DETERMINANTS OF DONATIONS: EMPIRICAL EVIDENCE FROM TAIWAN

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In this paper, data from the 1999 Survey of Social Development Trend (SSDT) in Taiwan were used to examine the effects of income, tax price, as well as demographic variables on donations to different types of nonprofit organizations. The findings of this paper suggest that the effect of income on the level of donations was positively significant only for charitable and religious donations, but not for other types of donations. In addition, lowering the tax price of a donation exerted a significant effect on the probability of making donations only for religious contributions, but it also raised the level of contributions both for charitable and religious donations. The effects of most demographic variables were significant for the participation decision for all the different types of donations, but not significant for the levels of donations to academic, medical, and political organizations.

I. INTRODUCTION

As in many developed countries, donations to nonprofit organizations in Taiwan also account for an important part of the country's economy. The 1999 Survey of Social Development Trend (SSDT) in Taiwan indicated that about 36.3 percent of people made monetary donations during the past year period, and the total amount of money contributed for a donation (hereafter referred to as "amount of donation") reached NT$42.4 billion. Despite this fact, the "donative behavior" in Taiwan has not received considerable attention in economic studies unlike in many other developed countries over the past decades. Since few empirical studies on donations in newly industrialized countries are available, in the present paper, attempts were made to fill this gap by estimating the determinants of the donative behavior in Taiwan by using nationwide household survey data. While all the donations to nonprofit organizations are tax-deductible, the motives driving people to make donations may be different depending on the types of nonprofit organizations.

This paper appears to contain the first empirical study using national survey data aimed at people's donations to five different types of nonprofit organizations in Taiwan, which are classified as charitable, academic, medical, religious, and politi-

cal contributions. It provides evidence for a comparison with those from the United States and European countries, such as the United States (Reece and Zieschang 1985, 1989; Smith, Kehoe, and Cremer 1995; Okten and Weisbrod 2000), Canada (Kitchen and Dalton 1990; Kitchen 1992), the United Kingdom (Jones and Posnett 1991a, 1991b; Jones and Marriot 1994), and Spain (Garcia and Marcuello 2001), as well as transition economies such as Russia (Brooks 2002). Regarding the effects of the tax price of donations, income, and other demographic characteristics on the donative behavior, the results from this study may enable to identify what variables are important for explaining the differences in the motives for making donations. In this paper, the tobit model with sample selection was employed to allow a distinction between participation decision and expenditure decision in making donations. This approach enables to investigate which variables exert the main impacts on the participation decision and/or the expenditure decision for different types of donations.

While in most of the previous studies in the literature on donations, emphasis was placed on charitable donations, contributions to other nonprofit organizations including academic, medical, religious, and political groups can also qualify for those itemized deductions for which provisions are made by the tax codes in most countries.[1] Though these different types of donations can all have the benefit of tax deduction, the reasons that motivate donors to make these contributions could be considerably different. As pointed out by economic experts, several different motives drive donors to make contributions.[2] Some are related to the tangible and intangible benefits that accrue to the donors, while others are stemming from the pleasure of giving, referred to as the "warm glow" motive or from the altruistic concern of donors about the recipient well-being.[3] Thus, donations made to different types of nonprofit organizations may reflect the differences in the intensity of various motivations. It is often argued that donors making contributions to religious groups, and educational and cultural institutions tend to benefit from their partici-

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[1] In Taiwan, the income tax system allows donations to nonprofit organizations to be tax-deductible up to 20 percent of the taxpayer's total income. According to Article 17 of the Personal Income Tax Codes of Taiwan, donations made to officially registered educational (academic), cultural, public welfare, and charitable organizations or agencies are deductible. The deduction should not exceed 20 percent of the gross income; however, donations made for national defense, for troop cheering, to the government, or for the maintenance and repair of antiquities and historical buildings under Article 31-1 of the Cultural Assets Preservation Law, are fully deductible. The taxpayer should provide evidence of official registration. Hence, even though taxpayers may have different motivations while they donate money to different types of nonprofit organizations, the tax treatments are the same. That is, for a taxpayer, the tax prices applied to donations to different types of nonprofit organizations are the same.

[2] For surveys of earlier studies see, for instance, Clotfelter (1985, 1997), Steinberg (1990), or Rose-Ackerman (1996).

[3] For theoretical discussions, refer to Bergstrom, Blume, and Varian (1986), Steinberg (1987), Sen (1990), Andreoni (1990), Glazer and Konrad (1996), and Harbaugh (1998).

pation in the support and operation of activities of the donees.[4] For instance, donors to religious organizations may benefit from the worship services, educational programs, and social or recreational activities. Alternatively, donations made to medical institutions may be influenced by insurance considerations for future needs and expected usages. By contrast, donations to charitable organizations appear to be made without consideration of the expected usage of the services provided by the donees, and instead are mostly concerned with the well-being of the recipients.

