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Income inequality Affects Donations Only for High-income People Who Feel Financially Insecure and Distrust Others

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Abstract

There is a growing debate about whether high-income individuals are more or less generous when income inequality is high. We advance this ongoing conversation by analysing a large and comprehensive data set with approximately one million respondents from 140 countries. In this data set, higher-income individuals who live in countries with greater income inequality are less likely to donate money to charity and are more likely to volunteer than their lower-income counterparts. Higher-income individuals who feel financially insecure or show distrust of others are especially unlikely to donate money to charity under high income inequality. These moderators do not influence rates of volunteering. Together, these results advance the debate regarding whether and when inequality shapes prosocial behaviour.

Keywords: Income inequality, prosocial behaviour, income, financial insecurity, trust.

Around the world, income inequality has compounded dramatically. The US, for example, is experiencing the highest levels of income inequality since the Great Depression, and China's income inequality has increased 30% in the last 40 years (Solt, 2016). In light of these trends, researchers have started to debate the welfare and behavioural consequences of income inequality (see Hauser, Hilbe, Chatterjee, & Nowak, 2019; Oishi, Kesebir, & Diener, 2011; Pickett & Wilkinson, 2015). One of these debates has focused on whether income inequality shapes prosocial behaviour among the affluent.

To date, this question has been explored only among samples of relatively high-income US and European individuals, and the existing evidence is mixed. In one representative survey of Americans ($N=1,498$), Côté, House and Willer (2015) found that higher income individuals gave less money to others when they lived in states with higher levels of income inequality¹. More recently, Schmukle, Korndörfer, and Egloff (2019) analysed three large-scale nationally representative data sets and found no evidence that higher income individuals gave less money to others when living in countries with higher income inequality ($N=29,048$). If anything, under greater income inequality, higher-income individuals volunteered more ($N=30,985$) (Schmukle et al., 2019).

To extend these past findings, we conducted analyses that have several clear advantages. First, we employed a large, diverse, and globally representative data set—the Gallup World Poll (GWP). This data set includes nationally representative data from 140 countries, nine survey years (2009-2017), and around a million observations ($N=940,081$). Second, we explored donation and volunteering behaviour using the same data set, allowing for comparison of results within the same sample. Third, unlike other studies on the topic (e.g., Côté et al., 2015;

¹ Côté and colleagues (Côté et al., 2015) did not measure volunteering.

Schmukle et al., 2019), our study included regions with historically high levels of income inequality such as Latin America and Asia (see Supplemental Online Material for a comparison of studies). This aspect is important because psychological processes often do not unfold in a similar way across cultures (Henrich, Heine, & Norenzayan, 2010; Joseph Henrich, Heine, & Norenzayan, 2010). Finally, we examined two well-documented moderators that could help explain high-income individuals' prosocial behaviour when income inequality is high: financial insecurity and distrust of others.

Data and Methods

Data

We used the Gallup World Poll (GWP), a cross-sectional data set that contains data for around 150 countries in the world from 2005 to 2017. In each country, every year of data are representative of the population and between 1,000 and 2,000 individuals are interviewed. In this study, we used data for the 140 countries and for the nine survey years (2009-2017) that had data available for our variables of interest.

Measures

Donation. To assess respondent's willingness to give money, we used a highly used indicator of donation behaviour from the GWP (e.g., Aknin et al., 2013). Respondents could answer Yes or No to the following question: "Have you donated money to charity in the past month?".

Volunteering. We also explored individuals' willingness to give time using the following question "Have you done any of the following in the past month? How about: Volunteered your time to an organization?", respondents could answer Yes or No.

Household Income. We used the measure of household income provide by the Gallup World Poll. In line with prior research (Côté et al., 2015; Schmukle et al., 2019), we used household income, centred at its grand mean across individuals.

Income Inequality (GINI Index). To account for the level of income inequality in each country and year we included in our analyses the Gini Index centred across countries. The Gini Index is a commonly used measure of income inequality that ranges between 0 and 1, with scores closer to one denoting higher income inequality. We obtained the Gini Index for this study from the Standardized World Income Inequality Database (SWIID; <https://fsolt.org/swiid/>).

Although the Gini Index is known to have some limitations, this measure of income inequality has key advantages for analyses that involve cross-country comparisons: the calculations of the Gini Index are independent of both the size of the economy and the population of a country. In addition, the Gini Index is available for all of the countries and survey years included in our dataset. Due to these features, the Gini Index is the preferable measure of income inequality for our study as it involves data from 140 countries worldwide.

Moderators

We explored two well-established psychological factors that could help to explain high-income individuals' prosocial behaviour when income inequality is high: financial insecurity (see e.g., Piff, Kraus, & Keltner, 2018; Piff, Stancato, Martinez, Kraus, & Keltner, 2012) and distrust (see e.g., Oishi et al., 2011; Twenge, Campbell, & Carter, 2014).

Financial insecurity. In an unequal context, people who have more money might feel as if they are especially at risk of losing their economic position. As a result, financial insecurity could undermine the willingness of higher-income individuals to donate money when income inequality is high (see Piff et al., 2018, 2012; for similar arguments). Thus, we included a proxy

for financial insecurity as a moderator: a dummy variable for the years around the 2008 economic crisis (“1” represents people who took the survey in 2008 and 2009) (Brunnermeier, 2009). The 2008 financial crisis has been found to be associated with perceived uncertainty about the economic future of one’s country, encouraging citizens to feel financially insecure (e.g., Chung & van Oorschot, 2011).

Distrust. Prior research shows that when income inequality is high, people tend to trust others less (Twenge et al., 2014). In a context with greater income inequality, higher-income people are more likely to be the target of criminal activities (Kennedy, Kawachi, Prothrow-Stith, Lochner, & Gupta, 1998), and as a result might express less trust in others compared to lower-income individuals. To explore whether distrust of others would influence prosocial behaviour among higher-income individuals when income inequality is high, we used the following question provided by the GWP: “Generally speaking, would you say that most people can be trusted or that you have to be careful in dealing with people?” answers were ‘Yes, most people can be trusted’ and ‘No, I have to be careful when dealing with people’. We used Yes as the reference category to create a variable that represented distrust of others.

