The Impact of Religiosity on Views Regarding

Attributes of Economic Systems

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ABSTRACT

This paper estimates the effect of various religious indicators on people's attitudes about three dimensions of economic systems: competition, structure of property ownership and income inequality. The empirical analysis is conducted using the dataset of the last four waves of World Values Survey by means of ordered logistic regression. On the whole, the results suggest that increased importance of religion in one's life is significantly correlated with the outcomes yet fails to yield consistent effects with regards to one's political leaning on economic dimension. Demographic indicators, on the other hand, appear to be consistent in predicting whether people view either capitalistic or socialistic systems in a positive light.

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Chapter 1: Introduction

Arguably, one could succinctly summarize economic attitudes as being arranged on something of a spectrum from classical liberalism, or the right, to socialism, or the left. Classical liberals believe that government and its various institutions should shape people's lives to the lowest possible extent (Clark 1998). Hence, they tend to endorse lower taxes, very limited governmentprovided services and unconstrained market competition. Socialists, on the other hand, regard competition as inherently a negative force which encourages individuals to reject their innate prosociality by rewarding selfishness and greed (Clark 1998). Socialists deny the claim that income equality results from some individuals working harder than others, rather they attribute it to the inherent lack of fairness in a free market system.

Capitalism as an economic system rooted in the classical liberalism tradition has attracted a great deal of scrutiny in the past century. With a dozen of post-Soviet countries attempting to liberalize their markets, socialism appears to have seized to be a challenger for the position of the dominant economic paradigm. Almost all the top economies today have adopted mixed economic systems skewed significantly in the capitalist direction. Capitalism pushes the formation of competitive markets, which in return forces people to improve, innovate or even to outperform others and, as a result, the economy is capable of achieving sustained growth. While it has always received its' fair share of criticism, in recent years an increasing number of individuals in developed countries are beginning to acknowledge the adverse consequences of unconstrained markets on the distribution of income, among other factors, and to shift their opinions in a more leftist direction. The population of the United States appears to follow this trend as well. According to Younis (2019) as much as 43% of U.S. adults have said that some form of socialism would be a good thing for their country as opposed to the results in the middle of the 20th century when only 25% perceived it as a positive change.

More than half of young Americans aged 18-29 have largely adopted pro-socialistic views and American Democrats, whose views were somewhat evenly split over a decade ago, have also started to favor socialism more (Newport, 2018). Pew Research Center (2011) also reported that people in several former Soviet republics were losing confidence in capitalistic system. The article states that Russians, Lithuanians and Ukrainians have all expressed faltering confidence in free markets and democratic values. Whether or not such a shift in views is of considerable magnitude is debatable, however it is indeed indicative of curious changes.

It is not inconceivable to imagine that people who had lived in a former Soviet country during that era and were doing well for themselves would become unsympathetic towards a free and competitive market if their financial situation deteriorated while living under the capitalistic system. Obviously, the reason for the unsatisfactory financial situation could very well be the lack of competence or unwillingness to adapt, but individuals rarely wish to blame their problems on themselves. This is not meditated by the fact that capitalist system tends to promote competence in an unbalanced way. For instance, According to The Guardian (2019) the world's 26 richest people own as many assets as the world's poorest 50%. Listing all the pros and cons of this economic system is an exercise in normative judgement and is outside of the scope of this paper. Rather, this study focuses on the determinants of individual views regarding a desirable structure of economic system.

In recent decades, a great deal of research has been devoted to the consequences of religious frameworks on economic preferences and behavior. Religion has been an integral part of many cultures and civilizations throughout history. It could arguably be described as one of the most

impactful paradigms instructing a person how they should behave, on par with legal codes and cultural traditions. Explaining this link between religious and socio-economic convictions of individuals has been a long-standing subject of social science research. Max Weber, best known for his book *The Protestant Ethic and the Spirit of Capitalism*, was one of the first political economists who in 20th century launched the wave of connecting religious traditions to economic preferences and, as a result, behavior of individuals (Weber 2013). He argued that the codified principles underlying certain religious traditions such as Protestantism both on individual- and country-level promote values especially conducive to competition and economic growth (Weber 2013). Indeed, it appears to make sense not to disregard a potential effect of religiosity on the preferable structure of economic system, however it is not apparent that this preferable economic system will necessarily be capitalism. For example, most major world religions dictate certain virtues like forgiveness or helping the poor which seem to defy capitalism. Hence, hypothesizing whether individual religious piety is positively correlated with favoring classical liberalism or socialism does not seem particularly straightforward.

This thesis aims to obtain empirical evidence on the effect of religiosity on people's views about certain attributes of economic systems. I will be analyzing the World Values Survey (Inglehart, R., and P. Norris 2014) database by means of ordered logit models with 3 different outcome variables – one's view of property ownership structure, competition and income equality - while controlling for religious determinants as well as several demographic characteristics. It is worth noting that I will be controlling only for religious determinants but not for the belief in God or any dimensions revolving around that. While the survey includes questions about God as well, it is unclear whether using them would help disentangle the direct effect of individual religiosity on attitudes. A religious person in most cases is guided by a certain code or a written text that

instructs or recommends people to act or believe in certain ways. Belief in God, however, doesn't necessarily mean that. For instance, deists who do believe in god but do not follow any organized religion would not be expected to have a codified religious text on which they base their opinions about the world. Hence, measuring the effect of the belief in God alone would yield nothing in terms of interpretation as it will include both religious and non-religious people. Hence, I decided to exclude this variable from my regression.

The most interesting finding of this study is that there exists a significant correlation between increased importance of religion in one's life and the outcomes of interest yet fails yet there is a lack of consistency in predicted effects with regards to one's political leaning on economic dimension. Demographic indicators, on the other hand, appear to consistently predict whether people will favor either capitalistic or socialistic systems in all of the three responses.

The paper proceeds as follows. In Section 2, I will be discussing the relevant literature from which I drew some of the methods of handling the estimation. In section 3 I will be describing the data and its drawbacks as well as outline the methodology of empirical analysis. In Section 4 I will be interpreting and discussing the results. Finally, in Section 5 I will draw conclusions, briefly touch upon this study's limitations and offer suggestions for future research.

Chapter 2: Literature review

Since Max Weber's seminal work (2013) numerous papers have been published attempting to test his hypotheses using different econometric approaches. I will, to an extent, borrow certain methods of handling data and estimation from some of those papers, which I am going to discuss below.