Therefore, some interesting issues can be raised for policy considerations. If the donors make charitable contributions stemming more from altruistic concerns than self-interest, in the case of religious, academic, or medical contributions, then will the tax price of a donation or donors' incomes be important to distinguish the behavior?[5] Similarly, if the donors make educational, cultural, or political contributions mainly motivated by the expected benefits from their participation in the activities provided by the donee, then will these types of donations be more responsive to changes in donors' incomes? Against this background, it is reasonable to further examine what key variables will be significant for explaining donors' different motives.

The rest of the paper is organized as follows. In Section II, the models and data used to estimate the effects of price, income, and other demographic characteristics on donations in Taiwan are described. In Section III, the estimated results from this study are analyzed. Finally, some policy implications and a conclusion will be presented in Section IV.

II. MODELS AND DATA

Two basic types of theoretical models have been constructed for analyzing the problem of the donativer behavior. The first type represents the public good models, assuming that individuals make donations for the provision of a public good from which they benefit (McGuire 1974; Weisbrod 1975; Warr 1982; Roberts 1984; Bergstrom, Blume, and Varian 1986). The second type represents the private good models that emphasize the benefits of contributions to individual donors (Arrow 1972; Margolis 1981; Sugden 1984; Andreoni 1990; Glazer and Konrad 1996; Harbaugh 1998). Here, I follow the approach taken by the private good models by treating donations as a private consumption good.

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[4] Evidence supporting this argument can be found, for example, in the reports of Biddle (1992) and Salamon (1992).

[5] In some earlier papers (e.g., Ribar and Wilhelm 1995, 2002; Khanna, Posnett, and Sandler 1995) where data on contributions to international relief and development organizations, which provide no direct consumption benefits to donors were examined, it was suggested that contributions motivated by altruistic intentions or by preferences for gift giving may qualify as luxury goods (relatively higher income and price effects) rather than contributions motivated by less altruistic intentions.

Assume that the optimal donation for a household can be derived by solving the following equation:

$$\max U(d, c; \theta)$$
$$\text{s.t. } pd + c = y,$$

where $U(d, c; x)$ is the utility function of the household, d is the donation, c is the composite commodity other than the donation, p is the price of the donation, y is the household income, and θ is a vector of characteristics of the household. Therefore, the optimal donation for a household can be written as:

$$d^* = \max[0, d(p, y; \theta)].$$

The structural form of donation for a household i can be expressed as a standard tobit model as:

$$d_i \begin{cases} = \beta x_i + \varepsilon_i & \text{if } \beta x_i + \varepsilon_i > 0, \\ = 0 & \text{otherwise,} \end{cases} \tag{1}$$

where d_i is the observed donation of the household i, β is a vector of parameters, $x = [p, y, \theta]$, and ε is the disturbance term. Nevertheless, this standard tobit model is based on the theoretical background assuming that the participation decision and expenditure decision of a donation are determined by the same process, and thus are explained by the same set of variables. Two types of problems may arise while the empirical model is specified as the standard tobit model as indicated in equation (1). First, when the household makes a participation decision and expenditure decision separately, as suggested by Bergstrom, Blume, and Varian (1986), this model specification will no longer be appropriate. Second, the zero observations in the sample cannot be explained as corner solutions of the estimated demand equation, but they result from misreporting or infrequency of donations.[6]

To overcome these problems, the empirical model is specified as a tobit model with sample selection as:

$$d_i \begin{cases} = \beta x_i + \varepsilon_i & \text{if } z^* = \alpha z_i + \mu_i > 0, \\ = 0 & \text{otherwise.} \end{cases} \tag{2}$$

The tobit model with sample selection incorporates two equations. The first is the participation equation $\alpha z_i + \mu_i$, where α is the vector of parameters, and z is the vector of household characteristics in the participation equation. The second is the expenditure equation $\beta x_i + \varepsilon_i$, and we assume that μ and ε display a bivariate normal distribution with $\text{Corr}[\varepsilon, \mu] = \rho$. The procedure for estimating this model follows the standard steps for the selectivity model. In the first step, the participation

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[6] See, for example, Cragg (1971), Blundell and Meghir (1986), and Jones and Posnett (1991a).

equation using a probit model is estimated, and in the second step, the probit results from the first step are used to fit the sample selection model with a maximum likelihood estimation (Amemiya 1985).

To estimate equations (1) and (2), data from the SSDT in Taiwan Area were used. This survey was conducted by Taiwan's Directorate General of Budget, Accounting and Statistics, Executive Yuan in 1999. It is by far the largest and most complete survey devoting particular attention to the donative behavior. Donations are categorized by the types of recipients into five different kinds, such as charitable, academic, medical, religious, and political contributions. The survey collects a nationwide sample of the respondent income, money contribution, volunteer work for nonprofit organizations, as well as demographic information with 31,527 observations.

