DOES HIGHER INCOME MAKE YOU MORE ALTRUISTIC? EVIDENCE FROM THE HOLOCAUST

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Abstract—This paper considers the decision of Gentiles whether to rescue Jews during the Holocaust, a situation of altruistic behavior under life-or-death stakes. I examine the role to which economic factors may have influenced the decision to be a rescuer. Using cross-country data and detailed individual-level data on rescuers and nonrescuers, I find that richer countries had many more rescuers than poorer ones, and within countries, richer people were more likely to be rescuers than poorer people. The individual-level effect of income on being a rescuer remains significant after controlling for ease-of-rescue variables, such as the number of rooms in one's home, suggesting that the correlation of income and rescue is not solely driven by richer people having more resources for rescue. Given that richer people might be thought to have more to lose by rescuing, the evidence is consistent with the view that altruism increases with income.

I. Introduction

IMAGINE that you are a Gentile in Nazi-occupied Europe during World War II. A Jewish person knocks on your door asking for shelter. While, depending on where you live, you may not be aware of the existence of the death camps, the Nazis have made their general attitudes and intentions toward Jews relatively clear. Perhaps you know of a Jewish person who has disappeared, or you have seen Jews being rounded up or shot. The Jewish person at your door may be your friend or a complete stranger. The penalty for sheltering Jews is death. What do you do?

While psychologists and sociologists have analyzed decision making in this situation of Jewish rescue during the Holocaust and in other large-scale altruistic situations, economists have not.[1] This is not because economists are uninterested in other-regarding behavior. Indeed, the past decade has seen an explosion of work on such behavior, much of it focused on unselfish decision making in the laboratory and on charitable giving. Laboratory experiments offer researchers significant control in testing theories of other-regarding behavior. However, as Levitt and List (2007) noted, laboratory experiments suffer from several possible limitations, among them that the experimental context is artificial and that stakes in experiments are low. List (2007) demonstrates that positive dictator game giving largely evaporates once a negative giving option is allowed, suggesting that positive giving is driven by the experimental context. Even the stakes in laboratory games played over hundreds of dollars (List & Cherry, 2000) or several months of salary (Cameron, 1999) pale in significance to the life-or-death stakes involved in Jewish rescue, and the context of rescue could not have been more real. While charitable giving is of significant interest to economists for many reasons, the costs of charitable giving for each giver are vastly less than the possible costs of rescue.

It is difficult to think of a more extreme situation for analyzing social preferences than World War II, a conflict that killed up to 60 million people (Forster & Gessler, 2005). Around 6 million of the civilian deaths were Jews (Gutman, 1990), who were specially targeted for genocide by the Nazi regime. Around 60% of European Jews were killed (Gutman, 1990), with killings occurring across occupied Europe. While the penalty for attempting to save Jews in most Nazi-occupied countries was death, a small number of Gentiles nevertheless risked their lives to rescue Jews. Yad Vashem, the Israel Holocaust Museum, has recorded over 20,000 Gentile rescuers of Jews, though the true number is surely higher. What made someone likely to be part of this remarkable group? What role, if any, did economic factors play?

Using both cross-country and individual-level data, I find that income is positively associated with rescue. All else equal, people in richer countries were much more likely than people in poorer ones to rescue Jews. The elasticity of rescue with respect to income in most of my regressions is about 2, meaning that a 10% increase in country income is associated with a 20% increase in the number of rescuers. Within countries, richer people appear to have been more likely to rescue Jews. Although I do not observe the income of individual rescuers, I find that occupational status and self-perceived economic status are positively associated with being a rescuer.

There is some evidence from less extreme settings that higher income may increase altruism. Andreoni (2006) discusses the relationship between income and charitable giving as a proportion of income in the United States. Focusing on households that give to charity, the relationship between income and percentage of household income given is roughly U-shaped. Households earning less than $10,000 a year give a substantial 4.8% of their income to charity. This percentage decreases with income up until the $40,000 to $49,000 range, before increasing in income.[2] The share of

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[1] One exception is Costa and Kahn's (2003) study of bravery during the American Civil War.

[2] One difficulty in interpreting anything about altruism from the relationship between income and share of income given to charity is that the tax benefit of giving to charity increases with income (Andreoni, 2006).

households giving to charity increases in income in both the United States (Andreoni, 2006) and Great Britain (Pharoah & Tanner, 1997). Bandy and Wilhelm (2007) and Brown and Lichter (2005) show that childhood poverty is associated with decreased prosocial behavior later in life.

While the focus of this paper is on the relationship between income and rescue, it also provides a dramatic example of altruistic behavior that is unlikely to be driven by desire for social status or approval or by expectations of reciprocity. There is a long-standing debate about whether altruistic behavior is driven by social presentation (for example, the desire to be appear moral or generous to other people). Hoffman et al. (1994) find that dictator game giving decreases dramatically once double-blind anonymity is implemented. The negative relationship between anonymity and giving has been observed in many more recent studies in both the lab (Andreoni & Petrie, 2004) and the field (Soetevent, 2005). In the economic history literature, Costa and Kahn (2003) argue that soldiers' willingness to incur danger during the American Civil War was driven by social cohesion and group homogeneity. In sharp contrast, Gentile rescuers of Jews usually performed their activities in relative secret, without informing their neighbors. Further, in many areas, rescue was an activity without social rewards, as there was little public consensus that rescuing Jews was a socially desirable or even moral activity.[3]

Finally, this paper aims to contribute to a small literature in psychology and sociology on Jewish rescue during World War II. Seminal work by Oliner and Oliner (1988) shows that rescuers exhibited higher levels of altruism on personality trait surveys than nonrescuers. They interpret this result as showing that rescue was primarily driven by altruistic personality traits. This viewpoint has been challenged by Gross (1994), who argues that organizational variables were more important. Work by Varese and Yaish (2000, 2005) emphasizes the importance of being asked to rescue in determining whether someone engaged in rescue. By focusing on income, this paper complements this past work.

The paper proceeds as follows. Section II discusses the theoretical links between income and altruism. Section III describes the data. Section IV analyzes the cross-country data. Section V analyzes the individual-level data. Section VI performs a social preference calibration using the cross-country data. Section VII concludes.

II. Theoretical Considerations

Variation in a Gentile's income may affect the decision to rescue in several ways. The effect may be negative. If utility is a function of income, people with higher prewar income have more to lose by engaging in rescue.[4] Provided that richer Gentiles caught rescuing Jews received similar fates to poorer captured rescuers, the expected cost of engaging in rescue is increasing in income.