Hayward and Kemmelmeier (2011) obtained results which were mostly consistent with Weber's theory. They used 4 survey waves of WVS dataset and conducted multilevel modelling using both country-level and individual-level. One of their findings was that individuals raised in Protestant cultures regardless of religious observance were more likely to endorse free markets. Hayward and Kemmelmeier (2011) also suggested that frequent attendance of religious services was a stronger predictor of market orientation for individuals with non-Protestant religious affiliations, which was inconsistent with Weber's theory.

Guiso et al. (2002) in their study "People's opium? Religion and economic attitudes" found a positive association of religion with economic attitudes; however, it was not consistent with Weber's findings. Using 3 waves from the WVS dataset, they estimated the impact of religiosity on multiple socio-economic attitudes. While their results suggest that on average there is a positive association of religion with attitudes facilitating economic growth and development, especially for Christian religious denominations, they also suggest that religious people are quite intolerant and have very conservative views towards women's role in society (Guiso, Sapienza, and Zingales 2002). Furthermore, these effects are heterogeneous depending on different religious denominations in specific countries. According to Guiso et al. (2002) the ranking of main Christian denominations with regards to the intensity of pro-market views was unclear since in terms of promarket attitudes Catholics were much more supportive of private ownership and competition than Protestants, while Protestants were in favor of income inequality as an incentivizing force.

Barro and McCleary (2003) used a slightly different approach in their study. Based on past research, they hypothesized that religion would decline in response to the advancement of science, education and economy, hence they used religion as a dependent variable and tried to estimate the effect of economic attributes on the intensity of religious affiliations using country-level aggregates. They regressed multiple religious attributes, like attendance of religious services and belief in afterlife, on state and individual religious denominations along with GDP per capita, intensity of regulations and views about economic systems. Barro & McCleary (2003) concluded that religious indicators and per capita GDP of a given country were negatively correlated as well as that there exists an inverse relationship between economic development and religious beliefs.

Duriez et al. (2002) conducted a study on first-year psychology students in Flanders, Belgium to estimate the relationship between religiosity, values and economic attitudes. Their results suggested that individual values were much more significant predictors of economic attitudes than religiosity.

Brañas-Garza et al. (2009) concluded that people with a religious affiliation, and especially Catholic affiliation, report enhanced trust towards other individuals and various institutions such as the government and the banking system.

Kum-Lung and Teck-Chai (2010) measured the impact of religiosity on business ethics using a sample of working adults and undergraduate business students in Malaysia. Their findings suggest that individual religiosity is positively correlated with business ethics. Friesen and Ksiazkiewicz (2015) find no evidence that religion alone is a significant predictor of an individual's political views, but rather conclude that they appear to be determined by one's genetic makeup. They do so by estimating a model using a sample of twins in America.

Kimball et al. (2009) conducted a study similar to Barro and McCleary's (2003) where they examined the effect of religiosity on college majors and vice versa. They came to conclude that religiosity declines with students who are enrolled in social sciences and humanities programs while it increases for students majoring in business.

Mohdali and Pope (2014) measured the effect of religiosity on attitudes towards tax compliance. Similar to Kum-Lung and Teck-Chai (2010) they conducted a mixture of self-administered surveys and face-to-face interviews on employed taxpayers in Malaysia and found a small but significant positive correlation between religiosity and voluntary tax compliance.

In short, based on the studies I have mentioned above, there seems to exist a relationship between religiosity and economic attitudes, however different estimation approaches yield somewhat different results.

Chapter 3: Data and Methodology

3.1 Dataset

To analyze the impact of cultural context and religion in shaping attitudes towards structure of property ownership and competition, this study relies on data from the World Values Survey (Inglehart, R., and P. Norris 2014). WVS was initiated with the express purpose of cross-country comparisons of individuals on a wide variety of behaviors, socio-political views, and inherent life principles, as well as tracking changes in those among nations (Inglehart and Baker 2000). The survey utilized country-level random and stratified sampling with the method of data collection being through fact-to-face interviews. While it is not extremely popular for religion related studies, the data allows one to control for views about various economic attributes, hence it is quite commonly used by economists in their studies.

Initial raw dataset consists of around 350,000 observations in 100 countries and 6 survey waves conducted from 1981 to 2014. Numerous papers have used this survey for estimation and have referred to it as panel data. The official website of WVS also refers to it as longitudinal when describing it. This isn't strictly speaking correct as there is not a single case when the respondents overlapped in the survey. The units in the dataset are not all the same individuals observed in different time periods but rather randomly selected people throughout different waves of the survey, so on individual level the dataset is a repeated cross-sectional rather than a longitudinal one. Hence, calling it cross-sectional time series data would be more appropriate. It is possible to use this data as an unbalanced panel if one is to use country-level aggregates following the approach of Barro and McCleary (2003) or Hayward and Kemmelmeier (2011). However, that

introduces the issue of a much smaller sample size, therefore I elected to forgo that option and rather estimate a pooled cross-sectional model while controlling for time periods.

3.2 Description of variables

As mentioned above, the WVS is quite vast in terms of questions asked, so it allows me to control for a considerable number of variables. The tables below indicate the summary statistics of all the variables I am using.

Table 1 Descriptive Statistics

Variables	Mean	Std. Dev.	Min	Max
Property ownership	5.374	2.852	1	10
Competition	3.687	2.554	1	10
Income inequality	5.345	2.997	1	10
Religiosity of a person	2.667	.557	1	3
Religion important in life	3.067	1.041	1	4
Attending religious services	4.021	2.132	1	7
Age	41.505	16.41	15	102
Sex	.479	.5	0	1
Household Income	4.635	2.306	1	10
Highest Education level	4.499	2.385	0	8
Number of children	1.902	1.785	0	8
Financial satisfaction	5.569	2.584	1	10

Total number of observations: 242,456

Table 2: Binary variables

	Freque	ency	Percent		
Binary variables	0	1	0	1	
Religious person	76,463	165,993	31.54	68.46	
Not a religious person	185,346	57,110	76.45	23.55	
Religion very important in life	131,096	111,360	54.07	45.93	
Religion rather important in life	183,719	58,737	75.77	24.23	