Another possible econometric problem in the estimation process is that the tax price of a donation itself is partly dependent on the amount of donations. To avoid this problem of endogeneity, I calculated the tax price of a donation as the first dollar price by assuming that the taxpayer does not make sufficient amounts of contributions to change his marginal tax rate after the donation.[7] Given the nature of the SSDT data used in the present study, it is likely that this simplification will not substantially affect the results.[8] Moreover, the SSDT data set does not allow us to distinguish the tax prices of donations made to different types of nonprofit organizations. The demographic information contains the important socioeconomic characteristics of the respondents that are used in most existing empirical studies on charitable donations such as age, gender, marital status, household size, educational level, and employment status, etc. Overall, the most distinctive feature of this survey is that it categorizes donations to nonprofit organizations by the types of recipients. In some previous studies using survey data, the samples usually focused on collecting information about total donations, and the types of recipient organizations were usually not specified in the data. Apparently, the relative paucity of studies aiming at investigating these differences may be ascribed to a lack of sufficient categorized data. Without the categorized donations, it is not possible to differentiate the motives driving people to make contributions for different recipients. As a

[7] According to the tax system in Taiwan, five income brackets are subject to different marginal tax rates (6% for an annual income less than NT$370,000, 13% for an annual income between NT$370,000 and NT$990,000, 21% for an annual income between NT$990,000 and NT$1.98 million, 30% for an annual income between NT$1.98 million and NT$3.72 million, and 40% for an annual income higher than NT$3.72 million). Some U.S. studies overcome this endogeneity problem by using the nonlinear maximum likelihood estimation (Reece and Zieschang 1985), the instrumental variables estimation (Feenberg 1987), or simultaneous equations tobit estimation (Choe and Jeong 1993).

[8] Based on the SSDT data, only 0.95% of the donors made sufficient amounts of contributions of over 20% of their total income to differentiate the marginal tax rates between the first dollar and the last dollar of the donations.

TABLE I

Distribution of Donations in Taiwan

	Charitable	Academic	Medical	Religious	Political	Other
As a % of the total number of donors	47.20	4.07	3.40	62.53	2.65	0.68
Average amount of donation (NT$)	5,248	9,296	4,954	5,224	12,109	4,950

Source: Executive Yuan, Directorate General of Budget, Accounting and Statistics, *Zhonghua Minguo 1999 Taiwan diqu shehui fazhan qushi diaocha ji shehui canyu yanshen diao cha baogao* [Survey of social development trend in Taiwan, 1999] (Taipei, 2000).

result, it is reasonable to conduct an empirical survey on different types of donations to nonprofit organizations with the sample of SSDT.

Some empirical results from developed countries, as noted by Kitchen and Dalton (1990), tend to suggest that the amount of a donation is irrelevant for determining the religious donations. It has been argued that contributions to religious organizations are more likely to be made on the basis of faith rather than tax consideration. However, it is unclear whether similar results can be found in the case of a newly industrialized country like Taiwan. According to the SSDT survey data presented in Table I, 62.53% of the total number of donors made donations to religious organizations, while 47.2% of the total number of donors made charitable contributions. Only 4.07%, 3.4%, and 2.65% of the donors made donations to academic, medical, and political organizations, respectively. However, the average amount of a political donation was NT$12,109, and the average amount of academic donations ranked second, namely NT$9,296. In contrast, even though people are relatively more likely to make donations to charitable and religious organizations, the average amounts of donations were lower, namely NT$5,248 and NT$5,224, respectively. Overall, these patterns are very similar to what has been deduced from the surveys conducted in developed countries such as the United States (Hodgkinson, et al. 1996).

As argued in many previous studies (e.g., Clotfelter 1985; Biddle 1992; Salamon 1992; Smith, Kehoe, and Cremer 1995), donations to academic, medical, and political groups tend to have more direct linkages to the benefits from the goods and services made available with the donations. This appears to be supported by the SSDT data, as shown in Table II. Among others, 60.14% of the donors were making contributions to religious groups as a form of blessing, and 23.27% were making contributions as a form of returns to the society. On the other hand, 57.79% of the donors were making contributions to charities as a form of returns to the society, while 21.04% as a form of blessing. Regarding the reasons for making donations, Table III presents the average amounts of donations for different types of nonprofit organizations. As a form of returns to the society, academic donations ranked first with an average amount of NT$12,911. The average amounts of donations made

TABLE II

DISTRIBUTION OF REASONS FOR MAKING DONATIONS IN TAIWAN

(%)

	Advocating Belief	Making Returns to the Society	Form of Blessing	Influenced by Friends and Family	Persuaded by Fundraising	Others
Charitable	8.38	57.79	21.04	7.57	4.81	0.41
Academic	30.70	48.63	5.71	8.59	5.76	0.60
Medical	18.73	59.13	10.15	5.78	4.91	1.29
Religious	9.70	23.27	60.14	4.32	2.40	0.16
Political	67.10	5.67	6.03	12.20	8.99	—
Other	16.12	42.29	13.05	15.22	13.32	—

Source: Same as Table I.