Yet for several reasons, the effect of income on rescue may be positive. First, engaging in rescue was usually not without some cost of time or money. Gentile rescuers holding Jews at their houses often provided food and other necessities to those they rescued. I examine this explanation in my individual-level regressions by analyzing the effect of ease-of-rescue variables, such as the number of rooms in one's home, on the probability of being a rescuer. Second, and probably more interesting, income may affect attitudes toward Jews and susceptibility to anti-Semitism. This is the explanation I focus on in this paper. Glaeser (2005) developed a model of hatred where nonminority individuals decide whether to pay a cost to investigate the truth of hateful messages about minority groups. People with higher incomes can better afford to obtain truthful information about minority groups (for example, by purchasing a variety of newspapers and by traveling to different places) and may also have more leisure time to make these investigations. Though altruistic behavior and hatred are not necessarily mutually exclusive (as I discuss later, there are several documented anti-Semitic rescuers), it seems likely in most cases that people with hatred toward a minority group would be less likely to take risks to benefit group members. A related and third explanation for why income may increase rescue involves relative prosperity. Charness and Rabin (2002) show that subjects are more likely to give to others when their own payoff is higher than that of the other person. Thus, the higher income a potential rescuer has relative to the Jew requiring rescue, the more likely he might be to rescue him.

The decision whether to rescue a Jew can be conceptualized as a risky dictator game. The Gentile can choose between the "safe" option of not rescuing, in which she is safe and the Jew receives a bad outcome, and the "risky" option of rescue, in which with some probability, the rescue is successful (and both Gentile and Jew are safe) and with the remaining probability both receive a bad outcome. In this setting, the effect of income is ambiguous; a rich Gentile may be less inclined to rescue than a poor one because she may derive greater utility from her safe option, but on the other hand, she may be more inclined to rescue if income affects her social preferences. To the researcher, if, all else is equal, income is positively associated with rescue, this is evidence that altruism increases

[3] After the war, rescuers who disclosed their rescue activities faced social disapproval and even the prospect of violence for having rescued Jews, particularly in Poland (Tec, 1986; Fogelman, 1994). For example, Oskar Schindler, the famous German businessman who rescued hundreds of Jews at his factory during the war, was pelted with stones and insulted as a "Jew-kisser" in postwar West Germany (Fogelman, 1994).

[4] This may be true for several reasons. First, there is significant evidence that happiness increases in income. The evidence is fairly strong within countries (Easterlin, 1974; Stevenson & Wolfers, 2008) and over time (Di Tella, MacCulloch, & Oswald, 2003; Stevenson & Wolfers, 2008). The cross-country evidence is less clear, though Stevenson and Wolfers (2008) provide recent evidence across several data sets that happiness increases in income across countries. Second, the estimated value of a statistical life (VSL) increases with individual income (Viscusi & Aldy, 2003). Third, independent of happiness, higher income may have also given European Gentiles greater life choices and opportunities, both of which may have been important to overall utility.

with income.[5] While I focus the paper on the relationship between income and rescue, I also consider other variables of potential interest to economists including education level,[6] religiosity,[7] anti-Semitism,[8] and religious creed.[9]

III. Data

A. *Country-Level Data*

My country-level rescuer data are from the Yad Vashem Righteous Among the Nations. Established in 1953, Yad Vashem is the national Holocaust museum in Israel. The Righteous Among the Nations program was created by Yad Vashem in 1963. To qualify as a Righteous Among the Nations, a Gentile had to be actively involved "in saving one or several Jews from the threat of death or deportation to death camps" (Yad Vashem, 2009). In addition, the action must have involved risk to the Gentile's life, liberty, or position, and the Gentile's motivation must have been strictly humanitarian (for example, not for the purpose of making extra money or on the hope of religious conversion). Requests for consideration are made in most cases by the rescued Jew or a family member of the Jew. Nominations may also be received from the Gentile rescuer, but they are rare. In order for the title of Righteous Among the Nations to be bestowed, testimony is usually required from the Jewish side (from the rescued Jew or his or her family;[10] testimony is not required from the Gentile rescuer, and they may be honored posthumously). Those who receive the designation Righteous Among the Nations are honored with a tree or plaque in Israel, or both, and since the 1980s, some rescuers in financial need have received small monthly stipends. Yad Vashem has told me that political concerns are not considered in the process; there is no effort to make sure certain countries are not under- or overrepresented in the number of Righteous rescuers.

Though the Righteous Among the Nations include rescuers from 42 countries, I restrict my analysis to the 25 European countries in which wartime mortality due to the Nazis or their collaborators was greater than 500 Jews.[11] Yad Vashem tabulates the Righteous Among the Nations according to present-day country designations. Thus, for example, Belarus, Russia, and Ukraine are separate countries, although they were part of the USSR. My data on prewar Jewish population and wartime Jewish mortality are from Gutman (1990), Dawidowicz (1975), and the U.S. Holocaust Memorial Museum (2008). For countries where borders changed and there was a significant Jewish population in the affected region, I adjust the mortality and prewar population figures to correspond to the Gentile population from which potential rescuers were drawn. My data on GDP per capita are from Maddison (2007). All other country-level variables are described in the appendix.

In order to make cross-country comparisons about the level of rescue, I needed some standardized measure that accounts for the different needs for rescue in different countries. A good hypothetical measure of rescue in a country would be rescuers divided by the number of Jews requiring rescue. This measure would take into account that in some countries, like Poland, nearly all Jews faced the possibility of falling into the hands of the Nazis, whereas in other countries, like what is now Russia, Jews living beyond the Nazi advance (for example, in Moscow or St. Petersburg) were largely safe. Because the number of Jews requiring rescue is not observed, my primary measure is rescuers per number of Jews killed. This measure may seem inappropriate because rescue should affect the number of Jews killed. However, since the ratio of Jews actually rescued to Jews requiring rescue is very small, the number of Jews killed is a relatively close approximation of the number of Jews requiring rescue.[12] Another possible

[5] A negative association, however, would be difficult to interpret, as it could be due to rich people having more to lose or due to a negative relationship between altruism and income. A formal model of the rescue decision appeared in an earlier version of this paper and is available from the author.

[6] If people are more educated, they might be less susceptible to hatred and propaganda, and thus more likely to engage in rescue. At a more basic level, if people are completely illiterate, certain rescue activities, such as creating documents and organizing meetings, may be difficult. Bekkers (2006) shows that dictator game giving increases in education, and more educated people give a higher proportion of their income to charity (Andreoni, 2006). However, List (2004) does not find an effect of education on social preferences in several field settings.

[7] People with a strong belief in God and other firmly held religious convictions may be more likely to engage in rescue. The religiosity of the rescuer is stressed in some personal accounts of rescue, for example, ten Boom (2004). While more religious individuals are more likely to give charity (Flanagan, 1991), religiosity appears to have little effect on giving in dictator, trust, or public goods games (Tan, 2006; Anderson, Mellor, & Milyo, 2008).

[8] Most European countries had some recent pre–World War II history of anti-Semitism, though the degree of anti-Semitism varied enormously by country. The Nazis won large shares of the German popular vote in the early 1930s, and during the 1930s, Poland, Romania, Italy, Hungary, and Slovakia enacted their own anti-Jewish laws. It might be supposed that people in countries with higher levels of anti-Semitism would have lower social preferences toward Jews and would be less likely to engage in rescue. There are, however, a number of cases of anti-Semitic rescuers, people who disliked Jews, but rescued them out of a sense of general moral duty or out of opposition to the Germans, particularly in Poland (Tec, 1986).