Continued				
Religion not very important in life	200,308	42,148	82.62	17.38
Attends more than once a week	206,909	35,547	85.34	14.66
Attends once a week	198,683	43,773	81.95	18.05
Attends once a month	215,851	26,605	89.03	10.97
Christianity	116,804	125,652	48.18	51.82
Islam	196,288	46,168	80.96	19.04
Hinduism	232,972	9,484	96.09	3.91
Buddhism	234,401	8,055	96.68	3.32
Other	231,804	10,652	95.61	4.39
No religion	200,154	42,302	82.55	17.45
Asia	163,766	78,690	67.54	32.46
Europe	176,411	66,045	72.76	27.24
America	193,660	48,796	79.87	20.13
Africa	201,624	40,832	83.16	16.84
Australia	234,761	7,695	96.83	3.17
Male	126,431	116,025	52.15	47.85

Total number of observations: 242,456

3.2.1 Dependent variables

My main dependent variable of interest is the survey question: Private vs State ownership of business. For this question the survey is conducted in a following way: Individuals are given two statements and they are asked to support either one on a 10-point scale. I corresponds that they completely agree with the statement on the left and I0 means that they completely agree with the statement on the right. If their views fall somewhere in between they are free to choose any number from 2 to 9 (Online Data Analysis, n.a.). For this variable I corresponds to an individual being fully supportive of private ownership of business all the way up to I0 which means that a respondent thinks that government ownership of business is preferable. In this case I and I0 are extreme points of the set so if respondent chooses any of them they are confidently supportive of that particular property ownership structure. However, the numbers in between can be indicative of their inclinations towards either end of the spectrum. This will be captured by a variable *Property ownership* in my analysis.

Views about competition and income equality are also captured by 10-point scale variables. The survey is conducted in the exact same manner for these questions as with the view about property ownership structure. Variable *Competition* illustrates full support for competition starting from *1*, while *10* shows that they think competition is harmful. As for the income equality, *1* means that they think income distribution should be more equal while *10* means that there should exist larger income differences which would serve as incentives. I do not know the reason for such a stylistic choice. For previous two questions *1* captured a pro-capitalistic view, while here it's vice versa. First, I made sure it was not a coding error and after that, to avoid confusion, I reversed the values for this variable so that *1* corresponds to income inequality and *10* to income equality.

3.2.2 Religiosity

My independent variables of interest attempt to capture one's religiosity. The survey contains multiple questions about religion that range from the religiosity of people to its' impacts on their social life. I am interested in exactly what dimension of religiosity has the highest impact on their views about property rights. More specifically, I will be measuring the impact of religiosity of a person, their views about importance of religion in life and the attendance frequency of religious services.

Religiosity of a person is captured by a 3-outcome variable "Religious person" in the dataset where the outcomes are: *Religious person, not a religious person, a convinced atheist.* I generated two binary variables for estimation. *Religious person* takes the value of 1 if a person is religious and 0 otherwise, *Not a religious person* takes the value of 1 if a person is not religious

and *0* otherwise. In this case the base will be a convinced atheist and my measurements will be in contrast with comparison to that type of a person.

Another independent variable of interest is whether people think religion is important in life or not. It's a 4-outcome variable "Important in life: Religion" that pans out as follows: *Very important, rather important, not very important, not at all important.* In the binary variable *Religion very important in life* I included "Very important" and 0 otherwise. Two other binary variables are *Religion rather important in* and *Religion not very important* which illustrate the outcome corresponding to their names when equal to *1* and *0* otherwise. The base category in this case is the answer *Not at all important* as their answer.

I am also controlling for how often people attend religious services, apart from weddings and funerals. It is captured by an 8-outcome variable illustrating the frequency of their attendance ranging from *Practically never* to *More than once a week*. Following Barro and McCleary (2003) I created dummy variables for 3 of the outcomes: *Attends more than once a week, Attends once a week* and *Attends once a month*. These variables show how frequently individuals attend religious services based on their names when equal to *1* and *0* otherwise

I also wanted to control for whether a person was an active or inactive member of any kind of religious organization, however around 30% of the data was missing for that variable, hence I was forced not to use it.

Additionally, I am controlling for individual religions of people. There is a myriad of religious denominations in the dataset, so I generated dummy variables for the major religions in the world according to Pew Research Center (2012) and combined the different branches of those religions into one. Variables include: *Christianity, Islam, Hinduism, Buddhism, Other* and *No*

religion. *Other* includes all the religions that are different from the four I stated above and *No religion* represents a person with no religious denomination.

3.2.3 Demographic variables

For demographics of respondents I am controlling for sex, age, number of children, educational level, income, satisfaction with their financial situation and state of health. Sex is represented by a binary variable *Male* that takes the value of 1 if an individual is male and 0 if female. *Age* is self-explanatory represented as years ranging from 15 to 102. *Children* directly shows the number of children an individual has ranging from 0 to 8. *Education* shows the highest educational level obtained by an individual. It is an 8-point scale question including elementary education and a university degree with the relevant states of completion. If an individual has no formal education the data was describing it as *Not Applicable*. I changed this value to *0* which transformed this variable into a 9-point scale one. *Income* shows the scale of respondents' household incomes. It's a 10-point scale question starting from lower step all the way up to tenth step of percentiles. Satisfaction with financial situation is represented by a variable *Financial satisfaction*. It is a 10-point scale where *I* represents dissatisfaction and *10* shows satisfaction.

I am also controlling for the continents from which the respondents are from. I am not trying to measure whether the continental location of a respondents is of any consequence, but rather attempting to control for country-fixed effects. Hence, I generated dummy variables for *Asia, Australia, America, Africa* and *Europe* and included the corresponding countries in them. The list of all the countries I have used in my analysis can be found in Appendix 1.

It would have been ideal to be able to use the entirety of this dataset for my study but unfortunately it didn't prove possible. The WVS questionnaire contains more than 200 questions so naturally there are situations when the individual either didn't answer the question or did not understand it or it just was not asked in the current survey wave. There are 5 such cases throughout the survey: *Missing, Not asked in a survey, Don't know, Not applicable* and *No answer*. The case when it is *Not applicable* is relatively easier to deal with as most of the time there is some explanation as to why this question is irrelevant to this particular individual. An example could be the case with an independent variable I am using for education level. For people who hadn't even attended primary school this variable was showing it as *Not applicable* giving them the value of - *3* so, I changed it to *0*.

