The Impact of Tax Returns on the Adjusted Income for Profit-Seeking Enterprises

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Abstract

This paperexplores the adjustment of income and the relevance of income adjustments to the characteristics of for profit-seeking enterprises in the five main tax returns, as well as tax return big data, over a five-year period from 2013 to 2017. The results of this paper show that the average income adjustmentperfor profit-seeking enterprise is $144,213 NTD, whilst the average one-year adjusted income was more than $120 billion NTD, and the average annual adjusted tax amount is about $2.4 billion NTD. In other words, the amount of tax evasion for profit-seeking enterprises is about $2.4 billion NTDper year. If account book records are incomplete for profit-seeking enterprises, they are more likely to be subjected to more auditsthrough reviewing declarations on their tax returns. Additionally, the average adjusted income is $11,302 NTDperhousehold, whilst theaverage adjusted tax is $1,921 NTDperhousehold, and the average annual adjusted tax amount is about $1billion NTD.Furthermore, as a result of theregressionanalyses, it is concludedthat the net sales revenue for profit-seeking enterprises is between $25 million and 30 million NTD. In order to meet the conditions for audit by reviewing declaration on tax returns, it is more likely to engage in earnings management behavior, with a higher ratio of adjusted income and a statistically significant level. Moreover, the profit-seeking enterprise adopts the "audit by reviewing declaration on tax return" in which tax paid is calculated at a certain rate measured as anoperating income (expansion rate 6%) without the need to prove the relevant cost or expense information, and the higher adjusted income.The adjusted income is heavily influenced by expenses and salary rates. Additionally, the inventory rate directly correlates with the cost of goods and therefore, has a direct impact on the adjusted income.

Keywords: Income Adjustment, Tax Adjustment, Audit by Reviewing Declaration on Tax Return, Audit by Reviewing Accounting Books.

1. Introduction

In Taiwan, profit-seeking enterprises file business income taxes primarilyin three methods. Those are,audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance; audit by reviewing accounting books; and certified return by certified public accountants. Statistics from the Fiscal Information Agency suggests that among the 917,009 tax filings from profit-seeking enterprises in Taiwan in 2017, 556,876 or 60.73% of these were audited by reviewing tax returnsfiling under the standards issued by the Ministry of Finance. These numbers indicate the popularity of audits by reviewing declarations on tax returns as a tax filing method.Most of the profit-seeking enterprises in Taiwanopt for audits by reviewing declarations on tax returns for two reasons. First, SMEs (small-and-medium enterprises) are not usually equipped with a dedicated accounting department. Accounting in SMEs is typically handled by the business owner or his/her spouse. The general lack of professional accounting skills leads to aninefficientaccounting system. Meanwhile, these enterprises mostly outsource bookkeeping to reduce accounting costs. Miscommunication between the enterprises and outsourced bookkeepers results in distortedtransactional facts.

Finally, most SMEs do not have comprehensive vouchers and their accounts are not prepared according to the Business Entity Accounting Act, the Regulation on Business Entity Accounting Handling, and Generally Accepted Accounting Principles. The use of audits by reviewing declaration on tax return under

the standards issued by the Ministry of Finance can avoid tax authorities from coming in for in-depth inspections.

This paper sets out two research objectives. First, it seeks to explore the difference of tax amounts adjusted by different filing methods. Second, it examines the relation between business income tax adjustments under different filing methods and the characteristics of enterprises. The purpose is to evaluate the systematic deficiency of the audits by reviewing declaration on tax return under the standards issued by the Ministry of Finance and the influence on tax avoidance and evasion.It will then discuss the rationale for keeping or abolishing the system.

This paper explores the adjustment of income and the relevance of income adjustments to the characteristics of profit-seeking enterprises in the five main types of tax return, as well as tax return big data, over a five-year period from 2013 to 2017. The results of this paper show that the average income adjustment per profit-seeking enterprise was$144,213 NTD, the average one-year adjusted income was more than $120 billion NTD, and the average annual adjusted tax amount was about $2.4 billion NTD.

In other words, tax avoidance and evasion by profit-seeking enterprises totaled$2.4 billion NTD each year. The filing via audit by reviewing accounting books resulted in the largest amount of tax adjustments, at an average of $988,031 NTD per profit-seeking enterprise. This translates to an income adjustment of $82.6 billion NTD and tax adjustments of $14.04 billion NTD on average per annum. For the profit-seeking enterprises with incomplete bookkeeping records and those that mostly file their taxes throughaudits by reviewing declaration on tax returns under the standards issued by the Ministry of Finance, the annual income adjustment was only $11,302 NTD and the income tax adjustment was a mere$1,921 NTD per enterprise on average.

The regression analysis suggests that the profit-seeking enterprises in the net revenue bracket of $25 million NTDto NTD30 million were more likely to engage in earnings management in order to qualify for audits by reviewing declarations on tax returns under the standards issued by the Ministry of Finance. Thehigh ratio of adjusted incomes indicatessome significant results. Payable income taxes are calculated at a percentage of revenue if taxes are filed via audit by reviewing declarations on tax returns. As this does not incur expenses in relation to evidence presentation, it leads to a high adjustment of incomes. The adjusted income is heavily influenced by expenses and wage expense ratio. Additionally, the inventory ratio directly correlates with the cost of goods and therefore, has a direct impact on the adjusted income.

This study samples and analyzes the five-year tax filings data from the Fiscal Information Agency.This is the first research paper that analyzes the whole set of tax filings and assessments from profit-seeking enterprises. An analysis is conducted on records from nearly one million profit-seeking enterprises each year and tax data is assessed by the authorities. This big data analysis is the main focusof this study.In addition, this study calculates the adjustment in incomes and taxes by referring to the profits and losses stated in income tax filings and the actual numbers on the balance sheets of profit-seeking enterprises. This is the second focusof this study.

The remainder of this paper is organized as follows. Section 1 describes the research motivations and objectives. Section 2 summarizes the literature review, theories and empirical research on tax avoidance and evasion. Section 3 outlines the research hypotheses and the research design and explains the development of hypotheses, the design of the empirical models, the definitions of variables and the process of sample screening. Section 4 provides the empirical results and analyses. Section 5 presents the conclusions, research contributions and limitations.

2. Literature Review and Hypotheses Development

In Taiwan, profit-seeking enterprises file business income taxes primarily in three methods.Those methods are, audit by reviewing declaration on tax return; audit by reviewing accounting books; and assessed and certified returns by certified public accountants. Few enterprises qualify for tax filing by foreign companies, sole proprietorships or partnerships.

Audit by reviewing declarations on tax returns was first proposed by the National Taxation Bureau of Taipei (NTBT) in 1970as a means of effectively utilizing tax assessment capacity by reviewing the filings that metcertain criteria to avoid the troubles of accounts retrieval and inspection, and to save on tax assessment costs. Therefore, the Ministry of Finance has been approving this approach each year with administrative

orders ever since. Currently,due to incomprehensive books and the desire to avoid inspections from the National Taxation Bureau, any SME with an annual revenue and a non-operating income totaling NTD30 million or less, may opt for adjusting the net margin for audit by reviewing declarations on tax returns.This may be relevant even if the finalized net margin on the book falls below the net margin reported for tax purposes (e.g., 2% net margin on the accounts but 6% net margin in the tax assessment). Audit by reviewing declarations on tax returnsunder the standards issued by the Ministry of Finance is not applicable to an SME with an annual revenue and non-operating income exceeding NTD30 million. However, if the income filed for tax purposes exceeds the standard incomes in the industry, the National Taxation Bureau will still assess the taxes based on the filed amount. If the SME concerned is randomly inspected but cannot provide accounts or documents, the tax assessment will be processed by referring to available data or the profitability standard of the same trade.If the recognized amount on the book turns out to be higher than the standard incomes or industry's profitability due to insufficient accounting vouchers, the SME concerned should still file taxes based on the booked amount. Otherwise, it will be deemed as suspected tax avoidance or evasion via illegitimate means and may be criminally liable for severe breaches of regulations according to Article 41 of the Tax Collection Act and Articles 71 and 72 of the Business Entity Accounting Act.

Wu and Chen (2020b) mention the necessity of audit by reviewing declarations on tax returns in order to save tax assessment costs. However, the taxable incomes under the standards issued by the Ministry of Finance are based on estimates, rather than revenues less costs and expenses. This is not consistent with the principle of honest tax filing encouraged by the income tax assessment system. Moreover, the low coverage of random inspections by tax authorities on audit by reviewing declarations on tax returnsunder the standards issued by the Ministry of Finance essentially provides protection for the profit-seeking enterprises without complete accounting records. Finally, tax revenues take a hit if profit-seeking enterprises file taxes by declaring a net margin lower than the actual margin.

