

Do Tax Credits Increase Contributions to Nonprofits? Evidence from Iowa and Arizona

Daniel Teles

Department of Economics



April 22, 2016

Research Question:

**Do *State-level Tax Credits for donors*
Increase Contributions to *Targeted*
Nonprofits?**

Research Question:

Do *State-level Tax Credits for donors* Increase Contributions to *Targeted Nonprofits*?

Sometimes?

I perform two case studies using Synthetic Control Methods

- Endow Iowa \Rightarrow increase in contributions to community foundations $> 100\%$
- No evidence of any impact from Arizona's Working Poor Tax Credit (WPTC)

Motivation

Charitable Tax Credits a WIN-WIN?

- **WIN:** More money for Public Goods
- **WIN:** Lower Taxes for Donors

33 states have CTC programs (2013)

Motivation

Charitable Tax Credits a WIN-WIN?

- **WIN:** More money for Public Goods
- **WIN:** Lower Taxes for Donors

33 states have CTC programs (2013)

BUT CTCs:

- Reduce Tax Revenue
- Impact on Public Good Provision
Unknown

Prior Research

The effectiveness of tax credits (in general) is interesting:

- R&D Credits (Bloom et al., 2002; Lokshin and Mohnen, 2012).
- retirement savings (Ramnath, 2013), employment (Faulk, 2002), and Innovation Clusters (Moretti and Wilson, 2014).

Research on the relationship between taxes and charity has focused on the federal tax deduction

- (Randolph, 1995; Auten et al., 2002; Duquette, forthcoming)

Or variance between states in the after-tax price of charity.

- (Bakija and Heim, 2011)

Novelty

Prior work:

- focused on tax deductions rather than credits
 - exception: non-causal research by National Council of Nonprofits, Johnson Center for Philanthropy
- focused on tax-payers rather than on nonprofit
 - exception: Duquette, forthcoming

CTC policies are not designed to reward donors, they are designed to support nonprofits.

Novelty

Prior work:

- focused on tax deductions rather than credits
 - exception: non-causal research by National Council of Nonprofits, Johnson Center for Philanthropy
- focused on tax-payers rather than on nonprofit
 - exception: Duquette, forthcoming

CTC policies are not designed to reward donors, they are designed to support nonprofits.

NOTE:

- Similar work estimates price-elasticity
- I estimate a general equilibrium effect of credits *in practice*.

Outline

- 1 Background
- 2 Methodology
- 3 Results
- 4 Extensions
- 5 Wrap Up

Background

Study 2 *very* different programs in Iowa and Arizona

- Discuss CTCs generally
- Provide background for Iowa and Arizona
- Sketch out the differences by comparing budget constraints
- Propose some hypotheses