TABLE III

AVERAGE AMOUNT OF DONATIONS BY REASON IN TAIWAN

(NT$)

	Advocating Belief	Making Returns to the Society	Form of Blessing	Influenced by Friends and Family	Persuaded by Fundraising	Others
Charitable	7,412	6,367	3,860	2,586	1,523	7,259
Academic	7,722	12,911	3,861	4,934	859	13,443
Medical	6,510	5,319	2,662	2,798	2,466	5,634
Religious	11,556	6,203	4,040	3,453	2,847	8,374
Political	13,208	11,413	4,221	12,357	9,492	—
Other	9,766	4,540	4,899	3,833	3,091	—

Source: Same as Table I.

for the same reason were NT$6,367, and NT$6,203 for charitable and religious donations, respectively. As a form of blessing, the average amounts were relatively lower, NT$3,861, NT$4,040, and NT$3,860 for academic, religious, and charitable donations, respectively. Overall, the highest average amount of donations was made for political donations, namely NT$13,208 for advocating a belief.

The average amounts of money earmarked for political donations were relatively higher than those for other types of donations among the various reasons listed in Table II. This indicates a considerable difference in the motives driving people to make donations to different types of nonprofit organizations. Thus, sample separating religious donations in the SSDT will allow a comparison, providing that the difference in the effects of income, price, as well as other demographic features from other types of donations reflect the distinction in the motives driving people to make contributions. It is interesting to examine how the donative behavior of people to various nonprofit organizations responds differently to changes in income, price,

TABLE IV

VARIABLES AND DEFINITIONS

Variable	Definition
Lcharity	Logarithm of the amount of donation to charities
Lacadem	Logarithm of the amount of donation to academic organizations
Lmedical	Logarithm of the amount of donation to medical institutions
Lrelig	Logarithm of the amount of donation to religious groups
Lpolit	Logarithm of the amount of donation to political groups
Ltotal	Logarithm of the total amount of donation
Pop15	Number of people more than 15 years old in the household
Gender	If male, gender = 1; and if female, gender = 0
Age	Age of the household head
Married	Marital status, if married, then married = 1; otherwise = 0
School	Years of schooling attained by the household head
Ly	Logarithm of annual income
Lprice	Logarithm of the "tax price" of per dollar donation. Equals 1 minus the marginal tax rate. Here the "tax price" of a donation is used to measure the after-tax cost to the donor (taxpayer) of contributing one dollar of pretax income.
Owner	If the respondent owns a house, owner = 1; otherwise = 0
Employed	If the respondent is employed, employed = 1; otherwise = 0
Volunt	If the respondent has ever been engaged in volunteer work, then volunt = 1; otherwise = 0

TABLE V

SUMMARY OF STATISTICS

Variable	Mean	Standard Deviation
Pop15	4.015	1.806
Gender	0.501	0.500
Age	42.402	17.386
Married	0.699	0.458
School	9.655	4.759
Employed	0.582	0.493
Annual income	238,622.451	295,109.318
Charity donation	812.255	6,544.090
Academic donation	121.185	2,934.556
Medical donation	54.496	1,046.068
Religious donation	1,171.874	6,801.108
Political donation	111.251	2,352.357
Total donations	2,271.062	11,679.543

and demographic variables. The variables used in the estimations as well as their definitions are listed in Table IV. Table V shows the means and standard deviations of some important variables.

III.   RESULTS AND DISCUSSION

The results from the estimation of the standard tobit model using equation (1) are given in Table VI. As expected, the coefficient of tax price appeared to have a negative sign with a relatively large magnitude and was statistically significant for all the types of donations except for the religious donations, which had a positive sign and were not significant. In contrast, the coefficient of income was small and positively significant for charitable, religious, and total donations. Changes in income did not tend to affect the donations made to academic, medical, and political groups. Estimated coefficients of years of schooling showed that more educated people were likely to make more donations to charities, academic, and medical institutions as well as political groups, but not to religious organizations. The coefficient of years of schooling for religious donation was positive and statistically not significant. In addition, for charitable and religious donations, married individuals were