Audit by reviewing accounting books refers to the National Taxation Bureau's access of accounts and books of profit-seeking enterprises via due diligence in order to check against the tax filings and determine taxes payable. If profit-seeking enterprises wish to avoid this, they can hire publicly certified accountants to audit tax filings by first going through company accounts. Publicly certified accountants review and audit tax filings by profit-seeking enterprises according to tax laws and generally accepted auditing principles. They inspect whether transaction records and accounting approachesare compliant with tax laws to certify the taxable incomes and submit filings on behalf of profit-seeking enterprises. Therefore, the National Taxation Bureau typically reviews these tax declarations on paper.

2.1 Theoretic Basis

Audit by reviewing declarations on tax returns under the standards issued by the Ministry of Finance is essentially taxation based on estimates. This refers to the use of a variety of indirect data, rather than direct data, as a way of determining tax requirements (incomes) in the imposition of disciplinary measures (or the assessment of income taxes). According to the tax laws, taxation based on estimates should only be allowed when the tax base is highly probable. In general, taxation based on estimates is deemed to be unfair and inconsistent with the spirit of honest filing for income taxes. Therefore, it is used mostly by the tax authorities in the investigation of tax data when taxpayers breach their obligations to provide required information. In other words, taxation based on estimates is a way for the tax authorities to exercise the right to tax, which is a right granted by lawmakers.

According to the first paragraph of Article 83 of the Income Tax Act in Taiwan, when the tax authorities are conducting checks or rechecks, taxpayers should provide all kinds of relevant accounts and vouchers as evidence of incomes. If taxpayers do not provide such accounts or vouchers, the tax authorities may assess the taxable incomes based on data available or profitability standards of the same trade. The second half of these sentences indicate that the tax authorities estimate and assess income taxes in reference to data available or profitability standards of the same trade if taxpayers do not present accounts or vouchers as required to prove incomes. Consequently, the tax authorities may estimate taxation not by direct data but by a variety of indirect data,such as profitability standards of the same trade,as the basis for taxation based on estimates in the income tax laws of Taiwan.

In addition, as stipulated by the second subparagraph of the first paragraph of Article 12 of the Tax Collection Act, in the determination of the elements of fact for tax assessments, the tax authorities should refer to the relationsand facts of economic substances and the ownership and entitlement of the resulting economic benefits. Based on this principle of taxation on economic substances, it is necessary to audit and verify the

objects of taxation and the basis of taxation. Hence, the income tax laws are based on the principle of taxation on factual incomes (taxation on the factual amounts). Taxation based on estimates is the approximation to approach taxation on factual amounts. In addition, the introduction of the standards of industry's profitability is essentially pro forma standard taxation based on average values and intended for the fair protection of the honest taxpayers.

Allingham and Sandomo(1972) examine the effect of tax avoidance and evasion from the perspective of taxpayers. This study foundthat higher random inspection rates and penalty rates by the tax authorities mitigate the occurrenceof tax avoidance and evasion. However, the impact of tax rate increases on the occurrenceof tax avoidance and evasion depends on the net result after the canceling out of income effects and substation effects for taxpayers. Graetz, Reinganum and Wilde (1986) compare the tax authorities as a game participant in the examination of the policy about random inspections and the offsetting effects on the decision by taxpayers not to file taxes honestly. The research findings indicate that random inspections on individual low incomes stated in tax filings are related to penalties and low tax rates imposed by the tax authorities. Meanwhile, the influencing factors of false tax filings include moral ethics of the society, penalties, taxation assessment costs, tax rates and income distributions of taxpayers.

Chu (1988)generalizes the factors contributing to tax avoidance and evasion into economic (e.g., tax evasion as gambling), psychological (the taxpayer's willingness to comply), moral (social norms and role expectations), and tax administration and legal frameworks. The research suggests that the quality and integrity of taxation personnel and the laws and regulations on taxation are the key determinants of tax avoidance and evasion by profit-seeking enterprises in Taiwan. Penalties and moral issues are not key factors.

The taxation system should avoid any disruption to economic activities in the society in order to maintain the order of an efficient market. Thus, it is important for the tax authorities to uncover false tax filings by enhancing inspection techniques and source tax data. Traceability relies on a robust taxation system. In practice, the random inspection rate is between 2% and 10% on audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance. This has made audit by reviewing declarations on tax returns under the standards issued by the Ministry of Finance a channel for tax avoidance and evasion by profit-seeking enterprises. As it is detrimental to taxation fairness and tax revenues, one of the research objectives of this study is to evaluate whether it is necessary to continue with this system.

2.2 Empirical Research

The empirical studies on the influencing factors of tax avoidance and evasion and the characteristics of companies in Taiwan can be divided into two categories.The first is the literature on tax filing behaviors (methods) and tax avoidance and evasion, and the second relates tothe relationship between company characteristics and tax avoidance and evasion.

As far as the literature on tax filing behaviors (methods) and tax avoidance and evasion is concerned, Chang (1983) believes that audits by reviewing declarations on tax returns do not serve positive purposes,as it violates the principle of honest tax filing and is susceptible to tax avoidance and evasion. Chen (2006) conducted an empirical study that utilizedthe Tobit regression model. This study examined the effects of inspections on tax filings from the tax authorities on missed or understated tax filings by profit-seeking enterprises. The results indicate that penalties imposed by the tax authorities detertaxpayers from missing or understating in their tax filings. However, audit by reviewing declarations on tax returnshas adverse impacts on tax compliance.Given the minimum inspections for conclusion by the tax authorities, it is necessary to examine the gambling mentality and the incomplete accounts of profit-seeking enterprises.

In reference to the relationship between company characteristics and tax avoidance and evasion, Lin (2000) explores the influence of tax filings certified by accountants on tax avoidance and evasion by performing an empirical study with the Tobit model. The study finds that the certification from public accountants leads to significantly lower tax avoidance and evasion than the regular tax filings. Therefore, the government is advised to lower the threshold for applicability of mandatory certification of tax filings and narrow the coverage for applicability of industries where tax avoidance and evasion is prevalent.

Meanwhile, the government should provide tax incentives to profit-seeking enterprises for certification by public accountants and increase inspections on non-certified tax filings. Huang, Lin, and Chen (2005)look at the selection of tax filing methods and the implementation of the integrated income tax system on corporate tax avoidance and evasion. The analysis suggests that companies opt for different tax filings

methods because of their own characteristics. When compared to regular tax filings, certification by public accountants reduces tax avoidance and evasion before and after the implementation of the integrated income tax system. In other words, certification by public accountants helps to mitigate corporate tax avoidance and evasion. The adoption of the integrated income system also deterscorporate tax avoidance and evasion.

Currently, the inspection on business income taxes is based on computer selections or manually conducted random checks. Computer selections are made by the computer model from the data maintained by theFinancial Data Center, Ministry of Finance, and based on dishonest rates. The cases selected are then forwarded to the tax authorities for inspection. However, the fairness of selections and inspections is subject to conditions predetermined due to understaffing and inconsistency of the methods with which different tax bureaus use to carry out checks. Huang and Lin (2009)construct the Tobit model and the Probit model in the analysis of the influencing factors of tax avoidance and evasion by profit-seeking enterprises and the selection and inspection by the National Taxation Bureau. The empirical results indicate that certification by public accountants, higher liquidity, and tax incentives lead to reduced income tax avoidance and evasion. However, tax avoidance and evasion is more pronounced among the profit-seeking enterprises with higher taxable incomes, high debt ratios, overdue tax filings, and back tax payments upon tax filings. Huang, Lin, and Huang (2012)suggest that the National Taxation Bureau should focuson the inspection ratio and increase penalties or forward the cases of severe tax avoidance and evasion to prosecutors' offices, in order to discourage tax avoidance and evasion, maintain taxation fairness and boost tax revenues.

Chiang and Lin (2007) apply the Delphi method to their study, which involves consulting experts and integrating professional opinions. The results show that, generally, experts think the financial reporting from SMEs in Taiwan is unreliable. It is widely believed that SMEs regularly manipulate financial reporting by concealing incomes, inflating expenses, and engaging in related-party transactions. There is a lot of room for improvement forthe current accounting system.

Yu and Wu (2015) conduct case studies by dividing the forms of tax avoidance and evasion into missed/understated revenues, inflated operating costs/expenses, multiple incorporations to distribute incomes, circumventing related taxable income sources, and intended errors in industry codes. Wu and Chen (2020a)perform a Probit regression analysis on the business income tax filings received by the National Taxation Bureau of Taipei (NTBT) in 2015. The results suggest that revenue concentration is positively correlated with the abnormal value added ratio and the net income or non-substantial operations.This factors also increase the chance of tax filings via audit by reviewing declarations on tax returns under the standards issued by the Ministry of Finance.

Almunia and Lopez-Rodriguez(2018)examine the relationship between the inspection intensity of the tax authorities and tax compliance by companies that report revenues above €6 million in tax filings in Spain. The research indicates that companies are motivated to keep the reported revenues below the €6 million mark. Hence, the government is advised to expand the scope of inspections to smaller businesses. Cheng et al. (2019)use the leapfrogging model to explore whether the system of the audit by reviewing declarations on tax returns under the standards issued by the Ministry of Finance has leapfrogged in Taiwan. The results highlight the commonleapfrogging approach in a number of companies around the threshold and indicate an understatement of annual revenues by $700,000 NTD, on average, for the profit-seeking enterprises concerned.

