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The Economics of Altruism – The Old, the Rich, the Female

by

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Abstract:

This study examines whether certain observed characteristics are associated people's altruistic feelings and behaviors. The paper utilizes a National Mental Health Survey that gathered questions about respondents' self-reported altruism along with their demographic, labor force, and income information. The empirical results reveal that (1) older people are more altruistic; (2) higher income people are more altruistic; and (3) women are more altruistic. The results are robust once the potential endogeneity problem of the income variable is eliminated by the use of the instrumental variable estimation method.

Keywords: Behavioral Economics, Altruism, Old Age, Gender
JEL Codes: D64, J16, J40

1. Introduction

Traditional Economics assumes that rational people are self-interest actors and only care about their own well-being. Thus, under the standard consumer's maximization problem, one only considers his own consumption in his utility maximization objective. However, altruism, defined as[2] (i) "unselfish regard for or devotion to the welfare of others" or (ii) "behavior by an animal that is not beneficial to or may be harmful to itself but that benefits others of its species," is often observed in real life. This observation forced economists to think beyond traditional rationality and eventually incorporated altruism into standard utility functions.

Researchers in both Psychology and Economics have tried to understand altruism. In addition, they tried to identify whether there are any observed characteristics that are associated with people behaving more altruistically. Most of the work in this subject area is done by conducting experiments.

Regarding age and altruism, (Green & Schneider, 2014) conducted experiments on boys and found that the older they are the more likely they are to share candies and to help pick up dropped items. (Skarin & Moely, 1976) conducted experiments on children using card games, designating the number of tokens to be earned and to be given to a partner. The older the children are, the more likely they are to share tokens to their partners. (Midlarsky & Hannah, 1989) conducted an experiment by having solicitors sitting at shopping malls. They documented the donation behaviors of the young and the old. The finding is such that the older they are, the more likely they are to donate. (Harbaugh, Krause, & Liday, 2003) observed bargaining behaviors of children via dictator games and ultimatum games. They found that the older the children are the more likely they are to offer higher proposals to others, showing higher degree of altruism.

Regarding gender and altruism, (Skarin & Moely, 1976), in addition to finding that older children are more altruistic, also found that girls are more likely to share their tokens to their partners compared to boys. (Eckel & Grossman, 1998) conducted double-anonymous dictator experiments and found that women are less selfish than men and tend to donate twice as much compared to men. (Andreoni & Vesterlund, 2001) observed gender differences in altruistic behaviors under different circumstances. Women tend to be more giving when the

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[2] Source: Merriam-Webster Dictionary

altruistic behaviors are relatively more expensive and men are more kind under the alternative circumstance.

A review of literature regarding income and altruism reveals mixed evidence. Under one extreme setting, (Hoffman, 2011) investigated the Gentiles' decisions to rescue the Jews during the World War II. He found that the higher income of the Gentiles, the more likely they are to rescue the Jews. (Holland, Silva, & Mace, 2012) used a lost-letter experiment. They dropped letters (with the author's name and address) on pavements in different neighborhoods and found that letters dropped in the richer neighborhoods are more likely to be returned to the author. However, (Miller, Kahle, & Hastings, 2015) found that children from richer families are less likely to donate their tokens to others compared to children from poorer families.

The main objective of this study is to investigate whether altruistic feelings and behaviors differ by observable characteristics of the individuals, focusing on age, gender, and income. While the previous literature tried to address the issue, most of the work was experimental work using limited number of observations. This study is among the first to utilize a national survey with large sample size to answer the question. This study utilizes Thailand's Mental Health Survey (MHS), conducted during 2014 and 2015 as attachments to the country's Labor Force Survey (LFS). The stratified two stage sampling method (with provinces as strata) was used so that the households interviewed are nationally represented.

2. Theoretical Considerations

(Becker, 1976) discussed how altruism is observed in biology. In this context, an altruistic cell may choose to give up some of its genetic fitness to its brother. Since both of them share most of their genes, therefore if the increase in the total genetic fitness is more than what the first cell gives up, then altruism is the optimal strategy. He defined an altruist as[3] someone who is "willing to reduce his own consumption in order to increase the consumption of others." He then proposed an economic model of altruism by incorporating others' consumption into one's utility function.