The second case *Not asked in a survey* can be interpreted in a quite straightforward fashion. It simply means that this particular question was not asked by an interviewer. The problem is that it's nearly impossible to figure out why they chose not to ask it, but it's a reoccurring event specifically for a number of countries in some of the waves. If there is a case when the question I am interested in was not asked, it is only natural that I exclude those cases. First, this is the case with the entirety of the first and second survey waves, which were conducted in 1981-1984 and 1985-1999 respectively. Namely, the question about their preferences over private or government ownership of business, competition or about various religious determinants was not asked at all. For this reason, I had to exclude the entire first and second waves from the data for my study. This resulted in 13,586 (Wave 1) and 24,558 (Wave 2) observations being dropped. This is a common practice when dealing with multi-year survey data. From what I have observed, the first wave of WVS is rarely used in the studies. Second wave, however, had around 90% missing observations

for variables I am interested in hence I decided to exclude it as well. Second case is where the question about my outcome variable is asked in the wave but not asked in some of the countries. Looking at previous papers, most of them dropped such countries completely from the dataset, however since I am not using country-level aggregates it won't be necessary for me. I instead identified and dropped couple of countries from the dataset, but only in specific waves when information was missing.

However, the real problem is that there is still a considerable amount of missing data remaining for the variables I am interested in and particularly because the relevant questions were not asked in specific countries. Available options include but are not limited to either dropping them or imputing them. Barro and McCleary (2003) used the data from other sources to substitute their missing observations. This is a viable method if one is using country-level aggregates. Guiso et al. (2002) however, excluded all the countries that had missing observations for the variables they were using in their regression. This could prove a bit tricky for me to use as one could argue that if I keep adding more control variables and keep dropping missing countries for those variables I will reduce my sample size greatly. In order to implement this method, one must choose control variables carefully. Adamczyk (2013) who was also working with the WVS data, excluded all the countries where values were systematically missing only for outcome and dependent variables of interest. However, she was using only the fourth wave of WVS and also conducted multiple imputation on the remaining missing values for the variables of interest.

Multiple imputation, introduced by Rubin (2004), is quite commonly used especially for surveys, however it requires assumptions of a certain kind, namely the MAR (missing at random) or MCAR (missing completely at random) assumptions. Li (2013) introduced a new command in Stata to test for MCAR using the method of Little (1988). If one rejects the null hypothesis of data

being Missing Completely At Random (MCAR), that implies that the mechanism of missingness is not uncorrelated with observed explanatory variables, so a listwise deletion of missing observation would inevitably introduce bias to the regression. Even without this test though it is clear that in my dataset, the missingness is systematic and not completely random. According to Adamczyk (2013) multiple imputation cannot be properly applied as those techniques are not appropriate for data that is missing in a systematic fashion.

Another method of imputation is mean substitution. It replaces the unobserved values with the mean of other observed values. This method, while problematic as it greatly reduces sample variation, is computationally easy and can be subject to certain conditions. According to Hawthorne and Elliott (2005), who compared various imputation methods, stated that person mean substitution performed quite well for cross-sectional data. For example, in my dataset, I could impute missing observations with mean based on the same wave-country-age-sex average mean of observed values. However, since I don't have panel data, I must worry about wave specific effects. If I could impute observations for some countries based on the means of those same countries in other waves, then there would be no point to control for waves at all. Hence, I decided not to use this method.

Taking all of this into consideration, I decided to follow the method of Guiso et al. (2002) and excluded the countries that had missing values for the variables I am interested in which are listed in Table 3 below.

Table 3 List of countries excluded from the analysis with	
corresponding waves	

Country	Wave	Country	Wave
Algeria	1999-2004	Montenegro	1994-1998
Argentina	2005-2009	Morocco	1999-2004

Continued			
China	1999-2004, 2005-2009	Netherlands	2005-2009
Colombia	1994-1998, 2005-2009	Nigeria	1999-2004
Czech Rep	1989-1993	Pakistan	1999-2004
Egypt	1999-2004, 2010-2014	Qatar	2010-2014
France	2005-2009	Russia	2005-2009
Hong Kong	2020-2014	Saudi Arabia	1999-2004
Hungary	1994-1998	Singapore	1999-2004
Indonesia	1999-2004	Slovakia	1989-1993
Iran	1999-2004	Spain	1989-1993
Iraq	1999-2004, 2005-2009	Turkey	1999-2004
Israel	1999-2004	United Kingdom	1994-1998, 2005-2009
Jordan	1999-2004, 2005-2009	United States	2005-2009
Kuwait	2010-2014		

Number of observations dropped: 67,932

Following this I am left with a relatively low amount of missing observations, which is

illustrated in Table 4 below:

Tal	ble	<i>4</i> :	Mis	sing
				0

Variables	Missing	Percentage.
Property ownership	14,460	5.96
Competition	7,763	3.2
Income inequality	9,375	3.8
Religiosity of a person	9,077	3.74
Religion important in life	3,626	1.5
Attending religious services	3,553	1.47
Age	0	0
Sex	0	0
Household Income	16,488	6.8
Highest Education level	1,090	0.45
Number of children	1,797	0.74
Financial satisfaction	2,390	0.99

Total number of observations: 242,456

Following Li (2013) I performed Little's test which showed that missingness is not MCAR however, the percentage of missing data is low enough for it to be ignorable. According to W. Ludwig-Mayerhofer (2012) when Stata is dealing with missing values it automatically uses listwise deletion, meaning they are by default excluded from statistical analysis. Performing multiple imputation on the remaining missing values would have been the best choice, however it takes a tremendous amount of time to conduct it especially for a dataset as large as the one I am using. Hence, I decided to leave it to Stata to deal with them.

3.4 Methodology

Ordering certain discrete choices with the goal of capturing more robust information about an individual is a common practice in social science research (Anderson 1984). Since my response variables of interest are indeed elicited via a 10-point scale meaning there exists a logical successive ordering in the values of all the categories so that one value is in a sense "higher" than the preceding one, I may use ordered logit instead of either OLS regression or a binary logit model. Not to mention, OLS regression would actually suffer from the issues of heteroscedastic standard errors as well as predicted probabilities lying outside the unit interval (O'Connell 2006). Then, I will evaluate how well the model fits the data by comparing the probabilities observed in the data and the probabilities predicted by the model since it is not immediately apparent why using 10 distinct categories is justified from the perspective of approximating the true population model.

First, to estimate the degree to which several distinguishing individual-level characteristics, including religion indicators, predict one's views about the markets, the economic system, as well as the distribution of income, I fit three different ordered logit models to the data.