There are currently thresholds on the applicability of audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance. Only the profit-seeking enterprise with a total of net revenues and non-operating incomes below $30 million NTD (excluding profits from transaction of land and fixtures or any tax-exempt incomes) can opt for this tax filing route. The tax authorities typically review papers only for the tax filings submitted via declaration under the standards issued by the Ministry of Finance. The inspection rate is lower than regular tax filings. Therefore, profit-seeking enterprises suppress their revenues to below the $30 million NTDthresholdin order to qualify for audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance. Hence, this study develops the following hypothesis:

H1: Tax amount adjustments are different for different tax filing methods adopted by profit-seeking enterprises.

Profit-seeking enterprises report a lower net margin for audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance by making empty purchases from business entities without substantial operations and established as a vehicle to manufacture evidence of higher expenses and lower net margins. As the tax authorities only make adjustments as an administrative measure for these tax filings, audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance is undoubtedly the protection of tax shelters for fictitious incorporated profit-seeking enterprises. In practice, SMEs in Taiwan opting for audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance usually set up multiple profit-seeking enterprises to distribute revenues or simply do not issue invoices to suppress sales. Therefore, this study infers that the profit-seeking enterprises choosing audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance and reporting revenues below the $30 millionNTDthresholdhave higher tax amount adjustments. The hypothesis is stated as follows:

H2-1:The closer the revenue to $30 million NTD, the greater taxable income adjustments for profit-seeking enterprises.
H2-2: The profit-seeking enterprises opting for audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance report higher taxable income adjustments.

To qualify for audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance, profit-seeking enterprises manufacture cost of goods sold (by understating inventory), operating expenses and other expenses to deflate net margins on the book. This is followed byself-adjustments thatonly require the reporting of revenues and non-operating incomes to the same net margin required for audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance. These are all measures to avoid tax burdens. Therefore, this study infers that the higher the recognized operating expenses, other expenses and wage expenses, the higher the tax amount adjustments for profit-seeking enterprises. This is also true for the lower the inventory, and therefore, the higher the cost of goods sold. Hence, the hypothesis is stated as follows:

H2-3: The greater the taxable income adjustments for profit-seeking enterprises.
H2-4:All else being equal,the higher the expenses, the greater the taxable income adjustments for profit-seeking enterprises.
H2-5: The higher the wage expenses, the greater the taxable income adjustments for profit-seeking enterprises.
H2-6:The higher the inventory ratio, the greater the taxable income adjustmentsfor profit-seeking enterprises.

Many SMEs in Taiwan are one-person companies or family enterprises and tend to mix company bank accounts with shareholders' personal accounts. Relevant transactions are mostly stated in one line "dealing with shareholders" on the balance sheet. If a company lends to shareholders or other parties, such lending is recognized under current assets on the balance sheet. If shareholders lend to the company, such lending is recognized as a current liability on the balance sheet. If dealing with shareholders is stated as a liability, it means the company is short on cash and shareholders provide funding to the company. If the company does not pay interest to shareholders, it can be deemed that interest does not accrue and therefore, not paid to shareholders. In other words, shareholders do not report interest incomes in the filing for personal income taxes. This often results in shareholders lending to the company to reduce their own interest incomes. If profit-seeking enterprises choose not to distribute earnings, this may result insome confusion between shareholders' personal accounts and the enterprise's account. If the capital flows are known by the National Taxation Bureau, there are risks that inspections by the tax authorities will follow. Hence, this study develops the hypothesis below:

H2-7: All else being equal, the higher the dealing with shareholders, the greater the taxable income adjustments for profit-seeking enterprises.

The control variables that influence tax amount adjustments include profitability, debt rations and firm sizes. Wu and Chen(2020a)sample 522,589 tax filings from profit-seeking enterprises via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance and 391,333 tax filings via other routes in 2015.

The results indicate that there are more tax filings in southern Taiwan via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance and these filings report higher average net revenues. This is related to the audit intensity of the tax authorities. The higher the net margin, the

greater the willingness to opt for tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance. Concentration of sales, abnormality in value added ratios and non-substantial operations are associated with a preference for tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance.

If a profit-seeking enterprise enjoys actual earnings higher than stated in the tax filing via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance, it is more likely to attempt tax avoidance and evasion during the year. DeAngelo,DeAngeloandSkinner (1994)posit that high debt ratios typically imply financial strain. Therefore, to renegotiate debt contracts, companies may seek to reduce earnings by manipulating payable tax.Chen (2006) finds in the empirical study that the higher the debt ratios, the greater the pressure in working capital management and the more likely missed/understated taxable incomes. Yang and Kuo(2017)review the influence of SME characteristics in Taiwan on business income tax avoidance and evasion. The results indicate that the higher the debt ratios, the more tax avoidance and evasion.

Based on case-study findings, Kao(2018)recommends that the tax authorities should cross reference tax items in the database and analyze sales patterns of the industry, unusual activities in industry codes, sales to and purchases from related parties or employees, ecommerce stores, home delivery data, and official website information. This will enable the tax authorities to remain aware of the operations of profit-seeking enterprises and mitigate business income tax avoidance and evasion by using tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance.

Cheng, Yang, and Han (2020)use the matching method in the sampling of tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance and the tax filings via other routes by companies with similar characteristics. The sampling pool is the companies with revenues between $10 million NTD and $30 million NTD in 2004-2014. The results suggest that $2 billion NTD to $3 billion NTD taxes for business incomes and individual incomes are avoided or evaded per annum due to income manipulation and cost/expense information under the system of tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance.

3. Empirical Research Design

3.1Empirical Model and Variable Measurements

This study examines the difference in income adjustments for profit-seeking enterprises between different tax filing methods. An ordinary least squares (OLS) regression is performed to examine the correlation between income adjustments and company characteristics.

The assessment of income taxes on profit-seeking enterprises is performed in three methods, i.e., profitability standards of the same trade, income standards, and net margin standards for tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance. In practice, the rate based on profitability standards of the same trade is greater than the rate based on income standards, which in turn is greater than the rate based on net margin standards for tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance. Therefore, if the National Taxation Bureau adjusts taxable incomes with profitability standards of the same trade or income standards, it will greatly increase the tax burdens on profit-seeking enterprises. To test whether H2-1 and H2-7 are in line with expectations, the regression model (1) is established as follows:

$$IncomeAdj_{it}=\beta_0+\beta_1EM_{it}+\beta_2TA_{it}+\beta_3OpeExp_{it}+\beta_4OthExp_{it}+\beta_5Salary_{it}+\beta_6INV_{it}+\beta_7WithDraw_{it}+\beta_8ROA_{it}$$
$$+\beta_9DEBT_{it}+\beta_{10}SIZE_{it}+\beta_{11}DYEAR_{it}+\beta_{12}GDP_{it}+\sigma_{it}(1)$$

WhereIncomeAdj denotes the income adjustment ratio, which is calculated by theincome adjustment (assessed taxable income less self-adjusted taxable income)being divided bythe assessed taxable income.EM denotes earnings management by profit-seeking enterprises. It is a dummy variable of 1 if the profit-seeking enterprise reports a net revenue of between $25 million NTD and $30 million NTD, and 0 if not. A positive correlation is expected between earnings management and income adjustments by profit-seeking enterprises. TA denotes the tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance.

This is a dummy variable of 1 if tax is filed via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance and 0 if not. A positive correlation is expected between tax filings

via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance and income adjustments by profit-seeking enterprises. Operating expense ratio (OpeExp), other expense ratio (OthExp) and wage expense ratio (Salary) are calculated with the recognized amounts on the book divided by net revenues. A positive correlation is expected between expense ratios and income adjustments. INV denotes inventory ratio, measured with reported inventory amount divided bynet revenues. An inverse correlation is expected between expense ratios and income adjustments. WithDraw denotes the ratio of dealing with shareholders, measured with the amount of dealing with shareholders recognized as a liability divided by the amount of total assets. A positive correlation is expected between dealing with shareholders and adjustment of incomes. Finally, the control variables include ROA as profitability, measured with annual incomes divided by total assets. A positive correlation is expected between profitability and income adjustments. The symbol DEBT denotes the debt ratio, measured with total debts divided by total assets. A positive correlation is expected between debt ratios and income adjustments. The symbol SIZE denotes firm sizes, measured with the natural logarithms of total assets. The symbol DYEAR denotes the integration of housing and land taxes. It is a dummy variable of 1 if the sampling period is either 2016 or 2017 and 0 if not. The symbol GDP is the control variable for economic growth.