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[3] Source: (Becker, 1976) pp. 818.

Following (Becker, 1976) and (Clavien & Chapuisat, 2016), a person's utility function can be written as:

$$U(x_1, x_2) = u(x_1, \propto x_2)$$

where x_1 is the person's own consumption, x_2 is someone else's consumption, and $0 \leq \propto \leq 1$ is the person's degree of altruism. It is important to note that, when $\propto = 0$, the utility function becomes $U(x_1, x_2) = u(x_1)$ which means the person only cares about his own consumption. This is the standard form of utility function in economics in which people are assumed to be self-interest agents. On the other hand, when $\propto$ takes on a positive value, the person takes someone else's consumption into his consideration. Thus, he exhibits some degree of altruism. Some literature went beyond the basic model of altruism by introducing the concept of "warm glow." (Andreoni, 1989) and (Andreoni, 1990) argued that a person may not purely care about others' consumption but he gets good feelings by the act of giving itself (warm-glow feeling). Since the altruism act is driven by the self-interest to increase one's own good feelings and not about the consumption of others, Andreoni called this "impure altruism."

The fact that different people exhibit different level of altruism translates into different people having different value of $\propto$. It is perhaps arguable that people may have been born with different $\propto$ in the first place. It is also arguable that people's $\propto$ can change as they evolve, depending on how they were raised, the environment they have been in, or situations they have encountered. Moreover, the society as a whole may have developed in the way that the norm has changed and thus the $\propto$'s have shifted. For example, many years ago, it may be unusual for ones to donate blood. However, nowadays, the practice of donating blood has become norm. If one considers donating blood as an act of altruism then perhaps the $\propto$'s of the people in the society have increased.

In this study, I plan to investigate whether altruistic feelings and behaviors differ by age, gender, and income. Thus, it is anticipated that, theoretically, people of different age, people of different gender, and people with different level of income, would differ in terms of the value of their $\propto$'s.

3. Data and Methodology

This study utilizes Thailand's Mental Health Survey (MHS), conducted during 2014 and 2015 as attachments to the country's Labor Force Survey (LFS). The MHS was conducted by the National Statistical Office of Thailand (NSO), Department of Mental Health, and Institute for Population and Social Research (Mahidol University).

The, earlier waves of the MHS were conducted as attachments to other surveys (such as the Survey on Conditions of Society and Culture, the Health and Welfare Survey, etc.). Depending on which surveys they were attached to, some of MHS waves did not have large number of observations or did not contain all the labor force information. The 2014 and 2015 waves of the Survey were attachments to the LFS, therefore the sample size was large. Also, the data contained all necessary labor force and demographic information such as age, gender, marital status, employment status, education, etc. For income earners (i.e., wage and salary workers – employees of government, state enterprises, private companies, and multiple job holders), the data on income, occupation, and industry, etc. were also collected.[4]

The stratified two stage sampling method (with provinces as strata) was used so that the households interviewed are nationally represented. A respondent of each household was asked about the demographic and labor force information of everyone in the household. However, the MHS questions were asked only to the respondents. The MHS questions were aimed to measure 5 important elements of mental health which are (i) state of mind – good feeling, (ii) state of mind – bad feeling, (iii) mental fitness, (iv) quality of mind, and (v) other supporting factors of mental health. The questions that are of interest in this study are the ones relating to the quality of mind. Specifically, these questions are:

Q1) Do you feel sympathetic when others are miserable?
Q2) Do you feel happy when you help others who are in trouble?
Q3) Do you help others when you have a chance?

The respondents were asked to answer these questions on a scale of 0 to 3 (0 = Not at all; 1 = A little; 2 = Quite a lot; 3 = A great deal). These questions are treated as self-reported altruism in this study and will be used as dependent variables in the analysis. It is worthwhile to point out that Q1 and Q2 mainly ask about the respondent's "feelings" whereas Q3 asks

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[4] For 2014, the Survey was conducted for months 2, 5, 7, 8, and 11 (however, month 11's information was not released to the public). For 2015, the Survey was conducted for months 2, 5, 7, 8, 9, and 11.

about the respondent's "actions." Therefore, it is plausible that this distinction of how the altruism questions were asked will have at least some slight impact on how people answers the questions.