The basic intuition behind both ordinal and binary logistic regression is the same. It is assumed that there exists an unobserved continuous variable, Y*, capturing the outcome which defines the discrete responses, Y, as it crosses certain cut-off values (<u>Anderson 1984</u>). For example, if respondents are asked to evaluate how they view market competition, as their underlying metric of how harmful competition is to society reaches and surpasses a specific threshold they choose "Competition is good", or "1", then "2", and all the way until "Competition is harmful".

I further suppose the following latent variable model.

$$Y_i^* = X_i \alpha + \epsilon_i$$

$$Y_i = j \text{ if } u_{j-1} < Y_i^* \le u_j$$
, where $j = 1, 2 \dots 10$ and $i = 1, 2 \dots N$

where X is a vector of explanatory variables.

Assuming ϵ_i has a Type I Extreme Value distribution, one can derive the probability that individual i chooses the alternative j:

$$p_{ij} = P(Y_i = j) = P(u_{(j-1)} < Y_i^* \le u_j) = \Lambda(u_{(j-1)} - X_i) - \Lambda(u_j - X_i\alpha)$$

where $\Lambda(.)$ is a logistic cumulative distribution function.

Since the models I use have 10 alternatives each, I will estimate one set of coefficients and nine intercepts for each as well as ten sets of marginal effects. The slope coefficient shows the relationship between Y* and the regressors.

Chapter 4: Empirical analysis and results

Explanatory variables	Comp	Competition Property ownership Income		Income in	nequality	
	Odds ratio	Std. Error	Odds ratio	Std. Error	Odds ratio	Std. Error
Religious person	0.914***	(0.0157)	1.025	(0.0176)	0.943***	(0.0158)
Not a religious person	0.940***	(0.0152)	1.020	(0.0166)	0.963**	(0.0154)
Religion very important in life	0.804***	(0.0140)	1.138***	(0.0195)	0.779***	(0.0132)
Religion rather important in life	1.023	(0.0165)	1.029*	(0.0163)	0.964**	(0.0152)
Religion not very important in life	1.018	(0.0146)	0.974*	(0.0140)	0.977	(0.0140)
Attends more than once a week	1.056***	(0.0168)	0.980	(0.0154)	0.887***	(0.0138)
Attends once a week	1.113***	(0.0154)	0.982	(0.0134)	0.976*	(0.0131)
Attends once a month	1.095***	(0.0162)	1.011	(0.0148)	0.959***	(0.0138)
Male	0.825***	(0.00699)	0.827***	(0.00701)	0.906***	(0.00758)
Age	0.999***	(0.000311)	1.000	(0.000314)	1.004***	(0.000308)
Highest Education level	0.946***	(0.00191)	0.963***	(0.00193)	0.939***	(0.00187)
Household income	0.995**	(0.00213)	0.954***	(0.00206)	0.961***	(0.00203)
Number of children	0.985***	(0.00302)	1.021***	(0.00314)	0.976***	(0.00299)
Financial satisfaction	1.001	(0.00206)	0.978***	(0.00208)	0.966***	(0.00204)
America	1.833***	(0.146)	1.279***	(0.113)	0.466***	(0.0321)
Africa	1.313***	(0.106)	1.123	(0.101)	0.334***	(0.0233)
Asia	1.815***	(0.145)	1.453***	(0.129)	0.424***	(0.0293)
Europe	1.839***	(0.145)	1.204**	(0.106)	0.537***	(0.0366)
Australia	1.444***	(0.117)	0.783***	(0.0705)	0.589***	(0.0417)
Christianity	1.712**	(0.368)	2.446***	(0.516)	0.776	(0.147)
Islam	1.312	(0.282)	2.480***	(0.524)	0.768	(0.146)
Hinduism	0.737	(0.160)	2.314***	(0.493)	1.683***	(0.324)
Buddhism	2.195***	(0.473)	2.400***	(0.508)	0.660**	(0.126)
Other	1.831***	(0.395)	2.023***	(0.428)	0.784	(0.149)
No religion	1.793***	(0.385)	2.674***	(0.565)	0.822	(0.156)
Wave 3	0.704***	(0.00826)	0.767***	(0.00905)	0.637***	(0.00745)
Wave 4	0.683***	(0.0104)	0.681***	(0.0105)	0.703***	(0.0107)
Wave 5	0.986	(0.0103)	0.962***	(0.00984)	0.694***	0.00717)
Observations	214,	772	210	,591	216,	155

Table 5: Ordered logit model results

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note: Wave 6 omitted due to collinearity

Note: wave o offitted due to conficantly

To begin with, it is important to note that the continent and survey-wave fixed effects as well as dummies for some of the main world religions are all jointly significant. However, since I am only including them in the model to control for an individual's unobserved heterogeneity and thereby avoid producing biased coefficients, I will not be examining their effects in detail. Prior to reporting the results regarding the set of religious indicators, I analyze the estimated effects of demographic controls.

Male.

Being male decreases the likelihood of reporting less favorable views regarding market competition by 17.5 %, holding all other variables constant, and the effect is statistically significant at 1% level. In other words, males are significantly more pro-competition than females in which is consistent with the findings of Brañas-Garza et al. (2009). In addition, *Male* appears to have a statistically significant positive correlation with favorable attitudes towards private ownership of property. Finally, being female exhibits a significant positive relationship with views favoring egalitarian distribution of income by 17.3%. All in all, men seem to have more pro-capitalistic opinions, holding everything else constant.

Age.

The effect of age on the satisfaction with public ownership of property is insignificant. A unit increase in age significantly reduces the probability of viewing competition as more harmful by 0.1 %, so the magnitude of this effect is very small. Also, a unit increase in *Age* increases the probability of holding more socialistic views regarding distribution of wealth by 0.4 %. To sum up, younger individuals are more likely to be pro-capitalism and the effect is statistically significant for all outcomes but property ownership.

Education.

Education shows a significant correlation with all three outcome variables. Being more educated reduces the probability of exhibiting a less favorable attitude towards competition by 5.4% and decreases the likelihood of favoring government ownership of property by 3.7%. In addition, individuals with a higher level of education are 6.1 % less likely to prefer a more equal distribution of income. In short, acquiring more education significantly increases the odds of an individual holding more pro-capitalistic views.