3.2 Data Sources

This paper has utilized sources from the Fiscal Information Agency the business income tax data in 2013-2017 (for a period of five years) on profit-seeking enterprises. The data consists of unidentified tax filings, tax assessments, and balance sheets of the taxpaying profit-seeking enterprises.

This study examines the influencing factors of the adjustment of taxable incomes for profit-seeking enterprises. The tax filings are integrated with the tax files assessed by the National Taxation Bureau (with a delay of two years). Table 1 summarizes the process of sample screening. The first step was to eliminate 736,831 assessment files corresponding to tax filings due to missing variable data. A total of 4,225,530 tax filings were sourced. This was followed by the removal of the files with missing variables (industry codes and balance sheet variables) and unreasonable values (e.g., negative values for balance sheet items or cost of goods sold). Finally, a total of 4,161,972 firm-year data were collected for the sampling period of five years.

Table 1: Sample Selection Process

Year	2013	2014	2015	2016	2017	Total
Assessment Files	954,717	976,215	993,704	1,033,670	1,004,055	4,962,361
Less:Missing Filing Files	155,431	153,988	148,909	165,608	112,895	736,831
Tax Filings Files	799,286	822,227	844,795	868,062	891,160	4,225,530
Less:Missing Variables and Unreasonable Data	62	4,677	4,693	13,791	35,335	63,558
Total	799,224	817,550	840,102	854,271	855,825	4,161,972

4.Empirical Results

4.1 Descriptive Statistical Analysis

Table 2 shows that a total of 4,225,530 business income tax filings by profit-seeking enterprises and corresponding 4,962,361 assessment files were sampled. The number of profit-seeking enterprises concerned (based on tax filings) increased from 799,286 in 2013 to 891,160 in 2017. As far as the distribution by region, the National Taxation Bureau of the Northern Area (NTBNA) accounted for 34% of the total, followed by approximately 24% for the Taxation Bureau of the Central Area (NTBCA) and approximately 20% for the National Taxation Bureau of Taipei (NTBT).Table 3 presents the distribution by year of tax filings from profit-seeking enterprises. During the five years, a total of 2,627,878 tax filings (62% of total sample) were made via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance, 765,400tax filings (18% of the total sample) with reported revenues of below $30 million NTD were reviewed on paper. Finally, tax files certified by public accountants accounted for 10% of the total sample.

Table 2: Tax Filings and Assessment Files for Profit-seeking Enterprises

2013		
National Taxation Bureau	Tax Filings Files	Tax Assessment Files

National Taxation Bureau	Tax Filings Files		Tax Assessment Files	
Taipei(NTBT)	160,595	20.09	183,219	19.19
Northern Area (NTBNA)	273,003	34.16	325,053	34.05
Central Area (NTBCA)	191,727	23.99	228,136	23.90
Southern Area (NTBSA)	87,044	10.89	100,451	10.52
Kaohsiung (NTBK)	86,917	10.87	117,858	12.34
Sub Total	799,286	100%	954,717	100%
2014				
National Taxation Bureau	Tax Filings Files		Tax Assessment Files	
Taipei(NTBT)	164,841	20.05	188,266	19.29
Northern Area (NTBNA)	281,252	34.21	332,419	34.05
Central Area (NTBCA)	197,313	24.00	232,167	23.78
Southern Area (NTBSA)	89,769	10.92	103,195	10.57
Kaohsiung (NTBK)	89,052	10.83	120,168	12.31
Sub Total	822,227	100%	976,215	100%
2015				
National Taxation Bureau	Tax Filings Files		Tax Assessment Files	
Taipei(NTBT)	168,917	20.00	193,533	19.48
Northern Area (NTBNA)	289,484	34.27	334,218	33.63
Central Area (NTBCA)	202,635	23.99	237,597	23.91
Southern Area (NTBSA)	92,428	10.94	105,211	10.59
Kaohsiung (NTBK)	91,331	10.81	123,145	12.39
Sub Total	844,795	100%	993,704	100%
2016				
National Taxation Bureau	Tax Filings Files		Tax Assessment Files	
Taipei(NTBT)	172,205	19.84	222,540	21.53
Northern Area (NTBNA)	297,330	34.25	336,581	32.56
Central Area (NTBCA)	208,854	24.06	239,944	23.21
Southern Area (NTBSA)	96,216	11.08	107,449	10.39
Kaohsiung (NTBK)	93,457	10.77	127,156	12.30
Sub Total	868,062	100%	1,033,670	100%
2017				
National Taxation Bureau	Tax Filings Files		Tax Assessment Files	
Taipei(NTBT)	175,872	19.74	194,725	19.39
Northern Area (NTBNA)	305,014	34.23	337,945	33.66
Central Area (NTBCA)	214,757	24.10	238,497	23.75
Southern Area (NTBSA)	99,344	11.15	107,647	10.72
Kaohsiung (NTBK)	96,173	10.79	125,241	12.47
Sub Total	891,160	100%	1,004,055	100%
Total	4,225,530	100%	4,962,361	100%

Table 3: Tax Filings from Profit-seeking Enterprises by Years

Tax Filings Return Form	2013	2014	2015	2016	2017	Total
Foreign Enterprise	1,824	2,128	2,416	2,570	2,601	11,539 (0.27%)
Review by CPA	80,780	83,511	85,172	87,016	88,941	425,420 (10.07%)
Blue Tax Return	132	120	133	120	116	621 (0.02%)
Reported Revenues of over$30 Million	35,485	38,211	38,402	37,765	40,101	189,964 (4.50%)
Reported Revenues of	143,131	147,020	153,354	158,392	163,503	765,400 (18.11%)

below $30 Million					
Proprietorship & Partnership	36,340	38,099	41,410	43,102	44,633	203,584 (4.82%)
Public Enterprise	42	42	41	44	42	211 (0.01%)
Audit by Reviewing Declaration	501,383	512,917	523,680	538,870	551,028	2,627,878 (62.19%)
Consolidated Filing Tax Return	167	169	173	180	194	883 (0.02%)
Midway Change of Fiscal Year	2	10	14	3	1	30 (0.001%)
Total	799,286 (18.92%)	822,227 (19.46%)	844,795 (19.99%)	868,062 (20.54%)	891,160 (21.09%)	4,225,530 (100%)

Table 4 shows the distribution of tax filings from profit-seeking enterprises with individual tax offices. The tax filings logged with the NTBNA over the five sampled years totaled1,429,701 (34% of the total sampled), 996,046 (24%) with the NTBCA, 830,754 (10%) with the NTBT, 456,919 (10.98%) with the National Taxation Bureau of the Southern Area (NTBSA),and 448,550 (10.78%) with the National Taxation Bureau of Kaohsiung(NTBK).

Table 4: Tax Filings from Profit-seeking Enterprises by National Taxation Bureau

National Taxation Bureau	Taipei	NorthernArea	Central Area	Southern Area	Kaohsiung	Total
Foreign Enterprise	7,515	1,934	1,110	235	515	11,309
Review by CPA	171,770	143,919	59,120	21,819	21,339	417,967
Blue Tax Return	276	119	84	39	84	602
Reported Revenues of over$30 Million	21,844	54,921	50,533	24,830	30,503	182,631
Reported Revenues of below $30 Million	260,098	285,214	127,783	45,173	38,318	756,586
Proprietorship & Partnership	37,270	75,393	52,819	23,077	10,681	199,240
Public Enterprise	40	54	19	49	13	175
Audit by Reviewing Declaration	331,578	868,072	704,570	341,682	347,084	2,592,988
Consolidated Filing Tax Return	359	66	4	16	10	455
Midway Change of Fiscal Year	3	9	4	1	3	20
Total	830,754 (19.96%)	1,429,701 (34.35%)	996,046 (23.93%)	456,921 (10.98%)	448,550 (10.78%)	4,161,972 (100%)

According to the description statistics in Panel A of Table 5, the mean of the income adjustments (IncomeA) calculated withassessed taxable income less self-adjusted taxable incomewasNTD144,213 for all the sampled 4,161,972 data entries during the sampling period of five years. The median was zero NTD, as about 50% of the profit-seeking enterprises did not adjust incomes. The adjusted portion accounted for 3.67% of the assessed taxable incomes (IncomeAdj). The total of the adjusted incomes during the five years was $600billion NTD, or $120billion NTD on average per annum. Tax adjustments (TaxAdj) came to an average of $24,516 NTD for each profit-seeking enterprise over the five sampled years.

In total, tax adjustments were $102 billionNTD over the five years or $2.4 billion NTD each year. In other words, tax avoidance and evasion by profit-seeking enterprises totaled $2.4 billion NTD per year. The average tax adjustments (TaxAdj) for all profit-seeking enterprises reached $24,516 NTD. The self-adjusted income tax expenses by profit-seeking enterprises (TaxExp_a) stood at $462,077 NTD, comparable to the assessed income tax expenses of $477,497 NTD.

