

What is the effect of economic inequality on people's prosocial behaviour in the Netherlands?

MSc Thesis Program Behavioural Economics

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Abstract

A cross-sectional study involving 107 participants was conducted in order to receive insight regarding the effect of economic inequality on people's prosocial behaviour in the Netherlands. Using a between-subject design, two neighbourhoods in Rotterdam were compared which served as a proxy for the Netherlands: Hoogvliet (neighbourhood with a relatively low economic inequality) and Kralingen-Crooswijk (neighbourhood with a relatively high economic inequality). To fully cover people's prosocial behaviour, three different measures for prosocial behaviour were analysed: generosity, altruism, and preference for income redistribution. In addition, this study covered to which extent income plays a role in (potential) effects. Combining a leafleting technique with additional data collection, people's generosity, altruism, and preference for income redistribution were derived, with a survey using the Generosity Scale, Self-Report Altruism Scale, and a quantified measure for income redistribution. This study found statistical evidence that a higher economic inequality increases people's average preferred tax rate in the Netherlands. In addition, there is a positive correlation between economic inequality and people's generosity and altruism. Economic inequality and people's preferred progressivity have a negative correlation. Furthermore, the findings show suggestive evidence that higher-income people in the Netherlands are less generous and altruistic than lower-income people. In addition, higher-income people seem to prefer a lower average tax rate and have a lower preferred progressivity than lower-income people. The findings regarding income were not statistically significant.

Keywords: economic inequality, prosocial behaviour, generosity, altruism, preference for income redistribution

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Introduction

Economic inequality can be described as the disparities among individual's incomes and wealth (Fontinelle, 2021). When the rich get richer and the poor get poorer, the wealth gap between them increases, in turn increasing the economic inequality. In the modern world, we cannot think of a society and their people without considering economic inequality, with the top 10% of the world having a 55% share of the total world income (World Inequality Database, 2021). Economic inequality is measured using the Gini-index (or Gini-coefficient). The Gini-index takes on a number between 0 and 1, being 0 with a completely fair income distribution and being 1 when all income is concentrated in one household (CBS, 2018). This is a good indicator to establish the differences between the rich and poor within an area, with the Gini-index varying in each country worldwide. South Africa is the country with the highest economic inequality with a Gini-index of 63.0 (The World Bank, 2014), while Slovenia is the country with the lowest economic inequality with a Gini-index of 24.4 (The World Bank, 2019).

To prevent the wealth gap between the rich and poor from endlessly growing, countries have taken measures to decrease economic inequality. Such measures include public policies such as increasing the minimum wage, expanding the earned income tax, building assets for working families, investing in education, providing a more progressive tax code, and ending residential segregation (Powell, 2014). Even though public policies have proven successful in minimizing the growth in economic inequality and there have been success stories of countries with a decreasing Gini-index, economic inequality has increased for 71% of the total world population between 1990 and 2015 (United Nations, 2020).

An increased economic inequality makes it more difficult to get by financially for the people with a relatively low income. One could wonder if this is the only consequence that an increased economic inequality could have. For example, could a higher economic inequality also affect the way people behave and act to one another? There is a well-known stereotype stating that the rich are stingy. To get rich and stay rich, you must love having money and hate seeing it go (The Sunday Times, 2003). This shows that someone's economic status might influence their prosocial behaviour. An interesting question to research is whether economic inequality itself has any impact on people's prosocial behaviour. This relationship between economic inequality and people's prosocial behaviour remains relevant, because economic inequality and how we deal with it is a hot topic to this day.

People's prosocial behaviour can be approached in many ways, for this research we take a more detailed look into three of them: generosity, altruism, and preference for income redistribution. There are studies which have investigated relationships between measures for people's prosocial behaviour and economic inequality, but there is still a gap in this field regarding the exact effect of economic inequality on people's prosocial behaviour, especially when investigated with a variety of different demographics and cultural context. Combining these three different measures for people's prosocial behaviour aims to provide a more elaborate and complete overview of the relationship with economic inequality than previous studies in this field. In addition, it adds to the current literature already known about social preferences and social class.

