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Research on Program Evaluation for Financial Statement Auditing Regulations in Japan

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Abstract

In recent years, program evaluation has become an important topic in the social science. In this research, to improve program evaluation for financial statement audits, we reviewed previous research and investigated the current system. As a result, we conclude that researchers need to better control variables and improve access to data in program evaluation. As a result of examination, this study proposes to conduct field experiments through randomized-controlled trials and establish a data center to manage audit quality indicators.

Keywords: financial statements audit, program evaluation, cost-benefit analysis, AQIs, field experiment

1. Introduction

Since the Sarbanes-Oxley (SOX) Act, the regulators for auditing financial statements have focused on the policies and effects of it on financial statements audits¹. Investors are interested in whether the newly introduced regulations (including public regulation and voluntary regulation) were successful in increasing the effectiveness of the audit. However, Francis (2004) states that policy making is inherently a political rather than scientific process and accounting regulation lacks a tradition of using scientific based research as input to policy deliberations. This trend exists in Japan as well, and many regulations have been applied since the SOX Act, but the introduction of these regulations is realized by critical public opinion due to serious fraud cases rather than based on scientific grounds.

Political policy decisions that are not scientific may create excessive costs for management, auditors, investors, etc. that do not match the benefits. Audit researchers and regulatory

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¹ Specifically, there are provisions prohibiting the simultaneous delivery of consulting services to strengthen the independence of auditors. There are also provisions to introduce rotation rules for audit offices, to introduce internal control audit reporting systems, and so on. In Japan, there is a partner rotation system that came into effect in 2003; a provision prohibiting auditors from pursuing non-audit work within a large company came into effect in 2004, and the Japanese version of the SOX act took effect in 2008.

bodies must measure the outcomes of programs and evaluate the effects in order to verify regulations posteriorly (or in advance as a pilot test). Such activities conducted by regulators and researchers are commonly called “program evaluation”² and are often used in the fields of pedagogy, epidemiology, and development science. Program evaluation is defined as “The use of social research methods to systematically investigate the effectiveness of social intervention programs in ways that are adapted to their political and organizational environments and are designed to inform social action in ways that improve social conditions”(Rossi et al., 2003).

In the program evaluation for Japan, the effect of regulation has been verified by researchers who are in independent positions rather than regulators. However, researchers in independent positions had limitations in terms of access to data and control of variables. The purpose of this paper is to make recommendations for improving the effectiveness of program evaluation for financial statement auditing regulations by reviewing previous research and institutions. This paper considers (1) how regulators should evaluate policies on audits of financial statements, and (2) how regulators can improve the availability of proxy variables for policy evaluation. In this study we propose to conduct field experiments through randomized-controlled trials (RCTs) and establish a data center to manage audit quality indicators (AQIs) to improve variable control and data access.

2. Review of program evaluation for financial statement audit regulation

2.1 Theory on causal inference

One of the major concerns of program evaluation is to evaluate the effectiveness of interventions using causal inference. There are three approaches to causality inference: Campbell’s causal model (CCM), Rubin’s causal model (RCM) and Pearl’s causal model (PCM). CCM is based on psychology; RCM is based on Fisher’s approach (Fisher, 1935) and is frequently used in the fields of statistics and econometrics. PCM is based on Wright’s approach (Wright 1921) and has a major impact on the fields of cognitive science, artificial intelligence and machine learning. Gow et al. (2016) focuses on PCM in the accounting field and encourages accounting researchers to use causal diagrams when conducting empirical research. In this paper, we focus on RCM and CCM in order to estimate the effect of these programs in financial statement audits.

