

THE SUSTAINABILITY OF CHARITABLE ORGANISATIONS

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ABSTRACT

Many charitable organisations do not produce commercially viable outputs and, consequently, rely heavily on private donations. As they operate in an increasingly competitive environment for donations and grants, organisational sustainability is increasingly a critical issue.

Empirical results explaining levels of private donations to individual charities are presented and are consistent with a Cournot oligopolistic structure in the competition for private donations. Thus, the level of donations increases with an organisation's level of fundraising expenditure, but the effect of inter-charity competition for grants reduces individual levels. Other influences on donations are volunteer numbers, government grants and organisational size and administrative expenditure.

Keywords: Non-profit; Cournot theory, organisational sustainability; public goods; private goods; provision; replacing government; volunteers.

INTRODUCTION

This paper represents part of a wider study and focuses on one economic model to gain some insight into the sustainability of charitable organisations which depend to varying degrees on public fundraising.

There are three main elements involved in corporate suitability including the economic, environment and social aspects which are known as a triple-bottom line (Elikington 1997). For charitable and philanthropic organisations, sustainability can be defined as how to ensure their continuity of services to community (Weerawandena, McDonald & Sullivan 2010). The many recent global humanitarian crises have attracted greater attention to the charitable sector. An increasing number of charitable organisations are, therefore, seeking donations from a broader section of the community (Salamon, Hems & Chinnock 2000).

The major problem of sustainability for most charities and philanthropic organisations is that they do not produce commercial outputs. Those charitable organisations that do produce a saleable commodity (e.g. sports clubs, stock exchanges, insurance clubs and community banks), frequently convert to for-profit organisations. Those that cannot or do not produce saleable commodities nevertheless provide vital services such as disaster, family welfare and counselling, and emergency relief (Chetkovich & Frumkin 2003). They provide both public and private goods that caring societies desire, but have difficulties in sustaining themselves. Charitable organisations may rely heavily on donations and carry out fundraising as a source of income. They operate in an increasingly competitive context where being sustainable has emerged

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as a critical issue (Chetkovich & Frumkin 2003). However, sustainability studies are virtually absent in the charitable sector (excluding governments) (Weerawandena et al. 2010). It is believed that this is either the first or one of the first studies of economic sustainability of charitable organisations.

This issue is further compounded by the existence of competition for funds among charities operating in the same areas. It is argued that competition for funds diminishes sustainability (Weerawandena et al. 2010). This article, therefore, attempts to investigate research questions of what effect fundraising activities have on competition of charitable organisations for donations, using the data from samples of Australian charitable organisations. In view of both the growth and the significance of the charity sector, there is a need to understand the role of competition between charitable organisations (Parsons 2003), using empirical models of this competition.

THEORETICAL FRAMEWORK

Recent research has found that market competition for donations is a primary instrument for charitable organisation to achieve more disciplined operations. (Glaeser 2003; Thornton & Belski 2009). Yet, it is not clear how donor markets might be influenced by variation in organisational efficiency. Employing the modified Cournot theory of oligopolistic competition markets, this study attempts to construct theoretically and empirical models.

Donors value the services of charitable organisations and so wish to provide donations. But in reality, charitable organisations usually have preferences about administrative expenses and costs of program services. If we assume an organisation is a purely altruistic charitable organisation, it will only be interested in maximising the utility for recipients (Roberts 1984). However, charitable organisations consist of incompletely altruistic individuals (members, employees and donors). Therefore, each charitable organisation may have different preferences for allocations to administrative expenses and program services. These preferences, as shown in financial accounts, may influence donations (Andreoni & Petrie 2004; Gordon & Khumawala 1999).

Consider charitable organisations in a market with N organisations. Assume the number and size of charitable organisations serves as the index of the degree of competition, and as the number of charitable organisations increases, the market is considered more competitive. Each charitable organisation produces a service to recipients (P) which is valued by potential donors. Thus, the charitable organisations compete for donations via: (i) fundraising expenditures and (ii) the level of donations going to recipients. Fundraising expenditures are assumed to either inform, induce or enhance the utility donors obtain from the output of the charitable organisation. Of course, increased fundraising expenditures reduce the resources available for program services.

Donations are used to cover expenditures on program services (PE), administration costs (AC), fundraising expenditure (F), and other expenditures (OE). Each charitable organisation operates under the non-distribution of surplus constraint as follows

$$PE + AC + F + OE = D \quad (1)$$

Donors derive utility from the services (P_i) of the charitable organisations. However, the utility derived from the services of a particular charitable organisation may increase with fundraising expenditures. Thus, if fundraising expenditures enhance the services of the charitable organisation or provide other services to donors, then fundraising expenditures impact directly upon the utility function of donors. However, if fundraising expenditure is treated as being for the purpose of advertising, providing information about the existence and nature of the organisation, they do not enter directly into the utility function of donors. It is assumed that the services provided to recipients are identical for all charitable organisations in a given group, so that the non-differentiated product oligopoly model is appropriate.