This study investigates the relationship between economic inequality and people's prosocial behaviour in the Netherlands. The Netherlands is an interesting country to dive deeper into in regards to this relationship between economic inequality and people's prosocial behaviour, because of the following three reasons. First, little research about this topic has been conducted on the Netherlands. Second, the Netherlands has many cultural, demographical and governmental differences with other countries. Third, the Netherlands could be considered a country that implements many progressive policies (Darmawangse, 2021), yet still has a lot of economic inequality with a Gini-index of 29.2 (The World Bank, 2019).

Serving as a proxy for the national level, two neighbourhoods in the city of Rotterdam are compared with each other, one with a relatively low economic inequality (Hoogvliet) and one with a relatively high economic inequality (Kralingen-Crooswijk). In particular, this study zooms in on the behaviour of the rich (or higher income individuals) compared to the behaviour of the poor (or lower income individuals) in both neighbourhoods, to compare whether there is a specific effect of economic inequality on rich people's prosocial behaviour. This includes establishing to which extent income plays a role in the effect of economic inequality on people's prosocial behaviour. For this study, the following main research question (RQ) is answered:

RQ: What is the effect of economic inequality on people's prosocial behaviour in the Netherlands?

To get a good grip on this effect, the three primary named measures for prosocial behaviour were researched, using the following three sub-questions (SQs):

SQ1: What is the effect of economic inequality on people's generosity in the Netherlands?

SQ2: What is the effect of economic inequality on people's altruism in the Netherlands?

SQ3: What is the effect of economic inequality on people's preference for income redistribution in the Netherlands?

First, we dive deeper into the scientific literature in which we state our hypotheses. After that, it is covered how the data is gathered, descriptive statistics about the sample, and what kind of analyses were conducted. Then, the main findings are covered in the results. This is followed by, the discussion including reflecting back on the results and covering the limitations of the study. Lastly, the main findings of the paper are concluded in the conclusion.

Literature Review

This section covers the main findings of the scientific literature on the effect of economic inequality on people's prosocial behaviour, including the relevant hypotheses which are tested for in this paper. In order to keep a clear overview, this section is divided into the three different measures for prosocial behaviour: generosity, altruism, and preference for income redistribution. In addition, throughout these sections the differences in the effect of economic inequality on people's prosocial behaviour between lower and higher income individuals are covered, because the majority of the scientific literature covered this and found differences between these two groups.

Generosity

Côté et al. (2015) found evidence that higher income individuals tend to be less generous than lower income individuals when economic inequality is high. In addition, this research shows that this difference in generosity only occurs when the economic inequality is high, but that there is no such difference between the rich and poor with low economic inequality (Côté et al., 2015). Schmuckle et al. (2019) questioned this finding by providing evidence that the rich are not less generous than the poor when economic inequality is high. Stating that the effect found earlier might be specific to certain circumstances and cannot be generalized, therefore economic inequality might not explain the effect of social class on prosociality (Schmuckle et al., 2019). Côté et al. (2020) responded to this by stating that their prior claim indeed might have been too broad. The two parties had used different measures to investigate generosity, therefore an interaction between economic inequality and generosity might only occur with the dictator game or other similar measures of generosity. Furthermore, the cultural context could play a role within this effect (Côté, 2020), for example the area in which the research has been conducted or the beliefs and behaviour of the participants of the research.

On the contrary, Birkelund & Cherry (2020) found suggestive evidence that lower income individuals tend to be less generous when economic inequality is high. Using a two-stage experiment with the option to be honest or dishonest about self-reported production, which gives the respondents certain earnings. This is followed by a dictator game where the subject decided how much of their earnings to share with an anonymous recipient. In short this showed that more inequality lead to more cheating and less giving among the disadvantaged (Birkelund & Cherry, 2020). As we can see, multiple studies on generosity find contradicting

results. These are most likely caused by either different research methods used for the studies, or by different cultural context in which the research is conducted. This does not provide us a clear line in an effect of economic inequality on people's generosity to be positive or negative. Hence, we test for the following hypothesis:

H1: Economic inequality has an effect on people's generosity in the Netherlands.

If an effect is found, it can be established whether that effect is positive or negative. In addition, the differences in the effect between lower and higher income individuals are checked for, because the scientific literature showed that income most likely plays a big role in the effect of economic inequality on people's generosity.