CTC Heterogeneity

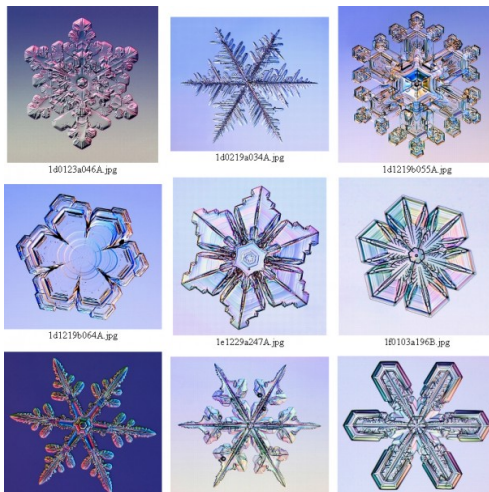


Figure: Every CTC program is different

CTC Heterogeneity

Credit	State	Effective	Ended	Issued (2012)	Qualifying tions	Organiza- tions	Pre- Qualifying Required?	Project Specific?	Personal/ Business	Percentage Cap	Refund- able?	Carry- Over?	
Education Tax Credit	AK	1987	-	\$3.8 million	Nonprofit or public schools and colleges		No	No	Business	50%*	\$5 million	No	No
Working Poor Tax Credit	AZ	1998	-	\$21.8 million	Varied		Yes	No	Personal	100%	\$200/\$400	No	Forward 5 years
Neighborhood Assistance Tax Credit	Assis- DE	1982	-	\$5 million	Varied		Yes	Yes	Business	60%**	\$150,000	No	Back 2 years
Neighborhood Assistance Tax Credit	Assis- DE	2000	-	est. \$200,000-\$300,000	Varied		Yes	Yes	Business	50%	\$100,000	No	Forward 5 years
Endow Iowa Tax Credit	IA	2003	-	\$5.8 million	Community Foundations		Yes	No	Both	25%	\$300,000	No	Forward 5 years
Community Service Tax Credit Program	KS	1994	-	\$4.1 million	Community Service, Crime Prevention, and Health Care Nonprofits		Yes	Yes	Both	50%***	\$250,000 per Organization	Yes	No
Endow Kentucky	KY	2011	-	\$200,000	Community Foundations		Yes****	No	Both	20%	\$10,000	No	Forward 5 years
Donations to Resource and Referral Agencies	LA	2008	-	\$218,539	Private Agencies with contracts through the Department of Social Services		Yes	No	Business	100%	\$5,000	Yes	No
Homeless Shelter / Food Bank Credit	MI	1992	2011	\$20.0 million (2011)	Homeless Shelters and Food Banks				Both	50%	\$100/\$200 (Individuals) \$5,000 (Businesses)		
Community Foundation / Education Credit	MI	1989	2011	\$3.8 million (2011)	Community and Education Foundations				Both	50%	\$100/\$200 (Individuals) \$5,000 (Businesses)	No	No
Youth Opportunities Program	MO	1996	-	\$3.8 million	Varied		Yes	Yes	Both	50%	\$200,000	No	Forward 5 years
Food Pantry Tax Credit	MO	2007	2011	\$793,794 (2010)	Food Pantries		No	No	Both	50%	\$2,500	No	Forward 3 years
Qualified Credit	Endowment NE	2006	2009	\$150,000 (2008)	Any 501(c)3 with an endowment		No	No	Both	15%*****	\$5,000	No	No
Donations to Biomedical Research Institutes	OK	2005	-	\$514,000	Medical Research Institutes		No	No	Both	50%	\$1,000	No	Forward 4 years

CTCs in Iowa and Arizona

1 “Big”

- WPTC: largest program, \$21.8 million in 2012.
- Endow Iowa: \$5.8 million in 2012 —nearly 6% of total contributions to community foundations.

2 Well documented.

- Plausible treatment and control groups.

3 Very different from each other.

- WPTC: Broad program, many credits (49,915 in 2009), low cap (\$200).
- Endow Iowa: Specific to community foundations, fewer credits (3,074 in 2012), high cap (\$300,000).

Endow Iowa

What Qualifies:

- Any donation by an Iowa taxpayer (**individual** or **business**)...
- ... made to a permanent endowment fund ...
- ... established for the benefit of an Iowa charitable cause ...
- ...at a *qualified community foundation*.

Endow Iowa

Time-line:

- Begins January 1, 2003 as a 20% credit on top of income tax deduction. (\$100,000 Cap)
- Followed in 2004 by the County Endowment Fund Program (funds distributed in 2005)
- Beginning in 2010: a 25% credit without deduction.
- 2008-2012: Cap increased to \$300,000

Arizona's WPTC

What Qualifies:

- Donations by **individuals** to *qualifying nonprofit organizations* who ...
- ...spend at 50 percent of their budget on Arizona residents who either:
 - ① receive Temporary Assistance for Needy Families (TANF) benefits,
 - ② have household income less than 150% of the poverty level, or
 - ③ are chronically ill or disabled children.

