THE EFFECTS OF AN ECONOMIC EDUCATION ON PHILANTHROPIC ACTIVITY

A Thesis

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By

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Abstract

This study examines whether there exists a relationship between the number of economic degree holders in a state and the level of philanthropic activity. This hypothesis is consistent with economics students being exposed to thinking about overall economic efficiency. This study uses panel data from the American Community Survey regarding individual educational attainment. Two sources of philanthropy are utilized, individual giving from the IRS, and receipts by philanthropic organizations from their 990 forms. I build a panel data set using US states from 2009-2017. After controlling for a number of other important influences including income, I find that the fixed effects regression results show that as the share of female economics major rises, individual giving rises. Conversely, however, male economics majors are found to engage in less philanthropy than the average of other college graduates. No statistically significant effects are found using the organizational income data.

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I. Introduction

Philanthropic activity is a large part of life and economics in the United States. In 2016, nonprofits contributed approximately 5.6 percent of the United States' Gross Domestic Product (GDP). Rather than look at why people give or what type of person gives, this study aims to see how an increase in specifically educated individuals affects giving in a defined region. This specific education is economics, as economics pertains to the allocation of resources, I am interested in if this training changes giving in a region. I do this by analyzing the relationship between the number of economic students in a region and that region's philanthropic activity.

The effect of economics education on philanthropic activity seems binary on the surface; economists could either systematically give or not give, which would determine their impact on philanthropic activity. However, looking past the surface, there is some difficulty proving the previously stated generalization. As for methodology, the issues stem from the sample selection. Rather than using a subset of individuals, who are susceptible to influences outside the interest of this study, and extrapolating on the whole, I look at the aggregate to observe the net effect. As it comes to how the training could affect students, we run into the issue of different theories leading to possibly different behavior.

Economics does study the allocation of resources from multiple perspectives, and this study of such theories could influence individuals and the individuals around them. It is conceivable that learning of externalities (a cost or benefit incurred by a third party who did not consent to that cost or benefit) makes students aware of a social cost and

subsequently motivates them to give and tell their parents to give as well. Students could have learned about the principal agency problem and realized they want to promote a non-profit to conduct market-level analysis to protect consumers from bad actors.

But it is equally conceivable that lessons on utility maximization will lead them to put themselves before others ruthlessly, and their friends learn to copy the behavior. Or more probable and less malicious, students of economics may choose to become free riders-individuals who benefit from a shared good without paying their fair share- and invite others on the ride.

There is also the possibility that being around someone selfish teaches you to be generous. For these reasons, this study focuses on the aggregate rather than the individual. On the individual, there are also differences between economics students, such as gender. Excel (2001) finds "that women, on average, donate twice as much as men to their anonymous partners when any factors that might confound cooperation are eliminated." Even more specific to this study, Frank (1993) likewise finds female economic students less self-interested than their male comparative counterparts. So, will this show up in the testing?

To conduct an empirical study, I built a panel data set of U.S. states and years. I used all fifty states and Washington D.C. The years ranged from 2009 to 2017. The limitations of available data determined the years. In 2009 the American Community Survey (ACS) began collecting data regarding educational attainment and specification of degrees. It also allowed for the most comprehensive reports from the Internal Revenue Service (IRS) regarding both the Statistics of Income (SOI), which provided

reported individual contributions and the Exempt Organization Business Master File (EO BMF), which provided information reported by Tax Exempt Organization. Collecting, collapsing, and merging using a relational database (H2) allowed for producing a dataset composed of 459 observations, including the variables of interest separated by state and year.

After building the dataset, I used an Ordinary Least Squares (OLS) regression with State and Year fixed effects to approximate the relationship between outcomes representing philanthropic activity and economic degree holders. Additionally, I used adjusted real income to control for difference in between states. The different variables used to represent philanthropic activity were the sum of individual contributions, the sum of reported income from tax-exempt organizations, and the number of tax-exempt organizations.

The results showed that economics does have a statistically significant relationship with philanthropic activity. Moreover, the gender of the students makes a significant difference in their aggregate effect on giving. While male economic majors are found to have a negative relationship with philanthropic activity in all but one outcome (number of organizations), females show a different relationship. The empirical data analysis shows that, on average, a rise in the percentage of female economic students coincides with an increase in philanthropic activity.