RCM presents a conceptualization of compact and accurate causal inference by determining whether or not regulatory intervention should be performed by random assignment. RCT is a research design applied program setting that randomly assigns

² The program evaluation targeted by this paper aims to estimate the effect of policy using causal inference rather than for the purpose of describing the current conditions.

samples and compares the measured outcomes of the results to determine the effect of the intervention. Here, if an observed difference between the intervention group ($I_i = 1$) and the control group ($I_i = 0$) is written as $E[Y_i|I_i = 1] - E[Y_i|I_i = 0]$, it can be taken as (1) the sum of the average treatment effect and the selection bias. We rewrite (1) as (2).

$$\underbrace{E[Y_i|I_i = 1] - E[Y_i|I_i = 0]}_{\text{observed difference}} = \underbrace{E[Y_{1i}|I_i = 1] - E[Y_{0i}|I_i = 1]}_{\text{average treatment effect}} + \underbrace{E[Y_{0i}|I_i = 1] - E[Y_{0i}|I_i = 0]}_{\text{selection bias}} \quad (1)$$

$$= E[Y_{1i} - Y_{0i}|I_i = 1] + E[Y_{0i}|I_i = 1] - E[Y_{0i}|I_i = 0] \quad (2)$$

Here, when the control group and the intervention group are randomly assigned, since $E[Y_{0i}|I_i = 1] = E[Y_{0i}|I_i = 0]$, (2) can be rewritten as (3). Therefore, observable differences can be considered program effects ($E[Y_{1i} - Y_{0i}]$).

$$\underbrace{E[Y_i|I_i = 1] - E[Y_i|I_i = 0]}_{\text{observed difference}} = E[Y_{1i} - Y_{0i}|I_i = 1] = \underbrace{E[Y_{1i} - Y_{0i}]}_{\text{program effects}} \quad (3)$$

Rossi et al. (2003) explained the program effect in the context of RCM as shown in Table 1. $E[Y_i|I_i = 1](= E[Y_{1iB} - Y_{1iA}])$ and $E[Y_i|I_i = 0](= E[Y_{0iB} - Y_{0iA}])$ are the outcomes of the intervention group and the control group, respectively. Y_{1iB} and Y_{0iB} are proxy variables before program implementation of the intervention group and the control group. E and F are proxy variables after program implementation of the intervention group and the control group.

Table 1. program effect

	outcome measure						program effect
	intervention group			control group			
	before program	after program	difference	before program	after program	difference	
variables	Y_{1iB}	Y_{1iA}	$E[Y_i I_i = 1]$ $= E[Y_{1iB} - Y_{1iA}]$	Y_{0iB}	Y_{0iA}	$E[Y_i I_i = 0]$ $= E[Y_{0iB} - Y_{0iA}]$	$E[Y_{1i} - Y_{0i}]$

As described above, CCM defines a program effect by eliminating selection bias using random assignment, while CCM aims at a more comprehensive approach. CCM has two concepts, a categorization of validity and a threat to validity. Campbell's validity classification has four validities as follows, showing 37 threats to each (Shadish et al., 2002; Shadish and

Sullivan, 2012).

- **Statistical conclusion validity;** The validity of inference about the correlation (covariation) between treatment and outcome.
- **Internal validity;** The validity of inferences about whether observed covariation between treatment and outcome reflects a causal relationship from treatment to outcome, as those variables were manipulated or measured.
- **Construct validity;** The validity with which inferences are made from the operations in a study to the theoretical constructs of those operations and to the theoretical constructs those operations are intended to represent.
- **External validity;** The validity of inferences about whether the observed cause-effect relationship holds over variation in persons, settings, treatment variables, and measurement variables.

As described above, the CCM is an approach aimed at improving research programs that use causality inference by clarifying the validity to be satisfied when performing causality inference. Under CCM, RCM can be considered a useful tool for securing internal validity. In the next subsection, we investigate efforts to improve internal validity and subsection 3 investigates efforts to improve the validity of constitution concept. It is important to note that the purpose of these subsections is not to point out the problems of prior research but to make suggestions to improve the research environment by clarifying the institutional limits of empirical research.