Statistical method

Consistent with prior research (Côté et al., 2015; Schmukle et al., 2019), we used multi-level logit models to predict donations (1=yes) and volunteering (1=yes) from respondents’ household income (centred at the grand mean) and income inequality (measured by the Gini Index centred across countries). To reflect cross-cultural differences in outcomes and predictors, we allowed for covariation between random slopes and intercepts (Bauer, Preacher, & Gil, 2006).

Results

Main analyses

Expanding the scope of prior research, we examined the associations between income inequality, income, and prosocial behaviour using all available data from the GWP (i.e., data from 140 countries). Under high levels of income inequality, higher-income individuals were less likely to donate money ($b=-0.173$, $p<.001$, 95% CI [-0.174, -0.171]) and were more likely to volunteer time ($b=0.720$, $p<.001$, 95% CI [0.406, 1.035]) (Table 1). These findings replicate Côté and colleagues (2015) by showing that under high income inequality, higher-income individuals are less likely to donate money to charity. These findings *also* replicate Schmukle and colleagues (2019) by showing that under high income inequality, higher-income individuals are more likely to volunteer. These results suggest that higher-income individuals are less generous with their money but are more generous with their time when they live in a country with higher levels of income inequality. In doing so, these findings highlight the need for researchers to move beyond examining *whether* income inequality moderates the link between income and prosocial behaviour and instead explore questions such as *when* and *why*.

To begin to understand the critical moderators underlying these effects, we conducted country-level heterogeneity analyses. Following Powdthavee, Burkhauser, & De Neve (2017), we divided the countries in our data set based on geographic location, resulting in 10 regions (see SOM). In these analyses, the association between income inequality, income, and donation rates was driven by the Nordic countries, Central, East, and South East Asia. The link between income inequality, income, and volunteering was driven by Latin America, Eastern Europe, Central and South Asia, and the US (Table 2).

Because we analysed data from 140 countries, our study contained more variation in income inequality than previously published papers (Gini Index Range: 22.1-60.8; see SOM). Across countries, our results (i.e., high volunteering and low donation rates) were strongest when income inequality was especially high (i.e., GINI coefficient was above 43.00, see SOM).

These analyses suggest significant within-and-between country variation that could help to explain the mixed findings in the empirical literature. For example, we observed that higher income individuals in Western Europe donated more under higher income inequality. It is possible that we observed these results because Western Europeans are more likely to associate income inequality with situational circumstances outside of people's control (vs. effort; see also Alesina, Di Tella, & MacCulloch, 2004). More research is needed to explore this possibility.

Moderation analyses

In this study we extend prior research that focused only on *whether* higher-income individuals are less generous when income inequality is high by providing potential explanations for that relationship.

Financial insecurity. Based Brunnermeier (2009), we included a dummy variable for the years around the 2008 economic crisis as a proxy for financial insecurity. Moderation analyses show that under greater income inequality and greater financial insecurity, higher-income individuals were especially unlikely to donate money to charity ($b=-0.412$, $p<.001$, 95% CI [-0.415, -0.408]). In contrast, volunteering rates were relatively unchanged ($b=-0.085$, $p=.507$, 95% CI [-0.335, 0.166]) (Table 1 columns 3 and 7).

Distrust. Because social trust tends to decline when income inequality is high (Twenge et al., 2014), we included distrust of others in our moderation analyses. We found that higher-income individuals who expressed distrust of others were less likely to donate money to charity

under high levels of income inequality ($b=-0.714$, $p=.018$, 95% CI [-1.308, -0.119]). In contrast, distrust did not moderate the association between income, income inequality and volunteering ($b=-0.286$, $p=.272$, 95% CI [-0.796, 0.225]) (Table 1 columns 4 and 8).

General discussion

Using a large and globally representative data set, we advance the discussion of whether and how income inequality shapes prosocial behaviour among higher-income individuals. Under greater income inequality, higher-income individuals were less likely to donate money and more likely to volunteer time. Following from these results, we found evidence for important cross-cultural variation and underlying psychological moderators.

When income inequality was high, higher-income individuals who felt financially insecure were less likely to donate money to charity. In an unequal context, higher-income individuals could feel at risk of losing their financial position. In turn, the large disutility associated with losses (vs gains) (Kahneman & Tversky, 1979), seems to explain why higher-income individuals are less likely to donate money under high levels of income inequality. We also observed that under high levels of income inequality, higher-income individuals, who expressed distrust of others, were less likely to donate their money to charity. Because higher-income individuals are more likely to be victims of crime in more unequal societies (Kennedy et al., 1998), they may consider monetary donations an investment that will be squandered and, as a result, become less likely to donate their money to charity. Future research should further substantiate these claims.

Interestingly, neither of the psychological moderators that we examined (financial insecurity nor distrust of others) moderated the association between income inequality, income,

and volunteering. These findings suggest that when income inequality is high, higher-income individuals are more sensitive to financial insecurity and social distrust, undermining their willingness to give up their money, but not their time.

This study represents an improvement on prior research—which has focused primarily on convenience samples and has excluded respondents from regions with historically high levels of income inequality such as Latin America and Asia (e.g., Côté et al., 2015; Schmukle et al., 2019). In an era where governments are deprioritizing redistribution and anti-poverty programs (Wasson & Dennis, 2017), the role of generosity in shaping citizens' well-being and flourishing (e.g., Aknin et al., 2013) has never been more relevant. Furthering the debate among academics and policy makers, our study contributes to the generosity-inequality puzzle of whether and how income inequality shapes prosocial behaviour among the affluent. Indeed, our study shows *what* resources high-income individuals give up under high levels of income inequality and *when*.

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Supplementary Online Materials: Additional supporting information can be found at XX.

Table 1: Multi-level logit model for donations and volunteering predicted by income, income inequality, financial insecurity (140 countries), and trust (115 countries), the GWP, 2009-2017.