II. Literature Review

Though there are no exact studies on the effects of philanthropic activity in relation to the number of economic students, there are similar studies. However, these studies

focused on the individual and their personality. Previous studies tested the psychological makeup, the likelihood to give or share, and generalizations about students studying economics Carter and Irons (1991).

Previous studies involved small group experiments, including current students and professors, and sending out surveys. Most studies use participants from small groups usually in one location like Frank, Gilovich and Regan (1993). The researchers would usually compare the behavior and decision making of professor and economics students (undergraduate thru graduate level) against a control group. The control group would also account for that state's culture, the current economic health of that state, or the cost of tuition for that particular school, which otherwise could show up in the individual behavior analysis. Some studies include a participant pool where surveys were sent out and returned in one time period (cross-sectional) Marwell, Gerald and Ames (1981). Again, control groups were used to account for current culture and events that otherwise could drastically bias responses. In some cases, researchers surveyed the same participants a few months apart Frank, Gilovich and Regan (1993).

Essentially the previous literature is focused on the current mindset of professor and students, attempting to categorize the personality of students choosing economics. One way this study differs is that the individuals are former students or predominantly former students of economics rather than current students or professors. This an important question for research, as we care to observe whether certain types of students select

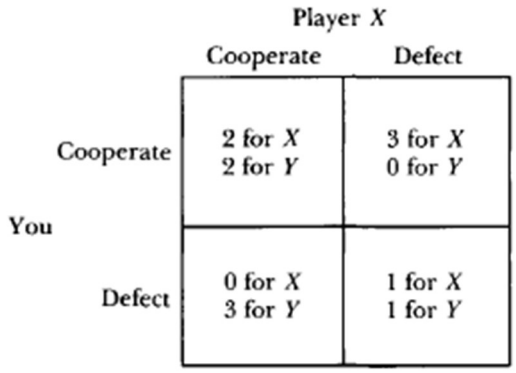
economics, or if economic students' behavior is essentially random until a more uniform behavior is molded by their training.

Also, unlike this study, previous studies often have participants play a "game." This ranged from "the ultimatum bargaining game" and subsequent iterations first developed by Guth, Schmittberger, and Schwarze (1982) and augmented by Kahneman, Knetsch, and Thaler (1986). The ultimatum bargaining game is very well explained by Thaler (1988):

> "She is to be given $10 and will be asked to divide it between herself and another student (Player 2) whose identity is unknown to her. The rules stipulate that she must make Player 2 an offer, and then Player 2 can either accept the offer, in which case he will receive whatever Eve[she] offered him, or he can reject the offer, in which case both players will receive nothing. Her question to her wise economist parent: How much should she offer?"

For numerous papers this test has been used to see how economists and economics students act in contrast to non-economics students.

There is also the prisoner dilemma, another game used in prior studies, such as Frank, Gilovich and Regan (1993). This example comes from the same study where researchers presented this matrix of the prisoner dilemma and used it as a self-interest model.



After having participants meet one another, they were brought in a different room and asked if they would cooperate or defect. After tabulating that 60.4% of the time economist chose to defect, the researchers concluded:

> "For these choices, the defection rate for economics majors was 60.4 percent, as compared to only 38.8 percent for nonmajors. This pattern of differences strongly supports the hypothesis that economics majors are more likely than nonmajors to behave Self-interestedly."

In both cases presented the research was centered around the student and their decision. In this study the economics student does not have to be the one that gives; instead, this study will look at the change in overall philanthropic activity in a region. A practical way this could happen is if a former student of economics talks around the water cooler about externalities and social cost and subsequently motivates non-economic students to donate. However it happens, the goal is to see if there is a change, and to what extent, when a region has more economic degree holders.

III. Data

For analysis, the study uses a panel of 50 U.S states and Washington DC from 2009-2017 for a total of 459 observations (Table 3). Data on educational attainment, degree specifics, and individual characteristics, such as gender, race, and ethnicity, was obtained from the American Community Survey through IPUMS. From 2009 and onward, the American Community Survey began asking if the individual had received a degree, and if so, in what discipline. This study constructs the independent variable representing individuals with Economics degree holders by grouping a few degrees. The study groups business economics, agricultural economics, and economics. Looking at the percentages, it is clear that some states are skewed, not just economic degrees, but with the percentage of degree holders as a whole.