Income

Income appears to exhibit a consistently significant correlation, regardless of the dependent variable. Higher household income reduces the predicted probability of favoring more socialist attitudes with regards to markets, structure of property ownership and income inequality by 0.5, 4.6 and 3.1 percent respectively. In short, as an individual's self-reported wealth increases, she is more inclined towards a capitalist economic system.

Children.

The number of children is also a significant determinant of economic attitudes, regardless of the response variable, yet the effect is heterogeneous. Having more children reduces the likelihood of endorsing a less competitive environment by 1.5% yet increases the probability of exhibiting of stronger preference for government ownership of property by 2.1%. The probability of favoring a more equal distribution income decreases by 2.4% with a unit increase in the number of children. In short, a larger family does not seem to unambiguously predict whether one's economic attitudes will shift in a pro-capitalist or a pro-socialist direction, but it does have a significant impact on those nonetheless and is justifiably included in the present analysis.

Financial Satisfaction.

The extent to which an individual is satisfied with her current financial situation has no significant correlation with her views regarding market competition. It does, however, have a significant effect on the other two outcomes. The probabilities of a greater endorsement of public property ownership and egalitarian distribution of wealth are both reduced by 2.2 and 3.4 percent respectively as an individual becomes more financially satisfied.

Religion.

Now, I turn to the explanatory variables of primary interest, the set of indicators of individual religiosity. The only variable that shows a consistently significant correlation with the dependent variables is the indicator that assumes the value of 1 if the individual answered affirmatively to the statement *"Religion is very important in life"*. The effects also seem to be relatively larger in magnitude compared to all other religious indicators. Religion being important in one's life decreases the likelihood of viewing competition as more harmful by 19.6% as well as lowers the odds of favoring a more equal distribution by 22.1%. Interestingly, the probability of having a stronger preference for government ownership of property increases by 13.8% if a person considers religion to be an important part of life. In other words, the effect of this indicator of personal religiosity is not homogeneous with regards to the capitalist vs socialist divide.

The three indicators for the frequency of attendance of religious services seem to have no consequences on views regarding property ownership. However, subjects who attend places of worship, regardless of how often that occurs, higher likelihood of viewing competition in a negative light and a lower likelihood of viewing income inequality as a harmful phenomenon, with both effects being statistically significant.

Another curious observation is that both a person who considers herself religious and a person who does not have a statistically significantly more positive view of market competition

and income inequality. The magnitudes of the two effects are larger for religious individuals, though.

4.1 Model fit

To evaluate the ordered logit model fit, I compute the predicted probabilities for the ten categories of each of the three response variables and compare them to the empirical probabilities observed in the data.

	Com	Competition		y ownership	Income	inequality
Outcome	Actual	Predicted	Actual	Predicted	Actual	Predicted
1	28.34	.28	12.86	.12	14.40	.145
2	11.85	.121	6.50	.063	6.40	.065
3	13.77	.14	9.34	.093	11.74	.121
4	11.01	.113	8.68	.089	10.79	.111
5	14.34	.142	18.50	.188	8.73	.09
6	6.10	.061	9.19	.095	12.88	.127
7	4.41	.043	8.57	.086	7.14	.073
8	3.78	.038	8.41	.088	7.89	.079
9	2.18	.021	5.72	.057	5.42	.054
10	4.24	.041	12.25	.122	14.61	.135

 Table 6: Predicted vs. actual probabilities

A close inspection of Table 5 reveals that the model fits the data reasonably well since the predicted probabilities are quite close to the actual ones.

Another ad-hoc check of model fitness I decided to conduct was to observe how ordered probit models would perform compared to ordered logit. To do so, I compare the model selection statistics such as the Akaike information criterion (AIC) and the Bayesian information criterion (BIC) of the two models.

	Comp	etition	Property	ownership	Income	nequality
Model	Logit	Probit	Logit	Probit	Logit	Probit
Obs	214772.00	214772.00	210591	210591	216155	216155
LL(Null)	-315139.3	-315139.3	-336475.2	-336475.2	-347075.1	-347075.1
LL(Model)	-312577.5	-312803	-334140.8	-334265.8	-343504.2	-343758.6
df	37	37	37	37	37	37
AIC	625229	625680	668355.7	668605.6	687082.4	687591.2
BIC	625609.2	626060.3	668735.2	668985.2	687462.9	687971.7

Table 7: Model selection statistics for logit and probit

Table 7 shows that both AIC and BIC are slightly lower under ordered logit. Since the smaller values are indeed preferable, I may conclude that the choice of an ordered logistic regression model appears to be justified.

4.2 Discussion of results

My findings suggest that individual religious indicators fail to consistently predict whether one's economic attitudes will be leaning to the left or to the right. Increased importance of religion in a person's life is associated with more pro-capitalistic views regarding income inequality and competition yet at the same time with more pro-government views regarding property ownership. Similarly, how often an individual attends places of worship appears to have a significant effect only on two of my outcome variables, albeit predicting a right-leaning attitude for both. Interestingly, while most religious doctrines endorse charitability and prosociality in general, subjects who consider themselves religious reported positive opinions towards market competition and income inequality. It is important, however, to note that subjects who viewed themselves as not religious have exhibited roughly similar preferences, however the effects were larger in absolute value for religious individuals. Still, the difference is so small that I doubt it could be indicative of religiosity causing classically liberal values to arise within individuals.

In stark contrast to religious indicators, almost all demographic controls demonstrate more consistent effects regarding the left vs. right divide. For instance, I find that male subjects are more pro-capitalism compared to female ones. In addition, older individuals tend lean to the left, whereas more educated people lean to the right. Individuals with higher self-reported incomes and a higher level of financial satisfaction also prefer a more capitalistic system. The only variable the effect of which was concluded to be ambiguous was the number of children.

Chapter 5: Conclusion

In this study, I attempted to obtain empirical evidence of the effect of religiosity on economic attributes using ordered logistic regression. The results failed to show any consistent effect which would allow one to draw a conclusion regarding the direction of one's economic attributes. However, in terms of religiosity I was able to somewhat firmly conclude that among the religious indicators I included in my model, religion's importance in life has the largest impact on economic attributes. Such a conclusion appears reasonable as people who believe that religion is very important in life are more likely to rely on guidance from religious texts or other sorts of indicators when forming a view on contentious subjects. While seemingly important, this indicator has, to the best of my knowledge, rarely been used in the literature on the estimation of religion's effect on personal views. Analogous to the results obtained by Guiso et al. (2002), demographic variables are more consistent in explaining to which direction people will lean regarding the structure of economic system.