[9] Prior to World War II, Jews had experienced difficulty and conflict with all three major Christian denominations in Europe: Catholic, Protestant, and Orthodox. However, religious clergy figure prominently in several well-documented rescue activities, such as Catholic priests and nuns in France and Protestant clergy in the Netherlands (Gross, 1994).

[10] The Yad Vashem web site states that in place of testimony, it may accept "unequivocal documentation establishing the nature of the rescue and its circumstances."

[11] The countries with positive rescuers that I exclude are Albania, Armenia, Brazil, Bulgaria, Chile, China, Denmark, Great Britain, Japan, Portugal, Slovenia, Spain, Sweden, Switzerland, Turkey, the United States, and Vietnam. As far as I am aware, all European countries with positive mortality have at least one rescuer, except for perhaps Finland, for which the number of Jews killed varies by source, from between 0 (Dawidowicz, 1975) and 7 (Gutman, 1990).

[12] Of the two-fifths of European Jewry who survived the war, probably a large majority survived by emigrating to safer areas or by happening to live in areas where Jews were not threatened. In a regression of Jewish survivors in a country on the prewar Jewish population and the number of rescuers, the coefficient on rescuers is actually negative (the effect ranges from insignificance to significance at the 10% level, depending on whether logs are used).

measure is rescuers divided by the prewar Jewish population, though this measure suffers from the problem that Jews in parts of certain countries did not require rescue. Later I list rescue rates by country for these measures of rescue (rescuers per Jews killed and rescuers per prewar Jewish population), as well as for two others (rescuers per Jew killed per prewar Gentile, and rescuers per prewar Gentile).

One of the largest selection concerns in using the Righteous Among the Nations data for cross-country comparisons is that unsuccessful rescue attempts are generally not observed. If the success of rescue varied by country and if unsuccessfully rescued Jews were killed and had no relatives survive the war to provide testimony, the data may understate rescue in countries where the probability of successful rescue was lower. One way to conceptualize this selection problem is as follows: let R_j be the actual number of rescuers in country j, which is the true variable of interest. Assuming that all failed rescued attempts are not observed by Yad Vashem, if the probability of successful rescue is p and if all successfully rescued Jews report their rescuers to Yad Vashem, the observed number of rescuers for country j, r_j, is given by

$$r_j = pR_j.$$

If the probability of successful rescue is the same in all countries, there is no selection problem, as this is simply a rescaling of the rescue variables and thus should not be relevant for my regressions.[13] Alternatively, if p differs across countries but can be measured or imputed, I can simply divide the number of observed rescuers by p_j to obtain the true amount of rescue: $R_j = \frac{r_j}{p_j}$. I do not observe average p or p_j, and cannot verify that the probability of successful rescue did not vary across countries. However, to partially address this selection problem, in sections IV and VI, I assume different p values for different countries and test how this variation affects estimates of regression coefficients and social preference parameters.[14]

The basic model for my cross-country regressions is of the form

$$\log(r_j) = \alpha + \beta log(Y_j) + X_j\gamma + \epsilon_j, \quad (1)$$

where r_j is observed rescuers per Jew killed in country j, Y_j is country j's GDP per capita, X_j is a vector of other variables of interest, and ϵ_j is an error term.

B. *Individual-Level Data*

My individual-level data come from two sources. First, I use Yad Vashem's *Encyclopedia of the Righteous Among the Nations* (Gutman, 1997). The *Encyclopedia* provides a short account (from several sentences to one page) of the rescue operations performed by each rescuer recognized as a Righteous Among the Nations and is organized by country. The accounts describe how the rescue began, rescuer motivations, near discoveries and difficulties along the way, and other details. Many of the accounts also incidentally list the occupation of the rescuer. Occupational information was hand-collected for all accounts for Belgium, France, the Netherlands, Poland, and Slovakia, which I then compared against the occupational distribution of these countries using census data in prewar statistical yearbooks.[15]

My second source of individual-level data was collected by two sociologists, Oliner and Oliner (1988). Oliner and Oliner interviewed several hundred rescuers who were located, primarily, using lists provided by the Righteous Among the Nations program at Yad Vashem.[16] In addition, they interviewed over a hundred nonrescuers. Nonrescuers were selected so that there were no statistically significant differences over age, sex, education, and geographic location during the war between rescuers and nonrescuers.[17] I refer to these characteristics on which the group of rescuers and the group of nonrescuers were roughly matched as matching characteristics. Interviews were conducted in person in respondents' native languages by local research teams between 1983 and 1987. The interviews conducted were exhaustive, consisting of around 450 questions. To my knowledge, it is the largest and most extensive interview-based individual-level data set on Holocaust rescuers and one of the only data sets that compares rescuers with nonrescuers.[18] The data I used consist of 344 rescuers and 164 nonrescuers.

The basic model I estimate for both individual-level data sets is of the form

$$Pr(R_{nj} = 1|X, Y) = F(\alpha + Y_{nj}\beta + X_{nj}\gamma), \quad (2)$$

where R_{nj} is a dummy variable for whether person n in country j was a rescuer, Y_{nj} is a vector of variables concerning occupational or economic status, X_{nj} is other variables (when available), and $F(\cdot)$ is the logit function. In the case of the data of Oliner and Oliner (1988), because the data are a choice-based sample (the sampling was not random, but done using the left-hand-side variable), weights are generally required to

[13] This rescaling does affect the value of the regression intercept when the logarithm of rescue variables is used.

[14] The probability p can be extended to cover, more generally, the rate at which all rescue attempts show up in the data, covering not only the rate of successful rescue but also the reporting of successful rescues to Yad Vashem.

[15] The countries were selected for data collection because they are five of the countries with the largest number of rescuers and for which a volume of the *Encyclopedia* was available.

[16] Ninety-five percent of rescuers were located using the Yad Vashem list, whereas the rest were located as a result of interviews with rescued Jewish survivors (Oliner and Oliner, 1988).

[17] In the data, there are actually small, statistically significant differences in age and geographic location. Rescuers are on average four years older, are more likely to be found in the Netherlands, and are less likely to be found in Poland.

[18] I use the data in Varese and Yaish (2000), who obtained the raw data from Oliner and Oliner in the mid-1990s, which are somewhat different along a few dimensions than those originally published in Oliner and Oliner (1988).