Table 1 displays the summary statistics of the data. The total number of observations is 322,592.[5] The average age of the respondents is 49.49 years old. About 41.4% are males and 68.6% of the respondents are married. Approximately, 68.0% are employed and 54.6% of the respondents live in urban (i.e., municipal) areas. The majority of the people (40.3%) have less than primary education. The average monthly income is THB 13,223.

Tables 2, 3, and 4 display how the respondents answered the altruism questions (Q1, Q2, and Q3), overall, by age group, by gender, by marital status, and by location. Since the questions ask whether the respondent (i) feels sympathetic when others are miserable, (ii) feels happy when helping others, and (iii) helps others when the opportunity permits, the higher the scale of the answer (0 = Not at all; 1 = A little; 2 = Quite a lot; 3 = A great deal) is interpreted as the respondent being more altruistic.

Overall, the majority of the respondents answered 2 (Quite a lot) to each of the questions (76.19% for Q1, 75.92% for Q2, and 71.29% for Q3). Among the 3 questions, lower proportion of people answered 2 (Quite a lot) and 3 (A great deal) for Q3 compared to Q1 and Q2. This is perhaps due to the fact that Q3 focuses on the respondent's "actions" rather than "feelings" like the other 2 questions. The older cohort (aged 40 up) are more likely to answer 2 (Quite a lot) and 3 (A great deal) to each of the questions compared to the younger cohort (aged 15-39). Higher percentage of men answered 0 (Not at all) to each of the questions compared to women (0.59% vs. 0.55% for Q1, 0.37% vs. 0.33% for Q2, 0.61% vs. 0.59% for Q3). However, higher percentage of men also answered 3 (A great deal) to Q1 and Q3 compared to women (9.38% vs. 9.02% for Q1, and 9.35% vs. 9.06% for Q3). Married people are more likely to answer 2 (Quite a lot) and 3 (A great deal) to each of the questions compared to people who are not married. Lastly, people residing in Northern, Northeastern, and Southern regions appeared to answer 2 (Quite a lot) and 3 (A great deal) to each of the questions more often than people residing in Bangkok and in the Central region.

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[5] Observations with missing/outlier information and observations that belong to extremely small industry groups were dropped.

In this study, the following OLS models will be estimated.

$$y_{it} = \alpha + \gamma' z_{it} + \delta_t + \varepsilon_{it} \qquad\qquad \text{[Model 1]}$$

Model 1 includes all observations both working and not working (i.e., unemployed or not in labor force). y_{it} is the answer to each of the altruism questions above. Each of the questions will be run on separate regressions. z_{it} is the vector of observable characteristics such as age, gender, marital status, employment status, education, and location information of individual i at time t. δ_t's are year-month dummies. ε_{it} is the error term. Robust standard errors will be estimated.

$$y_{it} = \alpha + \beta' x_{it} + \delta_t + \theta_{it} + \pi_{it} + \varepsilon_{it} \qquad\qquad \text{[Model 2]}$$

Model 2 includes only income earners (i.e., wage and salary workers). x_{it} is similar to z_{it} except that the employment status variable is now replaced by the log of income variable. θ_{it}'s and π_{it}'s are occupation and industry dummies. Robust standard errors will be estimated.

One potential issue that may occur under Model 2 is that, the income variable may be endogenous. Such issue is addressed in this study by the use of the instrumental variable estimation method. The selected instrument is the average income of individuals who belong to the same group. Each group is identified by region, urban/rural, occupation, industry, and education. The correlation between the selected instrument and the log of income variable is high (0.86) and the selected instrument by itself does not affect the respondents' answers to the altruism questions. Similar argument of endogeneity problem could be raised for the employment variable under Model 1. However, with data limitation, I was not able find a good instrument for such variable.[6] This study addressed the issue by segregating the data into the employed group and the not-employed group and examine whether the main conclusions still hold for both groups. The estimation results from both Model 1 and Model 2 are discussed in the following section.

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[6] An ideal instrumental variable could be the employment rate in each area. However, since the province information was removed from the data by the NSO (possibly due to the sensitive nature of certain MHS questions), the only location variations available were regions and urban/rural areas which were not sufficient.