Data on charitable donations came from the IRS. This study uses both individual tax SOI and Exempt Organization Business Master Files (EO BMF). The individual tax SOI is summary statistics on the individual taxpayers grouped by state and adjusted gross income. Individual tax SOI is published yearly by the IRS. The EO BMF is the aggregated 990s filed by tax-exempt organizations. There are, however, severe limitations to both data sets.

The individual tax SOI can only report on individuals reporting charitable giving. Therefore, the unknown reporting error could cause issues in analysis. Regarding EO BMF, the biggest problem for this study is the different filing requirements dedicated by size, as in donations received or organizations' assets. The IRS requires different sized organizations to report different information (Table 1).

There are four different versions of the 990, the simplest being the 990N, commonly referred to as the ePostcard. Organizations whose donations gross less than 50,000 yearly file the 990N. The 990N only asks eight questions: Employer identification number (EIN), tax year, Legal name and mailing address, name and address of a principal officer, web site address if the organization has one, confirmation that organizations annual gross receipts are 50,000 or less, and if applicable a statement that organization has terminated or is terminating. With the limited information provided by the 990N, summing total contributions from the EO BMF excludes smaller organizations. However, the count of organizations is unaffected as the name of the organization is still noted. This study takes advantage of the other versions of the 990 as they provide additional information pertinent to this study.

Table 1	
Filing requirments and respectice forms are as follows	
990N	For organizations grossing x<50,000
990-PF	For private foundations regardless of gross donations/income/assets
990-EZ	For organizations whose gross x< $200,000 and assets x< $500,000
990	For organizations whose gross x>$200,000 and assets x> $500,000
Note: Outside of having a count of organization the 990N provides no numerical data used in this study.	

The 990-PF, 990-ez, and 990 provide information on total donations received and assets. Moreover, through these forms, the organizations are asked to provide distinguishing features of their organization. This includes information such as the organization's character (religious, education, charitable).

Another problem of using the EO BMF is that it is unspecified if the donations came from individuals, corporations, or trusts. In the given example of the University of Houston, "Here we go" campaign Trusts and Corporations gave a combined 52% percent of the total raised. However, should this campaign have been a non-profit reporting on a 990 form, the information would show up as the total amount.

The inability to determine where a donation is from is a more nuanced problem present in both the datasets (the Individual SOI and EO BMF). If a Texas resident donated to an organization in California, the Individual SOI would attribute the donation to Texas, and the EO BMF would count the contribution towards California. This causes some regions to show significantly more donations, both received and given, than what can be responsibly assumed to have happened within the region's borders.

Dividing the amounts by the population, or changing the variable into a per capita, helps the model account for population difference; however, it also shows the effect of interstate donations. A quick look over the data shows Washington DC having more donations received per capita, more organizations per capita, and only ranking second in donations given per capita to Wyoming, which due to its low population, has severely skewed donations per capita figures (Table 2).

Table 2			
Per Capita Charitable Contribution Variables			
State	Number of Charties Per 1,000 Pop	All returns (SOI) per Capita	All Income (EO BMF) per Capita
DC	20.7	$ 1.27	$ 129,990
MT	9.7	$ 0.55	$ 7,631
VT	9.3	$ 0.43	$ 11,449
IA	9.1	$ 0.49	$ 7,449
ND	8.0	$ 0.45	$ 11,492
WY	7.9	$ 1.57	$ 5,055
SD	7.8	$ 0.61	$ 8,797
RI	7.5	$ 0.43	$ 19,235
AK	7.0	$ 0.44	$ 8,376
NE	6.9	$ 0.61	$ 9,749
ME	6.8	$ 0.34	$ 10,843
DE	6.5	$ 0.54	$ 15,047
MN	6.2	$ 0.65	$ 21,205
NH	6.0	$ 0.45	$ 12,487
WI	5.9	$ 0.49	$ 10,369
KS	5.8	$ 0.64	$ 5,933
MO	5.7	$ 0.55	$ 10,633
OR	5.6	$ 0.59	$ 13,029
CT	5.6	$ 0.90	$ 15,711
WV	5.6	$ 0.27	$ 5,729
OH	5.5	$ 0.45	$ 10,520
MD	5.4	$ 0.91	$ 17,325
IN	5.4	$ 0.47	$ 8,611
MA	5.4	$ 0.76	$ 36,816
CO	5.3	$ 0.67	$ 6,485
HI	5.3	$ 0.45	$ 11,058
PA	5.2	$ 0.51	$ 14,674
NY	5.0	$ 0.89	$ 17,544
IL	5.0	$ 0.62	$ 15,275
WA	5.0	$ 0.70	$ 16,977
VA	5.0	$ 0.72	$ 9,483
OK	4.8	$ 0.62	$ 6,090
SC	4.8	$ 0.60	$ 4,012
NM	4.7	$ 0.37	$ 3,635
MI	4.7	$ 0.51	$ 23,260
NJ	4.7	$ 0.66	$ 7,568
ID	4.7	$ 0.59	$ 3,972
TN	4.6	$ 0.59	$ 6,503
AR	4.5	$ 0.61	$ 6,689
NC	4.5	$ 0.61	$ 8,329
MS	4.3	$ 0.53	$ 3,898
AL	4.2	$ 0.66	$ 3,456
KY	4.2	$ 0.45	$ 7,876
CA	4.1	$ 0.71	$ 10,140
LA	4.1	$ 0.47	$ 5,993
GA	4.0	$ 0.81	$ 6,660
TX	3.9	$ 0.60	$ 6,029
FL	3.8	$ 0.59	$ 5,843
AZ	3.3	$ 0.48	$ 6,795
UT	3.0	$ 1.17	$ 6,895
NV	3.0	$ 0.54	$ 3,028