2.2 Internal validity of financial statements audit research

In this subsection, we focus on the internal control reporting system and point out its problems. The reason for choosing the internal control reporting system is that it is a representative system reform in Japan after the SOX Act and there have been relatively many empirical studies accumulated. Particularly in Japan's research review, audit researchers in independent positions selected research conducted using Japanese data on the internal control reporting system.

Coates and Srinivasan (2014) reviewed papers that analyzed the impact of the internal control reporting system based on the SOX act, and compared costs including indirect costs and benefits (see Figure 1).

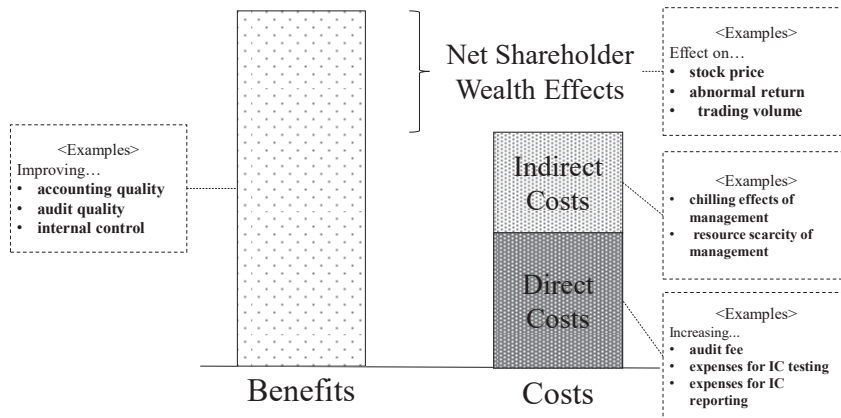


Figure 1. Costs and benefits analysis

The net investor's profits

First, there is a way to evaluate the net investor's profits by using the reaction of the stock market. Because consideration of cost / benefit to an investor's internal control reporting system is reflected in the stock price and transaction volume, by using the result, it is easy to understand the cost / benefit. Many studies are trying to evaluate programs using this method (Zhang, 2007; Jain and Rezaee, 2006; Li, Pincus, and Rego, 2008; Akhigbe and Martin, 2006).

Unfortunately, Coates and Srinivasan (2014) state that these studies have proven to be less beneficial in terms of SOX policy evaluation because they produce widely different results, an important uncertain subjective remains. Therefore, it is difficult to evaluate net effect, so it is necessary to verify benefits and costs.

In Japanese research, Takada et al. (2010) used a questionnaire to survey audited companies and audit firms about the system introduction process and investigated whether each component of the internal control was strengthened by introducing the internal control reporting system. Both the audited companies and the audit firms responded that internal control was strengthened. In addition, the paper analyzes the correlation between preliminary preparation information on the internal control reporting system and shareholders' capital cost by using data from 2007 to 2008 before the introduction of the internal control reporting system in Japan. As a result of the analysis, there is no significant correlation between the two, suggesting that preparations in advance have no influence on investor's capital cost.

The benefits

Benefits include improving the quality of financial reporting, audits and internal control.

First, there is improvement in internal control. Companies that were defective in internal controls are small and needy and have CFOs with certain characteristics (low knowledge of accounting, weak independence of the audit committee, weak internal control monitoring techniques, and clawback provision clauses Not yet signed) had been hired. However, the explanatory power of the model on internal control defects is low and there are many problems (Defond and Zhang, 2014). In the Japanese research, Yazawa (2010) analyzed the correlation between the determinant factors affecting the reporting of important deficiencies and the disclaimer of opinion, relevance to the quality of profits, and valuation of securities markets in the internal control reporting system. Reporting of important deficiencies were correlated with profit generation, but securities markets were not responding. Fujiwara (2017) also conducted analysis using propensity score matching for items that led to the disclosure of deficiencies in internal controls. Explanatory variables (shareholding ratio, having a relative of the representative director as the director, proportion of outside directors on the board of directors, large board of corporate auditors, presence of legal experts, ownership ratio of overseas investors, and increasing ration of holdings with individual investors increasing) led to the disclosure of active internal control deficiencies. In addition, as the scale of the internal audit system became larger, internal control problems were prevented in advance. These results give suggestions for further improving the internal control reporting system.

