

Tax-motivated expense shifting and determinants by nonprofit hospitals

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Introduction

In order to encourage nonprofit organizations (NPOs) to engage in charity care, governments often adopted measures like tax exemptions, direct subsidies, and entrusted schemes to reduce the cost of charity care. Nonprofit hospitals supplemented the resources with the operating surplus of paid medical services. To ensure the effectiveness of tax exemption policy, governments stipulated the standards for nonprofit hospitals to engage in community benefit services like minimum charity care as the basis for the latter to be entitled to tax exemptions. The tax-exempt qualification of those nonprofit hospitals which failed to meet the standards would be revoked (Nicholson et al., 2000).¹ The reason why organization get the tax-exempt status is because they provide community benefit service. In other words, nonprofit hospitals offer the community benefit service expense is similar to indirectly paying tax.

In terms of the design of tax exemption policy, governments granted a number of tax relief and exemptions for nonprofit hospitals. In other words, the latter would use tax expenditure to complement community benefit services like charity care. Correspondingly, governments established the items and limits of community benefit services which should be engaged by nonprofit hospitals. Taiwan had similar measures. As of tax exemption measures, nonprofit hospitals were exempted from business income tax and land tax. The natural persons and legal persons donated to legal persons could enjoy tax sparing credit. In the aspect of community benefit services like charity care, Medical Care Act Article 46 clearly states the minimum

¹ For example, Utah supreme court cancel the tax-exempt status of “Intermountain Health Care” (Maiure et al., 2004). The Tax authority (IRS) of Illinois cancel the tax-exempt qualification of Provena Covenant Medical Center. (Maiure et al., 2004; Barniv et al., 2005)

amount of community benefit services that nonprofit hospitals shall reach. Before the amendment of the Medical Care Act in 2004, the amount of community benefit services for nonprofit hospitals had to be “at least 5% of the annual medical revenue.” The amending the law in 2005, the minimum amount was changed to “20% of profit from medical operation.” The amendment has considerably reduced the minimum amount of the community benefit services that nonprofit hospitals should provide. However, Medical Care Act Article 46 stipulates that legal persons shall allocate funds for community benefit services according to the profit of medical activities rather than non-medical activities. The differences among allocation rates of different activities serve as the basis to verify the expense shifting of nonprofit hospitals.

Past studies on expense shifting of nonprofit organization mainly discuss on the allocation of joint cost from tax-exempt activities to taxable activities, the costs of taxable activities could be reduced so as to encourage the NPOs to engage more in such activities. In consideration of tax, through the shift of the expense from tax-exempt activities to taxable activities, they could minimize their taxable income. In addition, when NPOs engaged in taxable business activities unrelated to the purpose of establishment, they had the inducement to control cost apportionment and minimize tax liabilities (Yetman, 2001; Jegers, 2010; Sansing, 1998; Yoder, Addy, and McAllister, 2011).

When NPOs used the profits gained through commercial activities for public welfare or idle capacity for business activities, they could not only activate idle capacity to enhance efficiency, but also the cost appointment shouldered by tax-exempt activities was avoided by business activities.

Sansing (1998) pointed out based on an analytical model that, as the common expenses of medical activities and non-medical activities were non-separable without economic allocation, one of the purposes of cost accounting was to allocate the non-separable expenses, In the face of the selection of allocation basis, managers would consider the inducement of tax. The amending the law in 2005, create two different base on calculation the minimum amount community benefit services that nonprofit hospitals should provide. Thus, the manager have incentive to shifting expense from medical to non-medical activity.

This paper have 2 parts. Part 1 based on that of the empirical research on Yetman (2001) to estimate the degree of nonprofit hospitals to shift expenditure to reduce the

net profits of medical activities so as to avoid community benefit services. After the law amendment, due to the difference of allocation rates of the two types of activities, when nonprofit hospitals wanted to reduce the minimum expenditure of community benefit services, they had the motivation to shift the expenditure of non-medical activities to medical activities and reduce the legal minimum funds allocated for community benefit services through the reduction of the profit of medical activities. Part 2 of this paper explored the regression analysis to determine the factor of expense shifting of nonprofit hospitals. Emphasis on the impact on law amendment to expense shifting. Besides, Different types of funder varied in their ways of operation and community benefit services engaged (i. e. classified initiators into enterprise groups, religious groups and set up by doctor groups) may have different incentive to allocate expense.

Literature Review

The motivation and method of NPOs to manipulate financial statements were similar to those of profit organizations. The main purpose was to change the organization's report financial performance. For instance, the real manipulations to re-arrange recognition dates might belong to purely administrative manipulations without accounting manipulations of substantial impact. Both manipulations had costs. For instance, the time spent in manipulations and the change of organizational activities due to the re-arrangement of recognition dates would become less efficient. In the past, the studies on the range of this topic of NPOs mainly allocated costs of different types of activities, belong to a topic of cost accounting manipulations.