TABLE VI

DETERMINANTS OF DONATIONS USING THE TOBIT MODEL

	Lcharity	Lacadem	Lmedical	Lrelig	Lpolit	Ltotal
Constant	−25.01*	−79.88*	−77.36*	−14.86*	−88.41*	−14.66*
	(1.09)	(5.04)	(5.45)	(0.93)	(6.39)	(0.67)
Pop15	−0.37*	−0.55*	−0.076	−0.19*	−0.41	−0.23*
	(0.06)	(0.23)	(0.24)	(0.04)	(0.29)	(0.03)
Gender	−1.15*	0.98	−3.95*	−1.33*	4.67*	−1.33*
	(0.20)	(0.81)	(0.88)	(0.16)	(1.12)	(0.12)
Age	0.03*	0.046	0.073	0.114*	0.26*	0.088*
	(0.009)	(0.035)	(0.039)	(0.007)	(0.05)	(0.005)
Married	3.15*	3.58*	2.14	4.81*	2.47	3.66*
	(0.27)	(1.13)	(1.14)	(0.23)	(1.46)	(0.16)
School	0.57*	1.40*	1.42*	0.022	0.77*	0.24*
	(0.027)	(0.13)	(0.14)	(0.020)	(0.13)	(0.02)
Ly	0.0027*	−0.0012	0.0013	0.0026*	0.0025	0.0022*
	(0.0003)	(0.0014)	(0.0015)	(0.0002)	(0.0018)	(0.0002)
Lprice	−31.93*	−85.20*	−77.30*	9.30	−78.82*	−22.48*
	(6.17)	(16.40)	(18.83)	(5.73)	(20.14)	(4.05)
Owner	0.21	3.73*	0.95	0.93*	−0.18	0.73*
	(0.31)	(1.45)	(1.38)	(0.25)	(1.57)	(0.18)
Employed	2.11*	2.10	3.31*	1.47*	5.64*	1.57*
	(0.30)	(1.31)	(1.42)	(0.22)	(1.62)	(0.17)
Volunt	7.13*	12.18*	7.76*	6.24*	14.30*	6.27*
	(0.24)	(0.95)	(0.99)	(0.19)	(1.21)	(0.15)
σ	11.12*	18.12*	18.86*	9.70*	19.77*	8.03*
	(0.14)	(0.84)	(0.96)	(0.09)	(1.09)	(0.06)
Log-likelihood	−26,277.04	−3,032.64	−2,663.22	−36,115.99	−2,254.04	−48,878.55

Note: Standard errors are given in parentheses.
* represents statistical significance at the 5 percent level.

likely to make more donations than single individuals while females tended to contribute more than males.

Except for academic and medical donations, the coefficient of age was positively significant for all the other types of donations, but the magnitude of the coefficient was not large. To analyze the relationship between monetary donation and volunteer work, a dummy variable was added to reflect the donors' attitude in deciding whether making a donation of time would affect their monetary contributions. With a positively significant coefficient for all the categories of donations, the results also indicated that people providing volunteer work were likely to make higher amounts of donations than those who did not participate in volunteer work. The size of a household represented by the number of people more than fifteen years old in the household appeared to exert a slightly adverse effect on the donations to charitable, academic, and religious organizations. Individuals who owned houses tended to contribute more to academic and religious organizations. This may indicate that the donors will be willing to donate more money to the academic and religious groups near their permanent residence. This phenomenon partly suggests that when the donors had more opportunities to utilize the facilities and activities provided by the nearby academic and religious groups, they contributed more money to these groups.[9] Employed individuals were likely to make more donations than unemployed individuals to all the nonprofit organizations except to academic institutions.

After estimation of the standard tobit model, I modified the model specification to allow a distinction between the participation decision (donate or not donate) and the expenditure decision (how much to donate) by using the tobit model with sample selection as described in equation (2). All the explanatory variables used in the standard tobit model were included in the participation equation, but the dummy for employment status and the dummy for volunteer work were excluded from the expenditure equation to reflect the distinction between the participation and expenditure decisions.

Table VII lists the estimates from the tobit model with sample selection. In the participation equation, people with higher incomes appeared to be more likely to make donations to all five types of nonprofit organizations. While the tax price of a donation was negative and statistically significant for academic, medical, and political contributions, the coefficient of tax price for charitable donations was statistically not significant to explain the donors' participation decisions. In particular,

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[9] Assets are often considered to be important determinant factors in the studies on donor behavior. However, the data set (1999 SSDT in Taiwan) used in my paper does not provide information (or proxies) about the respondents' assets. Theoretically, individuals with more assets will have higher financial abilities to make contributions, and the effect of assets on donations certainly deserves some attention. Unfortunately, the data set used in my paper limits the attempt to examine the effect of assets on individuals' contributions to nonprofit organizations.