Competition period: In a given time period, the charitable organisations choose the portion of donations (F_i) for fundraising expenditures to raise total donations. Donations period: Then, the donors observe the choices of the Charitable Organisations and choose an allocation of donations (D_1, \dots, D_N). Ratio of competitors: Assuming the CO's fundraising activities/expenditure has an effect on donations, then its donations may be affected by competitors' fundraising activities/expenditures or the fraction of its fundraising expenditures to total competitors' fundraising expenditures. Relative size effect: Charitable organisations' size/age are considered as a stock of quality of charitable organisations. Grouping: Charitable organisations compete with similar service providers of charitable organisations, or charitable organisations in the same location area (grouping allocation).

Consider two charities competing for donations as well as each output to recipients:

$$(R_i, R_j), \text{ and } R_i = F(R_j) \text{ and } R_j = G(R_i).$$

where: i = charitable organisation i ; j = competing charitable organisation j ;
 R = output to recipient; F and G = function.

The characteristics of these charities may be considered as either:

- (i) Cooperating with each other as a monopoly. The optimum of utility MaxUR is where F is optimum $F = F_i + F_j$;
- (ii) Competing with each other, which shows two charities as duopoly organisations.

We assume that charitable organisation i 's total donation is affected by its own fundraising expenditures at competition period and donation period, when fundraising activities are taking place; and competitors' fundraising activities and ratio of competitors' fundraising expenditures on its own fundraising expenditure are also influenced at the same time. However, as discussed above, the charitable organisation i 's size (fixed assets), age, volunteers, administration costs, government grants and the relative effect of competitors' size on its own size may have an effect on the previous period. Consistent with previous studies, a log-log form of the model is used (Jacobs & Marudas 2009).

The parameter estimates from testing a log-log model are interpreted as elasticities; i.e., the percentage change in the dependent variable associated with a one percent change in the independent variable. The initial empirical model tested was Model 1:

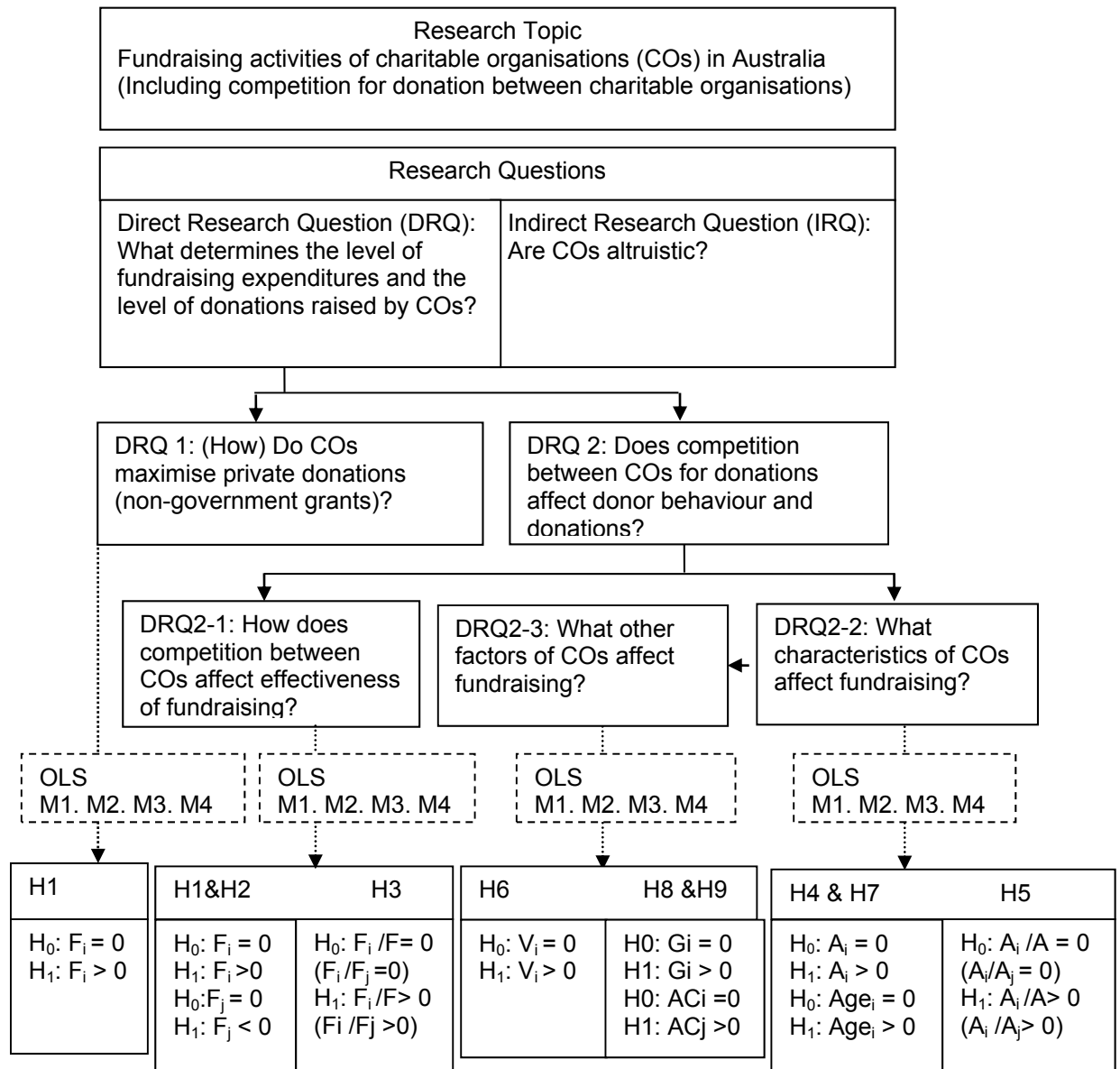
$$\ln D_{it} = \beta_0 + \beta_1 \ln F_{it} + \beta_2 \ln F_{jt} + \beta_3 (\ln F_{it} / \sum \ln F_{jt}) + \beta_4 \ln A_{it-1} + \beta_5 (\ln A_{it-1} / \sum \ln A_{jt-1}) + \beta_6 \ln V_{it} + \beta_7 \ln \text{Age}_i + \varepsilon \quad (\text{Model 1})$$