Table 5: Description Statistics

Panel A:Regression Variables(N=4,161,972) %				
Variables	Min.	Mean	StdDev	Max
IncomeAdj	0	3.67	17.08	100
COGS	0	59.11	32.93	100
GP	0	28.26	26.35	100
NI	0	4.82	11.19	100
OthExp	0	11.68	18.61	100
OthRev	0	1.58	9.91	100
OpeExp	0	29.97	30.16	100
WithDraw	0	9.64	22.88	100
Salary	0	9.83	19.19	100
INV	0	13.52	27.36	100
ROA	0	16.11	23.26	100
DEBT	0	40.33	38.25	100
SIZE	0	14.76	2.12	29.58
GDP	1.47	2.82	1.11	4.72
Panel B:Tax Filing Data (N=4,161,972) NTD				
Variables	Min.	Mean	StdDev	Max
Income_b	-62,390,799	7,219,719	546,052,908,518	1.11E+15
TaxIncome_b	-48,034,221,873	2,010,436	243,007,280	2.79E+11
TaxIncome_t	-48,031,308,860	2,147,064	243,511,950	2.79E+11
IncomeA	0	144,213	8,830,977	6.96E+09
TaxAdj	0	24,516	1,501,266	1.18E+09
TaxExp_a	0	462,077	40,265,087	4.75E+10
TaxExp_t	0	477497	40,361,329	4.75E+10
NSale_b	-95,766,882	62,330,736	7,099,718,958	1.11E+13
COGS_b	-215,939,859	50,679,208	4,383,251,058	3.54E+12
OpeExp_b	-15,223,768	6,546,612	163,756,939	9.22E+10
ASSET	1	13,455,667	12,825,795,530	7.01E+12
LIABILITY	-705,262,026	107,752,044	29,385,723,733	5.49E+13

Note: Variable Definition: IncomeAdj denotes the income adjustment ratio, which is calculated by the income adjustment (assessed taxable income less self-adjusted taxable income) being divided by the assessed taxable income. EM denotes earnings management by profit-seeking enterprises. It is a dummy variable of 1 if the profit-seeking enterprise reports a net revenue of between $25 million NTD and $30 million NTD, and 0 if not. TA denotes the tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance. This is a dummy variable of 1 if tax is filed via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance and 0 if not. Operating expense ratio (OpeExp), other expense ratio (OthExp) and wage expense ratio (Salary) are calculated with the recognized amounts on the book divided by net revenues. INV denotes inventory ratio, measured with reported inventory amount divided by net revenues. WithDraw denotes the ratio of dealing with shareholders, measured with the amount of dealing with shareholders recognized as a liability divided by the amount of total assets. ROA as profitability, measured with annual incomes divided by total assets. DEBT denotes the debt ratio, measured with total debts divided by total assets. SIZE denotes firm sizes, measured with the natural logarithms of total assets. DYEAR denotes the implementation of integration of housing and land taxes period, it is a dummy variable of 1 if the sampling period is either 2016 or 2017 and 0 if not. GDP is the control variable for economic growth.

Data extracted from financial reports of profit-seeking enterprises is summarized by Panel B of Table 5. The average cost of goods sold (COGS) ratio was 59%, gross profit (GP) margin 28%, operating expense ratio (OpeExp) 30%, wage ratio (Salary) 10%, other expense ratio (OthExp) 12%. The other expense ratio was 1/3 of the operating expense ratio and 2% higher than the wage ratio. The booked net income margin (NI) was only 5%. However, ROA (return on assets), which is calculated bythe annual incomes divided by total assets, was 15%. This indicates the understated profitability by profit-seeking enterprises. Finally, the average debt

ratio (DEBT) of all the sampled profit-seeking enterprises was 40%, the average firm size (SIZE) was NTD 134,555,667.

As shown bythe descriptive statistics by regional tax offices in Table 6, the highest average income adjustments (IncomeA) were with the NTBT (NTD261,869) and the average tax adjustments (TaxAdj) were NTD44,518. This was followed bythe NTBNA(NTD122,539(NTD44,518)), NTBCA(NTD116,680(NTD19,836)), NTBSA(NTD103,353(NTD17,570)), andNTBK NTD98,154(NTD16,586)).

Table 6: Description Statistics by National Taxation Bureau

NationalTaxation Bureau	Taipei	NorthernArea	Central Area	Southern Area	Kaohsiung
Income_b	23,046,671	4,183,641	2,455,694	2,087,886	3,390,552
Income_a	-19,224,487	2,842,636	1,550,397	1,172,194	-2,441,448
TaxIncome_a	3,085,215	2,124,805	1,593,072	1,095,821	1,513,790
TaxIncome_t	3,320,056	2,243,411	1,708,626	1,197,374	1,608,491
IncomeA	261,869	122,539	116,680	103,353	98,154
TaxAdj	44,518	20,832	19,836	17,570	16,686
TaxExp_a	830,694	466,276	314,664	233,182	326,490
TaxExp_t	854,620	480,381	328,748	245,000	336,981
IncomeAdj	3.46%	3.75%	3.57%	3.94%	3.73%
OpeExp	38.69%	30.19%	25.85%	25.37%	27.01%
OthExp	12.00%	11.51%	11.68%	11.93%	11.32%
Salary	15.91%	10.03%	6.72%	6.58%	8.13%
INV	14.61%	13.43%	12.69%	12.95%	14.26%
WithDraw	10.73%	9.74%	8.10%	9.11%	11.25%
ROA	10.22%	15.37%	19.20%	20.99%	17.50%
DEBT	47.51%	38.75%	38.53%	38.70%	37.67%
SIZE	15.11	14.75	14.61	14.49	14.77%
GDP	2. 82%	2.82%	2.82%	2.82%	2.82%
Total	830,753	1,429,701	996,046	456,919	830,753

Note: Reference Table 5 note.

The comparison of the average incomes indicates that the highest recognized annual incomes (Income_b) were logged with the NTBT at an average of $23.46million NTD, the lowest with the NTBSA ($2.08million NTD). The self-adjusted annual incomes (Income_a) were the highest with the NTBNA($2.84 million NTD) and the lowest with the NTBT (about $-19.22 millionNTD). The self-adjusted taxable incomes (TaxIncome_a) were highest with the NTBT, at an average of $3.08 million NTD, and the lowest with NTBSA ($1.09 million NTD). The difference was less than $300,000 NTDbetween the assessed taxable incomes (TaxIncome_t) and the self-adjusted taxable incomes (TaxIncome_a). Finally, the comparison of the average tax amounts for all five regions suggests that the average assessed tax amount (TaxExp_t) was highest with the NTBT, at an average of $854,620 NTD, and lowest with the NTBSA, at an average of $245,000 NTD,which is less than one third of the NTBT's.

To validate H1, this study analyzes the descriptive statistics concerning the five major tax filing methods for profit-seeking enterprises in Taiwan (excluding tax filings by branches and business agents of foreign profit-seeking enterprises, blue return filing system, tax filings by state-owned enterprises, link tax filings, and filings due to change of fiscal years). According to the descriptive statistics analysis shown in Table 7, about 10% of the profit-seeking enterprises had tax filings certified by public accountants, and the annual reported incomes of these enterprises averaged $36.9 millionNTD, the highest among the sub-groups.

This was followed by the average annual reported incomes of$15.14 millionNTD for the profit-seeking enterprises with net incomes below the $30 million NTDthresholdand that opt for regular tax filings. The lowest average of the reported annual incomes, at $220,000 NTDonly, were with the profit-seeking enterpriseswhichreported annual incomes below $300,000NTD and filed taxes viaaudit by reviewing declaration on tax return under the standards issued by the Ministry of Finance. Their average annual income levels were less than half of those for sole proprietorships or partnerships.

Table 7: Description Statistics by Main Tax Return

Tax Return Variables	Review by CPA	Reported Revenues of over $30 Million	Reported Revenues of below $30 Million	Audit by Reviewing Declaration
Income_b	36,904,293	4,319,968	15,147,673	221,493
Income_a	6,946,975	4,966,116	240,327	338,650
TaxIncome_a	15,574,854	4,142,601	-44,509	277,441
TaxIncome_t	16,509,202	4,621,093	-1,228	288,272
IncomeA	988,031	482,259	44,522	11,302
TaxAdj	167,965	81,984	7,569	1,921
IncomeAdj	3.24%	8.91%	3.00%	3.66%
TaxExp_a	3,597,284	750,951	48,048	47,190
TaxExp_t	3,699,109	812,995	51,336	49,089
OpeExp	27.88%	15.89%	32.47%	30.65%
OthExp	7.45%	5.23%	10.07%	13.39%
Salary	13.81%	4.98%	13.63%	8.46%
INV	19.72%	11.17%	15.50%	12.22%
WithDraw	11.60%	9.63%	10.70%	8.81%
ROA	4.90%	17.45%	6.12%	20%
DEBT	60.26%	54.66%	45.36%	33.87%
SIZE	18.03	17.18	15.16	14.02
GDP	2.82%	2.83%	2.82%	2.83%
Total	417,967	182,631	756,586	2,592,987

Note: Reference Table 5 note.