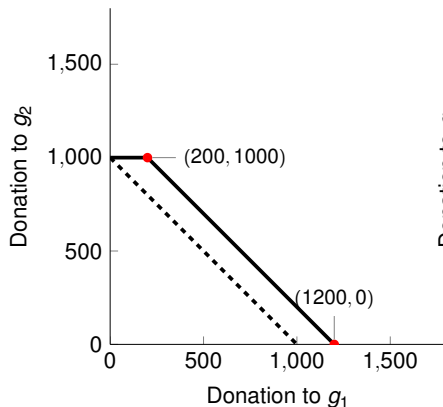
Arizona's WPTC

Time-line:

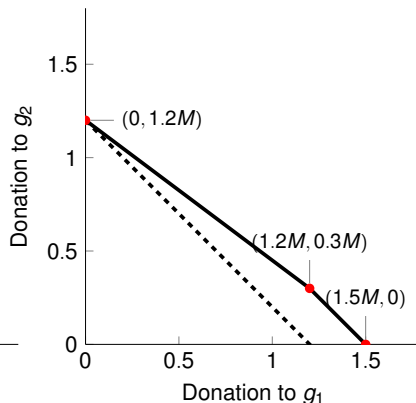
- Begins in 1998 as a 100% credit for the first \$200 in “excess donations” (beyond the amount donated in 1997 for regular itemizers).
- 2009: Extended to non-itemizers and first \$200 donated.
- 2013: Expanded to include credit up to \$400 for donations to foster care organizations
- 2013: Renamed “Credit for Donations made to Qualifying Charitable Organizations”

Budget Constraints for CTCs

Arizona WPTC



Endow Iowa



NOT TO SCALE

Hypotheses

- 1 Charitable Tax Credit programs increase the level of contributions received by targeted nonprofit organizations.

Hypotheses

- 1 Charitable Tax Credit programs increase the level of contributions received by targeted nonprofit organizations.
- 2 Arizona's WPTC led to positive spillover, increasing donations to untargeted nonprofits.
- 3 The Endow Iowa tax credit should produce a large substitution effect *between charities* and reduce donations to untargeted charities.
- 4 Endow Iowa led to an increase in charitable giving to targeted nonprofits that is greater than the value of credits disbursed.

Data

- Financial data for nonprofit firms are reported to the IRS and compiled by the National Center for Charitable Statistics (NCCS).
- Individual information on tax credit policies from various sources including tax forms, tax expenditure reports, evaluation studies, and legislation.

Estimation Framework

Difference in Differences Estimate:

$$DD = (\bar{Y}_{post}^{treated} - \bar{Y}_{post}^{control}) - (\bar{Y}_{pre}^{treated} - \bar{Y}_{pre}^{control})$$

Implicit Assumptions:

- CTC implementation is an exogenous policy shock
- CTCs are the only exogenous shock to contribution levels

Create a counterfactual using Synthetic Control Methods (SCM)

- Following Abadie and Gardeazabal (2003); Abadie, Diamond, and Hainmueller (2010); Abadie, Diamond, and Hainmueller (2014).

Deriving the Synthetic Control

The synthetic control is a weighted average of “donor states”

A weighting matrix is selected to minimize the distance between the treated state and its synthetic control during the pretreatment period.

$$W^* = \underset{W}{\operatorname{argmin}} \sqrt{(X_1 - X_0 W)' V (X_1 - X_0 W)}$$
$$\text{s.t. } W' i = 1, \quad w_j \geq 0, \quad \text{for } j = (2, \dots, J + 1)$$

X_1 = vector of predictor variables for the treated state

X_0 = matrix of vectors of predictor variables donor states

V = diagonal matrix that weights the predictor variables

Deriving the Synthetic Control

Potential Predictor Variables (X_0):

- Contributions
- Program Revenue
- Fundraising Expenditures
- State Population
- State Income Per Capita Income
- State Income Inequality Gini
- State Share of Income to Top 1%

Calibration using the period before intervention:

- Iowa: 1990-1994, 1995-1998
- Arizona: 1990-1994, 1995-1997

Placebo Tests (Inference)

- 1 Derive a synthetic control for each donor state
- 2 Calculate difference between placebo and synthetic control
- 3 Compare to estimated treatment effect.

Placebo Tests (Inference)

- 1 Derive a synthetic control for each donor state
- 2 Calculate difference between placebo and synthetic control
- 3 Compare to estimated treatment effect.

