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The price elasticity of charitable donations

Evidence from Australian tax file data

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Introduction

Research question

In 2013-14, Australians claimed $2.29 billion in tax deductions for gifts and donations (ATO, 2018). Government policy currently seeks to encourage charitable donations through making them tax deductible for individuals.

Is this likely to be an efficient or effective way to encourage donations?

We can look at the price elasticity of charitable donations to determine whether concessions are likely to be efficient and effective.

$$\frac{dQ_{donations}/Q_{donations}}{dP_{donations}/P_{donations}} = ?$$

Elasticity	
|Elasticity| >1	• An increase in tax concessions by 1% will increase giving by more than 1%.This is referred to as **"Treasury efficient"** • For a given reduction in government revenue through tax concessions, the tax concession results in a greater flow of funds to charities when compared to direct government grants
|Elasticity| =1	• An increase in tax concessions by 1% will increase giving by 1%. • For a given reduction in government revenue through tax concessions, the tax concession results in an equal flow of funds to charities when compared to direct government grants
|Elasticity| <1	• An increase in tax concessions by 1% will increase giving by more than 1%. • "**Treasury inefficient**" • For a given reduction in government revenue through tax concessions, the tax concession results in a smaller flow of funds to charities when compared to direct government grants

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Literature review

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Literature review

Previous published papers

Study	Elasticity	Empirical approach	Country
Almunia et al (2017)	-1.00	Negative binomial / poisson (when estimating overall elasticity) and instrumental variable (when estimating intensive and extensive margins separately)	United Kingdom
Hossain and Lamb (2012)	-1.68	Tobit and Heckman selection	Canada
Fack and Landais (2012)	-1.00 to -0.50	Literature review	-
Bakija and Heim (2011)	−1.16 to -0.35	Log-log demand model,	United States
Bonke et al (2010)	-1.44	Censored quantile regression	Germany
Peloza and Steel (2005)	-1.11	Meta-analysis	-

Findings

- Many different empirical approaches

- No consensus on elasticity estimate or ideal model, although recent estimates suggest it is likely to be around 1

- Unclear whether tax deductibility is likely to be efficient in Australia

- No previous study using Australian data

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Literature review
Significant determinants of donations

Religion

• Church membership and/or frequency of church attendance

Education

• Higher education levels

• Majored in social sciences or law
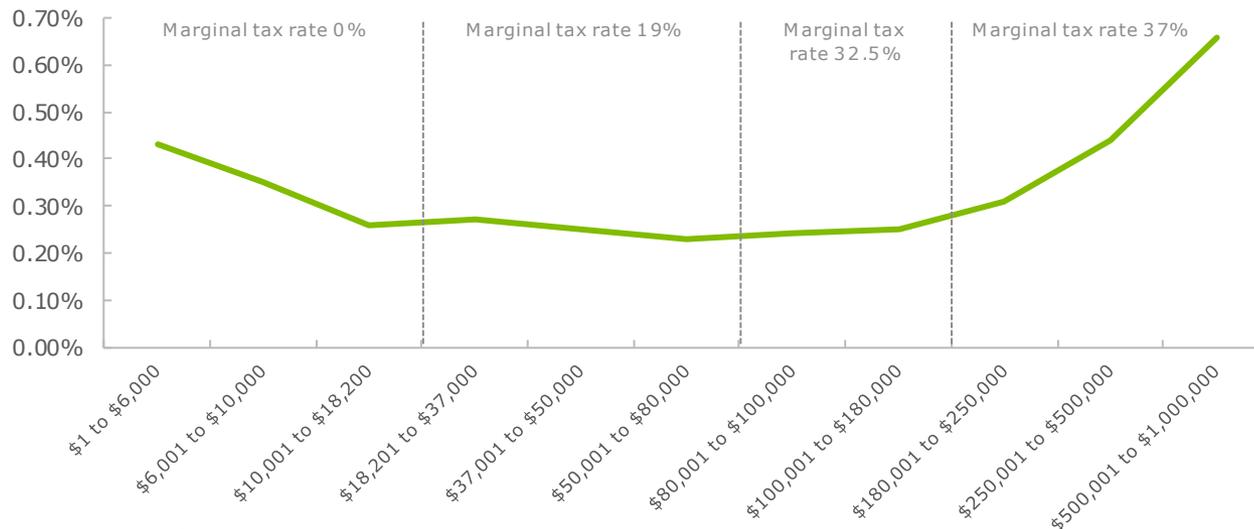
Income

