

This table represents the result of liner regression analysis using the propensity scores matched sample. The significance of coefficients is shown that *** is 0.1 percent level, ** is 1 percent level, * is 5 percent level, and ‘ is 10 percent level. The definitions of variables are on the Table 1.

Table 6

Linear Regression Results: Multiple regression using matched sample

DV=LNAF	[-/+]	Coeff.	Std. Error	t-value
(Intercept)		1.054	0.121	8.695***
CHA	?	-0.081	0.033	-2.459*
LNAsset	+	0.215	0.012	18.614***
Leverage	+	0.089	0.076	1.175
InvRec	+	0.008	0.095	0.080
GC	+	0.233	0.097	2.397*
Big3	+	0.185	0.038	4.868***
Dsales	+	-0.039	0.014	-2.702**
Number of Obs.=		486		
Multiple R-squared=		0.487		
Adjusted R-squared =		0.479		
F-statistic =		64.68***		

This table represents the result of liner regression analysis using the propensity scores matched sample. This analysis used the same variables in the first logistic regression. The significance of coefficients is shown that *** is 0.1 percent level, ** is 1 percent level, * is 5 percent level, and ‘ is 10 percent level. The definitions of variables are on the Table 1.

Table 7.1 The number of divided samples

Big3toBig3	35
Big3toNonBig3	61
NonBig3toBig3	29
NonBig3toNonBig3	118
Total	243

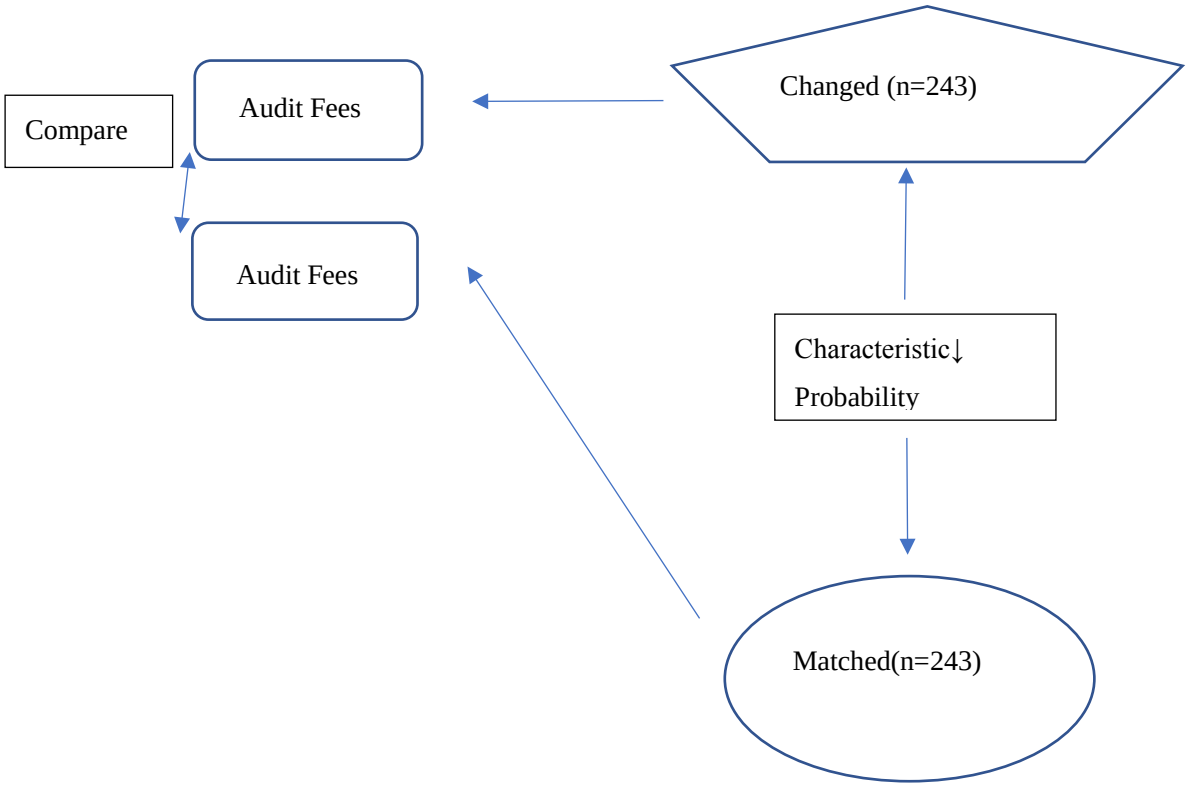
Table 7.2 Additional Analysis

Liner Regression using the divided samples

DV=LNAF	[-/+]	Coeff.	Std. Error	t-value
(Intercept)		1.034	0.123	8.438 ***
Big3toBig3	?	-0.048	0.076	-0.638
Big3toNonBig3	?	-0.067	0.053	-1.264
NonBig3toBig3	?	-0.267	0.081	-3.303 **
NonB3toNonB3	?	-0.051	0.043	-1.201
LNAsset	+	0.215	0.012	18.662 ***
Leverage	+	0.095	0.076	1.243
InvRec	+	0.038	0.096	0.393
GC	+	0.230	0.097	2.375 *
Big3	+	0.230	0.053	4.367 ***
Dsales	+	-0.040	0.014	- 2.770 **
Number of Obs.=		486		
Multiple R-squared=		0.494		
Adjusted R-squared =		0.484		
F-statistic =		46.43***		