The past studies on the strategies of levy duty and tax avoidance and evasion of NPOs emphasized unrelated business income tax (UBIT). To assure that NPOs could reach their goals and avoid them from abusing their tax-exempt qualification, the tax laws of each country generally levy UBIT of UBI. However, NPOs engaged in commercial activities with idle capacity, which could not only enhance production efficiency, but also allocate the fixed cost completely distributed to tax-exempt activities previously to commercial activities for cross-subsidization. In consideration of taxation, when NPOs engaged in both taxable and tax-exempt activities, managers might choose cost allocation method with low tax (Sansing 1998). Sansing (1998) examine nonprofit tax avoidance via cost allocations and demonstrate that nonprofits have a greater ability to shift expenses from their tax-exempt to their taxable activities when these activities are linked via common expenses. Much past literature pointed out that NPOs would excessively allocate costs to unrelated businesses. Even though the overall operation of the organizations was profitable, taxable activities had loss to

reduce tax, indicating their traces of cost shifting (Hofmann 2007).

Yetman (2001) adopted regression analysis to establish the estimation model of variable expenses of NPOs in the first chapter to estimate their expense shifting and degree of business income tax avoidance. Yetman (2001) studied the data on 703 educational institutions, health agencies, and public charities in America between 1995 and 1997 to estimate the expense-shifted and found that the expenses shifted by educational institutions accounted for 23% of the expense reported, while health agencies accounted for 62%. There were no significant expenses shifting in public charities. The model established by Yetman (2001) was often adopted by subsequent studies. Both Cordes and Weisbrod (1998) and Yetman (2001) pointed out that NPOs shifted costs to taxable activities and did not show reverse patterns in the aspect of revenue.

Yetman (2003) considered 1,400 NPOs (481 educational institutions, 714 health agencies, and 205 public charities) in America between 1995 and 1997 as his subjects. He combined the model of Yetman (2001) and joint cost allocation to explore the difference between the estimated total expense and reported total expense of taxable activities. His empirical results showed that the taxable and tax-exempt activities of NPOs were complementary. Through the allocation of joint cost from tax-exempt activities to taxable activities, the costs of taxable activities could be reduced so as to encourage the NPOs to engage more in such activities.

Hofmann (2007) probed into 399 observed values of 126 associations in America between 1994 and 1997. He adopted Yetman (2001) to estimate the costs to engage in both taxable activities and tax-exempt activities by the associations. His empirical findings demonstrated that, based on the shifting of expense, the associations shifted about 20-36% expense to unrelated businesses. Hofmann (2007) doubted that the fixed expense in Yetman (2001) occurred as average revenue was not reasonable and there were underestimation of the expense shifted to unrelated businesses. Supposing that the fixed expense occurred based on the average variable expense, the fixed expense was allocated by the estimated variable expense of each activity.

Omer and Yetman (2003) studied the Tables 990 T and 990 of 1,367 sectional observed values of the NPOs in America between 1995 and 1997 to analyze if the NPOs managed their taxable income. They analyzed the abnormalities of the counts of profits (net profit of taxable activities/income of taxable activities) of the NPOs approaching zero ($[-0.01, 0.01]$) to see the administration of taxable income by the NPOs. They believed that the reports of the proximity of taxable income to zero were the results of their tax avoidance. Omer and Yetman (2003) further adopted Logit to analyze which frictions and

restrictions reduced the occurrence of proximity of the reported taxable income to zero of the NPOs. Their empirical results showed that when there were relative (similar) tax-exempt activities or accumulated net loss of operation for the scale of NPOs (total assets) and taxable activities, the rate to report the proximity of taxable income to zero by the NPOs reduced. In addition, when the NPOs were hospitals (rather than educational institutions or public charities) or employed accounts as their tax agents (no matter of TOP 5 accounting firms or not), the rate to report the proximity of taxable income to zero by the NPOs increased.

Omer and Yetman (2007) used cross-state samples in the whole America to analyze the tax avoidance and its influencing factors of NPOs. (The data were the same as those used by Yetman (2001) for instance. Through regression analysis, they found that there was a positive correlation among tax misreporting, state highest tax rate, tax report complexity (activities including the 29 items in Table 990T income and expense), account system flexibility (there were similar practices in taxable activities and tax-exempt activities, so flexible cost allocation could be done.), and state government tax risk (The state government required that NPOs should comply with the normative item quantity.).

However, Schmidt (2007) thought that the financial misreporting in Omer and Yetman (2007) was only careless mistakes of taxpayers, because the instructions in Tables 990 and 990T made by Internal Revenue Service (IRS) were not clear. True tax evasion should be the situation that the overestimated expense was shifted to the following tax declaration periods to offset taxable income. Schmidt (2007) believed that the NPOs program services expense ratio, donation revenue, types of nonprofit organizations are the determining factors of nonprofit organization expense shifting as well.

Yetman et al. (2009) probed into the data on 1,612 NPOs in the fields of arts, education, health, human services, and public interests in American between 1995 and 1997 to explore their financial misreporting. As the punishment to the error in tax declaration data (Table 990T) was higher than that of open financial data (Table 990), Yetman et al. (2009) assumed that the accuracy of Table 990T was higher. This paper compared the financial information in Tables 990T and 990 to assess the accuracy of the financial information published and finds that there is difference in accuracy of different industries in terms of reporting financial information and that the accuracy of financial reporting is positively correlated to organizational revenue and activity complexity and negatively correlated to the employment of accountants. Lastly, the NPOs shifted the cost of nonprofit activities to profit activities and increased profit by reducing the

reporting cost of nonprofit activities so that their nonprofit activities looked more effective.