	<i>Dependent variables:</i>							
	Donated 1=Yes				Volunteered 1=Yes			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household income (divided by 10,000)	13.852*** (0.002)	14.074** (0.001)	14.030*** (0.002)	16.244*** (0.640)	7.455*** (0.176)	7.496*** (0.141)	7.475*** (0.281)	8.540*** (0.491)
Income inequality (Gini Index)	0.041*** (0.002)	0.036*** (0.001)	0.039*** (0.002)	-0.144* (0.072)	0.082** (0.029)	0.083** (0.029)	0.122*** (0.030)	0.098 (0.059)
Household income (divided by 10,000) x Income inequality (Gini Index)	-	-0.173*** (0.001)	-0.167*** (0.002)	5.779*** (0.574)	-	0.720*** (0.160)	0.487 (0.250)	1.866*** (0.469)
Household income (divided by 10,000) x Income inequality (Gini Index) x Crisis (Yes)	-	-	-0.412*** (0.002)	-	-	-	-0.085 (0.128)	-
Household income (divided by 10,000) x Income inequality (Gini Index) x Trust (No)	-	-	-	-0.714* (0.303)	-	-	-	-0.286 (0.260)
Constant	-0.682*** (0.002)	-0.699*** (0.001)	-0.693*** (0.002)	-0.504*** (0.087)	-1.379*** (0.054)	-1.378*** (0.052)	-1.370*** (0.054)	-1.202*** (0.065)
Observations	940,081	940,081	940,081	177,883	940,081	940,081	940,081	177,883

Note: *p<0.05; **p<0.01; ***p<0.001. Models show multi-level logit estimates and standard errors in parentheses. To capture financial insecurity, we conducted these analyses including a dummy variable for the years around the 2008 economic crisis (“1” represents people who took the survey in 2008 or 2009). We used these analyses to proxy financial insecurity in light of research showing that the 2008 financial crisis was associated with uncertainty about future economic circumstance of one’s home country—which led people to feel more financially insecure (Chung & van Oorschot, 2011). Full table can be found in the Supplemental Online Material.

Table 2: Multi-level logit estimates and standard errors in parentheses from multi-level logit models.

Region	Household income (divided by 10,000) x Income inequality (Gini Index)	
	Donated 1=Yes	Volunteered 1=Yes
World	-0.173*** (0.001)	0.720*** (0.160)
Latin America	0.016 (0.025)	0.066* (0.027)
Western Europe	0.538*** (0.155)	0.206 (0.116)
Eastern Europe	0.085* (0.036)	0.124* (0.053)
Nordic Countries	-0.069*** (0.017)	-0.045** (0.016)
Central Asia	-0.596* (0.278)	1.453*** (0.347)
East Asia	-0.575** (0.203)	0.005 (0.039)
South Asia	3.659*** (0.430)	1.704*** (0.497)
South East Asia	-0.994*** (0.081)	-1.402*** (0.089)
West Asia	0.944** (0.328)	0.016 (0.099)
Australia and New Zealand	-0.022 (0.037)	0.018 (0.023)
US	0.054 (0.108)	0.153* (0.073)

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. To explore cross-cultural variation in our critical effects, we divided the 139 countries in our data set in to regions based on geographic location, following a similar strategy as (Powdthavee et al., 2017).

Additional tables of results are available in the online Supplemental Online Material.

Supplementary Online Materials for

Income inequality Affects Donations Only for High-income People Who Feel Financially Insecure and Distrust Others

Supplementary results

Table S.1: Comparison between the two most cited papers on the topic and the present study.

	Schmukle et al (2019)			Côté et al (2015)	
	Study 1	Study 2	Study 3	Survey Study	Present study
Dataset	American Consumer Expenditure Survey (CEX)	German Socio-Economic Panel (SOEP)	International Social Survey Programme (ISSP)	Measuring Morality study	The Gallup World Poll
Countries	US	Germany	30	US	140
Years (waves)	2005-2012 (8)	2003 to 2005 (3)	1998 (1)	2012 (1)	2009-2017 (9)
DV	Amount of charitable contributions respondents made during the last 3 months in % of income.	Amount of donations in a dictator game	Volunteering (1=No to 4= yes, 6 or more times)	Amount of donations in a dictator game	Donations and Volunteering (Yes/No)
Gini source	American Community Survey. [Range: 41.3-53.1]	German Federal Statistical Office. [Range: 22-32]	Standardized World Income Inequality Database (SWIID) [Range: 36.4-52.8]	American Community Survey [Range: 41.7-53.4]	Standardized World Income Inequality Database (SWIID) [Range: 22.1-60.8]
N	27,714	1,334	30,985	1,498	~ 1,000,000

Table S.2: Multi-level logit models for donations and volunteering predicted by income and income inequality, GWP, 2009-2017, **Latin America.**

Dependent variables:

	Donated 1=Yes				Volunteered 1=Yes			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household income (divided by 10,000)	0.238*** (0.029)	0.242*** (0.032)	-	-	0.098*** (0.023)	0.112*** (0.033)	-	-
Income inequality (Gini Index)	0.180*** (0.023)	0.179*** (0.023)	0.159*** (0.023)	0.149*** (0.024)	-0.153*** (0.025)	-0.157*** (0.025)	-0.160*** (0.025)	-0.166*** (0.025)
Household income (divided by 10,000) x Income inequality (Gini Index)	-	0.016 (0.025)	-	-	-	0.066* (0.027)	-	-
Constant	-1.014*** (0.090)	-1.014*** (0.090)	-1.045*** (0.094)	-1.047*** (0.095)	-1.391*** (0.110)	-1.392*** (0.109)	-1.399*** (0.110)	-1.402*** (0.112)
Observations	143,114	143,114	143,114	143,114	143,114	143,114	143,114	143,114
Log Likelihood	-79,853.130	-79,852.910	-79,945.980	-79,938.110	-71,653.360	-71,649.780	-71,680.700	-71,670.470
Akaike Inf. Crit.	159,718.300	159,719.800	159,904.000	159,890.200	143,318.700	143,313.600	143,373.400	143,354.900
Bayesian Inf. Crit.	159,777.500	159,788.900	159,963.200	159,959.300	143,377.900	143,382.700	143,432.600	143,424.000

Note: *p<0.05; **p<0.01; ***p<0.001. Models show multi-level logit estimates and standard errors in parentheses. All models include the following 18 countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, Venezuela.

Table S.3: Multi-level logit models for donations and volunteering predicted by income and income inequality, GWP, 2009-2017, **Western Europe**.