4. Results

Table 5 displays the regression results for Model 1. Columns 1-3, 4-6, and 7-9 are the results for the altruism questions Q1, Q2, and Q3, respectively. Columns 1, 4, and 7 are the results in which all observations (both employed and not employed) are included. The pattern is clear that, the older cohorts (50-59 and 60 up) are more altruistic than the younger cohorts (reference group is age 15-19). For Q3 (Column 7), the age 40-49 cohort group is also more altruistic. This pattern of older cohorts being more altruistic remained robust once the analysis was carried out separately for people who are employed and for people who are not employed (Columns 2-3, 5-6, and 8-9). The coefficients for the male dummy variables are negative and significant, and remained robust for most of the specifications except for Q1-employed and Q3-employed groups (i.e., Columns 2 and 8). These outcomes suggest that, in general, women are more altruistic than men. Across all specifications, the coefficients for the married dummies are positive and significant suggesting that married people are more altruistic. Educated people appeared to be more altruistic (reference group is less than primary education). In addition, people living in the urban areas are less altruistic. The regional dummy variables (reference group is Bangkok) suggest that people residing in Northern, Northeastern, and Southern regions are more altruistic than people residing in Bangkok. However, people residing in the Central region (other than Bangkok) are less altruistic than people residing in Bangkok.

Table 6 displays the regression results for Model 2. Columns 1, 3, and 5 are the results for the altruism questions Q1, Q2, and Q3, under the basic specification (i.e., non-IV version). Columns 2, 4, and 6 are the results for the altruism questions Q1, Q2, and Q3, under the instrumental variable method. For all questions (Q1, Q2, and Q3), older people in their 40s, 50s, and 60s are more altruistic. The results remained robust once the instrumental variable estimation method is used. Women (compared to men) and married people (compared to not-married people) are more altruistic only for Q2 (i.e., Columns 3, and 4). The coefficients for the log of income variables are positive and significant suggesting that people with higher income are relatively more altruistic. Even after correcting for the endogeneity problem, the coefficients of the log of income variables remained positive and significant confirming the positive relationships between the two variables. Similar to the results from Model 1, educated people are more altruistic and people living in the urban areas are less altruistic. Finally, people residing in Northern, Northeastern, and Southern regions

are more altruistic and people residing in the Central region (other than Bangkok) are less altruistic compared to people residing in Bangkok.

5. Conclusions and Discussions

This paper examines self-reported altruistic feelings and behaviors gathered from Thailand's National Mental Health Survey (MHS) during 2014-2015. I find that altruism can be commonly observed from the respondents' answers to the altruistic-related questions. The empirical results reveal that (1) older people are more altruistic; (2) higher income people are more altruistic; and (3) women are more altruistic. The results are robust once the potential endogeneity problem of the income variable is eliminated by the use of the instrumental variable estimation method. In addition, I find evidence that educated people and married people are generally more altruistic (although not robust across all specifications). People residing in the rural areas appeared to be more altruistic than the people residing in the urban areas.

The fact that altruism is commonly observed should prompt traditional economists to incorporate the use of utility functions with altruism in their economics analyses more regularly. Policymakers could also take into account of the existence of people's altruistic feelings and behaviors when making policy recommendations. The fact that certain types of people exhibit higher degree of altruism could provide insights regarding which groups should be target groups for certain policies. This study contributes to the literature by uncovering how certain observed characteristics of the individuals are associated with higher degree of altruism using a large national survey. However, future search (perhaps with more extensive datasets) could explore more into the reasons why these people are more altruistic than others.