To sum up the afore-mentioned literature, Taiwan Medical Care Act Article 46 stipulated the minimum amount of community benefit services that nonprofit hospitals should engage in. It is a natural experiment of nonprofit hospitals expense shifting. The profit of medical revenue should be considered as the benchmark to allocate community benefit service expense. Based on the patterns with specified use (community benefit services) and charge benchmark (the profit of medical activities), it was similar to the business income tax levied from medical activities, which was used specifically for community benefit services. This regulation classified the activities of nonprofit hospitals into taxable activities and tax-exempt activities and formed the space for managers to manipulate account figures via cost allocation. This paper had two parts to analyze the expense shifting of nonprofit hospitals and the factors influencing expense shifting.

Empirical Strategy

According to the principles of management accounting, costs should be allocated to different activities based on causal relationship. But there was lack of the actual resource usage data of each activity. Besides, it was difficult to quantify the outcomes of these activities. There was lack of economic allocation methods. Such situations occurred for nonprofit hospitals as well. The norm on the preparation of financial statements by medical legal persons did not stipulate the method to allocate common costs. Based on generally acknowledged principles, it was necessary for the legal persons to allocate common cost in a consistent and reasonable manner. And the legal persons had high discretionary power.

Yetman (2001) first proposed the method to partition the common costs of NPOs into taxable activities and tax-exempt activities and established the indicators to assess the tax avoidance of NPOs through expense shifting. Later, Hofmann (2007) and Omer and Yetman (2007) revised Yetman (2001) based on the drawback. With the approach in the three articles, this plan partitioned the total expense of nonprofit hospitals in medical activities (activities which should allocate community benefit service expense) and medical activities (activities which should not allocate community benefit service expense, such as investment, planning, fundraising, and so on). We follow the idea of Yetman(2001) to construct the index of expense shifting for nonprofit hospital in Taiwan. The assumption and step of estimation are described as follows:

Step 1: Estimating the relationship between the total expense and the revenue of various activities. The total cost was divided into the activities requiring community benefit service expense and without such allocation. In other words, the total cost was to conduct regression of medical activity revenue, investment revenue, fundraising, and the revenues of other activities. It was supposed that the relationship between activity expense and revenue of the organizations was fixed. Cross section was used to estimate expense-to-revenue relationship, first difference model, and deflation of total assets. The function is shown below:

$$\Delta TOTAL_EXP_i = \beta_0 + \beta_1 \Delta MED_REV_i + \beta_2 \Delta NON-MED_REV_i + \varepsilon_i \quad (1)$$

$\Delta TOTEXP_{it}$ is the difference between the total expense in Years t and t-1 of Nonprofit Hospital i.²

ΔMED_REV_{it} is the annual change of medical activity revenue,

$\Delta NON-MED_REV$ s the annual change of non-medical activity revenue.

Eq. (1) adopted first difference of controllable nonprofit hospital-specific effects and the scale difference that the deflation of the total assets could control nonprofit hospitals (nonprofit hospital-specific effects). β_1, β_2 could be understood as the expense increased following the increase of each NTD 1 revenue, or, the variable expense ratio of medical and nonmedical revenue. β_0 meant that the variable fixed cost expectation was 0.

Step 2: Estimating the variable expense of nonprofit hospitals. Based on the supposed variable expense and the occurrence of marginal patten estimated in calculated as follows:

$$\text{estimated medical variable expense} = \beta_1 * MED_REV_i \quad (2)$$

$$\text{estimated non-medical variable expense} = \beta_2 * NON-MED_REV_i \quad (3)$$

The total fixed expense was the difference between total reported expense and total predicted variable expense:

$$FIXED_i = TOT_EXP_i - (\beta_1 * MEDICAL_REV_i + \beta_2 * NON-MEDICAL_REV_i) \quad (4)$$

² Past study (Yetman 2001; Hofsmann 2007; Yoder, Addy, and McAllister 2011) used total expense except tax expense, Therefore, we have similar regression result with total expense data exclude community benefit service.