	<i>Dependent variables:</i>							
	Donated 1=Yes				Volunteered 1=Yes			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household income (divided by 10,000)	0.983*** (0.211)	1.016*** (0.180)	-	-	0.314** (0.112)	0.331** (0.108)	-	-
Income inequality (Gini Index)	-0.078 (0.068)	-0.116 (0.068)	-0.085 (0.066)	-0.143* (0.069)	0.104 (0.071)	0.090 (0.072)	0.106 (0.072)	0.087 (0.072)
Household income (divided by 10,000) x Income inequality (Gini Index)	-	0.538*** (0.155)	-	-	-	0.206 (0.116)	-	-
Constant	0.120 (0.170)	0.120 (0.168)	0.096 (0.178)	0.095 (0.172)	-1.058*** (0.122)	-1.057*** (0.120)	-1.064*** (0.123)	-1.064*** (0.121)
Observations	100,811	100,811	100,811	100,811	100,811	100,811	100,811	100,811
Log Likelihood	-63,902.460	-63,896.220	-63,810.480	-63,807.570	-56,477.320	-56,475.590	-56,427.610	-56,425.640
Akaike Inf. Crit.	127,816.900	127,806.400	127,633.000	127,629.100	112,966.600	112,965.200	112,867.200	112,865.300
Bayesian Inf. Crit.	127,874.000	127,873.100	127,690.100	127,695.800	113,023.800	113,031.800	112,924.300	112,931.900

Note: *p<0.05; **p<0.01; ***p<0.001. Models show multi-level logit estimates and standard errors in parentheses. All models include the following 13 countries: Austria, Belgium, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, Switzerland, United Kingdom.

Table S.4: Multi-level logit models for donations and volunteering predicted by income and income inequality, GWP, 2009-2017, **Eastern Europe**.

	<i>Dependent variable:</i>							
	Donated 1=Yes				Volunteered 1=Yes			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household income (divided by 10,000)	0.313*** (0.049)	0.315*** (0.044)	-	-	0.181*** (0.030)	0.184*** (0.037)	-	--
Income inequality (Gini Index)	-0.274*** (0.059)	-0.290*** (0.058)	-0.262*** (0.057)	-0.307*** (0.060)	0.767*** (0.071)	0.762*** (0.071)	0.789*** (0.071)	0.776*** (0.070)
Household income (divided by 10,000) x Income inequality (Gini Index)	-	0.085* (0.036)	-	-	-	0.124* (0.053)	-	-
Constant	-1.403*** (0.117)	-1.403*** (0.119)	-1.461*** (0.119)	-1.460*** (0.120)	-2.093*** (0.238)	-2.091*** (0.245)	-2.129*** (0.241)	-2.128*** (0.242)
Observations	162,097	162,097	162,097	162,097	162,097	162,097	162,097	162,097
Log Likelihood	-76,215.240	-76,212.770	-76,166.100	-76,163.430	-57,910.790	-57,907.670	-57,896.080	-57,889.790
Akaike Inf. Crit.	152,442.500	152,439.500	152,344.200	152,340.900	115,833.600	115,829.300	115,804.200	115,793.600
Bayesian Inf. Crit.	152,502.500	152,509.500	152,404.200	152,410.800	115,893.600	115,899.300	115,864.100	115,863.500

Note: *p<0.05; **p<0.01; ***p<0.001. Models show multi-level logit estimates and standard errors in parentheses. All models include the following 21 countries: Albania, Armenia, Azerbaijan, Bulgaria, Bosnia Herzegovina, Croatia, Czech Republic, Estonia, Greece, Georgia, Hungary, Latvia, Lithuania, Macedonia, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Ukraine.

Table S.5: Multi-level logit models for donations and volunteering predicted by income and income inequality, GWP, 2009-2017, **Nordic countries.**

	<i>Dependent variables:</i>							
	Donated 1=Yes				Volunteered 1=Yes			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household income (divided by 10,000)	0.144** (0.051)	0.177*** (0.039)	-	--	0.080 (0.042)	0.089*** (0.025)	-	-
Income inequality (Gini Index)	-0.047** (0.018)	-0.045* (0.018)	-0.046* (0.018)	-0.046* (0.018)	0.005 (0.020)	0.008 (0.020)	0.004 (0.020)	0.006 (0.020)
Household income (divided by 10,000) x Income inequality (Gini Index)	-	-0.069*** (0.017)	-	-	-	-0.045** (0.016)	-	-
Constant	0.500*** (0.126)	0.501*** (0.126)	0.494*** (0.124)	0.494*** (0.124)	-1.052*** (0.175)	-1.054*** (0.175)	-1.060*** (0.174)	-1.058*** (0.175)
Observations	28,649	28,649	28,649	28,649	28,649	28,649	28,649	28,649
Log Likelihood	-18,914.070	-18,904.780	-18,870.460	-18,870.460	-15,941.420	-15,937.560	-15,934.720	-15,933.620
Akaike Inf. Crit.	37,840.140	37,823.560	37,752.910	37,754.910	31,894.850	31,889.130	31,881.450	31,881.240
Bayesian Inf. Crit.	37,889.720	37,881.400	37,802.490	37,812.750	31,944.420	31,946.970	31,931.020	31,939.080

Note: *p<0.05; **p<0.01; ***p<0.001. Models show multi-level logit estimates and standard errors in parentheses. All models include the following 5 countries: Denmark, Finland, Iceland, Norway, Sweden.

Table S.6: Multi-level logit models for donations and volunteering predicted by income and income inequality, the GWP, 2009-2017, **Central Asia**.