• Relative to income, this has a U shape

Age

• U-shape

Marriage

• The relationship is not so clear

• Some studies support conclusion that marriage increases donations

• Other studies find no relationship

Individual donations as a share of total income, by income band, 2014-15

Source: ATO (2017)

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Data & methods

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Data & methods
ATO two percent taxpayer sample

Panel data would be ideal, but no panel data recording donation levels and tax information (needed to estimate marginal tax rate) exists in Australia

ATO provides:
- 2% sample unit record file of all individual taxpayer records
- FY 13-14 tax year
- Cannot link individuals across years (sample changes each year)

Information on:
- Basic demographics (age range, gender, SA4, partner status etc.)
- Income (salary, allowances, dividends, rent etc)
- Essentially all income item boxes on tax return
- Deductions (travel expenses, car, dividend deductions, personal superannuation contributions)
- **Claimed donations**
- Other information which is needed to determine marginal tax rates

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Data & methods
Estimating marginal tax rates

Enables us to estimate marginal tax rates of individuals taking into account:
- low income tax offset
- Tax free threshold
- Medicare levy
- Medicare surcharge
- Seniors and aged pensioners tax offset

'First dollar price of donations'
Essentially the relative cost of donating $1, relative to consuming $1
This relies upon estimate of marginal tax rate

Issues in the data:
- not all donations are claimed (only about 40.5%)
- top coding of donations for top 1% of donors
- Over 50% of the sample do not claim any donations

Lower bound	Upper bound	Effective price of giving $1
$0	$20,542	$1
$20,543	$24,166	$0.71
$24,167	$37,000	$0.795
$37,001	$66,666	$0.645
$66,667	$80,000	$0.66
$80,001	$88,000	$0.615
$88,001	$102,000	$0.605
$102,001	$136,000	$0.6025
$136,001	$180,000	$0.60
$180,001		$0.52

Marginal tax rates shown are for individuals with no private health insurance, not eligible for seniors and aged pensioner tax offset, without HECS / HELP debt

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Data and methods
Candidate models

Model	Features / Comment	Decision
Log-Log OLS	• Large number of zero values will likely result in biased estimates	❌
Heckman corrected OLS (Log-Log)	• Separate selection model (whether a donation is made and the level of donations) • Enables testing of whether selection is important (significance of selection parameter) • **Selection parameter was significant** • Found to fit well	✔
Tobit	• Accounts for censoring (the zero values) • Has a strong assumption that the decision to donate and level of donation are unified by the same process • Statistical testing (LR test) revealed that this assumption is unlikely to hold	❌
Poisson	• Only defined over positive domain • Can account for large number of zero observations • Has a strong assumption of mean and variance being described by the same parameter • Testing found model to be **over-dispersed**	❌
Negative binomial	• Essentially Poisson model but allows mean and variance to differ • Found to fit well	✔

$$donation\ amount = f(tax\ price, disposable\ income, other\ controls) + \epsilon$$

Data and methods
Preferred models

Variable	Negative Binomial Model		Heckman Corrected OLS Model	
	Coefficient	Robust Standard Error	Coefficient	Robust Standard Error
Gift amount (Negative binomial) Log gift amount (Heckman)				
Elasticity estimate	-1.188***	(0.103)	-0.831***	(0.0726)
Log disposable income after tax	0.695***	(0.0158)	0.584***	(0.0152)

For each model estimates, a range of control variables were included, to control for:
- Log disposable income after tax (Accounting for Low Income Tax Offsets, Medicare Levy and Medicare Surcharge, where applicable)
- Age (in five year ranges from under 20 to 64)
- Occupation group
- Partner status
- Region (SA4)
- Private health insurance status.