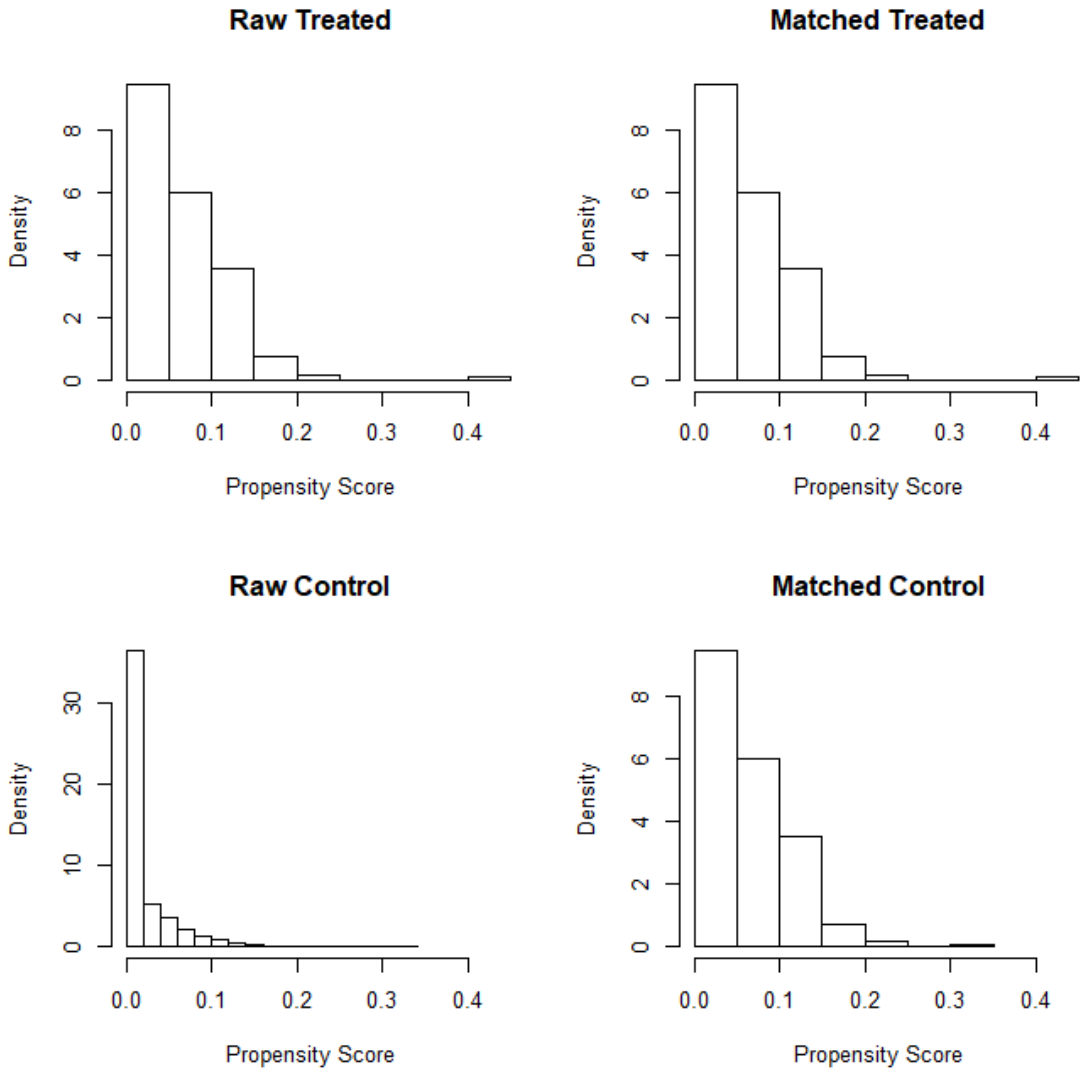
This table represents the result of liner regression analysis using the propensity scores matched sample. On this analysis I divided the sample of CHA to the 4 parts. The definitions of variables are on the Table 1. The significance of coefficients is shown that *** is 0.1 percent level, ** is 1 percent level, * is 5 percent level, and . is 10 percent level.

Graph 1: Outline of research



The above graph shows the outline of this study. The basic concept is from the causal inference framework.

Graph2: Propensity Score Matching Details



The above 4 histogram shows the matching result. This “Raw Control” histogram is changed like “Matched Control”.