As shown in the four major tax filing methods by profit-seeking enterprises from Panel A to Panel D of Table 8, the income adjustment (IncomeAdj) was the highest for tax filings certified by public accountants. On average, the income adjustment was $988,031 NTDper profit-seeking enterprise and in aggregate, the income adjustment was $413 billion NTDover the five sampled years, or $82.6 billionNTD per year. The resulting average tax adjustment (TaxAdj) was $81,984 NTDper profit-seeking enterprise in this sub-group. In aggregate, the tax adjustments totaled $70.2billion NTDover the five sampled years and $70.2billion NTDper year. The second highest tax adjustments were with the profit-seeking enterprises with net incomes exceeding $30 millionNTDthatopted for regular tax filings. The income adjustment (IncomeA) was $482,259 NTDper profit-seeking enterprise in this sub-group. In aggregate, this totaled $88.1 billion NTDover the five sampled years and $17.62 billion NTDper year. The resulting tax adjustment was $81,984 NTDper profit-seeking enterprise. In aggregate, this totaled $15 billionNTD over the five-year period and $3 billion NTDeach year.

Table 8: Income and Tax Adjustmentsby Main Tax Return

Total Data (N=4,161,972)NTD					
Variables	Min.	Mean	Median	Max.	Total Adjustment
IncomeA	0	144,213	0	6,962,257,460	600,212,019,123
TaxAdj	0	24,516	0	1,183,583,768	102,036,043,251
TaxIncome_a	-48,034,221,873	2,010,436	105,874	279,348,000,000	8,367,376,300,000
TaxIncome_t	-49,148,268,997	2,147,064	109,444	279,348,000,000	8936020300000
TaxExp_a	0	462,077	17,999	47,489,160,000	1923149700000
TaxExp_t	0	477,497	18,605	47,489,160,000	1987327100000
Panel A: Review by CPA(N=417,967)			NTD		
Variables	Min.	Mean	Median	Max.	Total Adjustment
IncomeA	0	988,031	0	6,962,257,460	412,964,145,277
TaxAdj	0	167,965	0	1,183,583,768	70,203,904,697
TaxIncome_a	-36,136,032,975	15,574,854	47,803	279,348,000,000	6,509,775,100,000
TaxIncome_t	-37,605,843,918	16,509,202	73,923	279,348,000,000	6,900,301,400,000
TaxExp_a	0	3,597,284	8,127	47,489,160,000	1,503,545,900,000
TaxExp_t	0	3,699,109	12,567	47,489,160,000	1,546,105,300,000
Panel B: Reported Revenues of over $30 Million(N=182,631)				NTD	

Variables	Min.	Mean	Median	Max.	Total Adjustment
IncomeA	0	482,259	0	2,019,533,374	88,075,472,466
TaxAdj	0	81,984	0	343,320,674	14,972,830,319
TaxIncome_a	-2,019,332,956	4,142,601	2,753,173	1,277,875,031	756,567,361,615
TaxIncome_t)	-1,177,543,016	4,621,093	2,922,204	1,277,875,031	843,954,816,968
TaxExp_a	0	750,951	468,039	217,238,755	137,146,954,625
TaxExp_t	0	812,995	496,775	217,238,755	148,478,135,836
Panel C: Reported Revenues of below $30 Million(N=756,586) NTD					
Variables	Min.	Mean	Median	Max.	Total Adjustment
IncomeA	0	44,522	0	1,244,015,801	33,684,522,816
TaxAdj	0	7,569	0	211,482,686	5,726,368,879
TaxIncome_a	-1,245,900,598	-44,509	1	35,862,922	-33,674,967,146
TaxIncome_t	-461,120,091	-1,228	205	162,778,039	-929,239,975
TaxExp_a	0	48,048	0	6,096,697	36,352,523,888
TaxExp_t	0	51,336	35	27,672,267	38,840,181,093
Panel D: Audit by Reviewing Declaration(N=2,592,987) NTD					
Variables	Min.	Mean	Median	Max.	Total Adjustment
TaxAdj	0	1,921	0	11,869,693	4,981,899,497
TaxIncome_a	-35,527,255	277,441	120,879	31,083,609	719,400,636,262
TaxIncome_t	-859,389,122	288,272	121,776	71,774,079	747,484,849,761
TaxExp_a	0	47,190	20,549	5,284,214	122,363,105,700
TaxExp_t	0	49,089	20,702	12,201,593	127,286,760,923

Note: Reference Table 5 note.

Further analysis wasconducted on the profit-seeking enterprises with net incomes below $30 millionNTD. Regular tax filings are allowed if the accounts are complete. The income adjustment (IncomeA) averaged $44,522 NTDper profit-seeking enterprise in this sub-group. In total, this came to $33.7 billion NTDover the five-year period and $6.74 billion NTDeach year. The average tax adjustment was $7,569 NTDfor each profit-seeking enterprise concerned. This totaled $5.7 billion NTDover the five-year period and $1.14 billionNTD each year.

The profit-seeking enterprises without complete accounts mostly opt for tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance. The taxable incomes are the aggregation of revenues and non-operating incomes multiplied at the applicable net margin rate (at about 6%).The tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance accounted for 62% of the total filings from profit-seeking enterprises. The random inspection rate is low due to understaffing of the tax authorities. As shown in Panel D of Table 7, the income adjustment (IncomeA) averaged at NTD11,302 per profit-seeking enterprise. Based on a total of 2,592,987 profit-seeking enterprises over the five-year period, this translates to a total of $29.3billion NTDover the period and $5.86billion NTDeach year. On average, the tax adjustment was $1.921 NTDper profit-seeking enterprise. In aggregate, this totaled $5 billion NTDover the period and approximately$1billionNTD each year.

As far as the incomes and tax adjustments are concerned for these five major tax filing methods, regular tax filings for net incomes above the $30 millionNTDthresholdand from sole proprietorships and partnerships are statistically and significantly different from other tax filing methods. However, tax filings certified by public accountants, regular filings for net incomes below the $30 millionNTDthresholdand filingsvia audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance are not statistically different. The empirical results only partially support H1.

The second objective of this study is to explore the correlation between income adjustments in different tax filing methods and the characteristics of the profit-seeking enterprises. A regression analysis is performed to test H2. Table 9 presents the descriptive statistics of the regression variables for all the sampled profit-seeking enterprises (N=4,161,972). The income adjustment ratio (IncomeAdj) as an explained variable reported a mean (median) of 3.67%(0%). In other words, the average income adjustment was 3.67% of the assessed taxable income, and slightly over 50% of the profit-seeking enterprises sampled did not witnessan adjusted income. Among the explanatory variables, only 2% of the profit-seeking enterprises reported net revenues between $25 million NTDand $30 million NTD(EM); and 62% of the profit-seeking enterprises

opted for tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance (TA). The mean (median) operating expense ratio (OpeExp) was 29.97%(18.56%), other expense ratio (OthExp)11.68%(5.58%), wage expense ratio (Salary)9.83%(1.86%), inventory ratio (INV)13.52%(0%), the ratio of dealing with shareholders (WithDraw)9.64%(0%).

Table 9: Regression Variables Description Statistics

Variables	Mean	Std Dev	Median	Minimum	Maximum
IncomeAdj (%)	3.67	17.084	0	0	100
EM (%)	0.02	0.151	0	0	1
TA (%)	0.62	0.485	1	0	1
OpeExp (%)	29.97	30.158	18.56	0	100
OthExp (%)	11.68	18.608	5.58	0	100
Salary (%)	9.83	19.195	1.86	0	100
INV (%)	13.52	27.361	0	0	100
WithDraw (%)	9.64	22.879	0	0	100
ROA (%)	16.11	23.256	6.20	0	100
DEBT (%)	40.33	38.248	29.25	0	100
SIZE (log)	14.76	2.122	14.65	0	29.58
DYEAR (0,1)	0.41	0.492	0	0	1
GDP (%)	2.82	1.111	2.48	1.47	4.72

Note: Reference Table 5 note

Among other control variables, return on asset (ROA) reported a mean (median) of 16.11%(6.20%). The mean (median) of the debt ratio (DEBT) was 40.33%(29.25%), firm sizes (SIZE)14.76%(14.65%). The number of observations under the integrated housing and land taxes (DYEAR) in 2016-2017 was about 41% of the total sample. The average economic growth (GDP) was 2.8% during the sampling period (2013-2017).

4.2 Correlation Coefficient Test Results

Table 10 summarizes the statistical analysis on correlation coefficients in the regression. At the upper right corner are Pearson coefficients; at the lower left corner are Spearman coefficients. According to the tests on Spearman coefficients, there is a positive and significant correlation between the income adjustment ratio (IncomeAdj) and the earnings management sub-group (EM), and between the tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance (TA) and the other expense ratio (TA). Stated differently, the profit-seeking enterprises with net revenues between $25 million NTDand $30 millionNTD and the tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance lead to high income adjustments. The higher the other expense ratio, the higher the income adjustments. The income adjustment ratio (IncomeAdj) is significantly and positively correlated with profitability (ROA) and the integration of housing and land taxes (DYEAR). In other words, the implementation of the integrated housing and land taxes, and high profitability of profit-seeking enterprises leads to high income adjustments. The debt ratio (DEBT), firm sizes (SIZE) and economic growth (GDP) were significantly and negatively correlated with the income adjustment ratio (IncomeAdj).