Altruism

On a national scale, Materia et al. (2005) showed a negative relationship between economic inequality and nation's altruism. This indicates that countries where the economic inequality is low (therefore being more equally distributed) are more willing to help others in poorer countries. Alternatively, this indicates that a higher economic inequality decreases people's prosocial behaviour. This research was conducted in Nordic countries who spend a relatively high amount of money on development aid while these countries have a relatively low level of economic inequality. Furthermore, Piff et al. (2010) found evidence that lower-class subjects are more generous, charitable, trusting and helpful than high-class subjects.

On the contrary, Macchia & Whillans (2022) found that the rich are more likely to engage in prosocial behaviour under high economic inequality compared to under low economic inequality, using models predicting the likelihood of donating money and volunteering time to an organization. Von Hermanni & Tutić (2019) researched the effect of economic inequality on prosocial behaviour using high- and low-class to distinguish between the 'rich' and 'poor', finding that high-class subjects feel more entitled regardless of the level of inequality, but still act more prosocial than lower-class subjects. Societies with higher economic inequality increase the prosocial behaviour of the high-class, because this encourages them to be more modest (Von Hermanni & Tutić, 2019). Moreover, Andreoni et al. (2021) found suggestive evidence that a higher socioeconomic status increases people's prosocial behaviour. Conducting a field experiment, this study found that the return rate of misdelivered letters is

substantially higher for individuals with a higher socioeconomic status than for individuals with a lower socioeconomic status (Andreoni et al., 2021). However, this study also found suggestive evidence that a higher Gini-index (a higher economic inequality) leads to less returned letters (less altruistic behaviour). Like our study, this study used Gini-indexes from the neighbourhoods of the subjects' households. As we can see, multiple studies on altruism find contradicting results. These are most likely caused by either different research methods used for the studies, or by different cultural context in which the research is conducted. This does not provide us a clear line in an effect of economic inequality on people's altruism to be positive or negative. Hence, we test for the following hypothesis:

H2: Economic inequality has an effect on people's altruism in the Netherlands.

If an effect is found, it can be established whether that effect is positive or negative. In addition, the differences in the effect between lower and higher income individuals are checked for, because the scientific literature showed that income most likely plays a big role in the effect of economic inequality on people's altruism.

Preference for income redistribution

Dimick et al. (2014) found support for income-dependent altruism. Their research within the United States shows that in states with more economic inequality, the rich are more supportive of income redistribution than the rich in states with less economic inequality. In addition, the poor are much less susceptible to this economic inequality in their preference for income redistribution (Dimick et al., 2014). This does not provide a clear line in whether an effect of economic inequality on people's preference for income redistribution is positive or negative for the whole population. Hence, we test the following hypothesis:

H3: Economic inequality has an effect on people's preference for income redistribution in the Netherlands.

If an effect is found, it can be established whether that effect is positive or negative. In addition, the differences in the effect between lower and higher income individuals are checked for, because the scientific literature showed that income most likely plays a big role in the effect of economic inequality on people's preference for income redistribution.

Methods

This paper tested the effect of economic inequality on people's prosocial behaviour in the Netherlands, by comparing people's prosocial behaviour in a cross-sectional study with two neighbourhoods in Rotterdam (high economic inequality versus low economic inequality). An ethics checklist from the Erasmus University Rotterdam was completed prior to data collection.

Experimental design

The data for the economic inequality was provided by Centraal Bureau Statistiek (CBS) in the form of the Gini-index. CBS provides data for all cities and neighbourhoods in the Netherlands including their corresponding Gini-index (CBS, 2019-2022). From this data, two neighbourhoods in Rotterdam were analysed: Hoogvliet (with a Gini-index of 0.23) and Kralingen-Crooswijk (with a Gini-index of 0.40). These two neighbourhoods have been chosen, because they have a big difference in their Gini-index, while demographical differences are low.

Individual data was collected from residents living in Hoogvliet and Kralingen-Crooswijk. Initially, a leafleting technique was used to gather respondents, distributing flyers to houses in these neighbourhoods. 300 flyers each were distributed in the two respective neighbourhoods. On these flyers there was a QR-code which can be scanned by the residents of these houses to fill out an online survey. The surveys linked to by the flyers were made in Qualtrics. To distinguish between respondents living in Hoogvliet and Kralingen-Crooswijk, both received a different survey with the same questions. For in-depth details about the leafleting technique, please refer to Appendix 1. Unfortunately, the response rate of the leafleting technique was insufficient to perform a proper analysis. Therefore, the link to the online survey was also distributed online among recipients living in these neighbourhoods to gather enough observations for the analysis. The resources used for the additional data collection include but are not limited to: personal social network of people living in these neighbourhoods, Facebook groups of people living in these neighbourhoods, badmintonclubs in these neighbourhoods, and local vegetables and fruits stores in these neighbourhoods.