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Tables

Table 1: Summary Statistics

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
AGE	322,592	49.49	16.37	15	98
MALE	322,592	0.414	0.493	0	1
MARRIED	322,592	0.686	0.464	0	1
EMPLOYED	322,592	0.680	0.466	0	1
URBAN	322,592	0.546	0.498	0	1
LESS THAN PRIMARY	322,592	0.403	0.490	0	1
PRIMARY	322,592	0.327	0.469	0	1
SECONDARY	322,592	0.130	0.337	0	1
BACHELOR	322,592	0.127	0.333	0	1
MASTER	322,592	0.0130	0.113	0	1
DOCTORAL	322,592	0.000487	0.0221	0	1
INCOME	74,173	13,223	12,356	180	520,620

Table 2: Distribution of Answers to Q1 by Group

Q1	All Observations Freq (Percent)	By Age Group 15-39 Freq (Percent)	40+ Freq (Percent)	By Gender Female Freq (Percent)	Male Freq (Percent)	By Marital Status Not Married Freq (Percent)	Married Freq (Percent)	By Region Bangkok Freq (Percent)	Central Freq (Percent)	North Freq (Percent)	Northeast Freq (Percent)	South Freq (Percent)
0	1,822 (0.565)	554 (0.625)	1,268 (0.542)	1,036 (0.548)	786 (0.588)	638 (0.630)	1,184 (0.535)	44 (0.363)	576 (0.635)	352 (0.457)	536 (0.601)	314 (0.587)
1	45,401 (14.07)	13,608 (15.34)	31,793 (13.59)	26,670 (14.12)	18,731 (14.01)	15,578 (15.38)	29,823 (13.48)	1,931 (15.93)	16,502 (18.19)	9,346 (12.13)	11,897 (13.34)	5,725 (10.69)
2	245,779 (76.19)	66,667 (75.16)	179,112 (76.58)	144,153 (76.31)	101,626 (76.02)	75,798 (74.84)	169,981 (76.81)	8,787 (72.51)	66,113 (72.86)	60,361 (78.37)	67,982 (76.23)	42,536 (79.46)
3	29,590 (9.173)	7,877 (8.880)	21,713 (9.284)	17,046 (9.024)	12,544 (9.383)	9,270 (9.152)	20,320 (9.182)	1,357 (11.20)	7,544 (8.314)	6,963 (9.040)	8,767 (9.830)	4,959 (9.263)
Total	322,592	88,706	233,886	188,905	133,687	101,284	221,308	12,119	90,735	77,022	89,182	53,534

Table 3: Distribution of Answers to Q2 by Group

Q2	All Observations Freq (Percent)	By Age Group 15-39 Freq (Percent)	40+ Freq (Percent)	By Gender Female Freq (Percent)	Male Freq (Percent)	By Marital Status Not Married Freq (Percent)	Married Freq (Percent)	By Region Bangkok Freq (Percent)	Central Freq (Percent)	North Freq (Percent)	Northeast Freq (Percent)	South Freq (Percent)
0	1,120 (0.347)	315 (0.355)	805 (0.344)	624 (0.330)	496 (0.371)	450 (0.444)	670 (0.303)	59 (0.487)	380 (0.419)	253 (0.328)	256 (0.287)	172 (0.321)
1	39,917 (12.37)	11,864 (13.37)	28,053 (11.99)	23,248 (12.31)	16,669 (12.47)	14,053 (13.87)	25,864 (11.69)	1,807 (14.91)	15,099 (16.64)	8,278 (10.75)	9,491 (10.64)	5,242 (9.792)
2	244,920 (75.92)	66,680 (75.17)	178,240 (76.21)	143,449 (75.94)	101,471 (75.90)	75,417 (74.46)	169,503 (76.59)	8,584 (70.83)	65,945 (72.68)	59,220 (76.89)	68,903 (77.26)	42,268 (78.96)
3	36,635 (11.36)	9,847 (11.10)	26,788 (11.45)	21,584 (11.43)	15,051 (11.26)	11,364 (11.22)	25,271 (11.42)	1,669 (13.77)	9,311 (10.26)	9,271 (12.04)	10,532 (11.81)	5,852 (10.93)
Total	322,592	88,706	233,886	188,905	133,687	101,284	221,308	12,119	90,735	77,022	89,182	53,534