TABLE VII

DETERMINANTS OF DONATIONS USING THE TOBIT MODEL WITH SAMPLE SELECTION

	Lcharity		Lacadem		Lmedical		Lrelig		Lpolit		Ltotal	
	Participation	Expenditure	Participation	Expenditure	Participation	Expenditure	Participation	Expenditure	Participation	Expenditure	Participation	Expenditure
Constant	-4.70* (0.18)	4.96* (0.49)	-7.08* (0.36)	7.20* (2.38)	-6.06* (0.36)	8.54* (2.81)	-2.24* (0.17)	4.88* (0.34)	-6.31* (0.39)	6.87* (2.22)	-3.85* (0.18)	4.89* (0.30)
Pop15	-0.030* (0.005)	-0.00054 (0.0115)	-0.030* (0.012)	-0.0225 (0.0553)	-0.007 (0.010)	-0.003 (0.04)	-0.023* (0.005)	-0.0095 (0.0096)	-0.010 (0.012)	-0.048 (0.051)	-0.030* (0.005)	-0.010 (0.008)
Gender	-0.181* (0.019)	-0.118 (0.044)	-0.021 (0.042)	0.334 (0.182)	-0.301* (0.040)	0.272 (0.190)	-0.114* (0.018)	0.0028 (0.0368)	0.235* (0.049)	-0.161 (0.221)	-0.204* (0.018)	0.051 (0.032)
Age	0.003* (0.001)	0.012* (0.002)	0.008* (0.002)	0.005 (0.010)	0.002 (0.002)	0.006 (0.008)	0.011* (0.0008)	0.010* (0.001)	0.014* (0.002)	-0.0018 (0.0085)	0.0114* (0.0008)	0.011* (0.0014)
Married	0.213* (0.023)	0.043 (0.057)	0.272* (0.057)	0.447 (0.321)	0.095 (0.050)	0.185 (0.219)	0.38* (0.025)	-0.153* (0.055)	0.035 (0.058)	0.537* (0.256)	0.367* (0.022)	-0.061 (0.044)
School	0.037* (0.003)	0.012* (0.006)	0.062* (0.006)	0.009 (0.029)	0.061* (0.006)	0.012 (0.028)	-0.011* (0.002)	0.034* (0.0047)	0.029* (0.006)	-0.0029 (0.0294)	0.017* (0.003)	0.027* (0.004)
Ly	0.257* (0.016)	0.181* (0.036)	0.238* (0.034)	0.069 (0.147)	0.212* (0.035)	0.095 (0.162)	0.086* (0.015)	0.198* (0.027)	0.187* (0.037)	0.254 (0.152)	0.197* (0.015)	0.195* (0.024)
Lprice	0.106 (0.597)	-4.997* (0.956)	-1.63* (0.805)	-3.367 (2.812)	-1.849* (0.869)	-1.385 (2.751)	2.024* (0.588)	-6.319* (0.921)	-1.835* (0.899)	-1.862 (3.334)	-0.870 (0.706)	-5.252* (0.775)
Owner	0.022 (0.028)	0.090 (0.064)	0.212* (0.073)	0.023 (0.318)	0.102 (0.065)	-0.227 (0.279)	0.131* (0.027)	-0.131* (0.057)	-0.0019 (0.066)	0.181 (0.303)	0.121* (0.027)	-0.061 (0.048)
Employed	-0.013 (0.028)		0.091 (0.071)		-0.003 (0.070)		0.067* (0.026)		0.122 (0.073)		0.045 (0.025)	
Volunt	0.684* (0.023)		0.663* (0.038)		0.407* (0.041)		0.732* (0.023)		0.736* (0.040)		0.980* (0.030)	
ρ		-0.583* (0.040)		-0.406* (0.161)		-0.725* (0.127)		-0.662* (0.027)		-0.600* (0.109)		-0.684* (0.019)
Log-likelihood	-15,687.57		-1,963.44		-1,772.57		-19,972.97		-1,642.10		-26,372.78	

Note: Standard errors are given in parentheses.
* represents statistical significance at the 5 percent level.

for religious donations, the coefficient of tax price was positively significant, implying that people with a lower marginal income tax rate were more likely to make religious donations. This finding was more conspicuous when the coefficient of schooling was examined. The estimated coefficients of schooling indicated that more educated people were more likely to make donations to all types of nonprofit organizations except for the religious groups. Conversely, for religious donations, the coefficient of schooling was negatively significant, indicating that less educated people were more likely to make religious donations. Regarding the effect from gender difference, male individuals were less likely to make charitable, medical, and religious donations than female individuals, whereas male individuals were more likely to make contributions to political groups. Moreover, older people appeared to be more likely to make donations to charitable, academic, religious, and political organizations. Surprisingly, no evidence indicated that older individuals were more likely to make donations to medical institutions. The results also showed that employed individuals were more willing to contribute to religious organizations, and people who provided volunteer work were more willing to make monetary donations for all types of nonprofit organizations.