First, the respondents were introduced to the study and asked for their consent. After that, in the main part of the survey, people's prosocial behaviour was measured, divided into three parts: generosity, altruism, and preference for income redistribution. Lastly, demographics of the respondents were collected, including age, gender, educational level,

marital status and income. This provided more insight in the demographics of the sample. In addition, this gave the possibility to check if a potential effect of economic inequality on people's prosocial behaviour is income related.

Sample / Subjects / Respondents

139 total respondents from Hoogvliet and Kralingen-Crooswijk were gathered using a leafleting technique and additional online data collection. Out of these respondents, 85 are from Hoogvliet and 54 are from Kralingen-Crooswijk. Everyone living in these two neighbourhoods was eligible for participation in the research, there were no further restrictions for participation.

Out of the 139 total respondents, 107 subjects were left after dropping subjects that did not complete the full survey or did not fill out the survey seriously (dropping 32 respondents from the sample). Out of these subjects, 62 are from Hoogvliet and 45 are from Kralingen-Crooswijk. Tables 1-5 below show the descriptive statistics of the final sample including all relevant demographics: age (table 1), gender (table 2), educational level (table 3), marital status (table 4) and income (table 5).

Table 1. Descriptive Statistics - Age

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Age	106	45.33	17.271	17	99
Rather Not Say Age	1	-	-	-	-
Total	107	-	-	-	-

Table 1 above shows the descriptive statistics of age of the final sample. The average age is 45 years old with the youngest participant being 17 and the oldest participant being 99. Furthermore, one participant did rather not share their age. The respondent of 17 years old did not seem to cause ethical concerns, which is why this respondent is kept for the analysis of this study.

Table 2. Descriptive Statistics - Gender

Gender	Frequency	Percentage	Cumulative
Male	31	28.97	28.97
Female	74	69.16	98.13
Rather Not Say Gender	2	1.87	100.00
Total	107	100.00	

Table 2 above shows the descriptive statistics of gender of the final sample. 29% of the participants is male, 69% is female and 2% did rather not share their gender. Noteworthy is that

the final sample seems to be female-dominated, with much more females having filled out the survey than men. This could potentially influence the results of this research.

Table 3. Descriptive Statistics – Educational Level

Educational Level	Frequency	Percentage	Cumulative
Senior General Secondary School (HAVO)	5	4.67	4.67
Higher Professional Education (HBO)	27	25.23	29.91
Secondary Vocational Education and Training (MBO)	30	28.04	57.94
Preparatory Vocational Secondary Education (VMBO)	8	7.48	65.42
Pre-University Education (VWO)	6	5.61	71.03
Bachelor's Degree (WO)	10	9.35	80.37
Master's Degree (WO+)	19	17.76	98.13
Rather Not Say Educational Level	2	1.87	100.00
Total	107	100.00	

Table 3 above shows the descriptive statistics of educational level of the final sample. The educational level seems to be well balanced within this sample with 28% of the participants having finished secondary vocational education and training (MBO), 25% of the participants having finished higher professional education (HBO) and 27% of the participants having finished a bachelor's degree (WO) or master's degree (WO+). The Dutch terms for the educational levels are used for further findings.

Table 4. Descriptive Statistics – Marital Status

Marital Status	Frequency	Percentage	Cumulative
Married	38	35.51	35.51
Divorced after Marriage	9	8.41	43.93
Divorced after Partnership	2	1.87	45.79
Unmarried	42	39.25	85.05
Partnership	11	10.28	95.33
Widowed after Marriage	1	0.93	96.26
Widowed after Partnership	1	0.93	97.20
Rather Not Say Marital Status	3	2.80	100.00
Total	107	100.00	

Table 4 above shows the descriptive statistics of marital status of the final sample. This is mainly dominated by participants that are married with 36% and participants that are unmarried with 39% (unmarried indicates that there is not a registered partnership or married status). Furthermore, 10% of the participants are divorced after either marriage or a partnership.