	<i>Dependent variables:</i>							
	Donated 1=Yes				Volunteered 1=Yes			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household income (divided by 10,000)	0.195*** (0.027)	0.160 (0.163)	-	-	0.096*** (0.029)	0.180 (0.639)	-	-
Income inequality (Gini Index)	-8.124*** (0.340)	-8.070*** (0.341)	-8.053*** (0.339)	-8.038*** (0.344)	0.301* (0.134)	0.391 (0.247)	0.183 (0.115)	0.176 (0.189)
Household income (divided by 10,000) x Income inequality (Gini Index)	-	-0.596* (0.278)	-	-	-	1.453*** (0.347)	-	-
Constant	-1.447 (1.562)	-1.444 (2.007)	-1.467 (3.743)	-1.465 (3.733)	-1.134*** (0.140)	-1.127*** (0.151)	-1.142*** (0.144)	-1.142*** (0.141)
Observations	37,267	37,267	37,267	37,267	37,267	37,267	37,267	37,267
Log Likelihood	-	-	-	-20,924.590	-	-	-20,048.850	-20,040.370
Akaike Inf. Crit.	41,874.290	41,871.600	41,861.520	41,863.180	40,093.090	40,094.300	40,109.710	40,094.740
Bayesian Inf. Crit.	41,925.450	41,931.290	41,912.680	41,922.860	40,144.240	40,153.990	40,160.860	40,154.420

Note: *p<0.05; **p<0.01; ***p<0.001. Models show multi-level logit estimates and standard errors in parentheses. All models include the following 5 countries: Kazakhstan, Tajikistan, Kyrgyzstan, Afghanistan, Pakistan.

Table S.7: Multi-level logit models for donations and volunteering predicted by income and income inequality, the GWP, 2009-2017, **East Asia**.

	<i>Dependent variables:</i>							
	Donated 1=Yes				Volunteered 1=Yes			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household income (divided by 10,000)	0.255*** (0.076)	0.026 (0.263)	-	-	0.100 (0.052)	0.102 (0.053)	-	-
Income inequality (Gini Index)	0.949*** (0.102)	0.923*** (0.103)	1.204*** (0.103)	1.277*** (0.102)	-0.199* (0.096)	-0.209 (0.127)	-0.016 (0.126)	-0.034 (0.145)
Household income (divided by 10,000) x Income inequality (Gini Index)	-	-0.575** (0.203)	-	-	-	0.005 (0.039)	-	-
Constant	-0.348 (0.522)	-0.358 (0.487)	-0.236 (0.578)	-0.209 (0.589)	-1.704*** (0.214)	-1.708*** (0.214)	-1.623*** (0.242)	-1.630*** (0.236)
Observations	52,164	52,164	52,164	52,164	52,164	52,164	52,164	52,164
Log Likelihood	- 25,339.940	- 25,333.860	- 25,067.590	-25,060.880	- 18,315.820	- 18,315.810	-18,089.330	-18,089.280
Akaike Inf. Crit.	50,691.870	50,681.730	50,147.180	50,135.760	36,643.640	36,645.630	36,190.650	36,192.570
Bayesian Inf. Crit.	50,745.050	50,743.760	50,200.350	50,197.800	36,696.820	36,707.670	36,243.820	36,254.600

Note: Note: *p<0.05; **p<0.01; ***p<0.001. Models show multi-level logit estimates and standard errors in parentheses. All models include the following 5 countries: China, Japan, Hong Kong, South Korea, Taiwan.

Table S.8: Multi-level logit models for donations and volunteering predicted by income and income inequality, the GWP, 2009-2016, **South Asia**.

	<i>Dependent variables:</i>							
	Donated 1=Yes				Volunteered 1=Yes			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household income (divided by 10,000)	0.269*** (0.079)	1.439 (0.975)	-	-	0.115** (0.039)	0.676 (0.467)	-	-
Income inequality (Gini Index)	0.095 (0.177)	-0.286 (0.278)	-0.017 (0.237)	0.034 (0.227)	-2.175*** (0.418)	-2.470*** (0.374)	-2.152*** (0.421)	-2.202*** (0.423)
Household income (divided by 10,000) x Income inequality (Gini Index)	-	3.659*** (0.430)	-	-	-	1.704*** (0.497)	-	-
Constant	-0.596* (0.261)	-0.710* (0.305)	-0.640* (0.272)	-0.623* (0.257)	-1.869* (0.803)	-1.959** (0.730)	-1.860* (0.856)	-1.874 (1.132)
Observations	53,397	53,397	53,397	53,397	53,397	53,397	53,397	53,397
Log Likelihood	-	-	-	-31,452.480	-	-	-25,959.020	-25,957.650
Akaike Inf. Crit.	31,565.460	31,542.730	31,453.020	62,918.970	25,974.730	25,972.040	51,930.040	51,929.300
Bayesian Inf. Crit.	63,142.930	63,099.460	62,918.040	62,918.970	51,961.450	51,958.070	51,983.350	51,991.500
Bayesian Inf. Crit.	63,196.240	63,161.660	62,971.350	62,981.170	52,014.770	52,020.270	51,983.350	51,991.500

Note: *p<0.05; **p<0.01; ***p<0.001. Models show multi-level logit estimates and standard errors in parentheses. All models include the following 7 countries: India, Pakistan, Sri Lanka, Bangladesh, Nepal, Maldives, Afghanistan, Bhutan.

Table S.9: Multi-level logit models for donations and volunteering predicted by income and income inequality, GWP, 2009-2017, **South East Asia.**

	<i>Dependent variables:</i>							
	Donated 1=Yes				Volunteered 1=Yes			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household income (divided by 10,000)	0.089*	0.381	-	-	0.071	-0.422	-	-
	(0.039)	(0.466)			(0.059)	(0.502)		
Income inequality (Gini Index)	0.052	0.160**	0.231***	0.264***	0.305***	0.193**	0.290***	0.246***
	(0.033)	(0.059)	(0.058)	(0.058)	(0.059)	(0.063)	(0.059)	(0.063)
Household income (divided by 10,000) x Income inequality (Gini Index)	-	-0.994***	-	-	-	-1.402***	-	-
		(0.081)				(0.089)		
Constant	-0.663***	0.483	0.369	0.394	-1.101***	-1.147***	-1.096***	-1.098***
	(0.130)	(0.359)	(0.372)	(0.362)	(0.234)	(0.239)	(0.238)	(0.238)
Observations	59,719	59,719	59,719	59,719	59,719	59,719	59,719	59,719
Log Likelihood	-53,534.710	-	-	-	-	-	-	-
		35,428.110	35,501.690	35,449.650	31,279.560	31,138.080	31,298.620	31,171.720
Akaike Inf. Crit.	107,083.400	70,870.210	71,015.380	70,913.310	62,571.120	62,290.170	62,609.250	62,357.440
Bayesian Inf. Crit.	107,146.400	70,933.190	71,069.360	70,976.290	62,625.110	62,353.150	62,663.230	62,420.430

Note: *p<0.05; **p<0.01; ***p<0.001. Models show multi-level logit estimates and standard errors in parentheses. All models include the following 9 countries: Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam.