The estimates of the expenditure equation using the tobit model with sample selection are also presented in Table VII. The most striking result is that the coefficients of income and tax price were statistically significant only for the charitable, religious, and total donations. Consequently, even though the income level can explain people's decision on whether to make any donation to academic, medical, and political organizations, the decision on how much to donate to these organizations may not be affected by the income level. In contrast, donors' income levels affected the decisions not only on whether to make donations to charitable and religious organizations, but also on how much to donate to these organizations. The coefficients of income level for charitable and religious donations were 0.181 and 0.198, respectively. Moreover, the tax price was not significant for explaining whether people would make donations to charitable organizations, but once they made charitable donations, a higher tax price led to a lower amount of donations with a coefficient of −4.997. For religious donations, people with a higher tax price were more likely to make donations, but a higher tax price also led to a lower amount of religious donations with a coefficient of −6.319.

For the years of schooling, more educated people tended to make higher amounts of donations to charitable and religious organizations, but not to academic, medical, and political groups. In particular, even people with more years of schooling appeared to be less likely to make religious donations, but, on the other hand, when they made this type of donation, a higher amount was donated. Married individuals made a lower amount of religious donations than unmarried individuals, but a higher amount of political donations. Older individuals contributed more to charitable and religious organizations than younger individuals, and the difference in gender did

not exert a significant effect on the amount of donations. The coefficients of household size appeared to be low and not significant for all types of donations. Homeowners were more likely to make donations to academic and religious organizations, whereas they tended to make a lower amount of religious donations than non-homeowners.

Compared with the results from the standard tobit model reported in Table VI, the coefficients of income level for charitable and religious donations in the expenditure equations from the tobit model with sample selection in Table VII were also both positive and significant. Nevertheless, the magnitude of the income coefficients was relatively higher from the sample selection model. Conversely, the coefficients of tax price were relatively lower from the sample selection model, and in particular, the coefficient of tax price for religious donations became negatively significant, suggesting the existence of a substantial difference in the results between these two model specifications. After separation of the participation and expenditure decisions, the tax price of a donation was significant in both decisions for religious donations. In other words, while individuals with a higher tax price (a lower marginal tax rate) were more likely to contribute to religious organizations, they donated a smaller amount than individuals with a lower tax price (a higher marginal tax rate). Unlike the results from the standard tobit model, the coefficients of tax price for academic, medical, and political donations were not significant in the expenditure equation from the sample selection model.

The tendency that individuals with a longer period of schooling donated more money to academic, medical, and political organizations found in the standard tobit model could not be supported by the results from the sample selection model. For other demographic characteristics such as marital status, age, gender, household size, and home ownership, the results from the standard tobit model and the sample selection model also appeared to be considerably different. In general, stronger effects of income and weaker effects of tax price on donations were found in the sample selection model. However, the stronger income effects tended to significantly influence the participation decision on whether to donate or not, instead of the levels of donations. On the other hand, the weaker price effects appeared to significantly determine the levels of donations only to the charitable and religious organizations. The effects of demographic characteristics tended to be significant only on the participation decision, but not on the expenditure decision. For charitable and religious donations, however, the effects of most demographic characteristics appeared to be significant on both participation and expenditure decisions.

Regarding the motives for making donations, it was suggested in previous studies that donations made to religious, academic, and medical organizations were partly motivated by the benefits from using the services provided by the donees. Based on the results from the sample selection model in the present study, there were a few noticeable indications. First, for charitable donations, which stem more

from altruistic concerns, the effect of the tax price was not significant for explaining the decision on whether individuals made any donation or not, while a lower tax price led to a higher amount of donation. Second, while religious donations were more related to benefits from using the services provided by the donees, the tax price was both significant for explaining the decision on whether to donate or not and the decision on how much to donate. Third, the likelihood of making religious donations was also positively related to the tax price of donations. The fact that for individuals with higher incomes, marginal income tax rates are higher and tax prices of donations are lower, suggests that individuals with lower incomes were more likely to make religious donations or were more likely to benefit from the goods and services provided by the religious organizations. Fourth, the effects of income on academic, medical, and political donations were significant only on the participation decision, but not on the expenditure decision. This tended to be apparently distinct from the effect of income on charitable and religious donations.

If donors were motivated by the expected benefits from their participation in the activities provided by the academic, medical, and political organizations, then the results suggest that the amount of donations made to these organizations would not be significantly affected by the level of income. There is no strong evidence to indicate whether the goods and services provided by these organizations were normal or inferior goods. By contrast, even with the positively significant coefficients of income in the expenditure function, the effects of income on charitable and religious donations were not substantial, with values of only 0.181 and 0.198, respectively for the coefficients. This appears to indicate that even though charitable and religious donations are normal goods, increase in income may not lead to a considerable increase in the amounts of donations.