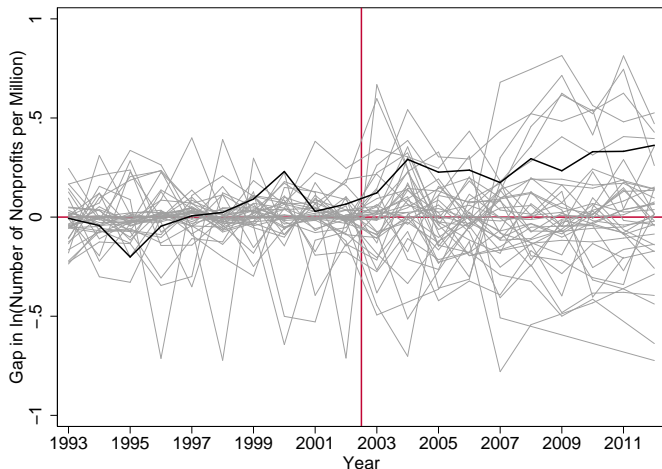
Two (pseudo) P-Values:

- 1 based on the DD estimates.
- 2 based on pre vs. post goodness of fit measure

$$RMSPE = \left(\frac{1}{T_0} \sum_{t=1}^{T_0} (Y_t^{treated} - Y_t^{synth})^2 \right)^{\frac{1}{2}}$$

$$Ratio_p = \frac{RMSPE_{post}}{RMSPE_{pre}}$$

Placebo Tests (Inference)



$p\text{-value(DD)}=0.175$

$p\text{-value(Ratio)}=0.475$

Treatment and Control Groups for Endow Iowa

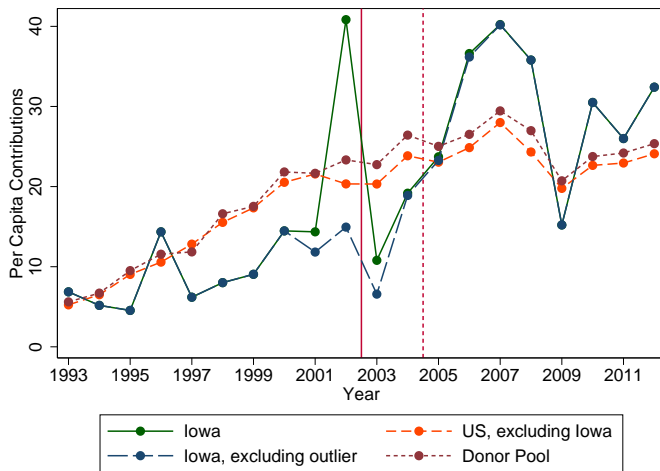
Compare aggregate contributions to community foundations in Iowa to a synthetic control.

- Exclude from the donor pool states with credits for similar donations (AZ, KY, MT, ND, MI, KS, NE).
- Compare contributions in Iowa to both the synthetic Iowa and an “expected Iowa” that received additional funds directly.

Caveat

Unable to differentiate between Tax Credit and Endowment Grant Program.

Contributions to Community Foundations



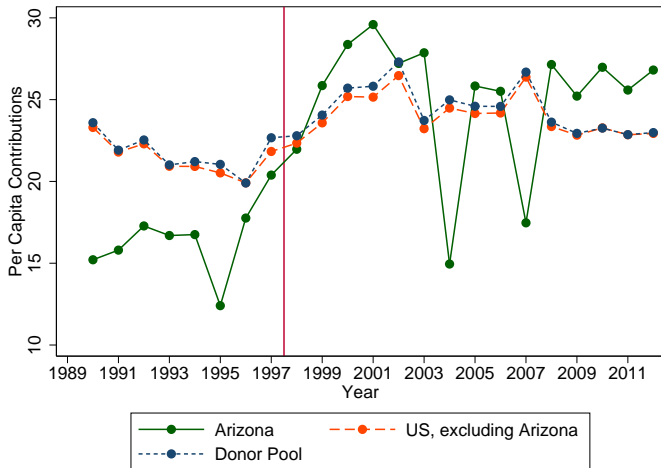
Treatment and Control Groups for Arizona's WPTC

Treatment group is somewhat difficult to define.

→ Focus on an upper bound based on 6 top credit recipients who are part of national networks.

- I exclude states with similarly broad credit programs or a variety of targeted programs (KS, MI, MO, NC, VA, WV.).
- For lower bound: (which I won't bother showing) I include all nonprofit sectors and find no evidence of a change in contribution levels.