Second, there is improvement in the quality of accounting (financial reporting). Many papers provide evidence consistent with the observation that the quality of accounting for US companies has improved in the period since 2002. Cohen et al. (2008) found that accrual-based profit management steadily increased from 1987 to 2002 and then declined significantly. In Japan's research, Niimi (2010) carried out a simple before-after study with accrual around the introduction of the internal control reporting system. As a result, there was no statistically significant difference before and after the introduction of the internal control reporting system. When analyzing the determinant factor of the accrual principle, fluctuation of the determinant factor is observed across the introduction, and this paper shows that the behavior of the sample company shifts from discretionary profit manipulation to substantive profit manipulation before and after the introduction.

Third, there is improvement in audit quality. There are few studies using more direct audit quality measurements. DeFond and Lennox (2011) concluded that small audit firms stopped auditing public companies after the SOX Act and that the SOX Act improved audit quality allowing a low-quality auditors to quit. In addition, Dyck et al. (2010) have discovered that after the SOX Act auditors have significantly improved in the role of detecting and reporting fraud in public companies.

The costs

The cost of the internal control reporting system is twofold: direct cost and indirect cost. Direct costs include increased costs for verifying internal controls, expenses for reporting and increased audit fees. Such costs are obviously increasing as a result of the SOX Act, but there is no basis for estimating the auditor's certification cost based on Section 404 (b). Next, there are indirect costs related to the internal control reporting system. For example, when resources on the management side are used for internal control and a chilling effect on management, it is difficult to understand these mechanisms. Iliev (2010), a representative cost-benefit analysis, uses quasi-experiments to separate the effects attributable only to the SOX Act. The paper concludes that on the net, compliance with the SOX Act has reduced the market value of small companies.

Based on the above reviews, empirical studies on the effects of institutions in both Japan and the United States tend to conduct simple before/after analysis, correlation analysis, and quasi-experiments. However, Gow et al. (2016) point out problems with quasi-experiments. In order to estimate the program effect in a quasi-experiment, it is necessary to understand that application of regulation "as if randomly," and in many cases such situations do not apply. Therefore, RCT can eliminate many threats to internal validities and statistical conclusions validities. CCM argues that the effect of confounding factors can be isolated by random assignment to the intervention group and the control group (Shadish et al., 2002).

2.3 Construct validity of financial statements audit research

The term "audit quality" is frequently used in discussions among stakeholders, in policy decisions, and in research. Although various research defines audit quality, the International Auditing and Assurance Standards Board (IAASB) (2014) concludes that audit quality is a complex subject and there is no definition or analysis of it that has achieved universal recognition. Therefore, the approach to developing a framework for understanding and integrating research on audit quality is the "balanced scorecard" and IAASB (2014) is also applied. IAASB (2014) identifies audit quality by breaking it down to eleven pieces from the axis of the analysis unit (audit contract, audit firm, and nation) and the axis of the work flow (input, process, and output) of the audit (See Table 2). Defond and Zhang (2014) analyzes variables used as audit quality measurements, and many of these variables have advantages and disadvantages. They points out the necessity of using variables properly according to research objectives. Variables introduced in this paper are also used in empirical analysis on Japanese audit quality. However, in the framework of IAASB (2014) the proportion of audit quality currently observable in the US and Japan is small (see Table 3 - Class A).