Note: This table shows the number of tax exempt organizations per capita, the amount that individual reported giving per capita, and the amount oranizations grossing more than 50,000 reported receiving per capita. It highlights the issue of regions in the extremes such as Washington D.C., Wyoming, and Utah. Table is sorted by largest number of organizations per capita.

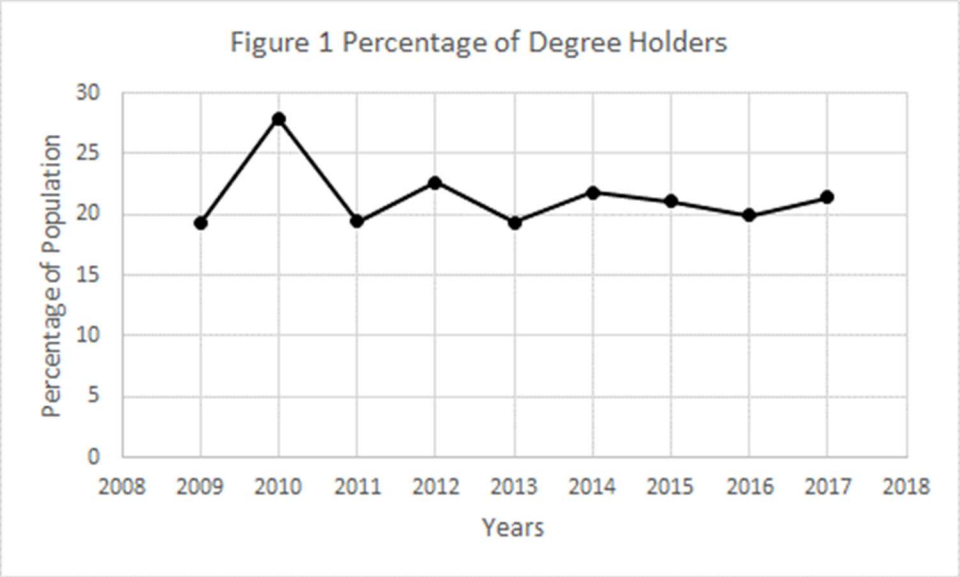
The study uses population count for calculating per capita donations and adjusted real income to help account for the difference in "wealth" of the average individual within a state. Both of these variables come from the United States Census Bureau. This study uses real income, which is adjusted for inflation, instead of income to account for inflation. This is important to the study as it better reflects individuals' purchasing power and the value today of their donations. Table 3 shows summary statistics for the panel dataset built. Figure 1 & 2 show the variation in the percentage of degree holders and economic degree holders, respectively, over time.