TABLE 1.—COUNTRIES AND REGIONS RANKED BY RESCUERS PER JEW KILLED

Country	Number of Rescuers	Rescuers per Jew Killed (× 1 thousand)	Rescuers per Prewar Jew (× 1 thousand)	Rescuers per Jew Killed per Prewar Gentile (× 1 billion)	Rescuers per Prewar Gentile (× 1 million)	Region
Italy	468	77.25	11.70	1.88	11.37	Southern
Norway	42	55.12	23.33	19.60	14.93	Northwest
Belgium	1,512	52.32	23.26	6.52	188.36	Northwest
The Netherlands	4,947	49.47	35.34	6.35	634.56	Northwest
France	2,991	38.68	8.55	0.93	72.16	Northwest
Serbia	125	6.02	5.53	1.66	34.45	Southern
Lithuania	761	5.38	4.76	2.44	344.81	Eastern
Croatia	102	5.10	4.08	1.42	28.48	Southern
Slovakia	489	4.40	3.39	1.46	162.65	Central
Greece	282	4.33	3.56	0.71	46.04	Southern
Bosnia	40	4.00	2.67	1.56	15.64	Southern
Germany	460	3.33	2.30	0.05	7.08	Central
Estonia	3	3.22	0.67	2.87	2.67	Eastern
Poland	6,135	2.55	2.28	0.11	264.48	Eastern
Hungary	725	1.86	1.18	0.19	73.18	Central
Austria	85	1.70	1.49	0.25	12.68	Central
Latvia	120	1.70	1.28	0.94	66.45	Eastern
Belarus	602	1.66	1.19	0.28	102.26	Eastern
Ukraine	2,246	1.56	1.06	0.05	67.92	Eastern
Russia	163	1.52	0.17	0.02	1.63	Eastern
Czech Republic	108	1.38	1.20	0.13	10.18	Central
Macedonia	9	1.26	1.13	0.80	5.75	Southern
Luxembourg	1	1.00	0.20	3.39	3.39	Northwest
Moldova	78	0.58	0.46	0.26	35.07	Eastern
Romania	56	0.36	0.14	0.03	4.18	Eastern
Northwest	9,493	45.64	16.90	2.25	157.22	
Southern	1,026	7.95	5.40	1.23	17.50	
Central	1,867	2.43	1.69	0.13	19.61	
Eastern	10,164	2.11	1.42	0.09	55.56	
Total	22,550	3.81	2.51	0.16	56.78	

Regional and total averages are weighted by Jews killed, prewar Jews, Jews killed × Prewar Gentiles, or prewar Gentiles. All variables are explained in the Appendix.

produce consistent regression estimates of the determinants of being a rescuer (Manski & Lerman, 1977).[19]

IV. Cross-Country Results

Table 1 presents the 25 countries ranked by my preferred rescue variable, rescuers per Jew killed, and several other rescue variables. The ranking of countries according to rescuers per prewar Jew is similar to that according to rescuers per Jew killed. The countries of northwest Europe, with the exception of tiny Luxembourg, exhibit high levels of rescue compared to most other countries. Southern Europe has higher rescue than Eastern or Central Europe on most measures. Table 2 gives summary statistics for the main right-hand-side variables in the cross-country analysis, including GDP per capita, education, religiosity, religious denomination, anti-Semitism, an Axis country dummy, and geographic region. Mean real GDP per capita for Europe in 1937 was around $2,850 in 1990 International Geary-Khamis dollars, though there was considerable variation. The richest countries tend to be in northwest and central Europe.

TABLE 2.—SUMMARY STATISTICS, CROSS-COUNTRY DATA

Variable	Observations	Mean	s.d.
GDP per capita	25	2,852.30	1,563.47
% Literacy	24	73.06	22.38
% believe in God	25	75.91	14.86
Catholic country	25	0.44	0.51
Orthodox country	25	0.32	0.48
Passed anti-Semitic law	25	0.28	0.46
% would not want Jewish neighbors	24	14.04	6.91
Axis country	25	0.24	0.44
Northwest	25	0.20	0.41
Eastern	25	0.36	0.49
Central	25	0.20	0.41

All variables are explained in the appendix.

I turn now to the main cross-country regression results. Because the sample size is very small and many variables are highly collinear, I ran many regressions, including log GDP per capita and different combinations of other variables. The effect of log GDP per capita in these regressions is strongly economically and statistically significant and is highly robust. Table 3 presents the results of weighted-least squares (WLS) regressions with log rescuers per Jew killed the dependent variable. The WLS regression of log rescuers per Jew killed

[19] While the Manski-Lerman weights are generally applied to logits on choice-based samples (Krueger & Maleckova, 2003), using an unweighted logit model on choice-based data should actually yield consistent estimates of all parameters except the choice-specific constants. This special case result is stated in Manski and Lerman (1977) and Train (2003). I will present both unweighted and weighted results.

TABLE 3.—COUNTRY-LEVEL DETERMINANTS OF RESCUE, WEIGHTED LEAST SQUARES, AND WEIGHTED 2SLS REGRESSIONS

	Dependent Variable: Log (Number of Rescuers per Jew Killed)									
	WLS								W2SLS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log (GDP per capita)	1.910 (0.354)***	2.029 (0.568)***	2.407 (0.356)***	1.846 (0.487)***	1.914 (0.363)***	2.257 (0.380)***	2.005 (0.298)***	1.813 (0.413)***	1.390 (0.602)**	1.981 (0.738)**
% literacy		−0.003 (0.012)								
% believe in God			0.021 (0.007)***							
Catholic country				0.349 (0.567)						
Orthodox country				0.061 (0.641)						
Passed anti-Semitic law					0.031 (0.214)					
% would not want Jewish neighbors						0.030 (0.018)				
Axis country							−0.806 (0.245)***			
Northwest								0.452 (0.746)		0.311 (0.965)
Eastern								−0.880 (0.503)*		−0.867 (0.523)
Central								−1.565 (0.564)**		−1.637 (0.639)**
Log(GDP per capita) instrumented with coal production									*X*	*X*
Observations	25	24	25	25	25	24	25	25	21	21
R^2	0.56	0.56	0.68	0.60	0.56	0.63	0.70	0.81	0.52	0.83

An observation is a country. Standard errors in parentheses. Regressions are weighted by the number of Jews killed in each country. In columns 9 and 10, log GDP per capita is instrumented by 1937 coal production per capita from Mitchell (1975). All variables are explained in the appendix. *Significant at 10%, **5%, ***1%.

on log GDP per capita in column 1 is also plotted in figure 1. The effect of log GDP per capita is highly significant in every regression, and the estimated elasticity is around 2. The correlation of log GDP per capita and rescue remains highly significant after geographic variables are added. Among the other variables, there are statistically significant effects of belief in God (positive) and being an Axis country (negative) on the amount of rescue.[20]

While I attempt to control for confounding influences, there are still unobserved variables that may affect rescue and also be correlated with GDP per capita. One example might be unmeasured societal preferences regarding tolerance and diversity. To attempt to control for this, I turn to an instrument for log GDP per capita. An instrument is also potentially useful in controlling for measurement error in GDP per capita, a common problem with cross-country regressions with GDP as a right-hand-side variable (Barro & Sala-i-Martin, 2004). In columns 9 and 10, log GDP per capita is instrumented with 1937 coal production per capita.[21] There is a moderate correlation between the instrument and log GDP per capita in the IV regressions, with a first-stage of log GDP per capita $= 7.3(0.08) + 237(59) \times$ coal in column 9. The first-stage F-statistics for columns 9 and 10 are 15.9 and 11.4, respectively ($p < .01$). The estimated coefficients on log GDP per capita are fairly similar to their least-squares analogues.[22]