where: i = a charitable organisation; j = competing charitable organisations; t = the year; D = donations; F = fundraising expenditures; F_i / F_j = the ratio of F_i to F_j ; A = fixed assets; A_i / A_j = the ratio of A_i to A_j ; V = the number of volunteers; Age = organisational age; and ε = the error term.

The dependent variable is total private donations. The major independent variable of interest is F , fundraising expenditures, as the more a charitable organisation spends on fundraising activities, the more donations the charitable organisation should receive. Also of major interest is A , fixed assets at the end of the year. This can be a measure of organisational wealth and that the wealthier an organisation is the less it needs additional donations, suggesting a negative relation between years of assets and donations (Marudas & Jacobs 2004).

Figure 1 presents the summary of research questions, testable hypotheses and empirical models.

Figure 1: Research topics, questions, hypotheses and models of the research



where: M = ordinary least squared (OLS) model (M1-4) for hypotheses (H) 1-9 testing;
 i = charitable organisation (CO) i; j = competitor CO to CO i;
 F = fundraising expenditures; A = fixed assets (a proxy of size);
 Age = number of years since the CO i was formally created (operational age);
 V = number of persons per year working as volunteers;
 G = government subsidies/grants; AC = Administrative costs

METHODOLOGY

The formation of each modified model is explained.

Creating a family of models

All of the models in this section are modifications of Model 1. As shown in Figure 2, a *family of empirical models*, in the first row there are four models, Model 1 to 4. Models 2 to 4 are modified from Model 1. For example, a modification for Model 2 is created by including an additional variable, Government Grants (G), on Model 1. A modification for Model 3 is created by including an additional variable, Administrative Costs (AC), on Model 1. Model 4 is created by excluding a variable, Organisational Age (Age) and including an additional variable, Government Grants (G).

Each Model 1 to 4 is divided into three major family or two minor family models. Major family models, 1 to 4 consist of a combination of lagged and unlagged independent variables, whereas minor family models, 1 to 4 are formed by either lagged independent variables only (Minor Family 1) or unlagged independent variables only (Minor Family 2). Major family models are labelled as Models 1 to 4. Minor family models employ either lagged independent variables only (minor family 1) or unlagged independent variables only (minor family 2, labelled as U). Models of minor family 1 are labelled L for sub-division of Models 1 to 4 (i.e. Model 1_L), whereas models of minor family 2 are labelled U for sub-division of Models 1 to 4 (i.e. Model 1_U).