Table 4: Distribution of Answers to Q3 by Group

Q3	All Observations Freq (Percent)	By Age Group		By Gender		By Marital Status		By Region				
		15-39 Freq (Percent)	40+ Freq (Percent)	Female Freq (Percent)	Male Freq (Percent)	Not Married Freq (Percent)	Married Freq (Percent)	Bangkok Freq (Percent)	Central Freq (Percent)	North Freq (Percent)	Northeast Freq (Percent)	South Freq (Percent)
0	1,923 (0.596)	571 (0.644)	1,352 (0.578)	1,106 (0.585)	817 (0.611)	927 (0.915)	996 (0.450)	39 (0.322)	776 (0.855)	450 (0.584)	512 (0.574)	146 (0.273)
1	61,066 (18.93)	17,731 (19.99)	43,335 (18.53)	36,372 (19.25)	24,694 (18.47)	21,515 (21.24)	39,551 (17.87)	2,719 (22.44)	21,691 (23.91)	13,563 (17.61)	15,173 (17.01)	7,920 (14.79)
2	229,987 (71.29)	62,453 (70.40)	167,534 (71.63)	134,313 (71.10)	95,674 (71.57)	69,757 (68.87)	160,230 (72.40)	8,204 (67.70)	60,183 (66.33)	56,274 (73.06)	64,779 (72.64)	40,547 (75.74)
3	29,616 (9.181)	7,951 (8.963)	21,665 (9.263)	17,114 (9.060)	12,502 (9.352)	9,085 (8.970)	20,531 (9.277)	1,157 (9.547)	8,085 (8.911)	6,735 (8.744)	8,718 (9.776)	4,921 (9.192)
Total	322,592	88,706	233,886	188,905	133,687	101,284	221,308	12,119	90,735	77,022	89,182	53,534

Table 5: Regression Results (Model 1: All Observations)