A. *Robustness*

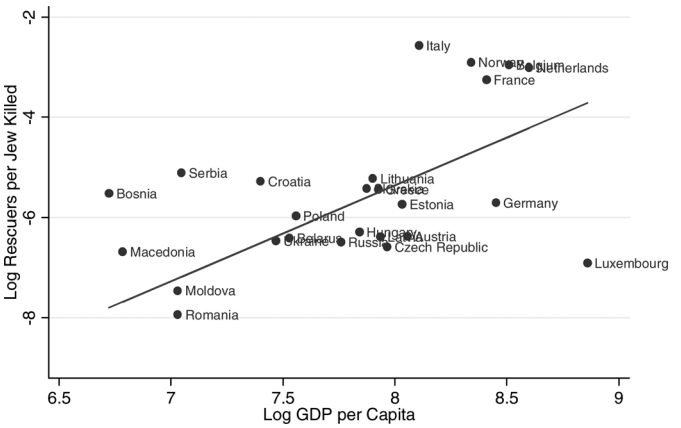
Historians often emphasize that Poland's position during World War II was unique. Most of Polish territory fell under the so-called General Government, where the Nazis maintained a brutal occupation under Governor-General Hans Frank. The death penalty was administered to Poles for any number of minor offenses, such as violating curfew or owning a radio (Paulsson, 2002), and for rescuers of Jews, the death penalty was sometimes administered not only to the

[20] The Web appendix presents results for additional possible determinants of rescue, including additional education and anti-Semitism variables and variables on topography and political systems.

[21] Coal was a highly important resource in the industrial development of Europe (Parker & Pounds, 1957). Instead of coal production, it is likely better to have as an instrument a variable for coal endowments before the industrial growth of Europe (say, coal deposits in the ground in 1800) to guarantee the exogeneity of the instrument. Many prominent studies, though, have had to make compromises in measuring natural resource endowments, for example, by using natural resource exports to proxy natural resource endowments (Sachs & Warner, 2001).

[22] The Web appendix also shows unweighted OLS/2SLS and feasible GLS results. The coefficient on log GDP per capita is statistically significant in seven of the eight OLS regressions and positive (but not significant) in the 2SLS regressions. One issue here is whether I include Luxembourg. Luxembourg had a tiny prewar Jewish population of 3,500 people and has a single recorded rescuer (giving it a relatively low number of rescuers per Jews killed), and its GDP per capita value is missing in the Maddison (2007) series. When I impute its GDP per capita from postwar measures, it has by far the highest in Europe, making it a huge outlier with a very high GDP per capita and a very low level of rescue. Once Luxembourg is removed, the estimated OLS coefficients on log GDP per capita increase, leading to significance at the 5% level in all the OLS regressions. The effect of log GDP per capita is similar, but slightly stronger in feasible GLS.

FIGURE 1.—GDP AND RESCUE, WLS REGRESSION



This figure plots the regression of log rescuers per Jew killed on log GDP per capita and a constant, and is weighted by the number of Jews killed in each country. All variables are explained in the appendix.

rescuer but to the rescuer's family as well (Gilbert, 1994). Gentile Poles were only somewhat above Jews in the Nazi racial hierarchy, and around 3 million Polish Gentiles were killed during the war (Gutman, 1990). In addition to its historical uniqueness, Poland is highly weighted in the above regressions, where countries are weighted according to the number of Jews killed. Thus, as a robustness check, I repeated the regressions with Poland removed. The results are in the Web appendix. The estimated coefficients on log GDP per capita are similar and are all highly significant. Additionally, the positive coefficient on belief in God is now significant only at the 10% level.

Using least squares with small samples can lead to overrejection of the null hypothesis of no effect, with standard errors that are too small. To account for this, I redid the regressions in table 3 with bootstrapped standard errors, which I report in the Web appendix. Log GDP per capita remains highly significant in columns 1 to 8, though the standard errors increase substantially in the weighted 2SLS specifications.[23]

Italy, Norway, Belgium, the Netherlands, and France all have a level of rescuers per Jew killed that is several times higher than that of other countries, as well as high levels of GDP per capita. As a further robustness check, I consider the possibility that rescue may have succeeded with a higher probability in these countries, leaving more surviving Jews to report their rescues to Yad Vashem. For example, I might assume that rescue succeeded with a probability equal to three-fifths in these five countries and a probability equal to two-fifths in other countries. Then I redid the regression results using observed rescue divided by probability of successful rescue as my rescue variable. As seen in the Web appendix, the coefficients on log GDP are mostly slightly lower, but the effect of log GDP on rescue is still highly significant.

[23] The use of the bootstrap may also help in analyzing how much the results depend on the effect of particular countries. If the results are driven by a small number of countries, this should show up in large standard errors, since particular countries will be excluded in different subsamples of the data.

V. Individual-Level Results

A. *Results from* The Encyclopedia of the Righteous *Data*

Table 4 presents a comparison of the occupations of rescuers to those of the nonrescuer general population based on the data collected from *The Encyclopedia of the Righteous Among the Nations* (Gutman, 1997). I focus my comparison using a simple 1-2-3 variable of occupational socioeconomic status corresponding with how occupations are listed in the prewar statistical yearbooks. The variable equals 1 for those in farming, fishing, and forestry; 2 for those in mining, manufacturing, commerce, transportation, and domestic service; and 3 for those in the liberal professions and public service. The ordering is consistent with the Standard International Index of Socio-Economic Status of Ganzeboom, de Graaf, and Treiman (1992), and also with group averages for occupational income and socioeconomic status in the 1930 U.S. Census.[24] Since occupations are given much more frequently for male than female rescuers, I compare male rescuers against the male general population for countries for which occupational information was available by gender. Further, I attempt to make the comparisons excluding clergy, policemen, and soldiers.[25]

[24] The Standard International Index of Socio-Economic Status ranks the occupations in the International Standard Classification of Occupations (ISCO68) according to likely socioeconomic status. Occupations from the liberal professions and public service are drawn primarily from the ISCO categories of Professional, Technical, and Related Workers and Administrative and Managerial Workers, the two groups with the highest socioeconomic status ranking in Ganzeboom, de Graaf, & Treimen (1992). Likewise, the group Agricultural, Animal Husbandry and Forestry Workers, corresponding closely to the farming, fishing, and forestry group in my data, has the lowest socioeconomic status ranking. I obtain 1930 U.S. Census data from the 1% IPUMS extract and analyze the variables Occupational Income and Duncan Socioeconomic Index provided by the IPUMS. The breakdown between groups 1, 2, and 3 is 22.3%, 71.3%, and 6.4%. The average occupational income for people in the three groups is 11.4, 24.8, and 33.6, and the average Duncan Socioeconomic Index is 12.3, 30.3, and 68.9. Further details are in the Web appendix.