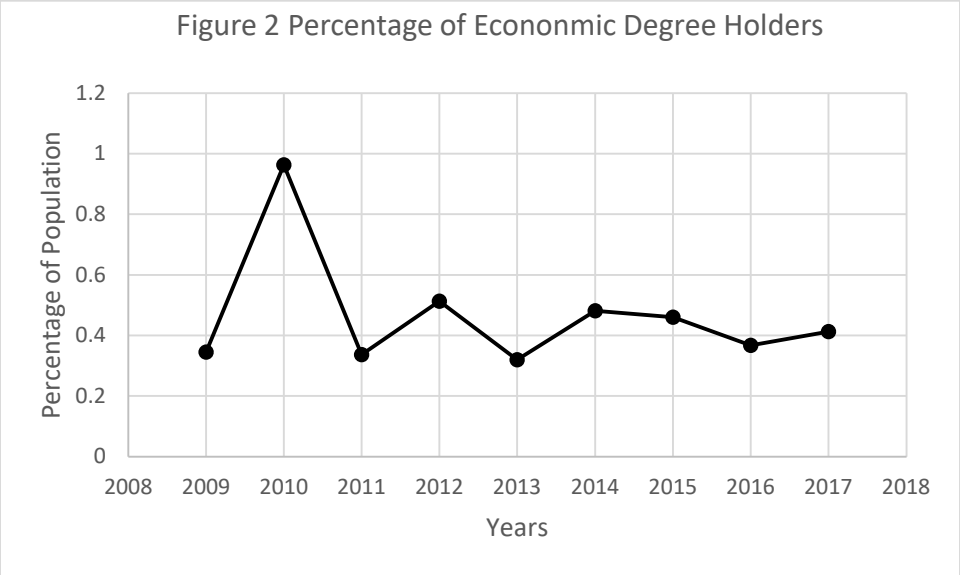
Table 3

Summary Statistics, 2009-2017, 50 States and Washington D.C, 459 total Observations

Variable	Mean	Standard Div	Min	Max
Percent of Degree Holders	21.44%	5.47%	12.92%	48.07%
Percent of Economics Degree Holders	0.47%	0.38%	0.09%	2.84%
perctenage of Male Degree Holders	10.13%	2.60%	5.97%	23.05%
Percentage of Econon Degree Holders	0.33%	0.23%	0.07%	1.83%
State Population	6196814	6974974	559851	39400000
Number of Non-Profit Organizations	29799	29120	4156	166725
Reported Income of Non-Profit Organizations	69B	87B	2.3B	488B
State level total reported charitable giving	$ 3,954,969	$ 5,038,717	$ 209,069	$ 36,600,000
Real income by state	$ 59,174	$ 9,485	$ 34,916	$ 84,094

Note: The table above reports the summary statistics used in this study. This study sourced the data relating to degree holders from IPUMS and the American Community Survey, state population, real income (adjusted for inflation) from the Census Bureau, and individual and non-profit tax statistics from the IRS SOI and Exempt Organization Business Master File. The data is aggregated on a state level to include all states and Washington, D.C, from 2009 through 2017. There is a total of 459 observations. The columns, left to right, are mean, standard deviation, minimum, and maximum. Regarding the reported income of non-profit organizations, The IRS does not require organizations annually receiving less than 50,000 to report received donations. Subsequently, this study excludes such organizations. Likewise, this study could only use the total reported giving reported in tax filing, using this as a base estimation for total giving.





In order to aggregate and organize the data from the multiple sources, an H2 database was used. H2 is a relational database management system written in Java. This database is operated with SQL. The merge used the state and year to combine and collapse as required.

IV. Methodology

This study uses Ordinary Least Square (OLS) regressions adapted for panel data. A regression analysis estimates a relationship between independent and dependent variables. Such models allow us to see the effect on the dependent variable from a unit change in the dependent variable, holding all other (independent variables) constant.

When dealing with different states over time there are unobservable, unaccountable, and omitted variables. Not accounting for such variables causes errors in the regression. This occurs when the included variables pick up the effect of the absent variables, conditional on the level of correlation between the two. This is referred to as the omitted variable bias. In order to help control for some of the unobservable, unaccountable, and omitted variables fixed effects are used.