Table 10: Correlation Coefficient Analysis

	IncomeAdj	EM	TA	OpeExp	OthExp	Salary	INV	WithDraw	ROA	DEBT	SIZE	DYEAR	GDP
IncomeAdj	1	0.010**	0.001	-0.106**	-0.071**	-0.053**	-0.035**	-0.010**	-0.049**	-0.012**	0.026**	-0.004**	-0.005**
		(<.0001)	(0.3658)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
EM	0.007**	1	-0.061	-0.053**	-0.047**	-0.025**	-0.008**	0.004**	0.026*	0.038**	0.117**	-0.006**	0.003**
	(<.0001)		(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
TA	0.109**	-0.061**	1	0.029**	0.118**	-0.092**	-0.061**	-0.047**	0.215**	-0.217**	-0.451**	-0.003**	0.003**
	(<.0001)	(<.0001)		(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
OpeExp	-0.027**	-0.036**	0.044**	1	0.670**	0.634**	0.137**	0.002**	-0.043**	0.082**	-0.135**	0.014**	-0.002**
	(<.0001)	(<.0001)	(<.0001)		(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.0005)
OthExp	0.021**	-0.030**	0.194**	0.726**	1	0.244**	0.080**	-0.030**	0.007**	-0.051**	-0.179**	0.007**	0.004**
	(<.0001)	(<.0001)	(<.0001)	(<.0001)		(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Salary	-0.058**	0.046**	-0.204**	0.526**	0.136**	1	0.136**	0.010**	-0.086**	0.144**	0.001**	0.013**	-0.004**
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)		(<.0001)	(0.0048)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
INV	-0.028**	0.036**	-0.124**	0.105**	0.007**	0.238**	1	0.220**	-0.236**	0.294**	0.172**	-0.012**	0.001**
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)		(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.0154)
WithDraw	-0.041**	0.015**	-0.119**	0.002**	-0.057**	0.073**	0.208**	1	-0.123	0.401**	0.108**	-0.005**	0.001
	(<.0001)	(<.0001)	(<.0001)	(0.001)	(<.0001)	(<.0001)	(<.0001)		(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.0847)
ROA	0.132**	0.047**	0.341**	0.074**	0.277**	-0.001*	-0.079**	-0.117**	1	-0.134**	-0.365**	-0.005**	0.005**
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.017)	(<.0001)	(<.0001)		(<.0001)	(<.0001)	(<.0001)	(<.0001)
DEBT	-0.064**	0.050**	-0.222**	0.115**	-0.013**	0.258**	0.335**	0.366**	-0.025**	1	0.171**	0.006**	-0.004**
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)		(<.0001)	(<.0001)	(<.0001)
SIZE	-0.048**	0.143**	-0.448**	-0.114**	-0.210**	0.240**	0.249**	0.204**	-0.309**	0.201**	1	-0.007**	-0.001
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)		(<.0001)	(0.0614)
DYEAR	0.001**	-0.006**	-0.003**	0.013**	0.002**	0.006**	-0.022**	-0.006**	-0.008**	0.009**	-0.007**	1	-0.062**
	(0.008)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)		(<.0001)
GDP	-0.008**	0.002**	0.003**	-0.001	0.008**	-0.006**	0.001**	0.001	0.004**	-0.007**	-0.002**	0.008**	1
	(<.0001)	(<.0001)	(<.0001)	(0.177)	(<.0001)	(<.0001)	(0.003)	(0.072)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	

Notes: Reference Table 5 note. Right upper corner is the Pearson Correlation Coefficient (P value), Left lower is Spearman Correlation Coefficient (P value). **, and * indicate coefficients significant at the 1%, and 5%.

The Pearson coefficient tests indicate that the income adjustment ratio (IncomeAdj) is positively correlated with the earnings management sub-group (EM) and the tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance (TA). However, only the correlation coefficient with the earnings management sub-group (EM) is significant. The income adjustment ratio (IncomeAdj) is negatively and significantly correlated with the operating expense ratio (OpeExp), other expense ratio (OthExp), wage expense ratio (Salary), inventory ratio (INV) and the ratio of dealing with shareholders (WithDraw). The coefficients with other variables are between -0.451 and 0.726(below 0.8), and hence the collinearity problem is not too significant.

4.3 Regression Analysis Test Results

This study examines the correlation between income adjustments in different tax filing methods and the characteristics of the profit-seeking enterprises. A regression analysis is conducted to validate H2. According to the regression results shown in Table 11, the earnings management sub-group (EM) reported a coefficient of 0.726. This indicates that the profit-seeking enterprises with revenues between $25 million NTDand $30 millionNTDare likely to engage in earnings management in order to qualify for tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance. The income adjustment ratio (IncomeAdj) was high and statistically significant (t=13.04, p<.0001), and hence H2-1 is supported. The coefficient for the tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance (TA) was 0.597. This suggests that tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance calculate taxes based on the applicable net margin without incurring any costs or expenses in relation to evidence presentation. The income adjustment ratio (IncomeAdj) was high and statistically significant (t=30.35, p<.0001), and hence H2-2 is supported. The correlation coefficient between the operating expense ratio (OpeExp) and the income adjustment ratio (IncomeAdj)was -0.073 and statistically significant. Therefore, the higher the operating expense ratio, the lower the income adjustment. This contradicts the expectation, which is probably due to the low likelihood of false reporting of operating expenses given the multiple input taxes available for checking. This reduces the possibility of using operating expense as a vehicle to adjust incomes and hence, H2-3 is not supported.

The correlation coefficient between the other expense ratio (OpeExp) and the income adjustment ratio (IncomeAdj) was 0.010 and statistically significant. This indicates that the higher the other expense ratio, the higher the income adjustments. Hence, H2-4 is supported.

The correlation coefficient between the wage expense ratio (Salary) and the income adjustment ratio (IncomeAdj) was 0.02 and statistically significant. This suggests that the higher the wage expense ratio, the higher the income adjustments. Hence, H2-5 is supported. Meanwhile, the higher the inventory ratio (INV), the higher the cost of goods sold. The correlation with the investment adjustment ratio (IncomeAdj) was -0.021 and statistically significant. This shows that the higher the inventory ratio, the lower the cost of goods sold, andthe higher the income adjustments. Hence, H2-6 is supported.

Finally, a higher ratio of dealing with shareholders (WithDraw) is associated with SMEs whose funding sources are limited. Whilst the borrowing from shareholders is high, no interest is incurred. As thisalso reduces the interest payable to shareholders, it leads to a high amount of tax avoided and evaded and therefore,a high income adjustment. However, the correlation coefficient with the ratio of dealing with shareholders (WithDraw) was -0.009, which is statistically significant, but contrary to the expectation. Therefore, H2-7 is not supported.

According to the regression results on other control variables, the higher the profitability (ROA), the higher the income adjustment ratio (IncomeAdj). This runs contrary to expectations and is statistically significant. The higher the debt ratio (DEBT), the higher the tax shield (in the form of high interest expenses before taxes), and hence, the higher income adjustment ratio (IncomeAdj). This aligns with expectations and is statistically significant. After the integration of housing and land taxes (DYEAR), the income from transactions of land and real estates is included into the taxable income for profit-seeking enterprises. In theory, this reduces the likelihood of income adjustments and leads to a low income adjustment ratio (IncomeAdj). The regression result is consistent with expectations and statistically significant. The higher the economic growth (GDP), the higher the income adjustment ratio (IncomeAdj), which is as expected.

Table 11: Regression Analysis _ All Sample

Variables	Pred. Sign	Coefficient Estimated	Std Dev	t Value	Pr>|t|	Variance Inflation Faction
Intercept	?	6.465	0.083	77.99	<.0001	0
EM (%)	+	0.726	0.056	13.04	<.0001	1.0219
TA (%)	+	0.597	0.020	30.35	<.0001	1.3172
OpeExp (%)	+	-0.073	0.000	-147.27	<.0001	3.2088
OthExp (%)	+	0.010	0.001	14.95	<.0001	2.0597
Salary (%)	+	0.023	0.001	38.58	<.0001	1.8908
INV (%)	–	-0.021	0.000	-64.82	<.0001	1.1900
WithDraw (%)	+	-0.009	0.000	-21.48	<.0001	1.2226
ROA (%)	+	-0.048	0.000	-120.62	<.0001	1.2177
DEBT (%)	+	0.002	0.000	8.40	<.0001	1.3469
SIZE (log)	+/–	-0.002	0.005	-0.52	0.6001	1.4734
DYEAR (0,1)	–	-0.118	0.017	-7.00	<.0001	1.0046
GDP (%)	–	-0.073	0.007	-9.78	<.0001	1.0040
Adj R-Sq. 1.6% ; F Value 5644.85 (p值<.0001) N=4,161,972						

Note: Reference Table 5 note.