Step 3: Allocating the fixed cost to each activity. The norm on financial statement preparation of nonprofit hospitals allowed them to allocate the common cost of the equipment or staffs commonly used by both medical and non-medical activities to other activities. Based on the assumed fixed expense and the occurrence in the pattern of average revenue, the fixed expense was allocated by the relative revenue rate of each activity. The amount of allocation of fixed cost is: ³

$$\text{estimated medical fixed expense} = \text{FIXED}_i * \left(\frac{\text{MED_REV}_i}{\text{MED_REV}_i + \text{NON-MED_REV}_i} \right) \quad (5)$$

Step 4: Healthcare benefits-motivated expense shifting. The difference among the actual reported expense, estimated variable expense, and allocated fixed expense of nonprofit hospitals was calculated.

$$\begin{aligned} \text{estimated medical expense} &= \text{estimated medical variable expense} + \text{estimated} \\ &\text{medical fixed expense} \\ \text{contribution-motivated expense shifting (SHIFEXP)} &= \text{reported medical expense} - \\ &\text{estimated medical expense.} \end{aligned}$$

At present, there is no literature discussing the determinants influencing the expense shifting of nonprofit hospitals to avoid the community benefit services. The allocation rate difference between medical and non-medical activities of nonprofit hospitals and the institution inducing expense shifting were similar to the tax rate difference between UBIT and BIT and institution of NPOs. Thus, the regression analysis of this paper were based on the study on the determinants influencing the tax avoidance and financial misreporting of NPOs (Scholes, Wolfson, Erickson, Hanlon, and Maydew, 2015) to establish the empirical model. Assume the decision and level of nonprofit hospitals expense shifting are the function of organization's frictions and restrictions. The empirical model are as follows:

$$\begin{aligned} \text{SHIFEXP}_{i,t} = & \alpha_0 + \alpha_1 \text{DONATION}_{i,t} + \alpha_2 \ln(\text{ASSETS})_{i,t} + \alpha_3 \ln(\text{AGE})_{i,t} \\ & + \alpha_4 \text{CHARITYCARE}_{i,t-1} + \alpha_5 \text{BIG5CPA}_{i,t} + \alpha_6 \text{POST05}_{i,t} \\ & + \alpha_7 \text{RELIGIOUS}_{i,t} + \alpha_8 \text{RELIGIOUS}_{i,t} * \text{POST05}_{i,t} \end{aligned} \quad (1)$$

³ Hofmann (2007) doubted that the fixed expense in Yetman (2001) occurred as average revenue was not reasonable and there were underestimation of the expense shifted to unrelated businesses. Supposing that the fixed expense occurred based on the average variable expense, the fixed expense was allocated by the estimated variable expense of each activity. We adopt Hofmann (2007) model and have consistent result.

$$\begin{aligned}
& +\alpha_9\text{BUSINESS}_{i,t} + \alpha_{10}\text{BUSINESS}_{i,t} * \text{POST05}_{i,t} \\
& +\alpha_{11}\text{TIMETREND}_{i,t} + \text{YearEffect} + e_{i,t}
\end{aligned}$$

$SHIFEXP_{i,t}$ is the expense shifting indicators, evaluating the extent of nonprofit hospitals which allocated the expense of non-medical activities to medical activities so as to avoid community benefit services.

- (1) $DONATION_{i,t}$ is the donation revenue of the legal persons. Schmidt (2007) point out that if nonprofit hospitals have higher donation revenue, they are concerned more about the likely influence of external environment on their reputation. It is expected that they have a lower tendency to shift their expenses. In other words, expected $\alpha_1 < 0$.
- (2) $\ln(ASSETS)_{i,t}$ is Natural logarithm of total asset. Omer and Yetman (2003; 2007) used the total assets of NPOs to evaluate their organizational sizes.
- (3) $\ln(AGE)$, is the funded year of nonprofit hospital. The funded year use as a proxy of hospital's reputation.
- (4) $CHARITYCARE_{i,t-1}$ is the amount of community medical service expenditure like charity care of nonprofit hospitals against their total expense. According our inference we expect $\alpha_4 < 0$.
- (5) When nonprofit hospitals employ the accountants of Top 4 accounting firms to auditw their financial statements, $BIGCPA$ is 1. Otherwise, $BIGCPA$ is 0. If the Top 4 accounting firms stress independent expectations, $\alpha_5 < 0$. If the Top 4 accounting firms help nonprofit hospitals shift their expense with their financial and accounting expertise, $\alpha_5 > 0$.
- (6) $POST05_{i,t}$ is dummy variable (POST05) (i.e. if year >2005 equal to 1, 0 otherwise) Medical Care Act in 2005 which changed the funds allocated to community benefit services from 5% medical revenue to the 20% profit of medical revenue. If nonprofit hospitals have motive to avoid the community benefit service provision will increase the level of expense shifting. We expect $\alpha_6 > 0$
- (7) This paper classified initiators into enterprise groups, religious groups, and others. It considered $BUSINESS$ and $RELIGIOUS$ as the two dummy variables of founders and considered other founders like doctor group and governments as reference groups.

$RELIGIOUS$ is dummy variable when funder is religious groups equal to 1, 0 otherwise. As of the nonprofit hospitals set up by religious groups which upheld medical mission policies usually selected conservative financial operation (Kuo and Ho 2008), they had lower degree of expense shifting. We expect $\alpha_7 < 0$. After the law amendment if nonprofit hospitals have motive to avoid the

community benefit service provision will increase the level of expense shifting. We expect $\alpha_8 > 0$

- (8) *BUSINESS* is dummy variable when funder is enterprises groups equal to 1, 0 otherwise. As of the nonprofit hospitals set up by enterprises groups which emphasis operation efficiency. Before the law amendment they intend to shift expense to nonmedical activity to increase medical performance, therefore we expect $\alpha_9 < 0$. After the law amendment if nonprofit hospitals have motive to avoid the community benefit service provision will increase the level of expense shifting. We expect $\alpha_{10} > 0$.