Contributions to Six National Nonprofits



Figure

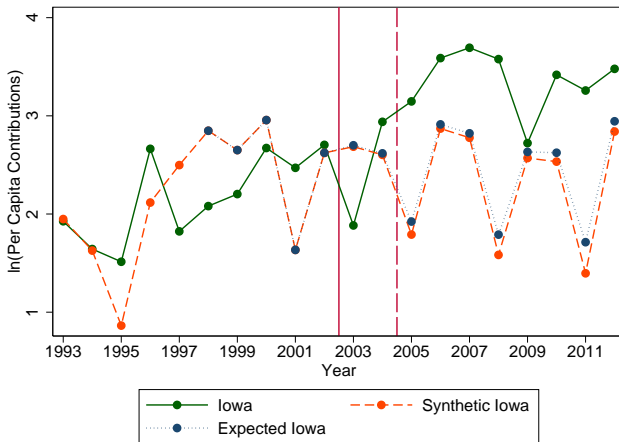
Preview of Results

- $\approx 125\%$ increase in donations to community foundations in Iowa
- No increase in donations to “Highly Treated” nonprofits in Arizona.
- Mixed results on Hypotheses 2 and 3.
- Cannot reject the alternative to Hypothesis 4.

Donor Weights for Iowa

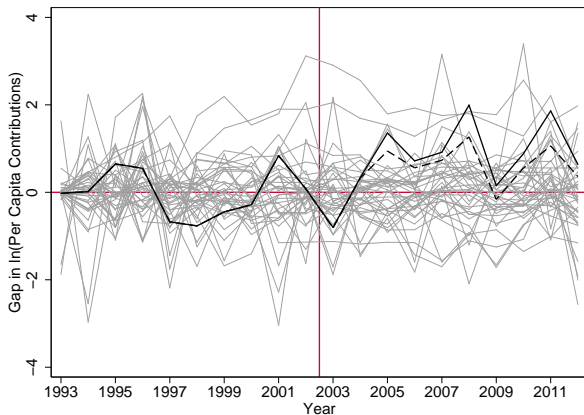
State	Weight
Arkansas	0.027
Indiana	0.121
Louisiana	0.059
Maryland	0.108
Ohio	0.179
Vermont	0.267
Wisconsin	0.029
West Virginia	0.210

SCM Results for Endow Iowa



$DD = 0.81 \approx 125\%$ increase

Inference (Placebo Tests) for Endow Iowa



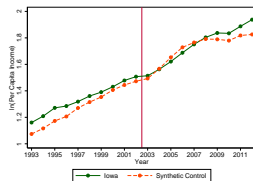
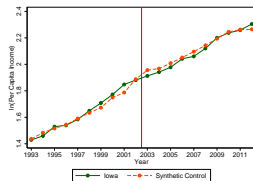
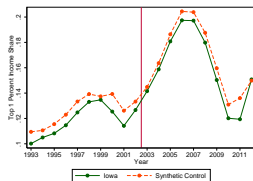
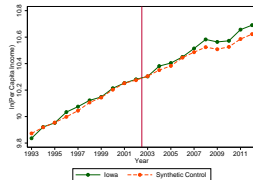
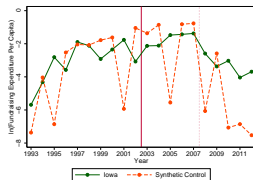
$p\text{-value(DD)}=0.05$

$p\text{-value(Ratio)}=0.13$

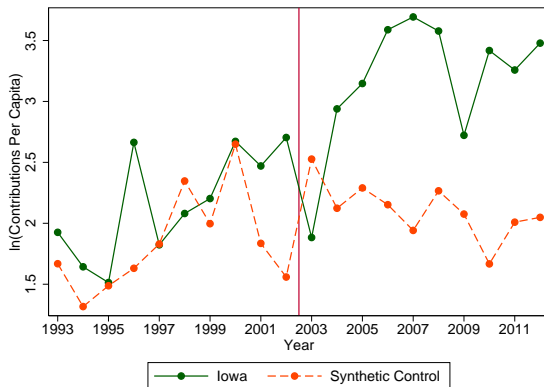
Threats to Causality (Endow Iowa)

Could there have been some shock to contributions in either Iowa or the control group other than Endow Iowa and the County Endowment Program?