[25] I do this to be conservative in classifying rescuers as part of group 3 (liberal professions and public service). Clergy and policemen (who would be counted as part of group 3) likely had more opportunities for rescue than other workers. Further, eliminating soldiers prevents classifying lower-occupational-status workers who served briefly in the armed forces as part of group 3. If I do not exclude clergy, policemen, and soldiers and use the same comparison of rescuers to the general population for each country, the share of rescuers in group 3 increases, and the effect of the occupational status variable on being a rescuer remains highly significant, as seen in Web appendix table 4. For Belgium, France, the Netherlands, and Slovakia, I lack occupational information broken down by religion. Thus, I compare the occupations of rescuers to the occupations of the general populations of these countries, even though the general populations include Jews (who cannot be Righteous Among the Nations). Occupational information by religious group, however, is available for Poland, and thus I compare Polish rescuers with the Polish Gentile population. It is fortunate I am able to do this for Poland given that Jews composed around 10% of the Polish prewar population and have a very different occupational breakdown from Polish Gentiles (Jews were much more likely to work in commerce and manufacturing and much less likely to be farmers). I suspect that if I could compare rescuers to the Gentile population for other countries, this would make the correlation of occupational status with rescue even stronger (as Jews would likely be overrepresented in groups 2 and 3 and underrepresented in group 1 relative to the general population).

TABLE 4.—OCCUPATIONS OF RESCUERS COMPARED TO THE GENERAL POPULATION

	Belgium—Men (army and clergy removed)		France—Men (army and clergy removed)		The Netherlands—Men (army, clergy, and policemen removed)		Poland—Gentiles		Slovakia (army removed)	
	Rescuers	Population[a]	Rescuers	Population[b]	Rescuers	Population[c]	Rescuers	Gentile Population[d]	Rescuers	Population[e]
A. Baseline Comparison										
Farming, fishing, and forestry	16.1	18.3	27.5	34.1	26.0	23.3	57.1	73.5	52.8	62.6
Mining, manufacturing, commerce, transportation, and domestic service	44.4	74.4	37.1	59.0	44.3	71.4	27.0	22.3	26.4	32.2
Liberal professions and public service	39.5	7.3	35.5	7.0	29.7	5.3	15.9	4.2	20.8	5.2

B. Logit Regression Results: Effect of Occupational Status on Being a Rescuer					
	Belgium—Men (army and clergy removed)	France—Men (army and clergy removed)	The Netherlands—Men (army, clergy, and policemen removed)	Poland—Gentiles	Slovakia (army removed)
Occupational status (1–3)	8.35e-05	2.83e-05	2.58e-04	8.64e-05	2.74e-05
	(8.23e-06)***	(2.37e-06)***	(2.83e-05)***	(3.99e-06)***	(5.72e-06)***
Observations	2,720,288	13,237,706	2,341,429	13,600,790	3,021,734
Rescuers in sample	205	437	745	1,811	144

The upper portion of the table provides the percentages of rescuers and people from the general population in different occupations. The lower portion of the table presents marginal effects of the variable occupational status on the probability of being a rescuer. Occupational status is defined to equal 1 for those in farming, fishing, and forestry; 2 for those in mining, manufacturing, commerce, transportation, and domestic service; and 3 for those in the liberal professions and public service. Robust standard errors in parentheses.

[a] *Annuaire Statistique de La Belgique et du Congo Belge* (1938).

[b] *Annuaire Statistique de la France* (1938).

[c] *Jaarcijfers voor Nederland* (1938).

[d] *Maly Rocznik Statystyczny* (1939).

[e] *Annuaire Statistique de la République Tchécoslovaque* (1938).

TABLE 5.—DETERMINANTS OF BEING A RESCUER, OLINER AND OLINER INDIVIDUAL DATA

	Dependent Variable: Rescuer (1 if rescuer, 0 otherwise)							
	Unweighted Regressions				Weighted Regressions			
Logit Models	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
High-status job during war	0.1909		0.1915	0.1216	0.0050		0.0050	0.0023
	(0.0399)***		(0.0360)***	(0.0506)**	(0.0020)**		(0.0025)*	(0.0012)*
Wartime economic status		0.0522	0.0456	0.0432		0.0012	0.0003	0.0005
		(0.0299)	(0.0435)	(0.0379)		(0.0005)**	(0.0011)	(0.0011)
Catholic			−0.2359	−0.2264			−0.0056	0.0005
			(0.0418)***	(0.1221)*			(0.0022)**	(0.0074)
Protestant			−0.1634	−0.2893			−0.0029	−0.0030
			(0.1242)	(0.1495)*			(0.0027)	(0.0042)
Rooms in home			0.0140	0.0131			0.0001	−0.0002
			(0.0185)	(0.0156)			(0.0006)	(0.0005)
City			−0.1819	−0.1818			−0.0045	−0.0012
			(0.0591)**	(0.0635)**			(0.0015)**	(0.0020)
House			0.0170	0.0258			0.0031	0.0052
			(0.1109)	(0.1204)			(0.0039)	(0.0010)***
Control for matching characteristics				*X*				*X*
Mean of dependent variable	0.6418	0.6033	0.6422	0.6368	0.0076	0.0076	0.0076	0.0076
Observations	282	368	204	201	282	368	204	201
Number of countries	13	15	12	12	13	15	12	12

The table presents marginal effects on the probability of being a rescuer. An observation is an individual in one of twelve to fifteen European countries. Robust standard errors are clustered at the country level and given in parentheses. Since the number of clusters is small, critical values are drawn from a *t*-distribution with G-2 degrees of freedom, where *G* is the number of clusters. Weights are calculated as in Manski and Lerman (1977) to account for oversampling of rescuers. Wartime economic status is a self-reported measure of subjective economic well-being, ranging from very poor (1) to very well off (5). Data are from Oliner and Oliner (1988). Matching characteristics include age, sex, education, and dummies for the four major countries in the data: Poland, the Netherlands, France, and Germany. In columns 1–4, the mean of the dependent variable is the share of rescuers in the choice-based sample, whereas in columns 5–8 it is the share of rescuers in the population of potential rescuers. The Manski-Lerman weights equal 0.0112 for rescuers and 3.086 for nonrescuers. *Significant at 10%; **significant at 5%; ***significant at 1%.

The table shows that rescuers in all five countries are overrepresented among those in the liberal professions and in public service. While this group represented between 4% and 7% of the general population, it represented between 16% and 40% of the rescuers. The analysis is continued using a logit regression of rescuer or not on the occupational status variable, using a pooled population of rescuers and nonrescuers for each country. For each country, the effect of the occupational status variable is highly significant. This correlation of occupational status and being a rescuer appears to support the view that not only across countries but also within countries, richer individuals were more likely to be rescuers. However, the correlation may reflect factors besides differences in altruism. People in different occupations may not have had the same opportunities to rescue, or they may not have had the same resources to engage in rescue. To examine this latter explanation, I turn to the data of Oliner and Oliner (1988).

B. Results from the Data of Oliner and Oliner

Although the data of Oliner and Oliner (1988) avoid certain limitations of the previous analysis, several caveats are also in order. First, the data size is relatively small, with only several hundred rescuers, most of them from four countries: Poland, the Netherlands, France, and Germany. Second, the data are retrospective, collected four decades after the war, so some information may not be accurately remembered. Third, a question about income during the war was not directly asked. To measure income and economic status during the war, I relied on two main questions. The first question asked subjects for their occupation during the war, which Oliner and Oliner coded into an occupational status of Professional, Business, Administrative, Clerical, Skilled, Semiskilled, and Unskilled. The second question was, "During the war, was your household very well off, quite well off, neither rich nor poor, quite poor, or very poor?" Aware of these limitations, I proceed with my analysis. Summary statistics are given in the Web appendix.