Due to the enterprises group hospitals often introduced their enterprise operating spirit and strategies in the operation of nonprofit hospitals. The enterprises group hospitals have more ability/skill of expense shifting than religious group hospitals. We expect $\alpha_{10} > \alpha_8$.

- (9) $TIMETREND_{i,t}$ is a time variable trend. Due to the outsider highly anticipated the financial reports of nonprofit hospitals. The strength of supervision by authorities continued to increase. We expect the level of avoid community benefit service will decrease overtime. The degree of expense shifting will decrease over time as well. We expect $\alpha_{11} < 0$.

- (10) YearEffect is annual dummy variable

Empirical Result

Currently, there are 57 nonprofit hospitals in Taiwan, wherein, 9 are in preparation 1 stop operation and 1 was converted into a public hospital in 2009. This study analyzed the data of 46 medical institutions in operation between 2001 and 2013, the total observation is 554. The data source was the annual financial reports of the nonprofit hospitals reviewed by accountants.

Descriptive Statistics:

Summary statistics for the analysis variables are reported in Table 1. We label our expense shifting measure as SHIFEXP1 indicated the data from 2001 to 2013 and SHIFRXP2 were respectively estimate 2001-2004 and 2005-2013.

The mean are both negative for SHIFEXP1 and SHIFEXP2 which are contrary to expectation, indicated that on the average nonprofit hospital allocated expense to non-medical activity. The standard deviation are both larger than mean and median indicates there are large degree of variation of expense shifting in different ownership hospitals.

We further test SHIFEXP1-2 divided into two period. For SHIFEXP1, we found after 2005 nonprofit hospitals significantly allocation expense from medical activity to non-medical activity. But, for SHIFEXP2, we found after 2005 nonprofit hospitals significantly allocation expense from non-medical activity to medical activity. Initial revealed that there were different expense shifting behavior for nonprofit hospitals before and after 2005.

The result of step 1 estimation list on Table 2. Table 3 is the correlation coefficients of all independent variables are below 0.1595 and VIF(variance inflation factor) are below 1.5, indicating that the colinearity level between key variables and other independent variables is not high. The first column of Table 2 indicates that 0.9195 medical cost increase will cause one dollar medical revenue increase. The expense of one dollar nonmedical revenue is 0.0589. The meaning of intercept is when revenue remain unchanged, the average fixed expense were change 17,442 thousand NT dollars with 10% significant level. We used this estimation and fellow step 1 to 4 to calculation the amount of expense shifting.

After medical law amendment at 2005, the community benefit service providing by nonprofit hospitals are significantly change. We can rationally predict the level of expense shifting would be change as well. We use two method to test this prediction, firstly, we divide the data into 2 period, 2001-2004 and 2005-2013, separately regression for both 2 period. The result list on 2nd and 3rd column of Table 2. We test the null hypothesis of two regression model coefficients are equal. The chi-square statistics is 28.21, reject null hypothesis at significance level 1%. The Wald test also rejects the null hypothesis at significance level 1% that the medical revenue and non-medical revenue are equal.

Secondly, Extent the regression model with adding the interaction term between dummy variable (POST05) (i.e. if year >2005 equal to 1, 0 otherwise) and both change in medical revenues and change in non-medical revenues. Result is list on the 4th column of Table 2 which indicated both regression coefficients are significantly different from 0.

We can find the marginal cost of one dollar medical revenue increase was significant difference between before and after 2005. Therefore, we use the regression result of 2nd and 3rd column of Table 2 to calculate the amount of amount of the excess expense as estimated in Yetman (2001) for period 2001-2004 and 2005-2013.

From Table 1 Panel B *SHIFEXP2*, we can find the mean and median are both negative in 2001-2004, but both turn positive in 2005-2013. Based on the results of t test and Wilcoxon test shows that after 2005 the medical expense shifting significantly increase.

Part B: The deterrents of medical expense shifting

Table 3 illustrates the Pearson correlation coefficients between independent variables. Correlation coefficients of the variable of *TIMETREND* and *POST05* is 0.8639, *RELIGIOUS(BUSINESS)* and *RELIGIOUS* POST05 (BUSINESS* POST05)* is 0.6258(0.7381) and all other independent variables are below 0.5022, VIF(variance inflation factor) are over 10 in *POST05*、*TIMETREND* and year dummy (2004-2010) and if remove *TIMETREND*, all other independent variables are below 8.65, this express *TIMETREND* is highly co-linearity level with other time-related independent variables.

Regression result are reported in Table 4. The dependent variable is *SHIFEXP1* in column 1 and 2 and dependent variable is *SHIFEXP2* in column 3 and 4. In column 1 and 3 we add the year dummies with a time trend variable (*TIMETREND*) and drop time trend variable in column 2 and 4.

Regarding the regression model the findings are as follows:

The regression coefficient of *DONATION* are significantly positive in all 4 model, indicating that greater nonprofit hospital's donation revenue results in higher expense shifting. With expense shifting to medical activity can decrease the medical profit, which can be the appeal of fund raising.