One of the limitations of the study was conducting the analysis on pooled cross sectional rather than panel data. Due of the absence of continuous year data with regard to the selected variables in my model, I could not capture individual-level effects and possible selection bias in my analysis. In addition, it was impossible to infer causality between response and explanatory variables. Another potentially serious limitation is the presence of a considerable amount of missing observations which forced me to exclude quite a few countries from my analysis because the certain questions pertaining to my variables of interest were not asked there at all. Another consequence of that issue was that I was unable to use several variables like wealth accumulation, one's view of hard work, and their self-identification on political scale as well as several other religious indicators in my regression. Even after deleting the countries with significant degree of

missingness, I still had quite a few missing observations that most likely occurred not completely at random. Listwise deletion probably introduced some sort of selection bias, however in the literature the rule of thumb is that the share of missing data does not exceed 10% is considered neglectable. Multiple imputation or Heckman correction would have been a better solution, but due to the time and resources constraint I was unable to implement them. WVS is planning to release the seventh survey wave in mid-2020, which will include even more countries than the previous waves (<u>"WVS wave 7", n.a</u>). Perhaps after that one will be able to estimate the effects more precisely. Conducting multiple imputation on the available data by pooling resources would also be extremely helpful to various researchers using this data.

Appendix

	Wave				
	1994-1998	1999-2004	2005-2009	2010-2014	Total
Country/region		Obser	vations		
Albania	990	996	0	0	1986
Algeria	0	0	0	1200	1200
Andorra	0	0	1001	0	1001
Azerbaijan	1988	0	0	1002	2990
Argentina	1074	1279	0	1020	3373
Australia	2029	0	1366	1450	4845
Bangladesh	1521	1495	0	0	3016
Armenia	1959	0	0	1096	3055
Bosnia Herzegovina	0	1185	0	0	1185
Brazil	1140	0	1493	1478	4111
Bulgaria	1064	0	984	0	2048
SrpSka Republic	398	0	0	0	398
Belarus	2026	0	0	1526	3552
Canada	0	1906	2123	0	4029
Chile	997	1194	991	983	4165
China	0	0	0	2166	2166
Taiwan	780	0	1227	1221	3228
Colombia	0	0	0	1507	1507
Cyprus	0	0	1040	1000	2040
Czech Rep.	1087	0	0	0	1087
Dominican Rep.	404	0	0	0	404
Ecuador	0	0	0	1201	1201
El Salvador	1254	0	0	0	1254
Ethiopia	0	0	1482	0	1482
Estonia	1000	0	0	1509	2509
Finland	980	0	1006	0	1986
Georgia	2000	0	1498	1200	4698
Palestine	0	0	0	1000	1000
Germany	1964	0	2044	2024	6032
Ghana	0	0	1495	1552	3047
Guatemala	0	0	994	0	994
Haiti	0	0	0	1910	1910
Hong Kong	0	0	1231	0	1231
Hungary	0	0	999	0	999
India	2024	1966	1944	4045	9979
Indonesia	0	0	2006	0	2006
Iran	0	0	2625	0	2625
Iraq	0	0	0	1200	1200
Italy	0	0	1011	0	1011
Japan	0	1267	1039	2290	4596
Kazakhstan	0	0	0	1500	1500
Jordan	0	0	0	1199	1199
South Korea	0	1196	1199	1191	3586
Continued					

Appendix 1. Countries, waves and corresponding observations

Kyrgyzstan	0	1039	0	1494	2533
Lebanon	0	0	0	1129	1129
Latvia	1127	0	0	0	1127
Libya	0	0	0	2093	2093
Lithuania	977	0	0	0	977
Malaysia	0	0	1197	1300	2497
Mali	0	0	1402	0	1402
Mexico	1461	1521	1544	1996	6522
Moldova	972	935	1046	0	2953
Montenegro	0	1040	0	0	1040
Morocco	0	0	1197	0	1197
Netherlands	0	0	0	1891	1891
New Zealand	1154	0	888	808	2850
Nigeria	1969	0	0	1759	3728
Norway	1122	0	1020	0	2142
Pakistan	0	0	0	1199	1199
Peru	1206	1478	1484	1192	5360
Philippines	0	1193	0	1199	2392
Poland	1142	0	997	948	3087
Puerto Rico	1132	705	0	0	1837
Romania	1194	0	1770	1495	4459
Russia	2003	0	0	2429	4432
Rwanda	0	0	1507	1527	3034
Serbia	1226	1176	1205	0	3607
Singapore	0	0	0	1938	1938
Slovakia	1095	0	0	0	1095
Vietnam	0	994	1495	0	2489
Slovenia	0	0	1013	1059	2072
South Africa	2831	2908	2918	3157	11814
Zimbabwe	0	1000	0	1500	2500
Spain	1199	1194	1183	1176	4752
Sweden	1003	0	996	1190	3189
Switzerland	1093	0	1229	0	2322
Thailand	0	0	1518	1164	2682
Trinidad and Tobago	0	0	992	985	1977
Tunisia	0	0	0	1205	1205
Turkey	1846	0	1345	1603	4794
Uganda	0	1001	0	0	1001
Ukraine	2658	0	953	1500	5111
Macedonia	981	1051	0	0	2032
Egypt	0	0	3051	0	3051
Tanzania	0	1128	0	0	1128
United States	1489	1136	0	2187	4812
Burkina Faso	0	0	1450	0	1450
Uruguay	980	0	1000	994	2974
Uzbekistan	0	0	0	1490	1490
Venezuela	1171	1195	0	0	2366
Yemen	0	0	0	1000	1000
Zambia	0	0	1500	0	1500
Bosnia	793	0	0	0	793
Total	60503	33178	66698	82077	242456