Table S.10: Multi-level logit models for donations and volunteering predicted by income and income inequality, the GWP, 2009-2017, **West Asia**.

	<i>Dependent variables:</i>							
	Donated 1=Yes				Volunteered 1=Yes			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household income (divided by 10,000)	0.677** (0.211)	0.700 (0.384)	-	-	0.293*** (0.076)	0.294*** (0.078)	-	-
Income inequality (Gini Index)	-0.593*** (0.150)	-0.700*** (0.140)	-0.542*** (0.150)	-0.709*** (0.154)	-0.586** (0.183)	-0.595** (0.186)	-0.488* (0.192)	-0.523** (0.197)
Household income (divided by 10,000) x Income inequality (Gini Index)	--	0.944** (0.328)	-	-	-	0.016 (0.099)	-	-
Constant	-0.621* (0.301)	-0.619* (0.308)	-0.764** (0.296)	-0.768* (0.333)	-1.894*** (0.269)	-1.893*** (0.265)	-1.904*** (0.242)	-1.906*** (0.252)
Observations	68,459	68,459	68,459	68,459	68,459	68,459	68,459	68,459
Log Likelihood	-37,465.650	-37,459.560	-37,380.530	-37,375.140	-24,600.700	-24,600.690	-24,557.450	-24,557.240
Akaike Inf. Crit.	74,943.290	74,933.120	74,773.060	74,764.290	49,213.400	49,215.380	49,126.900	49,128.480
Bayesian Inf. Crit.	74,998.100	74,997.050	74,827.860	74,828.230	49,268.210	49,279.320	49,181.700	49,192.420

Note: *p<0.05; **p<0.01; ***p<0.001. Models show multi-level logit estimates and standard errors in parentheses. All models include the following 9 countries: Iraq, Iran, Turkey, Lebanon, Israel, Jordan, Kuwait, Qatar, Bahrain, Yemen, Oman, Saudi Arabia.

Table S.11: Multi-level logit models for donations and volunteering predicted by income and income inequality, GWP, 2009-2017, **Australia and New Zealand.**

	<i>Dependent variables:</i>							
	Donated 1=Yes				Volunteered 1=Yes			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household income (divided by 10,000)	0.241*** (0.062)	0.243*** (0.054)	-	-	0.094*** (0.021)	0.090*** (0.024)	-	-
Income inequality (Gini Index)	0.103*** (0.021)	0.101*** (0.021)	0.105*** (0.019)	0.105*** (0.019)	0.054** (0.020)	0.054** (0.020)	0.054** (0.020)	0.054** (0.020)
Household income (divided by 10,000) x Income inequality (Gini Index)	-	-0.022 (0.037)	-	-	-	0.018 (0.023)	-	-
Constant	1.026*** (0.020)	1.026*** (0.020)	1.019*** (0.019)	1.019*** (0.019)	-0.332*** (0.074)	-0.332*** (0.074)	-0.333*** (0.072)	-0.333*** (0.072)
Observations	14,239	14,239	14,239	14,239	14,239	14,239	14,239	14,239
Log Likelihood	-8,157.314	-8,157.137	-8,149.298	-8,149.270	-9,664.423	-9,664.100	-9,668.161	-9,668.037
Akaike Inf. Crit.	16,326.630	16,328.270	16,310.600	16,312.540	19,340.850	19,342.200	19,348.320	19,350.070
Bayesian Inf. Crit.	16,372.010	16,381.220	16,355.980	16,365.490	19,386.230	19,395.150	19,393.700	19,403.020

Note: *p<0.05; **p<0.01; ***p<0.001. Models show multi-level logit estimates and standard errors in parentheses. All models include the following 2 countries: Australia and New Zealand.

Table S.12: Multi-level logit model for donations and volunteering predicted by income and income inequality, the GWP, 2009-2017, **United States.**

	<i>Dependent variables:</i>			
	Donated 1=Yes		Volunteered 1=Yes	
	(1)	(2)	(3)	(4)
Household income (divided by 10,000)	0.705*** (0.172)	0.700*** (0.171)	0.143* (0.067)	0.190* (0.077)
Income inequality (Gini Index)	-0.071** (0.026)	-0.064* (0.029)	-0.078*** (0.023)	-0.070** (0.025)
Household income (divided by 10,000) x Income inequality (Gini Index)	-	0.054 (0.108)	-	0.153* (0.073)
Constant	0.833*** (0.035)	0.832*** (0.035)	-0.191*** (0.023)	-0.187*** (0.024)
Observations	7,845	7,845	7,845	7,845
Log Likelihood	-4,863.996	-4,863.891	-5,388.106	-5,385.556
Akaike Inf. Crit.	9,739.991	9,741.782	10,788.210	10,785.110
Bayesian Inf. Crit.	9,781.797	9,790.555	10,830.020	10,833.890

Note: *p<0.05; **p<0.01; ***p<0.001. Models show unstandardized coefficients and standard errors in parentheses. All models include the 51 US states.

Table S.13: Johnson-Neyman test results for threshold analyses.

Regions that donate less	Gini Index ¹	Gini Index range	Regions that volunteer more	Gini Index ¹	Gini Index range
Central Asia	44.4	25.4-44.4	Latin America	44.6	35.9-52
East Asia	43.2	29.6-43.2	Eastern Europe	30	22.1-40.2
Nordic countries	25.8	24.3-28.5	Central Asia	44.4	25.4-44.4
South East Asia	45.5	33.3-47.3	South Asia	46.1	30-49.1
			US	46.7	41.3-53.1

¹Gini Index at which the interaction term between Household income (divided by 10,000) x Income inequality (Gini Index) starts to show significance.

Note: The above table documents the specific GINI thresholds where we observe the interactions between higher income inequality and income predicting lower donation rates and higher volunteer rates. More research is needed to understand cross-cultural differences in these thresholds.