The regression coefficient of *CHARITYCARt-1* are significantly negative in all 4 model, indicating that greater nonprofit hospital's charity expenditure results in lower expense shifting. This is consistent with our expectation.

The regression coefficient of dummy variable for medical law amendment at 2005 *POST05*, are significantly positive in model 1 and 4 indicating that greater nonprofit hospital's expense shifting in reference group. This can be point out the 2005 medical law amendment replace the "amount of community benefit services for nonprofit hospitals" had to be "at least 5% of the annual medical revenue", by "20% of profit from medical operation." The amendment has considerably reduced the

minimum amount of the community benefit services that nonprofit hospitals should provide. Nonprofit hospitals face the amendment have the motivation of expense shifting to medical activity. The empirical result is consistent with our expectation.

The regression coefficient of the dummy variable of religious nonprofit hospitals (*REGLIOUS*, α_7) was not significant at 10% level. This suggests that, before the law amendment, the expense shifting are indifference between religious nonprofit hospitals and reference group hospitals.

The regression coefficient of the interaction term (*REGLIOUS * POST05*, α_8) between dummy variable (*POST05*) and dummy variable of religious nonprofit hospitals (*REGLIOUS*), are significantly positive in model 3 and 4 indicating that greater religious nonprofit hospitals expense shifting than reference group hospitals, after the law amendment. This is consistent with our hypothesis.

The regression coefficient of the dummy variable of business nonprofit hospitals (*BUSINESS*, α_9) are significantly negative in model 3 and 4 indicating that business nonprofit hospitals expense shifting are lower than reference group hospitals, before the law amendment.

The regression coefficient of the interaction term (*BUSINESS* POST05*, α_{10}) between dummy variable (*POST05*) and dummy variable of business nonprofit hospitals (*BUSINESS*), are significantly positive in model 3 and 4 indicating that greater business nonprofit hospitals expense shifting than reference group hospitals, after the law amendment. This is consistent with our hypothesis.

The regression coefficient of the time trend variable are negative in model 1 and 3 indicating that the degree of expense shifting are slow down over time. But only model 1 are significant at 10%.

We further exam the difference between business nonprofit hospitals and religious nonprofit hospitals.

We fail to reject the null hypothesis of 2 types of hospital have same expense shifting behavior before the law amendment ($H_0: \alpha_7 = \alpha_9$) in all 4 models at 10% significant level. The regression results suggest the expense shifting between business nonprofit hospitals and religious nonprofit hospitals are indifference before the law amendment.

We fail to reject the null hypothesis of 2 types of hospital have same expense shifting behavior after the law amendment ($H_0: \alpha_8 = \alpha_{10}$) in all 4 models at 10% significant level. The results indicating the level of expense shifting between business

nonprofit hospitals and religious nonprofit hospitals are indifference after the law amendment.

The regression coefficient of other independent variables such as hospital size($\ln(ASSETS)$), funded years($\ln(AGE)$) and audit by big 4 audit firms($BIG4CPA$), have been control in all models.

Conclusion

This study examines nonprofit hospitals expense shifting behavior and the determination. Before the amendment of the Medical Care Act in 2004, the amount of community benefit services for nonprofit hospitals had to be “at least 5% of the annual medical revenue.” The amending the law in 2005, the minimum amount was changed to “20% of profit from medical operation.” The amendment has considerably reduced the minimum amount of the community benefit services that nonprofit hospitals should provide.

The amending the law in 2005, create two different base on calculation the minimum amount community benefit services that nonprofit hospitals should provide. Thus, the manager have incentive to shifting expense from medical to non-medical activity.

We follow the idea of Yetman(2001) to construct the index of expense shifting for nonprofit hospital in Taiwan. This study analyzed the data of 46 medical institutions in operation between 2001 and 2013. Empirical result indicated that after the law amendment, the nonprofit hospitals expense shifting level increase from non-medical activity to medical activity. In other word, the nonprofit hospitals significantly allocated cost to medical activity. Moreover, expense shifting and donation have significantly positive relationship, have negative relationship with pervious community benefit service expenditure. This paper classified initiators into enterprise groups, religious groups, and others. The religious groups has similar level expense shifting with doctor and governments groups (reference groups) before the law amendment. The business groups has lower level expense shifting than reference groups before the law amendment. After the law amendment, both religious and business groups have higher level expense shifting than reference groups. But the level of expense shifting between religious and business groups have no significantly difference.