The Public Company Accounting Oversight Board (PCAOB) (2015) enumerated 28 "audit quality indicators (AQIs)" candidates (see Table 2). PCAOB (2015) clarified potential

users of AQIs and assumed that PCAOB (and other regulators) will use it in informing policy-making, and assisting root cause, and quality control projects. Specifically, as Table 3 shows, it is evident that the number of proxy variables for audit engagement level items that can be measured, mainly in the category of input process, is increasing. Therefore, the publication of AQIs may improve the construct validity of program evaluation. However, the comment letter of the report argues that there is a possibility of causing inappropriate competition such as a reduction of audit fees at the expense of audit quality, and publication of AQIs may cause unexpected adverse effects.

Table 2. PCAOB's candidate AQIs

AUDIT PROFESSIONALS	Availability	[1] Staffing Leverage [2] Partner Workload [3] Manager and Staff Workload [4] Technical Accounting and Auditing Resources [5] Persons with Specialized Skill and Knowledge
	Competence	[6] Experience of Audit Personnel [7] Industry Expertise of Audit Personnel [8] Turnover of Audit Personnel [9] Amount of Audit Work Centralized at Service Centers [10] Training Hours per Audit Professional
	Focus	[11] Audit Hours and Risk Areas [12] Allocation of Audit Hours to Phases of the Audit
AUDIT PROCESS	Tone at the Top and Leadership	[13] Results of Independent Survey of Firm Personnel
	Incentives	[14] Quality Ratings and Compensation [15] Audit Fees, Effort, and Client Risk
	Independence	[16] Compliance with Independence Requirements
	Infrastructure	[17] Investment in Infrastructure Supporting Quality Auditing
	Monitoring and Remediation	[18] Audit Firms' Internal Quality Review Results [19] PCAOB Inspection Results [20] Technical Competency Testing
AUDIT RESULTS	Financial Statements	[21] Frequency and Impact of Financial Statement Restatements for Errors [22] Fraud and other Financial Reporting Misconduct [23] Inferring Audit Quality from Measures of Financial Reporting Quality
	Internal Control	[24] Timely Reporting of Internal Control Weaknesses
	Going Concern	[25] Timely Reporting of Going Concern Issues
	Communications between Auditors and Audit Committee	[26] Results of Independent Surveys of Audit Committee Members
	Enforcement and Litigation	[27] Trends in PCAOB and SEC Enforcement Proceedings [28] Trends in Private Litigation

Source: PCAOB (2015)