Table VIII depicts the income and price elasticities of donations made to different nonprofit organizations, based on the results from the tobit model with sample selection.[10] Overall, the values of income elasticity ranged between 0.203 and 0.428, and they were very similar to those reported in previous studies (Steinberg 1990; Brooks 2002). With the inelastic income elasticities, it is likely that the country's income growth generally does not exert a strong impact on the donations to non-

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[10] Since the income and tax price variables are expressed in logarithms in the estimation, the marginal effects of the variables will correspond to their elasticities. The marginal effect of an explanatory variable in the sample selection model used in the present study consists of two components. The first component is the direct effect of the explanatory variable on the dependent variable, and the second component is the explanatory variable's influence on the probability of participation (the dependent variable in the participation equation) through its presence in the inverse Mills ratio. In the model used in the present study, $d_i = \beta x_i + \varepsilon_i$ if $z^* = \alpha z_i + \mu_i > 0$, and $d_i = 0$ otherwise, the marginal effect of x_i can be derived as $\dfrac{\partial E(d_i | x_i, z^* = 1)}{\partial x_i} = \beta + \theta(-\lambda_i \alpha' x_i - \lambda_i^2)\alpha$, where $\theta = \rho \lambda_i$ and $\lambda_i = \phi(\alpha' z_i) / \Phi(\alpha' z_i)$. A mathematical detailed analysis can be found in the report of Greene (2000).

TABLE VIII

ESTIMATED ELASTICITIES OF DONATIONS FROM SAMPLE SELECTION MODEL

	Charities	Academic Organizations	Medical Institutions	Religious Groups	Political Groups	Total Donations
Income elasticity	0.378	0.203	0.321	0.276	0.428	0.384
Price elasticity	−4.916	−4.279	−3.361	−4.469	−3.567	−6.086

profit organizations. Only a severe income recession will lead to considerable difficulties in the finances of nonprofit organizations.

The values of the price elasticities calculated with the estimates of the sample selection model ranged between −3.361 and −4.916 for five different types of donations, while the charitable donations were the most price-elastic. Among them, the price elasticity for medical donations showed the lowest value of −3.361, followed by that for political donations, namely, −3.567. The price elasticities for academic, religious, and charitable donations all displayed an absolute value higher than 4. In general, the tax deductions to lower the tax price of a donation were effective in raising the amounts of donations made to these five different types of nonprofit organizations. This tends to suggest that even though charitable donations are mostly motivated by altruistic concerns, favorable tax treatments with deductions are acting as stimulants for individual donors. The effects of lowering the tax price are likely to be slightly more effective for increasing charitable and religious donations than for increasing other types of donations.

IV. CONCLUDING REMARKS

Donations to nonprofit organizations have received considerable attention in the economic literature, with emphasis placed on the effects of income and tax price of donations. Nevertheless, in most empirical studies, emphasis was placed on the United States and other developed countries, and studies on developing and newly industrialized economies have remained relatively inadequate over the past decades. The objective of the present paper was to fill this gap by examining the determinants of donations to five different types of nonprofit organizations, based on the data from the SSDT in Taiwan. Since the present study was considered to be the first empirical study in which donations made to different types of nonprofit organizations in Taiwan were being distinguished, the results from this study provide a comparison with previous studies from the literature using data of the United States, other developed countries, and transition economies. Moreover, the differences in the motivations among charitable, academic, medical, religious, and political donations were also investigated through the differences in the estimates of income, tax price, as well as other demographic variables.

Two different model specifications, the standard tobit model and the tobit model with sample selection, were used in the estimation. By separating the participation and expenditure decisions, the results from the tobit model with sample selection appeared to offer some distinctive features for different types of donations. First, the effect of income on the level of donations was found to be positively significant only for charitable and religious donations, but not for other types of donations. Even though the average amounts of donations to charitable and to religious organizations were not particularly higher than those made to other nonprofit organizations, the highest percentages of donors made these two types of donations. Thus, with the development of the economy in the country, it is likely that charitable and religious donations will also increase substantially, compared with other types of donations. Despite the increase in income leading to a higher probability that donations will be made to academic, medical, and political organizations, the levels of donations to these organizations will not be significantly affected by the change in income. Second, raising the tax price of a donation will increase the probability of making a donation to religious organizations, but will decrease those to academic, medical, and political organizations. However, the change in the tax price did not affect appreciably the probability of making donations to charitable organizations. In addition, lowering the tax price raised the level of contributions only for charitable and religious donations, while the effect of the tax price on the amount of donations to other nonprofit organizations was not significant. Third, the effects of most demographic variables were significant in the participation decision for all types of donations. Moreover, for charitable and religious donations, the effects of most demographic variables on the level of donation were also significant. For charitable donations stemming more from altruistic concerns, the effects of income and tax price were relatively more pronounced than those for other types of donations. As argued in some earlier studies, contributions motivated by altruistic intentions may be associated with relatively higher income and price effects that qualify as luxury goods. The results from this study also suggest that a similar pattern may prevail in Taiwan.

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