Fixed effects deal with heterogeneity which is constant (or constantly changing) over time. For our study, this means helping mitigate the effect of the difference between the states, which are constant across time, and the difference in time periods, both of which could cause errors in our analysis. This occurs because the variables we are using to explain philanthropic activity, such as the number of economic degree holders, would also "grab and discard" the effect of unobservable or accountable differences. The basic model is:

$$Y_i = \alpha + \beta_i X_{1i} + v_i + \varepsilon$$

It is important to note in this model that the dependent and independent variables are logarithmic, meaning that proper interpretation of results read : If we increase X by one percentage point then, on average and holding everything else constant, we expect a Y to change by β percentage points. The error term $v+\varepsilon$ is two-part. Epsilon represents stochastic error, v represents the unit specific error term as it varies between units but for particular units, its value is constant. The model adapted for this study is:

$$log(CharitableContribution_i) = \alpha + \beta_1 log(Maleeconomicdegreeholders_i) + \beta_2 log(MaleDegreeholders_i) + \beta_3 log(Economicdegreeholders_i) + \beta_4 log(Degreeholders_i) + \beta_5 log(RealIncome_i) + v_i + \varepsilon$$

With this framework several models were developed to conduct numerous tests of association to different philanthropic markers. Real income was included in the regression in order to account for wealth difference between states. The larger groups had the smaller groups removed from them. For example, Degree holders does not include economic degree holders and male degree holders does not include male economic degree holders. The explanatory variables are also expressed in percentages in order to account for population difference in between states. Real income was included in order to control for difference in between states.

$$log(SumofDonations_i) = \alpha + \beta_1 log(Maleeconomicdegreeholders_i) + \beta_2 log(MaleDegreeholders_i) +$$

$$\beta_3 log(Economicdegreeholders_i) + \beta_4 log(Degreeholders_i) + \beta_5 log(RealIncome_i) + v_i + \varepsilon$$

The first model uses the reported total charitable donations by individuals as a representative figure for Philanthropic activity in a region. As previously discussed, using reported charitable donations is limited in accuracy and detail by the frequency and accuracy of the individuals reporting. Moreover, the individuals may have made donations to out of state charitable/causes organizations. State and Year fixed effects were used to help mitigate the effect of unobservable variables between states and years.

Table 4. Charitable Contributions reported by individuals

Ln-Ln OLS Regression with Year and State FE		
Variable	Coefficent	STD Dev.
Male Economics degree Holders	-.09**	0.04
Male Degree Holder	-1.68***	0.47
Female Economics Degree Holder	.07***	0.02
Female Degree Holder	2.95***	0.42
Real Income	0.26**	0.12
r2	0.44	
N	459	

* 10% level of significance

** 5% level of significance

*** 1% level of significance

Note: The table above reports the estimated relationship, on a state level, between the reported total amount of charitable donations- how much individuals contributed and the percentage of male economic degree holders, male degree holders (excluding male economic degree holders), econ degree holders (excluding male economic degree holders), degree holders (excluding econ degree holders), and real income. To better control for population differences, total amount of charitable contributions was divided by population. The first column gives estimated coefficients of the ln-ln OLS regression with fixed effects on state and year.

$$log(SumIncomeReceived_i) = \alpha + \beta_1 log(Maleeconomicdegreeholders_i) + \beta_2 log(MaleDegreeholders_i) +$$

$$\beta_3 log(Economicdegreeholders_i) + \beta_4 log(Degreeholders_i) + \beta_5 log(RealIncome_i) + v_i + \varepsilon$$

This next Model uses total donations as reported by tax exempt organizations. It is worth noting the early issues discussed regarding the EO BMF data. First, organizations grossing less than 50,000 are excluded from the summation of donation. Next is the issue of unspecified donation sources; the donation may have come from an individual, corporation, trust, foundation, or a book club. Another issue is what and where the tax-exempt organization plans to use the funds for, such as not using the funds for the state they are headquartered and reporting from. Both of these issues are concerning when it comes to painting a larger picture. For example, an organization can be headquartered in Washington D.C but fundraising primarily in New York yet receiving 90% percent of its funding from a foundation in Wyoming and using its funds to build houses is impoverished nations. This hyperbolic example shows the “worst case scenario” in data analysis as it comes to using the EO BMF. Fixed effects on Year and State were used and variables were logged.