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Table 1 summary Statistics

Panel A	N	Mean	Median	Std. Dev.				
Dependent variables								
SHIFTEXP1 (in NT\$ millions)	554	-168.337	-28.899	600.271				
SHIFTEXP2 (in NT\$ millions)	554	-138.493	2.212	752.086				
Independent Variables								
DONATION (in NT\$ millions)	554	66.208	10.061	222.619				
ASSETS (in NT\$ millions)	554	8348.698	2037.312	32488.790				
AGE	554	33.45307	33	18.13069				
CHARITYCARE	554	35.065	5.659	84.076				
BIG4CPA	554	0.314	0.000	0.465				
POST05	554	0.563	1.000	0.496				
RELIGIOUS	554	0.444	0.000	0.497				
BUSSINESS	554	0.182	0.000	0.386				
Other variables								
TOTEXP (in NT\$ millions)	554	3360.858	1411.513	6638.747				
MEDREV (in NT\$ millions)	554	3361.505	1411.763	6637.509				
MEDEXP (in NT\$ millions)	554	3144.356	1347.214	5957.056				
NMEDREV (in NT\$ millions)	554	403.346	48.557	1876.990				
NMEDEXP (in NT\$ millions)	554	107.087	17.703	414.845				
Panel B	Mean	Median	Std.Dev.	Mean	Median	Std.Dev.	t test	Wilcoxon test
Period	2001-2004 (N =243)			2005-2013 (N=313)			t statistics	Z score
SHIFTEXP 1	-81.641	-15.476	339.540	-235.648	-55.963	735.251	3.013***	4.864***
SHIFTEXP 2	-504.001	-216.652	970.660	145.010	81.290	301.777	-11.195 ***	-18.896***

*** Significant at the 1 percent level.

SHIFTEXP1: amount of the excess expense as estimated in Yetman (2001) for period 2001-2013;
 SHIFTEXP2: amount of the excess expense as estimated in Yetman (2001) for period 2001-2004
 and 2005-2013;; DONATION: amount of revenue from donation in NT\$ million; ASSETS: total
 assets in NT\$ million; AGE: number of years since established; CHARITYCARE: amount of
 charity care in NT\$ millions; BIG4CPA: indicator variable equal to 1 if financial statement was
 audited by a Big 4 CPA firm and 0 otherwise; POST05: indicator variables equal to 1 after 2005
 year and 0 otherwise (medical law amendment at 2005); RELIGIOUS: indicator variables equal to
 1 if the founder was religious institution and 0 otherwise; BUSSINESS: indicator variables equal to
 1 if the founder was for-profit institution and 0 otherwise; TOTEXP: total expense in \$ NT million;
 MEDREV: medical activities revenues in NT\$ million; MEDEXP: medical activities expenses in

NT\$ million; NMEDREV: non-medical activities revenues in NT\$ million; NMEDEXP: non-medical activities expenses in NT\$ million.

Table 2 Regression Estimates Used to Partition Nonprofit Medical Institutions Variables Expense between Medical and Nonmedical Activities

$$\Delta TOTAL_EXP_i = \beta_0 + \beta_1 \Delta MED_REV_i + \beta_2 \Delta NON-MED_REV_i + \varepsilon_i$$

Sample Period	2001-2013 Coefficient (Std. Err.)	2001-2004 Coefficient (Std. Err.)	2005-2013 Coefficient (Std. Err.)	2001-2013 Coefficient (Std. Err.)
ΔMED_REV	0.9195*** (0.0635)	0.7347*** (0.0351)	1.0360*** (0.0316)	0.7347*** (0.0561)
$\Delta NON-MED_REV$	0.0598*** (0.0030)	0.2435*** (0.0210)	0.0155+ (0.0103)	0.2435*** (0.0128)
POST05				-29.1041* (15.4710)
$\Delta MED_REV * POST05$				0.3013*** (0.1070)
$\Delta NON-MED_REV * POST05$				-0.2281*** (0.0136)
Intercept	18.4424* (9.1966)	28.3610* (15.3712)	-0.7431 (13.0144)	28.3610** (12.7628)
\bar{R}^2	0.7039	0.7395	0.7745	0.7589
Observation	556	243	313	556
F Statistic	2812***	344.5***	536.86***	2430.05***

+, *, **, *** Denotes significant at the 0.2, 0.1, 0.05 and 0.01 levels, respectively.

All standard error in parentheses and are clustered by firm.

$\Delta TOTAL_EXP_i$: change in total medical expense;

ΔMED_REV : change in medical revenues;

$\Delta NON-MED_REV$: change in non-medical revenues;

POST05: indicator variables equal to 1 post 2005 and 0 otherwise (medical law amendment at 2005).

Table 3 Correlation Statistics

		A	B	C	D	E	F	G	H	I	J	K
DONTION	A	1.0000										
ln(ASSETS)	B	0.2716*	1.0000									
ln(AGE)	C	0.0525	0.2695*	1.0000								
CHARITYCARET-1	D	0.1869*	0.5022*	0.1983*	1.0000							
BIG4CPA	E	0.0749*	0.3803*	0.2585*	0.2513*	1.0000						
POST05	F	-0.0182	0.0395	0.1477*	0.0314	0.1333*	1.0000					
RELIGIOUS	G	0.2078*	0.2453*	0.4516*	0.049	0.2797*	-0.0479	1.0000				
POST05*RELIGIOUS	H	0.1269*	0.1789*	0.3636*	0.0677	0.2423*	0.4926*	0.6258*	1.0000			
BUSINESS	I	-0.0431	0.4255*	-0.0581	0.2927*	0.0733*	0.0294	-0.4220*	-0.2641*	1.0000		
POST05*BUSINESS	J	-0.0432	0.3340*	-0.0287	0.2142*	0.1646*	0.3069*	-0.3115*	-0.1949*	0.7381*	1.0000	
TIMETREND	K	-0.0124	0.0464	0.1793*	0.0262	0.1039*	0.8639*	-0.0497	0.4206*	0.0334	0.2736*	1.0000

* Significant at the 10 percent level.