- Look for evidence of a shock by exploring the time series of “related” outcomes.
 - Fundraising Expenditure
 - State Unemployment Rate
 - State Per Capita Income
 - State Top 1% Income Share
 - State and Municipal Expenditure
 - State and Municipal Revenue



Contributions in Iowa and a control fitted to fundraising expenditure



→ $DD = 0.72$ (compared to 0.81)

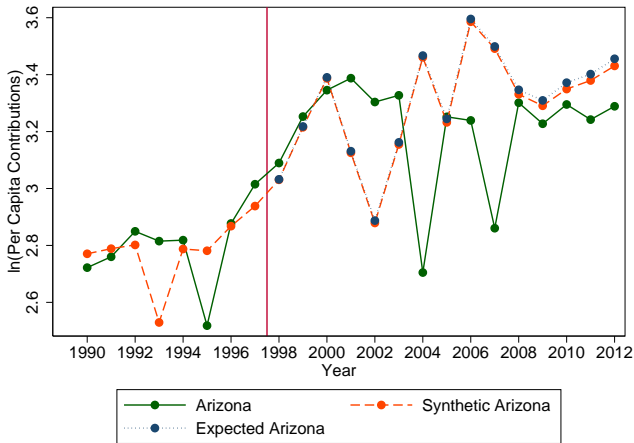
Other Robustness Checks

	<i>DD</i>	p-values	
		DID	Ratio
CBCBF not dropped	0.80	0.05	0.21
Indiana Excluded From Donor Pool	0.80	0.05	0.13
Maryland Excluded	0.80	0.05	0.13
Ohio Excluded	0.81	0.05	0.16
Vermont Excluded	0.48	0.13	0.37
West Virginia Excluded	0.47	0.18	0.74
Excluding Population as a Predictor	0.91	0.05	0.18
Restriction to Neighboring States vs. Average of Neighboring States	-0.03	0.60	0.80
vs. National Average	0.35	—	—

Donor Weights for Arizona

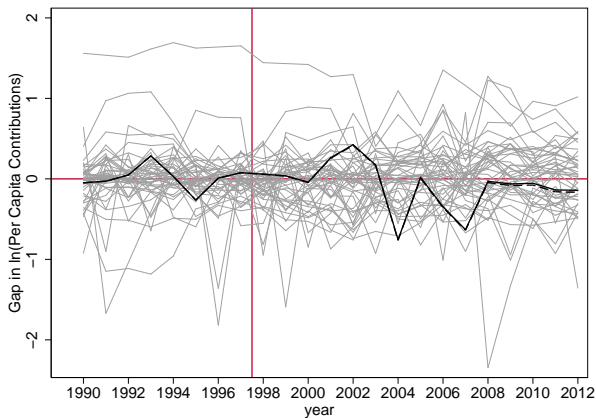
State	Weight
Alaska	0.016
Florida	0.005
Georgia	0.493
Idaho	0.038
Oklahoma	0.092
South Carolina	0.039
Texas	0.039
Utah	0.277

SCM Results for Arizona's WPTC



$DD = -0.10 \approx 10\%$ decline

Inference (Placebo Tests) for Arizona



$p\text{-value(DD)}=0.36$

$p\text{-value(Ratio)}=0.36$

Hypothesis 2

Arizona's WPTC led to positive spillover, increasing donations to untargeted nonprofits.

	treatment <i>DD</i>	p-values	
		DID	Ratio
Untargeted Nonprofits in Arizona	-0.05	0.42	0.16
Affiliates in California	0.40	0.09	0.93
Affiliates in Nevada	-0.13	0.29	0.58
Affiliates in Utah	-0.25	0.13	0.09
Affiliates in Colorado	0.06	0.42	0.89
Affiliates in New Mexico	-0.03	0.42	0.78

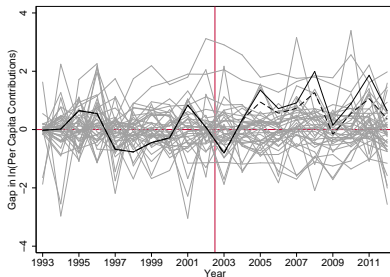
Hypothesis 3

The Endow Iowa tax credit should produce a large substitution effect *between charities* and reduce donations to untargeted charities.