Furthermore, major or minor models are each divided into two groups in relation to calculation of the ratio, either using denominator as total value of competing charities or the value of competing charities j . Figure 2 presents a family of empirical models, in the third row there are the first and the second box (1 or 2. 3 or 4, 5 or 6). Each of the first family models in the first boxes (1, 3 or 5) in the third row use the total value of all competing charities as the denominator in the calculation of the ratios (i.e., $\ln F_i / \sum \ln F$ or $\ln A_i / \sum \ln A$), whereas the second family models in the second boxes (2, 4 and 6) use the value of competing charity j as the denominator in the calculation of the ratios (i.e., $\ln F_i / \sum \ln F_j$ or $\ln A_i / \sum \ln A_j$). The latter models are labelled j as an addition of sub-modified Models 1 to 4 (i.e., Model 1_J or Model 1_LJ or Model 1_UJ). The amounts of competing charities j are calculated from the total value of competing charities minus the amount of charity i ($\sum \ln F_j = \sum \ln F - \ln F_i$ and $\sum \ln A_j = \sum \ln A - \ln A_i$).

DATA AND SAMPLE SELECTION

This study uses, as its sample data, the financial and non-financial variables obtained from the annual reports of 44 charitable organisations, which operated in Australia for the eight financial years from 2001 to 2008.

The choice of the eight year time period provides scope for the inclusion of data that is both representative and avoids distortion. With respect to the eight year time period selected from 2001, the Australian Government has required Australian charitable organisations to disclose their annual reports since that date. This allows this study to employ full data sets from 2001. The charitable organisations were selected from the

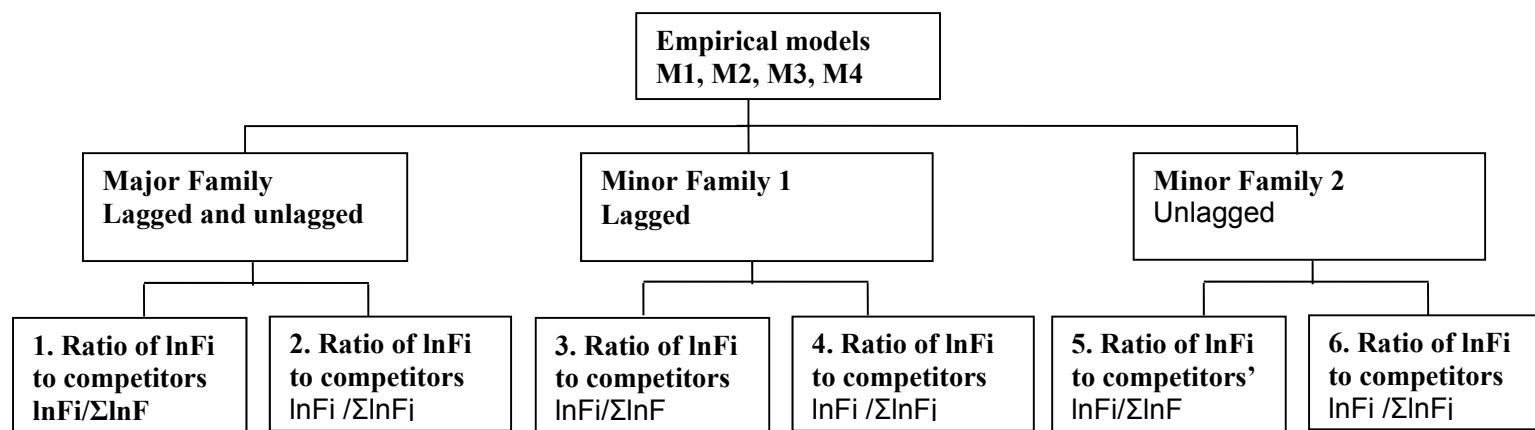
Business Review Weekly's (BRW) 'Top 200 Charitable Organisations' list, as at July 2006 (BRW 2006)¹.

Descriptive statistics on data were examined, followed by a correlation matrix which discloses the general factorability (Tabachnick & Fidell 2001). Second, the data are checked for normal distribution. If the variables are normally distributed, the solution is enhanced (Tabachnick & Fidell 2001). However, the logarithm transformation for variables is to reduce the impact of outliers but it is necessary to check whether the variable gives a normal or near-normal distribution after the transformation of the data (Tabachnick & Fidell 2001,p.81). Thirdly, the outliers in the variables act as an influence on the factor solution. Univariate outliers are examined using the scatter plot and the histogram graphically, or testing from a standardised score of z scores on one or more variables, to see if it is in excess of 3.29 ($p < 0.001$, two-tailed test) (Tabachnick & Fidell 2001). If outliers are detected, the data is eliminated after checking the accuracy of the data entry. In addition, the Mahalanobis Distance (MD) measurement is used to determine the outliers (Gujarati 1995).

Finally, heteroscedasticity is tested using the 'Newey-West test' (1987, 1994). In regression analysis, the variance of the dependent variable is assumed to be the equal variance across the data (homogeneity of variance) (Tabachnick & Fidell 2001). The results of the "White test" are evaluated for the null hypothesis of heteroscedasticity in the residuals with F-statistic in p-value. This 'Newey-West test' also allows the results of heteroscedasticity to be adjusted using the weighted least squares (Norusis 1993).