Table 5. Descriptive Statistics - Income

Income	Frequency	Percentage	Cumulative
More than €100.000	2	1.87	1.87
Rather Not Say Income	18	16.82	18.69
€0 - €10.000	19	17.76	36.45
€10.001 - €20.000	13	12.15	48.60
€20.001 - €30.000	20	18.69	67.29
€30.001 - €40.000	12	11.21	78.50
€40.001 - €50.000	9	8.41	86.92
€50.001 - €60.000	6	5.61	92.52
€60.001 - €70.000	2	1.87	94.39
€70.001 - €80.000	2	1.87	96.26
€80.001 - €90.000	3	2.80	99.07
€90.001 - €100.000	1	0.93	100.00
Total	107	100.00	

Table 5 above shows the descriptive statistics of income of the final sample. The majority of the incomes of the participants are between €0 and €30.000, which represents 49% of the sample. Furthermore, there are some higher incomes with fewer observations distributed over the categories. Moreover, 17% of the participants did rather not say their income.

It is interesting to see how similar the two neighbourhoods are in terms of demographics. If the two neighbourhoods differ much in their demographics within the sample, this could potentially influence the results of this research. Please refer to Appendix 2 for a comparison.

Stimuli & Materials

To gather as many responses as possible, the survey was kept short and accessible. The survey takes approximately five minutes to fill out and is in Dutch to keep it more accessible for the average Dutch citizen. In addition, a Bol.com voucher worth €50 was randomly raffled over the participants to give an extra incentive to fill out the survey.

To measure people's prosocial behaviour, methods from scientific studies have been used. People's generosity was measured using the Generosity Scale from Buhrow et al. (2010). Using the three subscales: charitable (financial) giving, volunteerism, and donations of goods and services, a general and detailed overview of generosity was given (Buhrow et al., 2010). The questions in my study have been slightly changed to account for a different subject pool than the one in the study from Buhrow et al. (2010). In their study, part of the sample consisted of members of a church, questions related to this have been generalized. Furthermore, the number of questions has been cut back to increase the response rate. For each answer there is a corresponding score of 0-4 (ranging from never to very often and from totally agree to totally disagree), the sum of all scores for a respondent gives a generosity score of the respondent. The

minimum score a respondent can get is 0 and the maximum score a respondent can get is 40. At the end, the generosity score was divided by four in order to create a scale from 0 to 10. The higher respondents score in this generosity score, the higher their generosity. For a detailed overview of the questions used to measure people's generosity, please refer to Appendix 3.

People's altruism was measured using the Self-Report Altruism Scale (SRA) from Rushton et al. (1981). Altruistic activities were presented, and respondents had to state how often they had done these activities, ranging five response options from never to very often (Rushton et al., 1981). There is some overlap between the Generosity Scale and the SRA, but the SRA is more generalized and does not have as strong a focus on generosity as the Generosity Scale. Furthermore, the number of questions has been cut back to increase the response rate. Again, there is a corresponding score of 0-4 (ranging from never to very often) for each answer, and the sum of all scores provides the altruism score of the respondent. The minimum score a respondent can get is 0 and the maximum score a respondent can get is 40. At the end, the altruism score was divided by four in order to create a scale from 0 to 10. The higher respondents score in this altruism score, the higher their altruism. For a detailed overview of the questions used to measure people's altruism, please refer to Appendix 3.

People's preference for income redistribution was measured using a quantified measure from Singhal (2008). Based on a hypothetical situation, the respondents were asked how much percent tax someone should pay (Singhal, 2008). By asking the same question four times using various incomes, people's preference for income redistribution was measured, for which people's opinion about the percentage of tax someone should pay serves as a proxy. From this two variables emerged: the average preferred tax rate (calculated by taking the average of the four tax rates stated by the respondent) and the preferred progressivity (calculated by taking the difference in percentage between the fourth and first stated tax rate). For the variable of preferred progressivity, this value was changed to 0 if a respondent had stated 0 in their first stated tax rate. This was used as a solution for the error occurring of dividing a value by 0. For a detailed overview of the questions used to measure people's preference for income redistribution, please refer to Appendix 3.

Procedure

The subjects were gathered using a leafleting technique and additional online data collection. All subjects of the final sample fully completed the survey.