Table 3. PCAOB’s candidate AQIs in audit quality framework

	Engagement Level	Firm Level	National Level
Input			
Values, Ethics, and Attitudes	(C) The engagement team recognizes that the audit is performed in the wider public interest. (C) The engagement team exhibits objectivity and integrity. (B) The engagement team is independent (PCAOB [16]). (B) The engagement team exhibits professional competence and due care (PCAOB [1], [2], [3], [5]). (B) The engagement team exhibits professional skepticism (PCAOB [1], [2], [3]).	(B) Governance arrangements are in place that establish independence and the appropriate “tone at the top” (PCAOB [13], [16]). (B) The firm promotes the personal characteristics essential to audit quality (PCAOB [13]). (B) Financial considerations do not drive actions and decisions that may have a negative effect on audit quality (PCAOB [15]). (B) The firm emphasizes the importance of providing partners and staff access to high-quality technical support (PCAOB [5], [17]). (B) The firm promotes a culture of consultation on difficult issues (PCAOB [13]). (B) Robust systems exist for making client acceptance and continuance decisions (PCAOB [15]).	(A) Ethics requirements are promulgated that make clear both the underlying ethics principles and the specific requirements that apply. (C) Regulators and professional accountancy organizations are active in ensuring that the ethics principles are understood, and the requirements are consistently applied. (C) Information relevant to client acceptance decisions is shared between audit firms.
Knowledge, Experience, and Time	(B) Partners and staff have the necessary competences (PCAOB [5], [6], [7], [10]). (B) Partners and staff understand the entity’s business (PCAOB [11]). (B) Partners and staff make reasonable judgments (PCAOB [9], [11], [12]). (B) The audit engagement partner is actively involved in risk assessment, planning, supervising, and reviewing the work performed (PCAOB [12]). (B) Staff performing detailed “on-site” audit work have sufficient experience, their work is appropriately directed, supervised and reviewed, and there is a reasonable degree of staff continuity (PCAOB [1], [8]). (B) Partners and staff have sufficient time to undertake the audit in an effective manner (PCAOB [12]). (B) The audit engagement partner and other experienced members of the audit team are accessible to management and those charged with governance.	(B) Partners and staff have sufficient time to deal with difficult issues as they arise (PCAOB [5], [11] and [12]). (B) Engagement teams are properly structured (PCAOB [1], [2], [5], [6]). (C) Partners and more senior staff provide less experienced staff with timely appraisals and appropriate coaching or “on-the-job” training. (B) Sufficient training is given to audit partners and staff on audit, accounting and, where appropriate, specialized industry issues (PCAOB [10]).	(A) Robust arrangements exist for licensing audit firms/individual auditors. (A) Education requirements are clearly defined, and training is adequately resourced. (A) Arrangements exist for briefing auditors on current issues and for providing training to them in new accounting, auditing or regulatory requirements. (A) The auditing profession is well-positioned to attract and retain high-quality individuals.
Process			
(B) The engagement team complies with auditing standards, relevant laws and regulations, and the audit firm’s quality control procedures (PCAOB [18], [19]). (B) The engagement team makes appropriate use of information technology (PCAOB [17]). (C) There is effective interaction with others involved in the audit including, where applicable, internal auditors. (B) There are appropriate arrangements with management so as to achieve audit efficiency properly structured (PCAOB [18], [19]). (C) There is appropriate audit documentation.	(B) The audit methodology is adapted to developments in professional standards and to findings from internal quality control reviews and external inspections (PCAOB [18], [19]). (B) The audit methodology encourages individual team members to apply professional skepticism and exercise appropriate professional judgment (PCAOB [13], [14]). (C) The methodology requires effective supervision and review of audit work. (C) The methodology requires appropriate audit documentation. (B) Rigorous quality control procedures are established, audit quality is monitored, and appropriate consequential action is taken (PCAOB [19]). (B) Where required, effective engagement quality control reviews are undertaken (PCAOB [19]).	(A) Auditing standards are promulgated that make clear the underlying objectives as well as the specific requirements that apply. (A) Bodies responsible for external audit inspections consider relevant attributes of audit quality, both within audit firms and on individual audit engagements. (A) Effective systems exist for investigating allegations of audit failure and taking disciplinary action when appropriate.	
Output			
<From the Auditors> (A) Auditor’s reports to users of audited financial statements (PCAOB [24], [25]). (A) Auditor’s reports to those charged with governance (C) Auditor’s reports to management (C) Auditor’s reports to financial and prudential regulators <From the Entity> (A) The audited financial statements (PCAOB [21], [22], [23]). (A) Reports from those charged with governance, including audit committees. <From Audit Regulators> (A) Providing information on individual audits (PCAOB [19], [27], [28])	<From the Audit Firm> (A) Transparency reports (A) Annual reports <From Audit Regulators> (A) Providing an aggregate view on the results of audit firm inspections (PCAOB [19], [27]).		

* (A) is the audit quality as revealed by public information. (B) is the audit quality that may become public information when AQIs of PCAOB are introduced. (C) is audit quality of private information.

* For the notation of PCAOB [], see Table 2.

Source: The Author, based on IAASB (2014)

CAQ (2016) considers whether the disclosure of engagement level AQIs information should be mandatorily and expresses concern that mandated disclosure of engagement level AQIs will lead to unintended consequences in the market. CAQ (2016) believe that mandated public disclosure of engagement-level AQIs could lead to unintended consequences and that any disclosures of engagement-level AQI information should be voluntary. For example, AQIs could lead to a check-the-box compliance exercise or, worse, a misallocation of resources and overemphasis on managing select metrics to the detriment of a focus on other factors that might be more pertinent to quality performance. Therefore, for policy evaluation, AQIs at the engagement level should not be fully disclosed, and it is necessary to limit the scope of their publication.