¹ A list of the organisations is available from the principal author.

Figure 2: A family of empirical models



M1:	$\ln D_{it} = \beta_0 + \beta_1 \ln F_{it} + \beta_2 \ln F_{jt} + \beta_3 \frac{\ln F_{it}}{\Sigma \ln F_t} + \beta_4 \ln A_{it-1} + \beta_5 \frac{\ln A_{it-1}}{\Sigma \ln A_{t-1}} + \beta_6 \ln V_{it-1} + \beta_7 \ln Age_{it-1} + \varepsilon$
M2:	$\ln D_{it} = \beta_0 + \beta_1 \ln F_{it} + \beta_2 \ln F_{jt} + \beta_3 \frac{\ln F_{it}}{\Sigma \ln F_t} + \beta_4 \ln A_{it-1} + \beta_5 \frac{\ln A_{it-1}}{\Sigma \ln A_{t-1}} + \beta_6 \ln V_{it-1} + \beta_7 \ln Age_{it-1} + \beta_8 \ln G_{it-1} + \varepsilon$
M3:	$\ln D_{it} = \beta_0 + \beta_1 \ln F_{it} + \beta_2 \ln F_{jt} + \beta_3 \frac{\ln F_{it}}{\Sigma \ln F_t} + \beta_4 \ln A_{it-1} + \beta_5 \frac{\ln A_{it-1}}{\Sigma \ln A_{t-1}} + \beta_6 \ln V_{it-1} + \beta_7 \ln Age_{it-1} + \beta_8 \ln AC_{it-1} + \varepsilon$
M4:	$\ln D_{it} = \beta_0 + \beta_1 \ln F_{it} + \beta_2 \ln F_{jt} + \beta_3 \frac{\ln F_{it}}{\Sigma \ln F_t} + \beta_4 \ln A_{it-1} + \beta_5 \frac{\ln A_{it-1}}{\Sigma \ln A_{t-1}} + \beta_6 \ln V_{it-1} + \beta_7 \ln G_{it-1} + \varepsilon$

Note: M1, M2, M3, M4 are family models. M1 is basic model and M2, M3 and M4 are constructed from M1. M2 contains an additional variable to M1, Government Grants, G. M3 contains an additional variable, Administrative Costs, AC. M4 has an additional variable G, but not Age. Major family models use combining lagged and unlagged values for independent variables [fundraising expenditure related variables are unlagged (lnFi, lnFj and lnFi/lnF) and others are lagged]. Minor family models are either all lagged (L) (minor family 1) or unlagged (U) (minor family 2) for independent variables. The ratios to competitors are employed in two ways to compute competitors: 1. all competitors, F (or A); or 2. competing charities J (Fj or Aj), computed from all competitors minus i, (Fj=F–Fi or Aj = A–Ai).

Dependent and Independent Variables

OLS regression analyses are conducted using the natural logarithm on total donations as the dependent variable ($\ln D_{it}$). Based upon theoretical and empirical modelling, the following variables are included as independent variables in the models and they are all transformed to a logarithm and are employed in these previous studies: Fundraising expenditures (F) (Gordon & Khumawala 1999; Tinkelman 2004; Weisbrod & Dominquez 1986); Administration Costs (AC) (Castaneda, Garen & Thornton 2007); Fixed Assets (A) (Rose-Ackerman 1996; Tinkelman 1999, 2002); Organisational age (Age) ((Khanna & Sandler 2000; Parsons & Trussel 2003; 2008; Posnett & Sandler 1989; Tinkelman 1999; Weisbrod & Dominquez 1986); The number of volunteers (V): (Bekkers & Graaf 2005; Callen 1994; Gidron 1983; Gittell & Tebaldi 2006; Smith 1983; Unger 1991); and Government grants (G): Charitable organisations compete for receiving government subsidies (Marcuello & Salas 2001). Some previous studies find that government grants encourage private donors to donate more (Andreoni 1990; Khanna & Sandler 2000; Kingma 1989; Payne 1998; Roberts 1984; Warr 1982) and others have found that government subsidies discourage private giving (Kingma 1989; Payne 1998; Roberts 1984; Warr 1982), or that any increased government assistance can partially reduce private donations (Schokkaert & Ootegem 1998).