	DD	p-values	
		DID	Ratio
Similar Nonprofits in Iowa	-0.11	0.38	0.55
Public Benefit Nonprofits in Iowa	0.09	0.20	0.20
Untargeted Nonprofits in Iowa	-0.21	0.08	0.30
CFs in South Dakota	0.63	0.08	0.25
CFs in Minnesota	-0.33	0.22	0.30
CFs in Wisconsin	0.00	0.45	0.38
CFs in Illinois	0.09	0.43	0.98
CFs in Missouri	0.61	0.10	0.90

Hypothesis 4

Endow Iowa led to an increase in charitable giving to targeted nonprofits that is greater than the value of credits disbursed.



DD=0.49

p-value(DD)=0.18

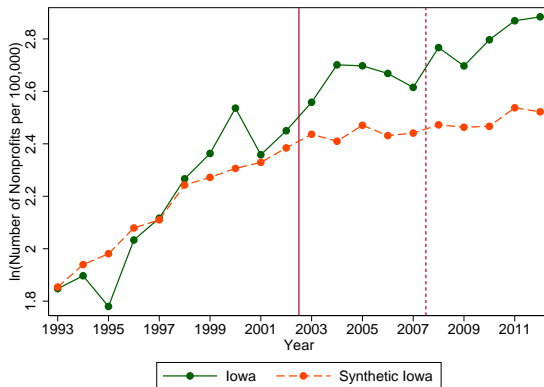
p-value(Ratio)=0.28

Growth in Contributions Per Foundation

<i>DD</i>	0.268**	0.253*	0.287*
	(0.085)	(0.119)	(0.121)
Iowa	-1.439***		
	(0.111)		
Fundraising Expenditure			0.022**
			(0.008)
Program Revenue			-0.006
			(0.005)
Controls	no	yes	yes
Year FE	yes	yes	yes
Foundation FE	yes	yes	yes
Observations	2650	2650	2650

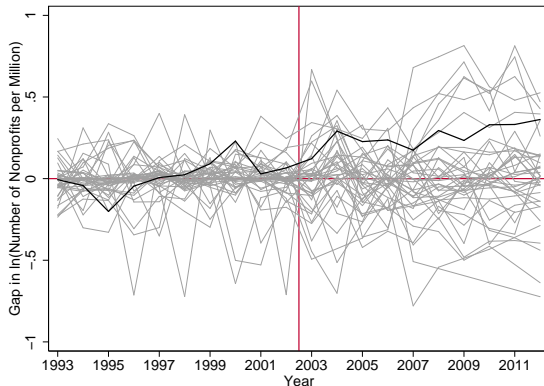
NOTE: 10 year balanced panel (1998-2007), standard errors clustered at the state level

Growth in the Number of Community Foundations



$DD = 0.25 \approx 28\%$ increase

Growth in the Number of Community Foundations



$p\text{-value(DD)}=0.17$

$p\text{-value(Ratio)}=0.15$

Disentangling Grants and Credits

Endow Iowa	0.339** (0.114)	0.378** (0.113)
Community Endowment Fund	-0.146** (0.048)	-0.155** (0.050)
Fundraising Expenditure		0.022** (0.008)
Program Revenue		-0.006 (0.005)
Controls	yes	yes
Year FE	yes	yes
Foundation FE	yes	yes
Observations	2650	2650

NOTE: 10 year balanced panel (1998-2007), standard errors clustered at the state level

Summary of Results

- $\approx 125\%$ increase in donations to community foundations in Iowa
- No increase in donations to “Highly Treated” nonprofits in Arizona.
- Mixed results on Hypotheses 2 and 3.
- Cannot reject the alternative to Hypothesis 4.
- Endow Iowa followed by increases in both the number of community foundations and contributions per foundation.