DONATION: amount of revenue from donation in NT\$ million; ln(ASSETS): take natural of total assets in NT\$ million; ln(AGE): take natural of number of years since established; CHARITYCARE: amount of charity care in NT\$ millions; BIG4CPA: indicator variable equal to 1 if financial statement was audited by a Big 4 CPA firm and 0 otherwise; POST05: indicator variables equal to 1 post 2005 and 0 otherwise (medical law amendment at 2005); RELIGIOUS: indicator variables equal to 1 if the founder was religious institution and 0 otherwise; BUSSINESS: indicator variables equal to 1 if the founder was for-profit institution and 0 otherwise; TIMETREND: time trend.

Table 4 Regression Results for Expense Shifted

$$SHIFEXP_{i,t} = \alpha_0 + \alpha_1 DONATION_{i,t} + \alpha_2 \ln(ASSETS)_{i,t} + \alpha_3 \ln(AGE)_{i,t} + \alpha_4 CHARITYCARE_{i,t-1} + \alpha_5 BIG5CPA_{i,t} + \alpha_6 POST05_{i,t} + \alpha_7 RELIGIOUS_{i,t} + \alpha_7 RELIGIOUS_{i,t} * POST05_{i,t} + \alpha_8 BUSINESS_{i,t} + \alpha_9 BUSINESS_{i,t} * POST05_{i,t} + \alpha_{10} TIMETREND_{i,t} + YearEffect + e_{i,t}$$

	SHIFTEXP1		SHIFTEXP2	
	(1) Coefficient (Std.Err.)	(2) Coefficient (Std.Err.)	(3) Coefficient (Std.Err.)	(4) Coefficient (Std.Err.)
DONATION	0.22** (0.09)	0.22** (0.09)	0.27*** (0.07)	0.27*** (0.07)
ln(ASSETS)	-59.65+ (41.22)	-59.65+ (41.22)	-54.29+ (40.86)	-54.29+ (40.86)
ln(AGE)	17.63 (37.65)	17.63 (37.65)	-6.77 (46.07)	-6.77 (46.07)
CHARITYCAR _{t-1}	-4.07*** (0.79)	-4.07*** (0.79)	-2.97*** (0.79)	-2.97*** (0.79)
BIG4CPA	-80.91 (68.85)	-80.91 (68.85)	59.4 (116.93)	59.4 (116.93)
POST05	917.43** (454.89)	-56.43 (88.81)	431.78+ (273.32)	241.64*** (69.08)
REGLIOUS (α_7)	176.66+ (120.70)	176.66+ (120.70)	-168.39+ (112.47)	-168.39+ (112.47)
REGLIOUS * POST05(α_8)	-53.87 (67.76)	-53.87 (67.76)	471.71** (179.60)	471.71** (179.60)
BUSINESS(α_9)	285.98 (228.94)	285.98 (228.94)	-828.23* (453.18)	-828.23* (453.18)
BUSINESS* POST05 (α_{10})	-360.58 (305.71)	-360.58 (305.71)	1420.47** (582.08)	1420.47** (582.08)
TIMETREND	-81.16* (44.28)		-15.84 (23.78)	
Intercept	293.39 (300.09)	212.23 (267.37)	154.76 (270.60)	138.92 (265.25)
Control year fixed effect	Yes	Yes	Yes	Yes
$H_0: \alpha_7 = \alpha_9$	0.3875	0.3875	1.6866	1.6866
$H_0: \alpha_8 = \alpha_{10}$	0.9436	0.9436	2.4564	2.4564
\bar{R}^2	0.46	0.46	0.43	0.43
Observation	554	554	554	554
F Statistic	46.87***	46.87***	20.06***	20.06***

+, *, **, *** Denotes significant at the 0.20, 0.10, 0.05, 0.01 level, respectively.

SHIFTEXP1: amount of the excess expense as estimated in Yetman (2001) for period 2001-2013;
SHIFTEXP2: amount of the excess expense as estimated in Yetman (2001) for period 2001-2004
and 2005-2013; DONATION: amount of revenue from donation in NT\$ million; ln(ASSETS): take
natural of total assets in NT\$ million; ln(AGE): take natural of number of years since established;
CHARITYCARE: amount of charity care in NT\$ millions; BIG4CPA: indicator variable equal to 1
if financial statement was audited by a Big 4 CPA firm and 0 otherwise; POST05: indicator
variables equal to 1 post 2005 and 0 otherwise (medical law amendment at 2005); RELIGIOUS:
indicator variables equal to 1 if the founder was religious institution and 0 otherwise; BUSSINESS:
indicator variables equal to 1 if the founder was for-profit institution and 0 otherwise;
TIMETREND: time trend.