Table 1: Research variables and summary definitions

Variables	Definitions
$\ln D_i$	The natural logarithm of private donations (current dollars) to charitable organisation (CO) i
$\ln F_i$	The natural logarithm of fundraising expenditures of COi
$\ln F_j$	The natural logarithm of fundraising expenditures of COi's competitor COj, (Total fundraising expenditures in a group (F) – Fi). This value will vary between groups.
$\ln F_i / \sum \ln F$	The natural logarithm of ratio Fi to all competitors' F. This value will vary between groups.
$\ln F_i / \ln F_j$	The natural logarithm of ratio Fi to competitors' Fj, (alternative ratio to $\ln F_i / \sum \ln F$). This value will vary between groups.
$\ln A_i$	The natural logarithm of fixed assets of COi; used a proxy for the size and wealth of CO.
$\ln A_i / \sum \ln A$	The natural logarithm of ratio Ai to all competitors 'A. This value will vary between groups.
$\ln A_i / \ln A_j$	The natural logarithm of ratio Ai to competitor's Aj (alternative ratio to $\ln A_i / \sum \ln A$). This value will vary between groups.
$\ln V_i$	The natural logarithm of number of persons per year working as volunteers for COi.
$\ln Age_i$	The natural logarithm of number of years since the COi was formally created (operational age).
$\ln G_i$	The natural logarithm of government subsidies/grants to COi.
$\ln AC_i$	The natural logarithm of administrative costs of COi.

NOTE: All variables are represented in number or monetary value for a financial year.

One major difference between the present study and the most similar of previous studies (Castaneda et al. 2007; Posnett & Sandler 1989) is that they employed the fundraising competition index variables. Such aggregation would be fatal to the present study, since it would render meaningless the competition variables, which should vary between like

charity groups. The competition variables are competitors' fundraising expenditure, F_j , and the ratio of fundraising expenditures to all competitors, F_i/F or F_i/F_j and ratio of organisational size to all competitors' size. The difference between F_i/F and F_i/F_j , or A_i/A and A_i/A_j is whether the denominator value includes the value of the charitable organisation in the former (F_i/F and A_i/A) or excludes it in the latter (F_i/F_j and A_i/A_j). These values are not different from each other when the group is large, but when the group is small, their differences would be large and so would affect results. The reason for using different denominators is to determine whether the empirical results are sensitive to the formulation used. Table 1 presents research variables and summary definitions.

THE RESULTS OF A FAMILY OF EMPIRICAL MODELLING FOR AUSTRALIAN DATA

Competitive models in the OLS regression with allocation of charitable organisations into similar industry group. The purpose of the grouping is to allow competition effects from competitor charities, different organisations with similar missions and objectives. The sample of charitable organisations is formed into eight groups. These are: All — all organisations combined for comparative purposes ($n = 352$); Welfare ($n = 119$); Humanitarian ($n = 42$); Global ($n = 35$); Disability ($n = 84$); Animal ($n = 21$); Science (and Culture) ($n = 28$); and Rural ($n = 49$).

The family of competition model 1

This paper concentrates on the results of research using Model 1 which combines lagged and unlagged independent variables as determining donation. As discussed earlier, fundraising expenditures are the cost for fundraising activities for raising donations, therefore fundraising expenditures are expected to have a direct effect on current collection of donations. Other independent variables take longer to have an effect on the current donation, so Model 1 employs fundraising expenditures of the current year whereas other independent variables use information from the previous year.

Estimation results for each industry group and the coefficients of independent variables for each industry group are presented. These results indicate several points: (1) the sample of Australian charitable organisations is successfully allocated in an appropriate group; (2) the competition models fit well with the groups of charitable organisations; (3) most variables in the competition models one are related to total donations; and (4) charitable organisations compete within the same group of organisation. The structural form of the regression analysis is consistent with a Cournot type model of oligopolistic competition.

In Table 2, $\ln F_i$ is shown as positive elasticity in most of the groups, as expected, except Rural. Thus, the coefficients of fundraising expenditures in all groups are the range between -0.010 and 10.016. $\ln F_i$ shows significantly positive correlation in the Global, Disability and Science groups. Hypothesis 1 is tested as follows: $H_0: F_i \leq 0$; and $H_1: F_i > 0$. The Null Hypothesis is rejected in most groups; All, Welfare, Humanitarian, Global, Disability, Animal and Science groups, while the Null Hypothesis is not rejected in the Rural group. The coefficients for $\ln F_j$ are significantly negative in the Global, Disability and Science groups, as expected, while they are positive and significant in the Humanitarian industry, and positive but insignificant in the All, Welfare, Animal and Rural groups, and the ranges are between -6.094 and 0.607.

Hypothesis 2 is tested as: $H_0: F_j \geq 0$ and $H_1: F_j < 0$. The Null Hypothesis is rejected in Global, Disability and Science groups, while the Null Hypothesis is not rejected in the All, Welfare, Humanitarian, Animal and Rural groups. The regression coefficient on the ratio of $\ln F_i$ to all competitors, $\ln F_i / \sum \ln F$, has mixed results, with significantly positive elasticities in All, but insignificant but positive elasticities in the Humanitarian and Animal. Those of the Global, Disability and Science groups are negative but significant, but show negative and insignificant elasticities in the Welfare and Rural groups. Hypothesis 3 is tested as: Hypothesis 3: $H_0: F_i / F \leq 0$ and $H_1: F_i / F > 0$. The Null Hypothesis is rejected the All, Humanitarian and Animal groups, whereas the Null Hypothesis is not rejected in the Welfare, Global, Disability, Science and Rural groups.