Table 5. Revenue Reported by Organizations

ln-ln OLS Regression with Year and State FE		
Variable	Coefficent	STD Dev.
Male Economics degree Holders	-0.07	0.05
Male Degree Holder	-0.69	0.59
Female Economics Degree Holder	0.05*	0.03
Female Degree Holder	1.5***	0.54
Real Income	0.45***	0.15
r2	0.2	
N	459	

* 10% level of significance

** 5% level of significance

*** 1% level of significance

Note: The table above reports the estimated relationship, on a state level, between the reported total reported income of non-profit organizations - how much non-profits claimed to have recieved and the percentage of male economic degree holders, male degree holders (excluding male economic degree holders), econ degree holders (excluding male economic degree holders), degree holders (excluding econ degree holders), and real income. To better control for population differences, total reported income of non-profit organizations was divided by population. The first column gives estimated coefficients of the ln-ln OLS regression with fixed effects on state and year.

$$log(Numberof Organizations_i) = \alpha + \beta_1 log(Maleeconomicdegreeholders_i) + \beta_2 log(MaleDegreeholders_i) +$$

$$\beta_3 log(Economicdegreeholders_i) + \beta_4 log(Degreeholders_i) + \beta_5 log(RealIncome_i) + v_i + \varepsilon$$

This model explores the relationship between economic degree holders and the number of organizations through an OLS regression with fixed effects on Year and State. The relationship results signal a different relationship than those explored before. One reason for this may be the fact that all organization types are included. Therefore, the tally of organizations includes organizations such as religious, charitable, education,

and others all clumped together. Fixed effects on Year and State were used and all variables were logged.

Table 6. Number of Organizations

Ln-Ln OLS Regression with Year and State FE		
Variable	Coefficent	STD. Dev
Male Economics degree Holders	0.03*	0.02
Male Degree Holder	1.32***	0.21
Female Economics Degree Holder	-0.02*	0.01
Female Degree Holder	-1.36*	0.19
Real Income	0.06	0.05
r2	0.13	
N	459	

* 10% level of significance

** 5% level of significance

*** 1% level of significance

Note: The table above reports the estimated relationship, on a state level, between the reported total reporting number of non-profit organizations - how "many" organizations and the percentage of male economic degree holders, male degree holders (excluding male economic degree holders), econ degree holders (excluding male economic degree holders), degree holders (excluding econ degree holders), and real income. To better control for population differences,the total number of non-profit organizations was divided by population. The first column gives estimated coefficients of the ln-ln OLS regression with fixed effects on state and year.

V. Results

Estimating the Model for individual contributions

Under these specifications all variables are statistically and economically significant. Results show that males, both those isolated as economists and those not, exhibit a negative relationship with giving. All else equal, on average, a one percentage point increase of male economists would decrease the philanthropic activity by .09 percentage points. While a one percentage point increase in the aggregate of degree holding males, males holding degrees such as chemical engineers or history majors, leads to a decrease in giving by 1.68 percentage points on average, holding all else constant. In terms of dollars, this corresponds to a loss of $ 3,547 for a percentage point increase in male economic degree holders and $66,625 for a percentage point increase in male degree holders.

Conversely, females show a positive relationship with giving as measured by reported individual contributions. All else equal, on average, a one percentage point increase of female economists would raise the philanthropic activity by .07 percentage points. This marginal effect translates to an average increase of $2,707 from the mean, holding all else constant. Having more female degree holders regardless of that degree specification is likewise significant and positive as well. As for females with a degree, a percentage point increase would raise individual giving by 2.95 percentage points, on average holding all else constant. This corresponds to a marginal effect of $116,868.

Female economic degree holders give less then female degree holders by a larger amount than the difference between male economic degree holders and male

degree holder. While the difference in the marginal effect of a 1 percentage point change between female economic degree holders and female degree holders is $114,000, for males the difference is $63,000.

Male and female economists are closer to one another than male and female of all other degrees are. The difference of a 1 percentage point change between female and male economics degree holder is approximately $6,254, while the difference between the genders for the aggregate degree holder is approximately $183,120.

Average real income, which was included primarily to account for differences between states, shows a positive and statistically significant relationship with individual giving. A percentage point increase in the average real income, on average and holding all else constant, yields a .26 percentage point increase in contributions. This corresponds to an average increase of $10,235 from the mean.

Estimating the model for income received by organizations

Under these specifications all variables, but male economics and aggregate degree holders, are statistically and economically significant.