VARIABLES	(1) Q1	(2) Q1	(3) Q1	(4) Q2	(5) Q2	(6) Q2	(7) Q3	(8) Q3	(9) Q3
AGE: 20-29	-0.0245***	0.0161	-0.0323***	-0.0326***	0.0164	-0.0429***	-0.0289***	0.0331***	-0.0464***
	(0.00578)	(0.0112)	(0.00812)	(0.00575)	(0.0113)	(0.00806)	(0.00637)	(0.0125)	(0.00888)
AGE: 30-39	-0.0216***	0.0257**	-0.0514***	-0.0286***	0.0268**	-0.0563***	-0.0244***	0.0491***	-0.0780***
	(0.00562)	(0.0110)	(0.00903)	(0.00559)	(0.0111)	(0.00898)	(0.00619)	(0.0122)	(0.01000)
AGE: 40-49	0.00500	0.0495***	-0.00953	-0.00330	0.0506***	-0.0216***	0.0128**	0.0816***	-0.0150
	(0.00544)	(0.0109)	(0.00818)	(0.00541)	(0.0110)	(0.00820)	(0.00602)	(0.0121)	(0.00917)
AGE: 50-59	0.0337***	0.0770***	0.0209***	0.0246***	0.0753***	0.0161**	0.0498***	0.113***	0.0373***
	(0.00558)	(0.0110)	(0.00786)	(0.00556)	(0.0111)	(0.00792)	(0.00615)	(0.0122)	(0.00879)
AGE: 60+	0.0427***	0.0867***	0.0336***	0.0350***	0.0898***	0.0243***	0.0465***	0.113***	0.0347***
	(0.00545)	(0.0112)	(0.00707)	(0.00542)	(0.0113)	(0.00704)	(0.00602)	(0.0124)	(0.00787)
MALE	-0.00404**	-0.00134	-0.0124***	-0.0142***	-0.0106***	-0.0248***	-0.00502**	0.00120	-0.0230***
	(0.00183)	(0.00212)	(0.00369)	(0.00183)	(0.00210)	(0.00373)	(0.00198)	(0.00225)	(0.00412)
MARRIED	0.0173***	0.0150***	0.0219***	0.0227***	0.0195***	0.0279***	0.0328***	0.0244***	0.0464***
	(0.00205)	(0.00255)	(0.00351)	(0.00205)	(0.00254)	(0.00355)	(0.00223)	(0.00273)	(0.00394)
EMPLOYED	0.0179***			0.0243***			0.0419***		
	(0.00220)			(0.00220)			(0.00241)		
PRIMARY	0.0149***	0.0123***	0.0189***	0.0252***	0.0210***	0.0332***	0.0423***	0.0339***	0.0568***
	(0.00263)	(0.00311)	(0.00502)	(0.00261)	(0.00308)	(0.00500)	(0.00282)	(0.00330)	(0.00555)
SECONDARY	0.0605***	0.0531***	0.0762***	0.0696***	0.0604***	0.0896***	0.0924***	0.0749***	0.130***
	(0.00326)	(0.00385)	(0.00628)	(0.00327)	(0.00384)	(0.00633)	(0.00351)	(0.00412)	(0.00681)
BACHELOR	0.100***	0.0977***	0.105***	0.115***	0.112***	0.123***	0.146***	0.135***	0.170***
	(0.00324)	(0.00384)	(0.00626)	(0.00324)	(0.00383)	(0.00630)	(0.00343)	(0.00405)	(0.00667)
MASTER	0.153***	0.151***	0.152***	0.168***	0.161***	0.203***	0.222***	0.215***	0.229***
	(0.00765)	(0.00830)	(0.0207)	(0.00783)	(0.00849)	(0.0212)	(0.00782)	(0.00846)	(0.0217)
DOCTORAL	0.236***	0.216***	0.318***	0.248***	0.219***	0.363***	0.362***	0.350***	0.403***
	(0.0392)	(0.0443)	(0.0819)	(0.0428)	(0.0486)	(0.0861)	(0.0414)	(0.0468)	(0.0880)
URBAN	-0.0164***	-0.0213***	-0.00639*	-0.0206***	-0.0248***	-0.0119***	-0.0236***	-0.0323***	-0.00606*
	(0.00182)	(0.00218)	(0.00330)	(0.00181)	(0.00215)	(0.00331)	(0.00196)	(0.00231)	(0.00367)
CENTRAL	-0.0499***	-0.0468***	-0.0533***	-0.0440***	-0.0376***	-0.0536***	-0.0217***	-0.0121*	-0.0345***
	(0.00516)	(0.00635)	(0.00888)	(0.00534)	(0.00659)	(0.00913)	(0.00547)	(0.00669)	(0.00948)
NORTH	0.0239***	0.0281***	0.0175**	0.0385***	0.0411***	0.0363***	0.0502***	0.0604***	0.0358***
	(0.00517)	(0.00636)	(0.00891)	(0.00536)	(0.00661)	(0.00919)	(0.00548)	(0.00670)	(0.00953)
NORTHEAST	0.0191***	0.0198***	0.0202**	0.0396***	0.0378***	0.0468***	0.0675***	0.0709***	0.0679***
	(0.00515)	(0.00633)	(0.00892)	(0.00531)	(0.00654)	(0.00913)	(0.00544)	(0.00665)	(0.00949)
SOUTH	0.0353***	0.0382***	0.0316***	0.0318***	0.0341***	0.0301***	0.0800***	0.0834***	0.0814***
	(0.00526)	(0.00643)	(0.00919)	(0.00542)	(0.00665)	(0.00944)	(0.00555)	(0.00676)	(0.00977)
Constant	1.996***	1.974***	1.998***	2.041***	2.018***	2.042***	1.867***	1.850***	1.871***
	(0.00797)	(0.0131)	(0.0127)	(0.00806)	(0.0133)	(0.0129)	(0.00861)	(0.0143)	(0.0138)
Observations	322,592	219,421	103,171	322,592	219,421	103,171	322,592	219,421	103,171
R-squared	0.023	0.024	0.020	0.027	0.028	0.025	0.026	0.025	0.025
YR-MONTH	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	Employed	Not Employed	All	Employed	Not Employed	All	Employed	Not Employed

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6: Regression Results (Model 2: Income Earners)