Excludes individuals aged over 65 they may be eligible for the Senior and Aged Pensioner Tax Offset, which requires estimation of household income and couple status rather than just personal income.

Data and methods
Preferred model - Results

	Negative Binomial	Heckman Corrected OLS
Elasticity estimate	-1.188*** (0.103)	-0.831*** (0.0726)
Log(Disposable Income)	0.695*** (0.0158)	0.584*** (0.0152)
Gender	0.0936*** (0.0295)	0.133*** (0.0132)
Age (base 60-64)		
55 to 59	-0.201*** (0.0632)	-0.132*** (0.0258)
50 to 54	-0.331*** (0.0639)	-0.198*** (0.0253)
45 to 49	-0.442*** (0.0623)	-0.260*** (0.0256)
40 to 44	-0.465*** (0.0695)	-0.355*** (0.0255)
35 to 39	-0.666*** (0.0680)	-0.446*** (0.0262)
30 to 34	-0.844*** (0.0605)	-0.581*** (0.0264)
25 to 29	-0.985*** (0.0670)	-0.666*** (0.0275)
20 to 24	-1.374*** (0.0679)	-0.943*** (0.0316)
Under 20	-2.349*** (0.105)	-1.495*** (0.0615)
HELP Debt	0.248*** (0.0414)	0.111*** (0.0194)
Private Health Insurance	0.289*** (0.0271)	0.194*** (0.0131)

Other controls excludes from table for brevity

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Data and methods
Rejected models

Variable	OLS Total Elasticity	OLS Intensive Margin	OLS Extensive Margin	Tobit	Poisson
	Coefficient (S.E)	Coefficient (S.E)	Coefficient (S.E)	Coefficient (S.E)	Coefficient (S.E)
Gift amount (Log gift amount for Poisson)					
Elasticity estimate	-2.480***	0.0793	-0.486***	-4.701***	-0.296
	(0.0291)	(0.0669)	(0.00601)	(0.144)	(0.373)
Log disposable income after tax	0.0758***	0.432***	0.0129***	1.156***	1.297***
	(0.00206)	(0.0162)	(0.000409)	(0.0313)	(0.0624)

Caveats

Accounting for claim rates

- Not all donations which are made, are claimed. This is potentially problematic if the amount of donations not claimed varies by income.