3. Recommendations for program evaluation of financial statements audit regulation

3.1 Implementation of field experiments

In the previous section, I reviewed the study of program evaluation for audit regulation of financial statements focused on the internal control reporting system in Japan. In this section, as a recommendation to further improve the internal validity of program evaluation, we will focus on field experiments by RCT.

In the field of environmental audits, Duflo et al. (2013) analyze how regulations on companies conducting audits on pollution in India affect audits. In the paper, a field audit of an environmental audit of an industrial plant was conducted for two years, and as a result, conflicts of interest harmed the information provision, indicating that there is a possibility of invalidating the regulation. In the paper, it is shown that environmental audits of industrial plants are conducted for two years, and as a result, conflicts of interest may harm the information supplement function and disable the regulation. As an example of the Securities and Exchange Commission (SEC) performing field experiments in the field of finance, there is a pilot test on deregulation of short selling in 2004. In conducting the pilot test, the SEC had newly established the law called Rule 202T. It is an administrative rule stipulated for the procedures of field experiments., so it can be seen that administrative rules are sometimes required for program evaluation. In response to the requirements of the SEC, each regulatory agency has agreed to publish transaction data so that researchers can analyze the pilot program. Publishing data to researchers by regulators is an important process for field experiments.

Floyd and List (2016) believe that the momentum of field experiments in the audit of financial statements within the United States is rising. The PCAOB Economic Analysis Center sets out an explicit goal of informing PCAOB activities using economic theory and analysis (PCAOB, 2015). As illustrated at the PCAOB / Journal of Accounting Research conference, the Economic Analysis Center shows interest in dialogue and exchange with

accounting and financial scholars. As this relationship deepens, Floyd and List (2016) are considering the opportunity for PCAOB to cooperate with scholars to implement policy-related field experiments and the paper recommends that researchers conduct field experiments. Therefore, this paper proposes the implementation of field experiments for more effective control of variables.

3.2 Installation of AQI data center

In the previous section, we reviewed the construct validity in program evaluation for regulation of financial statement audits. However, since independent researchers may limit access to AQIs at the audit engagement level, it is difficult to use AQIs at the audit engagement level as policy outcomes. In this section, I would like to consider a framework to raise both the accessibility of AQI data at the audit engagement level and the confidentiality of data by examining a sample case where data release has progressed by an administration to assist independent researchers.

In recent years, efforts to improve the availability of data have received great attention in administrations around the world. The US government has released “Data.gov,” a site that provides various data sets related to statistical data possessed by the administration since 2009³. President Obama issued “Executive Order - Making Open and Machine Readable the New Default for Government Information” in 2013, and also announced a new policy on open data. This presidential decree mandates government agencies make newly created data as discoverable and accessible as possible, and made available for easy reuse while considering the protection of personal privacy, confidential information, and information on national security. The “Commission on Evidence-Based Policymaking” established under the Obama administration submitted its final report (CEP, 2017). The Committee proposes an attempt to secure data confidentiality as well as accessibility. The report is aimed at the federal government to (1) develop a safe data access infrastructure, (2) secure a mechanism to improve the privacy protection and transparency about data use for evidence building, and (3) provide institutional capacity to reinforce evidence-building.

Efforts are also being made in Japan to increase the availability of data. For example, “Electronic Administration Open Data Strategy” formulated by the Strategic Headquarters for Promotion of Advanced Information and Telecommunications Network Society (IT Comprehensive Strategy Headquarters) in 2012 is cited. Based on the same strategy, the “road map for promotion of electronic administrative open data” was formulated, and based on the same road map, in 2013 the data catalog site “DATA.GO.JP” was published by the

³ As of October 31, 2017, 197,980 data sets have been released and 129 data sets on Finance. The site can be accessed from the following URL, <https://www.data.gov/>

Cabinet Secretariat⁴.