These results indicate that fundraising expenditures have a positive impact on the level of total donation in most of groups except in the Rural group. The competitors' fundraising activities impact on donors in the Global, Disability and Science groups to donate to competitors by reducing donations to the original organisations. However, they increased the level of donations in the Welfare, Humanitarian, Animal and Rural groups. Thus, competitors' fundraising activities may influence donors to increase overall support for their own preferred charitable causes especially in the Welfare, Humanitarian, Animal and Rural groups.

The coefficient on size ($\ln A_i$) is shown to be positive and significant in the Disability group, and positive but insignificant in the Welfare, Animal, and Science groups as expected, whereas the coefficients in the All, Humanitarian, Global and Rural groups are obtained otherwise. Hypothesis 4 is tested as: $H_0: A_i \leq 0$ and $H_1: A_i > 0$: The Null Hypothesis is rejected in the Welfare, Disability, Animal, and Science groups, while the Null Hypothesis is not rejected in the All, Humanitarian, Global and Rural groups. The coefficient on the ratio of size to competitors' size is positive in the All, Humanitarian, Global, Science and Rural groups, while those in the Disability and Animal groups is negative but significant, and negative and insignificant in the Welfare group. Hypothesis 5 is tested as: $H_0: A_i / A \leq 0$ and $H_1: A_i / A > 0$. The Null Hypothesis is rejected in the All, Humanitarian, Global, Science and Rural groups, whereas the Null Hypothesis is not rejected in the Welfare, Disability and Animal groups. The above results indicate that the size of charitable organisations has a positive impact and encourages donors to donate more in the groups of Welfare, Animal and Disability.

Table 2: OLS Estimation for a Family of Model 1

$$\ln Dt = \beta_0 + \beta_1 \ln Ft + \beta_2 \ln Fjt + \beta_3 (\ln Fi / \Sigma \ln Ft) + \beta_4 \ln Ait-1 + \beta_5 (\ln Ait-1 / \Sigma \ln At-1) + \beta_6 \ln Vit + \beta_7 \ln Agei + e$$

	All	Welfare	Humanitarian	Global	Disability	Animal	Science	Rural
β_0	-2.709 (5.658)	-1.266 (2.924)	-4.026 (4.365)	32.919*** (9.789)	64.777*** (16.962)	30.224*** (7.349)	31.845 (25.291)	13.650** (6.700)
$\ln Fi$ (β_1)	0.116 (1.380)	0.351 (0.356)	0.103 (0.081)	7.502*** (2.587)	10.016*** (3.044)	0.020 (0.575)	4.808** (2.639)	-0.010 (0.576)
$\ln Fj$ (β_2)	0.325 (0.447)	0.024 (0.228)	0.607** (0.359)	-2.137*** (0.773)	-6.094*** (1.516)	0.643 (0.499)	-4.024** (2.043)	0.027 (0.489)
$\ln Fi / \Sigma \ln F$ (β_3)	145.228 (757.196)	-9.597 (64.776)	7.171* (5.060)	-374.576*** (143.195)	-1305.326*** (400.462)	4.376 (17.699)	-186.955** (103.03)	-6.179 (55.186)
$\ln Ai$ t-1 (β_4)	-0.686 (1.416)	0.015 (0.183)	-0.484 (0.430)	-1.344 (1.573)	1.856** (1.178)	0.178 (0.291)	0.387 (0.925)	-1.466* (1.064)
$\ln Ai$ t-1/ $\Sigma \ln At$ -1 (β_5)	382.981 (944.701)	-18.724 (41.424)	82.331 (72.106)	73.543 (95.283)	-275.739** (174.335)	-39.811*** (13.181)	1.364 (41.849)	92.648 (105.94)
$\ln Vi$ t-1 (β_6)	0.679*** (0.064)	1.116*** (0.113)	0.771*** (0.066)	0.245 (0.252)	0.373*** (0.148)	-2.488*** (0.859)	0.307 (0.552)	1.018*** (0.123)
$\ln Agei$ t-1 (β_7)	0.143 (0.112)	-0.066 (0.122)	-0.227** (0.103)	-1.188*** (0.294)	1.678*** (0.225)	-0.060 (0.345)	2.201 (2.164)	-1.099*** (0.278)
R2	0.455	0.570	0.711	0.832	0.610	0.838	0.639	0.785
Adjusted R2	0.442	0.543	0.684	0.789	0.574	0.751	0.512	0.740
SE regression	1.319	1.003	0.734	0.521	1.034	0.298	1.117	0.663
Observations	308	119	42	35	84	21	28	49