Table S.14. Multi-level logit model for donations and volunteering predicted by income, income inequality, financial insecurity (140 countries), and trust (115 countries), the GWP, 2009-2017.

	<i>Dependent variables:</i>							
	Donated 1=Yes				Volunteered 1=Yes			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household income (divided by 10,000)	13.852*** (0.002)	14.074*** (0.001)	14.030*** (0.002)	16.244*** (0.640)	7.455*** (0.176)	7.496*** (0.141)	7.475*** (0.281)	8.540*** (0.491)
Income inequality (Gini Index)	0.041*** (0.002)	0.036*** (0.001)	0.039*** (0.002)	-0.144* (0.072)	0.082** (0.029)	0.083** (0.029)	0.122*** (0.030)	0.098 (0.059)
Household income (divided by 10,000) x Income inequality (Gini Index)	-	-0.173*** (0.001)	-0.167*** (0.002)	5.779*** (0.574)	-	0.720*** (0.160)	0.487 (0.250)	1.866*** (0.469)
Crisis (Yes)	-	-	-0.064*** (0.002)	-	-	-	-0.063*** (0.009)	-
Household income (divided by 10,000) x Crisis (Yes)	-	-	0.110*** (0.002)	-	-	-	-0.178* (0.091)	-
Income inequality (Gini Index) x Crisis (Yes)	-	-	0.070*** (0.002)	-	-	-	-0.010 (0.009)	-
Household income (divided by 10,000) x Income inequality (Gini	-	-	-0.412*** (0.002)	-	-	-	-0.085 (0.128)	-

Index) x Crisis (Yes)								
Trust (No)	-	-	-	-0.324*** (0.014)	-	-	-	-0.372*** (0.016)
Household income (divided by 10,000) x Trust (No)	-	-	-	-1.126*** (0.342)	-	-	-	-0.128 (0.189)
Income inequality (Gini Index) x Trust (No)	-	-	-	0.086*** (0.014)	-	-	-	0.057*** (0.014)
Household income (divided by 10,000) x Income inequality (Gini Index) x Trust (No)	-	-	-	-0.714* (0.303)	-	-	-	-0.286 (0.260)
Constant	-0.682*** (0.002)	-0.699*** (0.001)	-0.693*** (0.002)	-0.504*** (0.087)	-1.379*** (0.054)	-1.378*** (0.052)	-1.370*** (0.054)	-1.202*** (0.065)
Observations	940,081	940,081	940,081	177,883	940,081	940,081	940,081	177,883
Log Likelihood	-502,945.300	-502,944.900	-502,885.800	-94,115.050	-433,845.900	-432,702.900	-433,817.200	-75,987.250
Akaike Inf. Crit.	1,005,903.000	1,005,904.000	1,005,794.000	188,252.100	867,703.800	867,702.200	867,656.400	151,996.500
Bayesian Inf. Crit.	1,005,973.000	1,005,986.000	1,005,923.000	188,363.100	867,774.300	867,784.500	867,785.700	152,107.500

Note: *p<0.05; **p<0.01; ***p<0.001. Models show multi-level logit estimates and standard errors in parentheses. To capture financial insecurity, we conducted these analyses including a dummy variable for the years around the 2008 economic crisis (“1” represents people who took the survey in 2008 or 2009). We used these analyses to proxy financial insecurity in light of research showing that the 2008 financial crisis was associated with uncertainty about future economic circumstance of one’s home country—which led people to feel more financially insecure (Chung & van Oorschot, 2011).

Fig. S.1: Volunteering as a function of household income and income inequality (\pm SD). The figure includes the regions in which higher-income people volunteer more under high levels of income inequality.