I propose the establishment of a data center on AQIs to improve data access for independent researchers. Confidentiality of audit contract information can be secured while permitting access to researchers by establishing a data center that manages AQIs related to intervention of financial statement audits and other relevant AQIs.

Figure 2 shows the outline of the data publishing method. The regulator provides data on intervention companies and control companies, the auditor provides Non-disclosed AQIs through the data center, and provides Disclosed AQIs without passing through the data center. The data center anonymizes only Non-disclosed AQIs. By anonymizing the accessible data of registrants, regulators can reduce the risk of spillage. The data center publishes Non-disclosed AQIs only to registrants who have signed a usage restriction contract. By limiting the scope of publication to registrants, it prevents information leakage. Registrants can access all data; non-registrants can access the data from intervention companies and control companies and Disclosed AQIs. By establishing such a data center, confidentiality can be secured while improving accessibility.

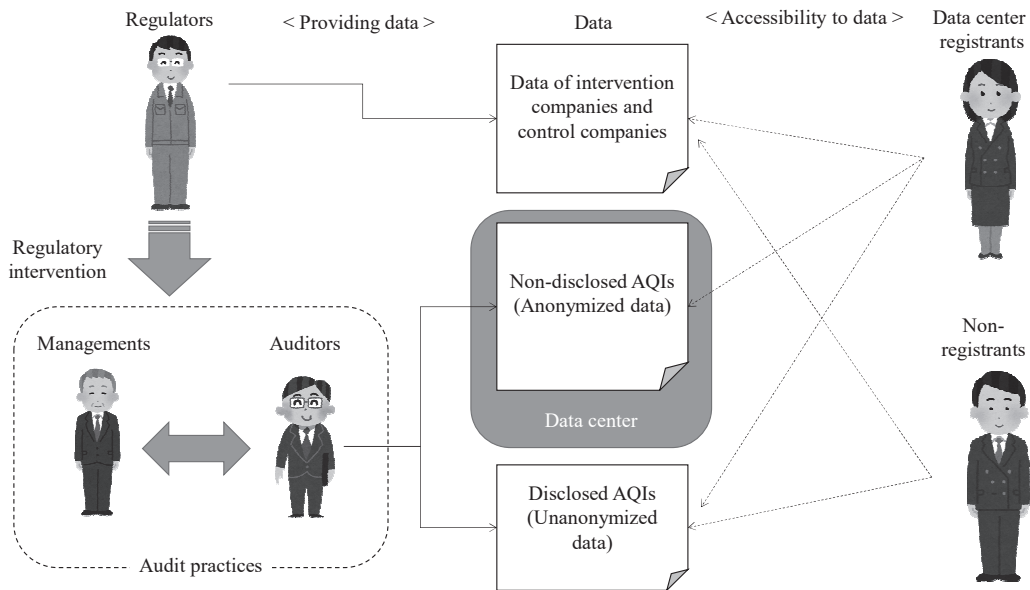


Figure 2. Method of data disclosure

⁴ As of October 31, 2017, this data catalog site has 388 data sets registered and 103 country datasets registered. Two datasets registered by the Financial Services Agency (EDINET and Registered Money Investor Information Retrieval Service) are registered. The site can be accessed from the following URL, <http://www.data.go.jp/>

4. Conclusion

In this paper, we make suggestions to improve the effectiveness of program evaluation for financial statement audits by reviewing previous research and institutions. First, we inducted the three approaches in causal inference (RCM, PCM and CCM) and introduced the work of previous research to improve the internal validity and the construct validity of program evaluation for financial statement audits. In addition, we proposed approaches to improve the current efforts (implementation of field experiments and establishment of a data center of AQIs).

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