NOTE: Dependent variable is ln of Total Donations (Di), Table 1 presents definition of variables, ***, **, * significant at 1, 5, 10 %

The coefficients on Volunteers (lnV) are either significantly positive or positive in all groups, significantly positive in the All, Welfare, Humanitarian, Disability and Rural groups, and positive but insignificant in the Animal group. Volunteers seem to affect and increase the level of total donations in all groups. Hypothesis 6 is tested as: $H_0: V_i \leq 0$ and $H_1: V_i > 0$. Thus, the Null Hypothesis is rejected in the All, Welfare, Humanitarian, Disability, Rural groups of charitable organisations. Conversely the Null Hypothesis is rejected in the Animal group. The coefficient on Age (lnAge) also indicated mixed results. It was positive and significant in the Disability and positive but insignificant in the All and Science groups, whereas those of the Humanitarian, Global and Rural groups are negative but significant, and negative and insignificant in the Welfare and Animal groups. Hypothesis 7 is tested as: $H_0: Age_i \leq 0$ and $H_1: Age_i > 0$. The Null hypothesis is rejected in the All, Disability and, Science and Culture groups of charitable organisations, while the Null Hypothesis is not rejected in the Humanitarian, Global, Welfare, Animal and Rural groups of charitable organisations.

DISCUSSION AND CONCLUSION

The model was also tested for geographical grouping in 6 States, ACT, Victoria, New South Wales (NSW), Queensland (QLD), Western Australia (WA) and South Australia (SA). Overall the results with the geographic groups were much weaker than the industry group. This is to be expected if donors have an interest in the focus of organisations' charitable activities, rather than their location. Therefore this paper is focusing on the factors affecting Industry Groups.

Factors influencing donations in Industry Groups

The level of volunteers (V) had a significant positive effect on donations in most groups except Animal industry in the following year; and Welfare and Rural groups show strongest at 1% of significance. This was because volunteers are involved in fundraising activities of the charity and many of them can be expected to also donate. Because volunteers have insight into how charitable organisations operate, donors might see that the more volunteers are involved in the charitable organisations or for a longer time, the more they would trust the organisation.

Similar to the effect of volunteers on donation, the organisational size and age also showed a positive effect on the total donations. Thus, organisational size (A) had a positive effect on donations in Welfare, Disability, Animal and Science groups in the following years, whereas organisational age has also a positive effect in All, Disability, Science and Rural industry.

Administrative costs (AC) had a negative effect on total donations in All, Global and Science groups in Australia and this result was consistent with the previous study which found that the more charitable organisations spent on administration, the less it received from donors using limited organisational data with much larger donations in US (Tinkelman & Mankaney 2007). However, in this thesis in five groups, Welfare, Humanitarian, Disability, Animal and Rural, was positive on donations in the following year, these results might be affected by the size of donations.

Government grants were not included in Model 1, but when they were included as an additional explanatory variable in empirical models (Models 2 and 4), the competing organisation's Fundraising expenditures (Fj) sometimes showed a negative effect on its total donations in Welfare and Rural groups in current year. However, in the overall

study, Government support (G) showed mixed results, which was consistent with the previous studies. In some groups, government grants had a crowded-in effect on total donations in the following year, whereas in others, they were crowding-out donations.

The results showed that the more a charitable organisation spent on its fundraising expenditures (F_i), the more its total donations increased in the current year in most of the Australian charity groups except the Animal group. The results also indicated, as expected, that in Global, Disability and Science groups in the current year, the more their competing organisations spend on competing fundraising expenditures (F_j), the less these charitable organisations raise in total donations. In addition, the ratio of fundraising expenditures to the competitors' fundraising expenditures in the current year had a positive effect on raising donations in all other groups. However, these results were not statistically significant and most of these organisations were protected from competition to a degree because they received government assistance. The reasons for these results are unclear in terms of donor and organisational behaviour.

These results indicated that a sample of each charitable organisation in similar service provider groups in Australia carefully watches the major decisions of its rivals and would often plan counterstrategies. For example, Red Cross Australia cancelled its annual door-knock appeal after the collection of large donations for the Victorian Bushfire in 2009.

Summary of Results for Model 1 and its sub-families

The results of Model 1 family indicate the effectiveness of an organisation's own fundraising activities and the variable effect of their competitors' activities on their level of donations. Analysis by this Model also demonstrates the positive influence of volunteers, size of organisation and administrative costs on the level of funds raised. The use of the economic theory should assist charitable organisations and governments to understand the context in which the non-profit sector raises funds and the impact of competition and other factors.

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