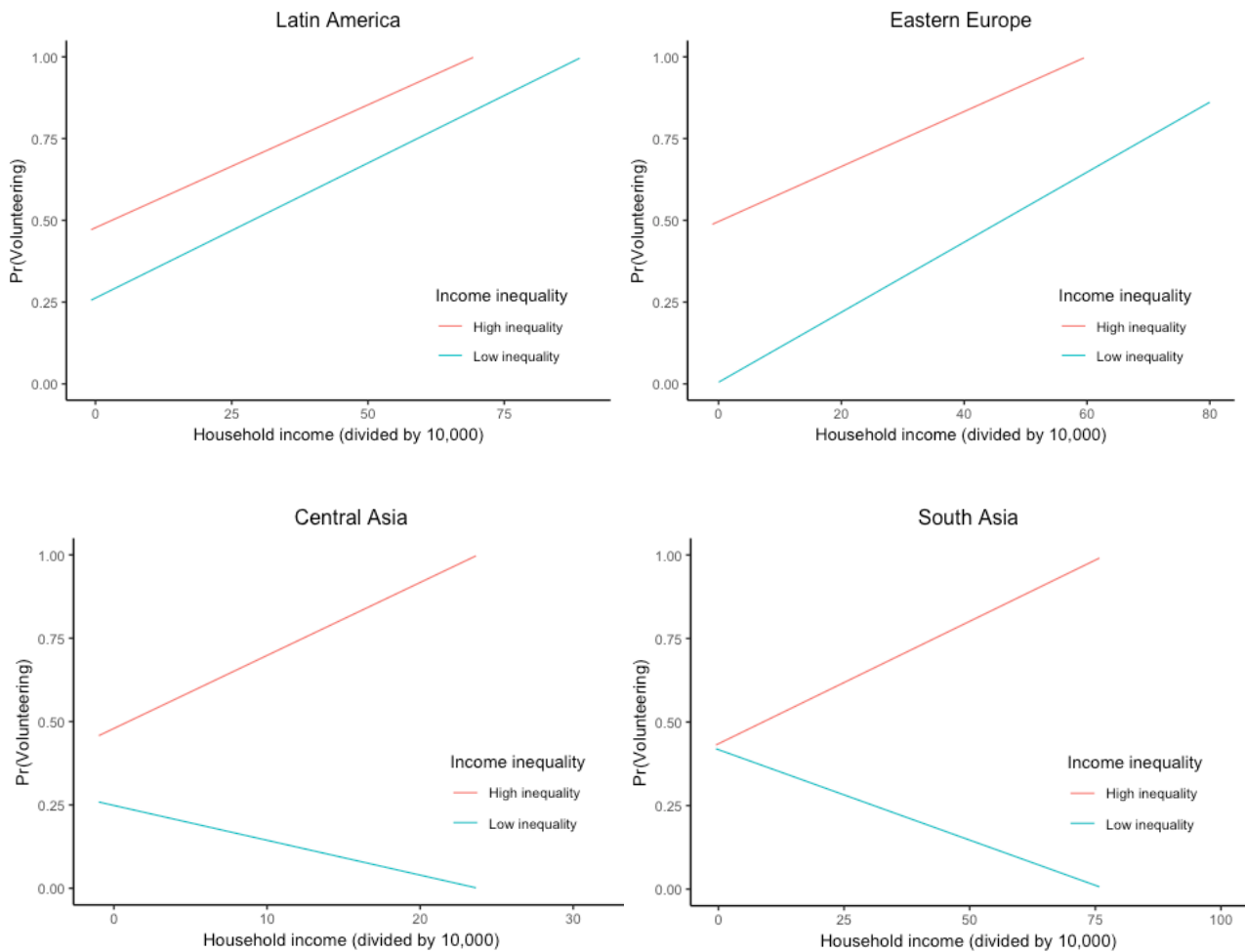


Figure S.1 shows that higher-income people are more likely to volunteer under high levels of income inequality than under low levels of income inequality. Whereas in Latin America and Eastern Europe high income people are more likely to volunteer than low income people regardless of the level of income inequality, in Central and South Asia lower-income people are more likely to volunteer than higher-income people when income inequality is low. More research is needed to explore the patterns in these specific cultural contexts.

Fig. S.2: Donations as a function of household income and income inequality (\pm SD). The figure includes the regions in which higher-income people donate less under high levels of income inequality.

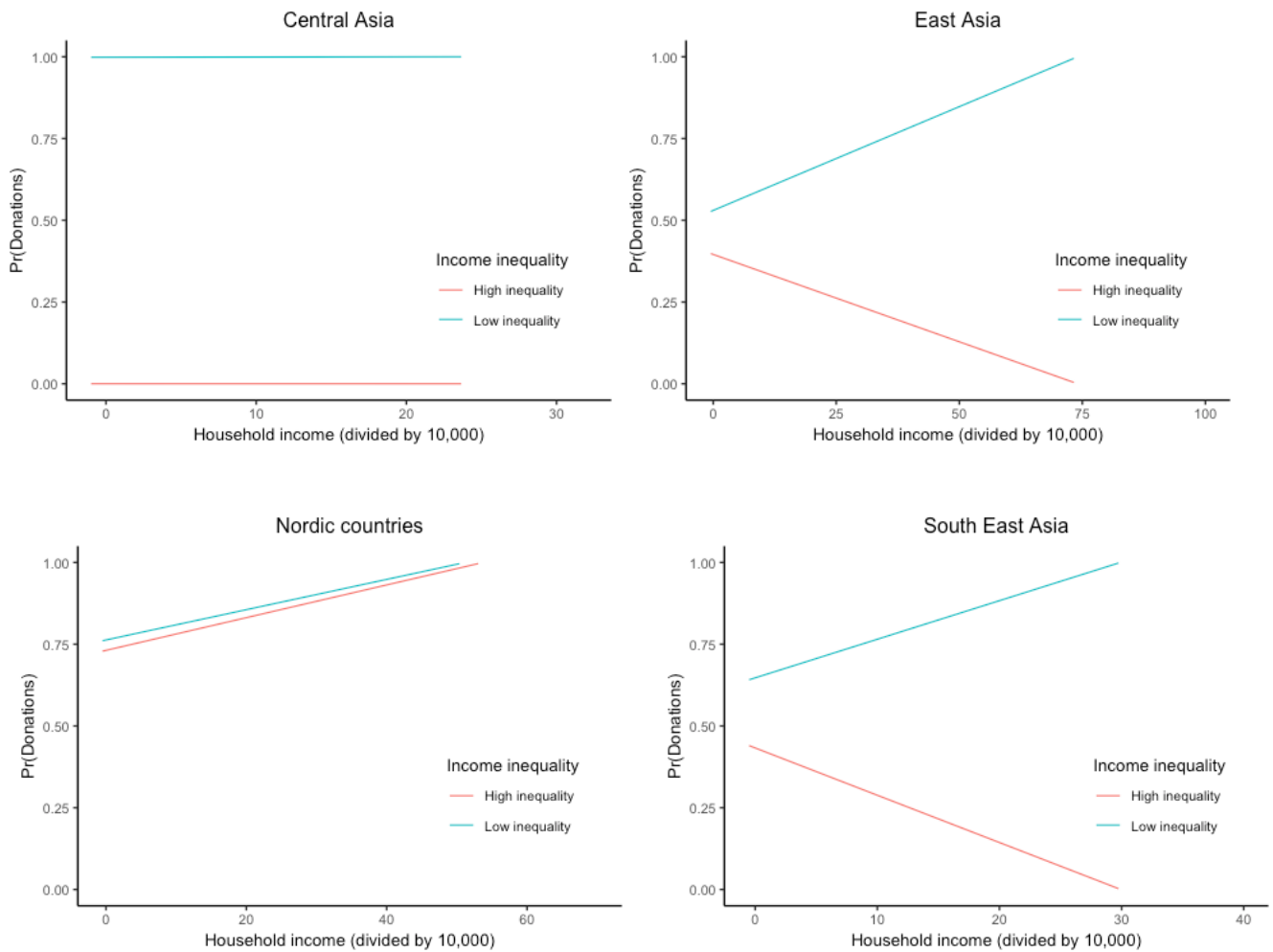


Figure S.2 shows that higher-income people are less likely to donate under high levels of income inequality than under low levels of income inequality. In Central, East and South East Asia, under high levels of income inequality higher-income people are less likely to donate than lower-income people whereas under low levels of income inequality higher-income people are more likely to donate than lower-income people. However, in the Nordic countries, higher-income people are more likely to donate than lower-income people under high and low levels of income inequality. More research is needed to explore these possibilities.

References

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