VARIABLES	(1) Q1	(2) Q1-IV	(3) Q2	(4) Q2-IV	(5) Q3	(6) Q3-IV
AGE: 20-29	0.0146	0.0147	0.0162	0.0162	0.0310*	0.0310*
	(0.0160)	(0.0159)	(0.0163)	(0.0163)	(0.0182)	(0.0182)
AGE: 30-39	0.0116	0.0120	0.0138	0.0139	0.0363**	0.0370**
	(0.0158)	(0.0158)	(0.0161)	(0.0161)	(0.0180)	(0.0180)
AGE: 40-49	0.0261*	0.0271*	0.0272*	0.0276*	0.0481***	0.0499***
	(0.0158)	(0.0159)	(0.0161)	(0.0162)	(0.0180)	(0.0181)
AGE: 50-59	0.0496***	0.0514***	0.0449***	0.0455***	0.0709***	0.0739***
	(0.0162)	(0.0164)	(0.0165)	(0.0167)	(0.0184)	(0.0186)
AGE: 60+	0.0641***	0.0647***	0.0657***	0.0659***	0.0937***	0.0948***
	(0.0176)	(0.0176)	(0.0179)	(0.0179)	(0.0199)	(0.0199)
MALE	-0.00656	-0.00582	-0.0179***	-0.0177***	-0.00229	-0.00104
	(0.00442)	(0.00453)	(0.00444)	(0.00456)	(0.00474)	(0.00486)
MARRIED	0.00115	0.00149	0.00682*	0.00693*	0.00311	0.00367
	(0.00408)	(0.00410)	(0.00409)	(0.00410)	(0.00436)	(0.00439)
LN(INCOME)	0.0291***	0.0239***	0.0347***	0.0329***	0.0496***	0.0409***
	(0.00425)	(0.00846)	(0.00430)	(0.00852)	(0.00462)	(0.00887)
PRIMARY	0.000406	0.00167	0.00870	0.00912	0.0131*	0.0153**
	(0.00649)	(0.00672)	(0.00646)	(0.00669)	(0.00698)	(0.00720)
SECONDARY	0.0269***	0.0288***	0.0269***	0.0276***	0.0347***	0.0380***
	(0.00795)	(0.00839)	(0.00788)	(0.00834)	(0.00848)	(0.00892)
BACHELOR	0.0430***	0.0464***	0.0503***	0.0514***	0.0506***	0.0563***
	(0.00921)	(0.0103)	(0.00924)	(0.0104)	(0.00991)	(0.0111)
MASTER	0.0571***	0.0620***	0.0619***	0.0635***	0.0760***	0.0843***
	(0.0134)	(0.0149)	(0.0136)	(0.0151)	(0.0139)	(0.0155)
DOCTORAL	0.103**	0.109**	0.108**	0.110**	0.172***	0.182***
	(0.0489)	(0.0492)	(0.0548)	(0.0551)	(0.0522)	(0.0525)
URBAN	-0.0201***	-0.0198***	-0.0252***	-0.0251***	-0.0298***	-0.0294***
	(0.00400)	(0.00401)	(0.00398)	(0.00400)	(0.00428)	(0.00429)
CENTRAL	-0.0706***	-0.0714***	-0.0537***	-0.0539***	-0.0291***	-0.0303***
	(0.00887)	(0.00891)	(0.00913)	(0.00917)	(0.00929)	(0.00935)
NORTH	0.0303***	0.0287***	0.0572***	0.0566***	0.0679***	0.0651***
	(0.00926)	(0.00950)	(0.00954)	(0.00979)	(0.00969)	(0.00997)
NORTHEAST	0.0257***	0.0241**	0.0483***	0.0477***	0.0674***	0.0647***
	(0.00941)	(0.00963)	(0.00961)	(0.00984)	(0.00984)	(0.0101)
SOUTH	0.0201**	0.0187**	0.0290***	0.0285***	0.0657***	0.0633***
	(0.00929)	(0.00945)	(0.00951)	(0.00968)	(0.00971)	(0.00989)
Constant	1.841***	1.883***	1.894***	1.908***	1.647***	1.717***
	(0.0436)	(0.0729)	(0.0440)	(0.0734)	(0.0474)	(0.0772)
Observations	74,173	74,173	74,173	74,173	74,173	74,173
R-squared	0.041	0.041	0.050	0.050	0.054	0.054
YR-MONTH	Yes	Yes	Yes	Yes	Yes	Yes
OCC	Yes	Yes	Yes	Yes	Yes	Yes
IND	Yes	Yes	Yes	Yes	Yes	Yes
Sample	W&S Workers	W&S Workers	W&S Workers	W&S Workers	W&S Workers	W&S Workers