Appendix 2: Ordered probit model results

	Competition	Property ownership	Income inequality
VARIABLES	Coefficient	Coefficient	Coefficient
Religious person	-0.0502***	0.0163	-0.0342***
	(0.0102)	(0.0103)	(0.0101)
Not a religious person	-0.0370***	0.0135	-0.0197**
	(0.00975)	(0.00984)	(0.00971)
Religion important in life	-0.126***	0.0701***	-0.145***
	(0.0103)	(0.0101)	(0.0100)
Religion rather important in life	0.00333	0.0157*	-0.0254***
	(0.00962)	(0.00948)	(0.00949)
Religion not very important in life	0.00297	-0.0157*	-0.0152*
	(0.00876)	(0.00871)	(0.00871)
Attends more than once a week	0.0265***	-0.0142	-0.0693***
	(0.00924)	(0.00902)	(0.00902)
Attends once a week	0.0571***	-0.0136*	-0.0127
	(0.00802)	(0.00790)	(0.00785)
Attends once a month	0.0498***	0.00347	-0.0225***
	(0.00866)	(0.00856)	(0.00849)
Male	-0.112***	-0.111***	-0.0558***
	(0.00503)	(0.00498)	(0.00496)
Аде	-0.000763***	-0.0000221	0.00251***
	(0.000184)	(0.000184)	(0.000182)
Education	-0.0328***	-0.0217***	-0.0367***
	(0.00119)	(0.00118)	(0.00118)
Income	-0.00412***	-0.0278***	-0.0223***
	(0.00126)	(0.00125)	(0.00123)
Children	-0.00693***	0.0116***	-0.0136***
	(0.00180)	(0.00177)	(0.00177)
Financial satisfaction	0.00128	-0.0126***	-0.0177***
	(0.00120	(0,00119)	(0.00119)
America	0.420***	0.124**	-0.445***
- monou	(0.0496)	(0.0539)	(0.0448)
Africa	0.222***	0.0673	-0.631***
111100	(0.0501)	(0.0543)	(0.0453)
Asia	0.300***	0.204***	-0.500***
1.1014	(0.0496)	(0.0540)	(0.0448)
Furone	0.407***	0.000+0)	-0.366***
Europe	(0.0403)	(0.0537)	(0.0445)
Australia	0.262***	_0.175***	
rusualla	(0.0506)	(0.0548)	(0.2)
Christianity	0.0300)	0.0340)	0.115
Cinisuality	(0.122)	(0.114)	-0.115
Islam	(0.122)	(0.114)	(0.100)
15/4/11	(0.131	(0.11.4)	-0.120
	(0.122)	(0.114)	(0.106)
Hinduism	-0.1/4	0.450***	0.312***
	(0.123)	(0.115)	(0.107)
Buddhism	0.423***	0.464***	-0.209**
	(0.123)	(0.115)	(0.106)

Other	0.315**	0.374***	-0.105			
Continued: Ordered probit model results						
	(0.123)	(0.115)	(0.106)			
No religion	0.304**	0.534***	-0.0821			
	(0.122)	(0.114)	(0.106)			
Wave 3	-0.201***	-0.147***	-0.259***			
	(0.00699)	(0.00688)	(0.00689)			
Wave 4	-0.208***	-0.211***	-0.198***			
	(0.00886)	(0.00883)	(0.00870)			
Wave 5	-0.0117*	-0.0187***	-0.210***			
	(0.00615)	(0.00606)	(0.00616)			
Observations	214,772	210,591	216,155			

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note: Wave 6 omitted due to collinearity

Appendix 3: Ordered Logit model results

	Competition	Property ownership	Income inequality
VARIABLES	Coefficient	Coefficient	Coefficient
Religious person	-0.0894***	0.0250	-0.0587***
	(0.0171)	(0.0171)	(0.0168)
Not a religious person	-0.0619***	0.0200	-0.0377**
	(0.0161)	(0.0163)	(0.0160)
Religion important in life	-0.218***	0.130***	-0.250***
	(0.0175)	(0.0171)	(0.0169)
Religion rather important in life	0.0229	0.0289*	-0.0372**
	(0.0161)	(0.0159)	(0.0158)
Religion not very important in life	0.0182	-0.0265*	-0.0231
	(0.0144)	(0.0144)	(0.0144)
Attends more than once a week	0.0542***	-0.0201	-0.120***
	(0.0159)	(0.0157)	(0.0156)
Attends once a week	0.107***	-0.0185	-0.0246*
	(0.0138)	(0.0137)	(0.0134)
Attends once a month	0.0906***	0.0109	-0.0415***
	(0.0148)	(0.0146)	(0.0144)
Male	-0.193***	-0.190***	-0.0987***
	(0.00848)	(0.00848)	(0.00837)
Age	-0.00101***	-0.000135	0.00437***
	(0.000311)	(0.000314)	(0.000307)
Education	-0.0551***	-0.0377***	-0.0630***
	(0.00202)	(0.00201)	(0.00200)
Income	-0.00471**	-0.0475***	-0.0398***
	(0.00214)	(0.00216)	(0.00211)
Children	-0.0148***	0.0211***	-0.0242***
	(0.00306)	(0.00307)	(0.00306)
Financial satisfaction	0.00126	-0.0220***	-0.0344***
	(0.00205)	(0.00213)	(0.00211)
America	0.606***	0.246***	-0.764***
	(0.0798)	(0.0888)	(0.0690)
Africa	0.272***	0.116	-1.098***
	(0.0806)	(0.0895)	(0.0699)
Asia	0.596***	0.374***	-0.858***
	(0.0797)	(0.0888)	(0.0690)
Europe	0.609***	0.186**	-0.622***
	(0.0791)	(0.0884)	(0.0683)
Australia	0.368***	-0.245***	-0.529***
	(0.0812)	(0.0901)	(0.0708)
Christianity	0.538**	0.894***	-0.254
	(0.215)	(0.211)	(0.189)
Islam	0.271	0.908***	-0.263
	(0.215)	(0.211)	(0.190)
Hinduism	-0.305	0.839***	0.520***
	(0.217)	(0.213)	(0.192)
Buddhism	0.786***	0.875***	-0.415**
	(0.216)	(0.212)	(0.190)
Other	0.605***	0.704***	-0.243

	(0.216)	(0.212)	(0.190)
Continued: Ordered logit model results			
No religion	0.584***	0.984***	-0.196
	(0.215)	(0.211)	(0.190)
Wave 3	-0.352***	-0.266***	-0.450***
	(0.0117)	(0.0118)	(0.0117)
Wave 4	-0.381***	-0.384***	-0.353***
	(0.0152)	(0.0155)	(0.0152)
Wave 5	-0.0136	-0.0383***	-0.365***
	(0.0104)	(0.0102)	(0.0103)
Observations	214,772	210,591	216,155

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note: Wave 6 omitted due to collinearity

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