Table 5 shows logit regressions of being a rescuer on the income proxies. I cluster standard errors by country to account for possible correlation of the error within countries.[26] The effect of having a high-status job on being a rescuer is highly positively significant in column 1 of table 5. The effect of wartime economic status on being a rescuer in column 2 is positive and just misses conventional significance. The marginal effect of 0.19 in column 1 means that having a high-status job (versus having a low-status job) is associated with an increase in the probability of being a rescuer of 19 percentage points, or an increase of 30% compared with the mean proportion of rescuers in the sample. In column 3, I add religious denomination dummies, and ease-of-rescue variables (the number of rooms in one's home, living in a city, and living in a house versus an apartment or somewhere else), and in column 4, I add the matching characteristics, which include country dummies. The effect of a high-status job remains statistically significant. I repeat the same regressions in columns 5 to 8 while applying Manski-Lerman weights to account for the oversampling of rescuers in my choice-based

[26] Since the number of clusters is small, I use critical values from a *t*-distribution with degrees of freedom equal to the number of clusters minus 2 (Cameron, Gelbach, & Miller, 2008; Cohen & Dupas, 2010).

TABLE 6.—AVERAGE SOCIAL PREFERENCES TOWARD JEWS, BY COUNTRY

Country	Rescuers	(1)	(2)	(3)	(4)	Region
Italy	468	0.36	0.22	0.26	0.12	Southern
Norway	42	0.34	0.18	0.24	0.08	Northwest
Belgium	1,512	0.34	0.18	0.24	0.08	Northwest
The Netherlands	4,947	0.33	0.17	0.23	0.07	Northwest
France	2,991	0.32	0.15	0.22	0.05	Northwest
Serbia	125	0.25	−0.00	0.35	0.10	Southern
Lithuania	761	0.24	−0.01	0.34	0.09	Eastern
Croatia	102	0.24	−0.01	0.34	0.09	Southern
Slovakia	489	0.24	−0.02	0.34	0.08	Central
Greece	282	0.24	−0.03	0.34	0.07	Southern
Bosnia	40	0.23	−0.03	0.33	0.07	Southern
Germany	460	0.23	−0.04	0.33	0.06	Central
Estonia	3	0.23	−0.04	0.33	0.06	Eastern
Poland	6,135	0.22	−0.06	0.32	0.04	Eastern
Hungary	725	0.21	−0.08	0.31	0.02	Central
Austria	85	0.21	−0.09	0.31	0.01	Central
Latvia	120	0.21	−0.09	0.31	0.01	Eastern
Belarus	602	0.21	−0.09	0.31	0.01	Eastern
Ukraine	2,246	0.20	−0.09	0.30	0.01	Eastern
Russia	163	0.20	−0.09	0.30	0.01	Eastern
Czech Republic	108	0.20	−0.10	0.30	0.00	Central
Macedonia	9	0.20	−0.10	0.30	−0.00	Southern
Luxembourg	1	0.19	−0.12	0.29	−0.02	Northwest
Moldova	78	0.17	−0.15	0.27	−0.05	Eastern
Romania	56	0.16	−0.18	0.26	−0.08	Eastern

This table converts rescuers per Jew killed into an estimate of the mean of social preferences toward Jews in each country. I use the assumption that social preferences in each country are distributed normally: $\sigma \sim N(\mu, \Sigma^2)$. Fixing the standard deviation Σ, I estimate μ using the model in the text and the normal quantile. Column 1 has $\Sigma = 0.1$, $p = 0.5$. Column 2 has $\Sigma = 0.2$, $p = 0.5$. Column 3 has $\Sigma = 0.1$, $p = 0.4$ for Italy, Norway, The Netherlands, Belgium, and France, and $p = 0.6$ for other countries. Column 4 has $\Sigma = 0.2$, $p = 0.4$ for Italy, Norway, The Netherlands, Belgium, and France, and $p = 0.6$ for other countries.

sample. The estimated marginal effects are smaller, but the general pattern of significance is fairly similar.[27]

C. *Income and the Quantity of Rescue*

Above, I examined the decision of whether to engage in rescue, that is, the extensive margin. I now briefly consider the intensive margin: Conditional on engaging in rescue, what factors determined the number of Jews a person rescued? The number of persons rescued is measured using the question: "Overall, about how many people do you think you helped, directly or indirectly, during the war?" Web appendix table 6 presents regressions as in table 5, but with log number of persons helped as the dependent variable. Because I restrict my sample to people rescuing a positive number of Jews, there is no choice-based sampling, so the Manski-Lerman weights are no longer appropriate. The coefficients on high-status job are positive, whereas those on wartime economic status are actually negative, though both sets of coefficients are mostly insignificant. The ease-of-rescue variables all become insignificant once the matching characteristics controls are added. This suggests that income did not affect the intensive margin of rescue, nor did ease-of-rescue variables. If the relationship between income and altruism were spurious and driven by rich people being able to better afford the costs of rescue, one would expect ease-of-rescue variables to affect the quantity of Jews rescued, which they do not.

[27] During the interview, nonrescuers were also asked "Did you do anything out of the ordinary during the war to help other people or resist the Nazis?" (Oliner & Oliner, 1988). Sixty-seven of the nonrescuers answered yes to this question, and included resistance members, helpers and rescuers of non-Jews, and rescuers of Jews not yet recognized by Yad Vashem. The variables high-status job and wartime economic status do not predict answering yes to the question.

VI. Social Preferences toward Jews: A Calibration

This penultimate section is more speculative than the previous ones and tries to use rescue rates and several strong assumptions to back out social preferences toward Jews in different countries. I employ the risky dictator game framework discussed in section II. First, I assume that utility is linear in the payoffs to oneself and to a Jewish person, $V = (1 - \sigma)\pi_{self} + \sigma\pi_{Jew}$, where σ is a parameter measuring social preferences. Second, I assume that the difference between safe and bad payoffs is the same for Jews and Gentiles: $\pi_{self,safe} - \pi_{self,bad} = \pi_{Jew,safe} - \pi_{Jew,bad}$. Under that assumption, a Gentile chooses to rescue if $\sigma \geq 1 - p_j \equiv \sigma^*$, where p_j is the probability of successful rescue in country j. Third, I assume that σ is normally distributed with mean μ and standard deviation Σ within each country.