Why Iowa \neq Arizona

Potential Reasons for differing results:

- Structure of the credits:
 - Iowa: 25% up to \$300,000
 - Arizona: 100% up to \$200
- Endow Iowa applies to a smaller group of nonprofits
- Businesses are eligible for Endow Iowa but not WPTC
- Iowa 1-2 punch with County Endowment Program

Thank You!

Leave One Out Tests

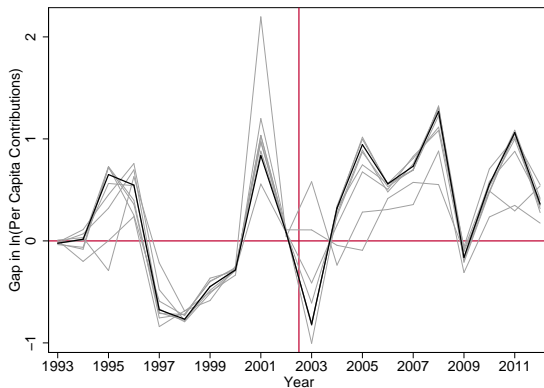


Figure: Contributions to ALL nonprofits, Iowa and Synthetic Control

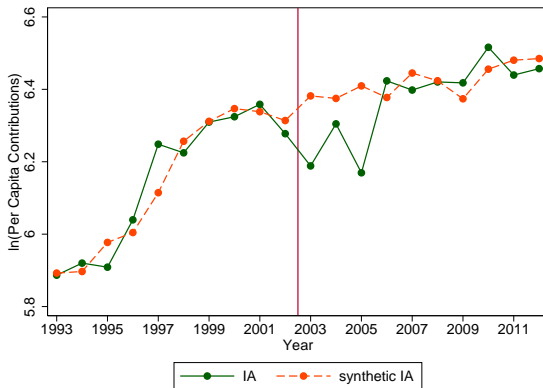


Figure: Contributions to ALL nonprofits, Iowa and Synthetic Control

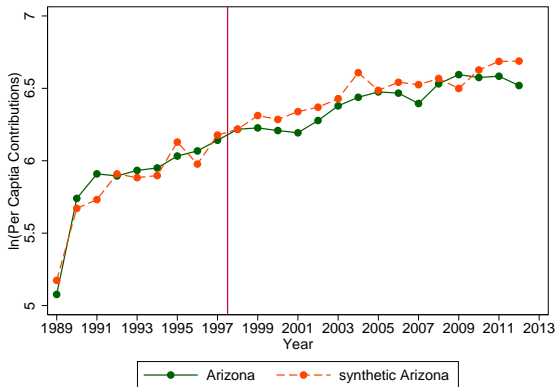
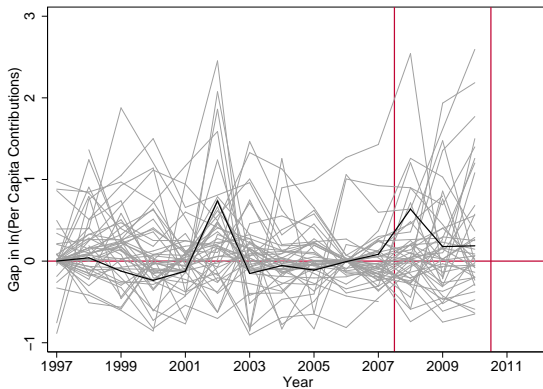
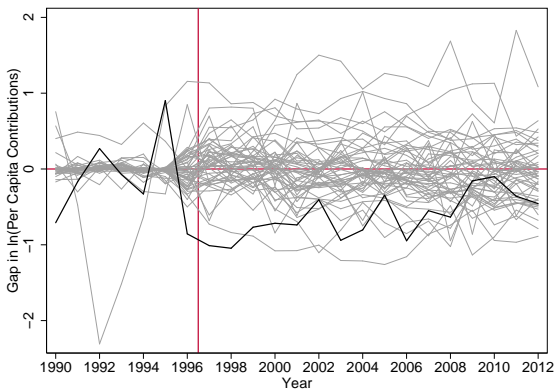


Figure: Contributions to ALL nonprofits, Arizona and Synthetic Control

Missouri Food Pantry



Missouri Youth Opportunities Program



Oklahoma Biomedical Organizations