Females show a positive relationship with giving as measured by income reported by tax exempt organizations. All else equal, on average, a one percentage point increase of female economists would raise the philanthropic activity by 0.05 percentage points. This marginal effect translates to an average increase of $35,812 from the mean, holding all else constant. Having more female degree holders regardless of that degree specification is likewise significant and positive as well. As for

females with a degree, a percentage point increase would raise income reported by 1.49 percentage points, on average holding all else constant. This corresponds to a marginal effect of $1,029,288.

Though males are statistically insignificant by convention standards, the closeness is behavior between female and male economist, in contrast to the aggregate of all other degrees, is observable in this model.

Average real income, which was included primarily to account for differences between states, shows a positive and statistically significant relationship with individual giving. A percentage point increase in the average real income, on average and holding all else constant, yields a .45 percentage point increase in income reported. This corresponds to an average increase of $ 313,757 from the mean.

Though statistically significant, further analysis would be required to determine the economic significance. In other words, with the problems outlined in using the EO BMF, further analysis in order to better isolate the effect of these specifications is required.

Estimating the model for number of organizations

Unlike the previous specifications used, having the number of organizations as the outcome changes the signs of male and female degree holders, both economic and aggregate degrees alike and average real income loses significance by convention measures.

Under these specifications all variables, but average real income, are statistically significant. Results show that males, both those isolated as economists and those not, exhibit a positive relationship with the number of organizations per capita. All else equal, on average, a one percentage point increase of male economists would increase the count of organizations by .03 percentage points. While a one percentage point increase in the aggregate of degree holding males, males holding degrees such as chemical engineers or history majors, leads to an increase in the number of organizations by 1.32 percentage points on average, holding all else constant. In terms of the number of organizations, this corresponds to approximately 19 more organizations for a percentage point increase in male economic degree holders and approximately 783 more organizations for a percentage point increase in male degree holders. This could be interpreted as a preference for targeted allocation of resource, or that males prefer organization that answer a specific demand.

Conversely, females show a negative relationship with giving as measured by reported individual contributions. All else equal, on average, a one percentage point increase of female economists would lower the number of organizations by .02 percentage points. This marginal effect translates to ten less organizations from the mean, holding all else constant. Having more female degree holders regardless of that degree specification is likewise significant and negative as well. As for females with a degree, a percentage point increase would lower the number of organizations by 1.36 percentage points, on average holding all else constant. This corresponds to approximately 804 less organizations.

We can observe, again, a likeness is aggregate effect between female and male economist in contrast too the difference between the aggregate effect of male and female degree holders. These results also indicate that male economist, and male degree holders, have a positive relationship with the number of organizations, but do not have a positive relationship with the sum of contributions to those organizations.

Using this specification, there is a flip in relationship between males, females and a variable meant to represent philanthropic activity. However, the variable that represented the count of tax-exempt organizations does not differentiate from the different types of organization. Regardless of an organization character, be it a church or a school, all organizations are counted in the sum. Consequently, what would be needed to give concrete economic significance to this approximation would be to isolate the type of organization. Unfortunately, this is somewhat limited using the EOBMF data as some organizations are “questionable” in self-characterization. For example, numerous religious organizations classify themselves, or sub organizations within themselves, as educational organizations. Thus, finding and isolating the effect on even a particular type of organization presents its challenges.

VI. Conclusion

The non-profit sector accounted for an estimated 5.6% of the 2016 GDP with income of 1.047 trillion dollars. The difficulty in breaking up the non-profit sectors and assessing the data is a problem to be considered. With a sizable portion of the GDP “nontaxable”, data should be more than readily available in order to provide insight on the benefit and the value these organizations bring, or don’t bring. However, this is beyond the scope of

this study, as is extrapolating from the empirical data collected, why the percentage of female economists raises the philanthropic activity of a region.

Previous research of economics does concede that female economic students behave less “Self- Interestedly”, and that could project into a greater likelihood to give to philanthropic causes. But those same studies still found female economic students to be more “self-interested” than the control. However, the data collected for this study suggest that the effect of female economists is positive and greater than their individual financial contribution. It seems that female economists are raising how much others give too.

The results also indicate that male and female economist act in a relatively uniform fashion in contrast to the difference between genders for other degree holders. Still, there are far fewer female economics students than male (23% are female), and the author of this study believes there should be more. Even if the results regarding the effects of an economic education on philanthropy are not earth shattering or convincing, they demonstrate a difference in behavior between male and female economists. Therefore, it is clear that female involvement in the field would lead to expansion and be a benefit to the field.

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