Let r denote the proportion of Jews rescued out of those requiring it in a given country, which I measure using a country's rescuers per Jew killed. Writing $\sigma = \mu + \Sigma Z$, where Z is a standard normal variable, I obtain that $Pr(\sigma > \sigma^*) = Pr(\mu + \Sigma Z > \sigma^*) = r$. Rearranging terms yields that $Pr(Z < \frac{\sigma^* - \mu}{\Sigma}) = \Phi(\frac{\sigma^* - \mu}{\Sigma}) = 1 - r$, where $\Phi(\cdot)$ is the CDF of a standard normal. Further rearranging and plugging in $\sigma^* = 1 - p$, I find that

$$\mu = 1 - p - \Sigma\Phi^{-1}(1 - r).$$

I will take Σ to be either 0.1 or 0.2, values that are generally consistent with the large experimental literature on social preferences.[28]

Calculated μ values are given in table 6. In column 1, I begin with the assumption that $\Sigma = 0.1$ and $p = 0.5$ (same p for all countries) and estimate μ. The values are between 0.1 and 0.35 and are thus roughly similar to those estimated using dictator game experiments. Changing the assumed Σ to be 0.2 for column 2, the estimated μ values go down, and many of them are now negative. This occurs because to rationalize the relatively small amount of rescue given the amount needed, one needs to go out several standard deviations into the normal distribution and to do this with a higher Σ, a negative μ is required. Columns 3 and 4 repeat the exercise in columns 1 and 2, but assume that rescue had a higher probability of success, $p = 0.6$, in Italy, Norway, the Netherlands, Belgium, and France, and a lower probability, $p = 0.4$, in other countries. The calibration exercise illustrates two conclusions. First, social preference estimates are highly sensitive to p, the probability of successful rescue.

[28] For example, in Fisman, Kariv, & Markovits (2007), who estimate CES utility functions using dictator games, the standard deviation of estimated social preferences is 0.16. The simple linear utility function that I consider is a special case of CES (where the curvature parameter equals 1).

Second, it shows that under certain assumptions, social preference parameters estimated from rescue during World War II are not horribly at odds with those estimated from laboratory experiments, though under some specifications, they are substantially lower.

VII. Discussion

I have shown that the rescue of Jews during World War II is positively correlated with income at the cross-country and the individual levels (using occupational status and self-perceived economic status as proxies for income). Explanations of this correlation or of Jewish rescue in general based on differences in social presentation (such as the desire to appear as altruistic to others) do not seem credible. One of the limitations of the paper is that I cannot rule out the alternative that poorer people or countries could not afford to engage in rescue. I show, however, that the correlation of income with being a rescuer remains significant after controlling for ease-of-rescue variables (such as the number of rooms in one's home) and that these variables have a limited effect on the probability of being a rescuer and on the number of persons helped by rescuers. Given that richer people might be thought to have more to lose by rescuing, the evidence is consistent with the view that altruism increases with income.

More work is needed to understand the relationship between income and rescue during World War II, as well as between other variables and rescue. If and when researchers are able to obtain data on rescue activities during other conflicts, it would be interesting to explore the same or similar questions. Further, the general question of the relationship between income and altruism remains unresolved and certainly requires further study.

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DATA APPENDIX

List of Relevant Variables in Cross-Country Analysis

- *Rescuers*. From Yad Vashem (2009) as of January 2009. Rescuers are assigned countries by country of citizenship and ethnicity. For most rescuers, the two coincide. However, for rescuers living in regions where borders shifted (during the interwar period, during World War II, or after the war), Yad Vashem assigns countries according to ethnicity. Thus, a Ukrainian who saved Jews in eastern Poland (according to prewar borders) would be assigned Ukraine for his or her country.
- *Jewish mortality*. Baseline mortality data are from Gutman (1990), except for the mortality figures for Belarus, Ukraine, Russia, and Luxembourg, which are taken from Dawidowicz (1975). To correspond Jewish mortality data to how Yad Vashem determines rescuer country, I take the baseline mortality figures from the above sources and then make adjustments for Jewish mortality in border regions. Specifically, I compute shares of Jewish mortality for the two border country Gentile ethnic groups using prewar census data and the following formula: $\text{Mortality(A)} = \text{Mortality} * s_A/(s_A + s_B)$. Further details are available in the Web appendix.
- *Prewar Jewish population*. From Dawidowicz (1975) for all countries except Germany, Austria, Latvia, Lithuania, Estonia, Hungary, Romania, Moldova, Greece, and the constituent countries of Yugoslavia, which are taken from the Web site of the U.S. Holocaust Memorial Museum, with the exception of Yugoslavia, which is from Gutman (1990). As for Jewish mortality, the figures are adjusted for border regions using prewar census data.
- *Prewar Gentile population*. Prewar Gentile population measured between 1926 and 1934. From Kirk (1946).
- *Region*. Classified according to the Web site of the U.S. Holocaust Memorial Museum (2008).
- *GDP*. GDP per capita in 1937 from Maddison (2007), given in 1990 International Geary-Khamis dollars. I impute 1937 GDP per capita for the Czech Republic, Slovakia, Belarus, Russia, Ukraine, Serbia, Croatia, Bosnia, Macedonia, and Luxembourg. For the first nine countries, I impute the GDP per capita of country i in 1937 as $Y_{i,1937} = \widetilde{Y}_{1937} \times \frac{Y_{i,T}}{\widetilde{Y}_T}$, where the tilde indicates the 1937 GDP per capita of Czechoslovakia, the USSR, or Yugoslavia and the T indicates the first year after 1937 for which separate data are available for country i (1990 for Czechoslovak and Yugoslavian countries, 1973 for Belarus, Russia, and Ukraine). I impute the 1937 figure for Luxembourg by multiplying the 1937 GDP per capita of Switzerland by the ratio of 1950 GDP per hour in Luxembourg to 1950 GDP per hour in Switzerland. I use 1937 GDP per capita for the Kingdom of Romania for Romania and Moldova. GDP per hour (real GDP per hour in 2007 EKS dollars) is from the Conference Board (2008).
- *Literacy*. Literacy rate measured between 1926 and 1934. From Kirk (1946).
- *Belief in God*. Percentage of population believing in God from all waves of the World Values Survey.
- *Passed anti-Semitic law*. Dummy for whether a country passed an anti-Semitic law while not occupied by Nazi Germany during the 1930s before the outbreak of war. From the appendix of Dawidowicz (1975).
- *Would not want Jews as neighbors*. Percentage of population that would not want Jews for neighbors. From all waves of the World Values Survey.
- *Catholic, Orthodox*. Dummies for whether the country was predominantly Catholic or Orthodox. From Epstein (1939) and the *CIA World Factbook*.
- *Coal*. 1937 total coal production (hard coal plus brown coal) in thousands of metric tons per capita. From Mitchell (1975).

Notes on Individual-Level Data and Analysis

The sample from Varese and Yaish (2000) consists of 346 rescuers and 164 nonrescuers. I exclude two observations with clear inconsistencies, leaving 344 rescuers and 164 nonrescuers. High-status job during the war is a dummy variable, taking value 1 if the subject had a wartime occupational status of professional, business, or administrative, and 0 if the subject had an occupational status of clerical, skilled, semiskilled, or unskilled. As this division is somewhat arbitrary, I also created a second version of my job status variable taking value 7 for an occupational status of professional, 6 for business, 5 for administrative, 4 for clerical, 3 for skilled, 2 for semiskilled, and 1 for unskilled. Under this definition, job status is also correlated with being a rescuer, though less so than under the other definition. For the question about wartime economic status, I convert an answer of "very well off" to 5, "quite well off" to 4, "neither rich nor poor" to 3, "quite poor" to 2, and "very poor" to 1. Additional information is given in the Web appendix.