4.4Additional Analysis

The supplementary analysis focuseson the four major tax filing methods for profit-seeking enterprises in Taiwan. These four tax returns are tax filings certified by public accountants; regular filings for a net income of over $30 millionNTD; regular filings for a net income below $30 millionNTD; tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance; filings by sole proprietorships and partnerships. A regression analysis is conducted to validate H2.

According to the regression results shown in Table 12, tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance are not accompanied with the risk of tax

adjustments by the National Taxation Bureau as a result of earnings management (EM) in the form of the operating expense ratio (OthExp), inventory ratio (INV) and the ratio of dealing with shareholders (WithDraw). Therefore, none of H2-1, H2-3, H2-6 and H2-7are supported. Tax filings with certification by public accountants are submitted by accountants after they have reviewed the tax related data, whilst the tax authorities only review the papers. The regression results suggest that the income adjustment didnot align with expectations. Accounting books are reviewed for regular filings by the profit-seeking enterprises with net revenues about $30 millionNTD. Checks are conducted on recognized revenues and expenses. Therefore, the income adjustments by the National Taxation Bureau are low compared to the profit-seeking enterprises with revenues between $25 millionNTD and $30 million NTDthat engage in earnings management (EM). Therefore, H2-1 is not supported. The higher operating expense ratio (OpeExp), the higher wage expense ratio (Salary), and the lower the inventory ratio (INV), the lower the taxable incomes and hence, the higher income adjustment ratio (IncomeAdj). Therefore, H2-3, H2-5 and H2-6 are supported. The higher the ratio of dealing with shareholders (WithDraw), the higher the understated interest income, and hence, the higher the income adjustment (ratio). Therefore, H2-7 is supported.

The profit-seeking enterprises with net revenues below $30 millionNTDmay opt for regular tax filings by presenting accounting books for review by the tax authorities or for reviewing their books or via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance. As shown by Table 12, regular tax filings, earnings management (EM) by the profit-seeking enterprises with revenues between $25 million NTDand $30 million NTD, a high wage ratio (Salary) and a high ratio of dealing with shareholders (INV) are associated with lower taxable incomes. Therefore, the income adjustment ratio (IncomeAdj) will be high.

H2-1, H2-5 and H2-7 are supported. The reduction of the inventory ratio (INV) is a less likely means of income adjustment. On the other hand, tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance, earnings management (EM) by the profit-seeking enterprises with revenues between $25 million NTD and $30 million NTD, a high other expense ratio (OtheExp), a high wage ratio (Salary), and a low inventory ratio (INV) are associated with lower taxable incomes and hence, a high income adjustment ratio (IncomeAdj) by the tax authorities. H2-1, H2-4, H2-5 and H2-7 are supported.

Finally, sole proprietorships and partnerships are less likely to reduce taxable incomes by managing the operating expenses ratio (OpeExp) or other expense ratio (OthExp). Earnings management (EM) by the profit-seeking enterprises with revenues between $25 million NTD and $30 million NTD, a high other expense ratio (OtheExp), a high wage ratio (Salary), and a low inventory ratio (INV) are associated with lower taxable incomes and hence a high income adjustment ratio (IncomeAdj) by the tax authorities. H2-1, H2-5 and H2-7 are supported.

Table 12: Regression Analysis _ Main Tax Returns (IncomeAdj)

Variables	Pred. Sign	Review by CPA (N=417,967)		Reported Revenues of over $30 Million (N=182,631)		Reported Revenues of below $30 Million (N=756,586)		Audit by Reviewing Declaration (N=2,592,987)	
		Cof. Est.	t Value (Pr>|t|)	Cof. Est.	t Value (Pr>|t|)	Cof. Est.	t Value (Pr>|t|)	Cof. Est.	t Value (Pr>|t|)
Intercept	?	-10.861	-40.38** (<.0001)	9.033	8.61** (<.0001)	-0.811	-4.52** (<.0001)	17.556	154.03** (<.0001)
EM (%)	+	-1.058	-8.56 (<.0001)	-2.409	-3.47** (0.0005)	1.839	20.06** (<.0001)	1.885	21.99** (<.0001)
OpeExp (%)	+	-0.031	-21.40** (<.0001)	0.023	2.65** (0.0080)	-0.021	-21.38** (<.0001)	-0.096	-150.21** (<.0001)
OthExp (%)	+	-0.001	-0.51 (0.6097)	-0.212	-17.15** (<.0001)	-0.008	-6.47** (<.0001)	0.017	21.05** (<.0001)
Salary (%)	+	-0.001	-0.41 (0.6787)	0.307	24.04** (<.0001)	0.005	4.46** (<.0001)	0.036	46.99** (<.0001)
INV (%)	−	0.020	23.96** (<.0001)	0.122	40.92** (<.0001)	0.001	0.53** (0.5929	-0.043	-98.14** (<.0001)
WithDraw (%)	+	-0.007	-6.36** (<.0001)	0.017	5.76** (<.0001)	0.006	6.82** (<.0001)	-0.010	-19.57** (<.0001)
ROA (%)	+	0.064	28.83**	0.053	14.98**	0.085	63.14**	-0.093	-192.61**

			(<.0001)		(<.0001)		(<.0001)		(<.0001)
DEBT (%)	+	0.033	40.82** (<.0001)	0.126	54.43** (<.0001)	0.004	8.65** (<.0001)	-0.005	-13.98** (<.0001)
SIZE (log)	+/−	0.726	53.43** (<.0001)	-0.496	-8.35** (<.0001)	0.264	23.94** (<.0001)	-0.631	-85.18** (<.0001)
DYEAR (0,1)	−	-0.975	-20.65** (<.0001)	-3.178	-28.55** (<.0001)	-0.518	-14.04** (<.0001)	0.376	17.46** (<.0001)
GDP (%)	−	-0.106	-5.12** (<.0001)	-0.162	-3.34** (0.0008)	-0.048	-2.93** (0.0033)	-0.080	-8.43 (<.0001)
Adj R-Sq.	2.19%			5.56%			1.02%		3.51%
F Value (p Value)	850.83 (p<.0001)			978.98(p<.0001)			706.56 (p<.0001)		8564.75 (p<.0001)

Note: Reference Table 5 note.

5. Conclusion and Suggestions

This study samples the tax filings by profit-seeking enterprises in 2013-2017 and tax assessment data in the estimation of the taxes avoided and evaded by tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance and the correlation with the characteristics of these profit-seeking enterprises. The research findings suggest that tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance accounted for 62% of the total filings by profit-seeking enterprises as a whole. As the tax authorities are understaffed, the random inspection rate is low. As a result, the income adjustment came to an average of only $11,302 NTD and the tax adjustment was only$1,921 NTD per profit-seeking enterprise. This translates to an annual tax adjustment of $1 billion NTDin aggregate. An increase in the selection of paper reviews will lead to over $1 billion NTDin the annual tax adjustments.

The regression analysis indicates that the profit-seeking enterprises with net revenues between $25 million NTD and $30 million NTD are likely to engage in earnings management in order to qualify for tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance. This results in a high tax avoidance and evasion ratio that is statistically significant. In the meantime, tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance calculate income taxes based on the applicable net margin, without incurring any costs or expenses for evidence presentation. This results in high income adjustments. Also, the higher the other expense ratio and the higher wage expense ratio, the higher the income adjustments. The higher the inventory ratio, the lower the cost of goods sold, and the higher the income adjustments.

This study analyzes the tax filings data from the Fiscal Information Agency, Ministry of Finance over a five-year period. It is the first study that examines the amount of tax avoided and evaded by examining tax filings and assessment files of all the profit-seeking enterprises. The main contribution of this study is the analysis of the big data of taxfilings from nearly one million profit-seeking enterprises and assessments by the tax authorities. Meanwhile, this study estimates the income adjustments by referring to profits and losses stated in tax filings and the actual numbers on the balance sheets of the profit-seeking enterprises in order to gauge the impact on tax revenues (as a result of tax avoidance and evasion). This is the second contribution of this study.

Tax filings via audit by reviewing declaration on tax return under the standards issued by the Ministry of Finance accounted for 62% of the total filings by profit-seeking enterprises as a whole. However, the tax authorities are understaffed and hence the random inspection rate is low (less than 10%). The estimates by this study on tax avoidance and evasion based on tax adjustments are conservative at best. Given that it took two years for the tax filings to be assessed, the acquisition of tax assessment files is consequently delayed by two years. In Taiwan, the increase of the business income tax rate was from 17% to 20% in 2018. Therefore, this study selects the sampling period of 2013-2017. These are the research limitations of this study.

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