Claim rates by income level
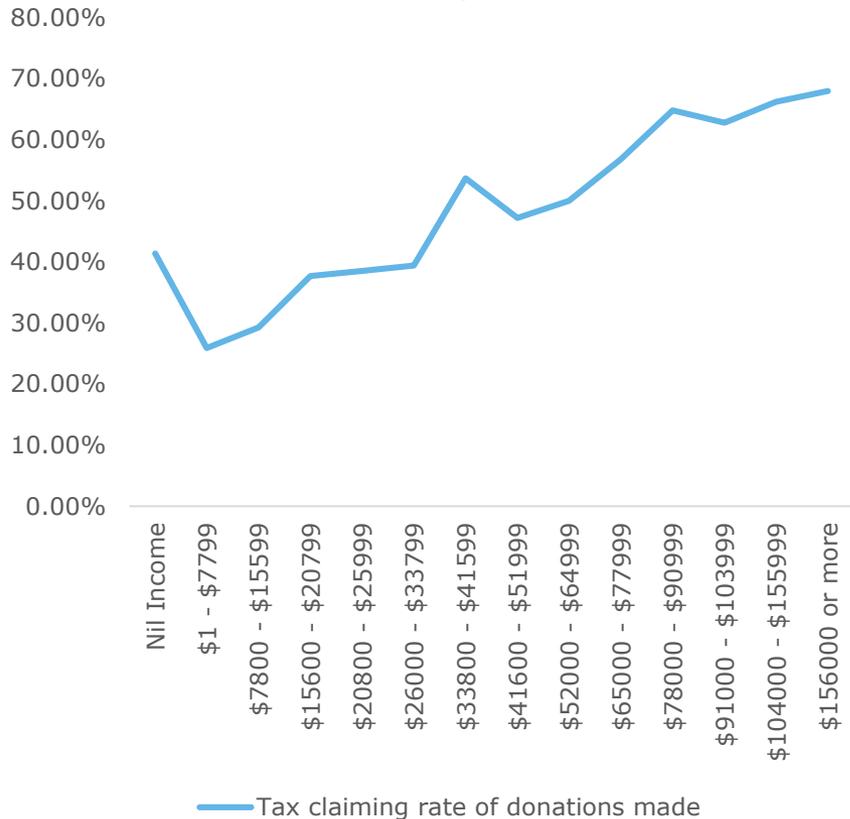
Unclaimed donations by income level
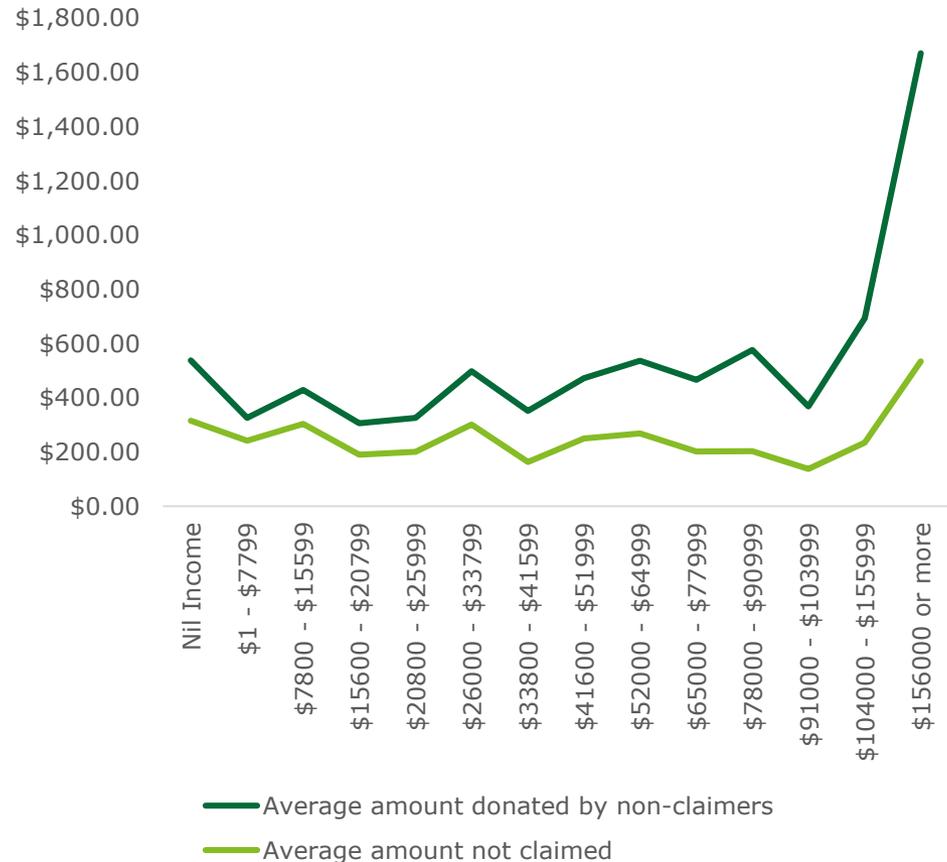
Source: Giving Australia (2016).

Areas for further research

Panel data

- Panel data would allow us to measure the change in donations as income changes for a given individual as thus better account for individual specific factors and omitted variable bias.

- The ideal form of panel data would involve variations in marginal tax rates over time.

Regression discontinuity design

- Could be used to examine change in donations on either side of a marginal tax rate threshold.

Conclusions and policy implications

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Findings

The results suggest that **a 1% increase in tax concessions in Australia leads to at least a 1% increase in the level of funds donated**. This finding is broadly consistent with the international literature in this area.

Overall, it suggests that this is likely to be an economically efficient mechanism (relative to providing direct grants to charities) for governments to achieve the broader policy goal of supporting social ventures and charitable activities in order to enhance community well-being.

This mechanism also supports individual taxpayers' preferences for particular charities. However, there may still be a role for direct government grants to achieve specified policy objectives.

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