Before participants decided to participate, they received a short introduction including that the research will be used for a master thesis of the Erasmus University Rotterdam and that it is about measuring social behaviour and preferences. In addition, it states that the survey takes around five minutes to complete and that participants can join the raffle of a €50 Bol.com voucher. Furthermore, it asks the participants to fill out the survey truthfully and states that there are no right or wrong answers. Then, it thanks the participant in advance for collaboration. Lastly, it asks for the consent of the participant using a multiple-choice question which automatically closes the survey if no consent is given. If the participant continues the survey, consent is given to use the answers for research.

During the survey, people's prosocial behaviour (generosity, altruism, and preference for income redistribution) was measured using the methods stated above. After the main part of the survey, people's demographics were collected. At the end of the survey, people had the possibility to enter their email address and participate in the raffle for the €50 Bol.com voucher.

After the participants filled out the survey, they got a message stating that their response has been recorded successfully and thanking them for participating in the research.

Analysis

Combining the data from CBS and the collected individual data from the respondents in these specific neighbourhoods, the data was merged into a dataset. After dropping incomplete surveys and respondents that did not answer seriously there was a final sample left with 107 respondents. The data got cleaned in Excel and Stata, including transforming the Likert-Scale answers into numbers, creating variables and labelling categories.

First, Mann-Whitney U tests were done to compare the generosity scores, altruism scores, average preferred tax rate, and preferred progressivity between the two neighbourhoods. Second, Student's T tests were done for the variables where the normality assumption holds, in order to increase the statistical power. Third, box plots are shown to visually see the differences between Hoogvliet and Kralingen-Crooswijk for each measure of prosocial behaviour. Fourth, Multiple Linear Regressions (MLRs) were done to account for the effect of control variables. Specifically, whether being a higher- or lower-income individual plays a big role in potential effects. Income has been changed into a continuous variable by taking the middle point of the intervals. The few observations where the respondent has an income of more than €100.000 have been established at €110.000. In addition, the incomes of the respondents who rather not

shared their income have been set at missing values. From this variable, income has been split into three categories. These consists of the dummies: poor (low-income), normal (regular-income) and rich (high-income). Including poor and rich into the MLRs gives us the opportunity to analyse the effects specifically for these groups in reference to the regular-income category. Because 18 respondents rather not shared their income, these are dropped for the regressions, reducing the sample size to 89.

For each type of prosocial behaviour in the regressions, the independent variable is the economic inequality, and the dependent variables is different for the types of prosocial behaviour: generosity, altruism, and preference for income redistribution (average preferred tax rate and preferred progressivity). Lastly, neat tables were constructed to display the found results in a visually pleasing manner, displayed in the results section.

Formulas MLRs

Below you find the formulas for the MLRs presented in the results section.

$Y_{Generosity\ Score}$

$$= \beta_{Constant} + \beta_{Kralingen-Crooswijk} * X_{iKralingen-Crooswijk} + \beta_{Age} * X_{Age} \\ + \beta_{Gender} * X_{Gender} + \beta_{Education} * X_{Education} + \beta_{Marital\ Status} * X_{Marital\ Status} \\ + \beta_{Income} * X_{Income} + \beta_{Poor} * X_{Poor} + \beta_{Rich} * X_{Rich} + \epsilon$$

$$Y_{Altruism\ Score} = \beta_{Constant} + \beta_{Kralingen-Crooswijk} * X_{iKralingen-Crooswijk} + \beta_{Age} * X_{Age} \\ + \beta_{Gender} * X_{Gender} + \beta_{Education} * X_{Education} + \beta_{Marital\ Status} * X_{Marital\ Status} \\ + \beta_{Income} * X_{Income} + \beta_{Poor} * X_{Poor} + \beta_{Rich} * X_{Rich} + \epsilon$$

$Y_{Average\ Preferred\ Tax\ Rate}$

$$= \beta_{Constant} + \beta_{Kralingen-Crooswijk} * X_{iKralingen-Crooswijk} + \beta_{Age} * X_{Age} \\ + \beta_{Gender} * X_{Gender} + \beta_{Education} * X_{Education} + \beta_{Marital\ Status} * X_{Marital\ Status} \\ + \beta_{Income} * X_{Income} + \beta_{Poor} * X_{Poor} + \beta_{Rich} * X_{Rich} + \epsilon$$

$Y_{Preferred\ Progressivity}$

$$= \beta_{Constant} + \beta_{Kralingen-Crooswijk} * X_{iKralingen-Crooswijk} + \beta_{Age} * X_{Age} \\ + \beta_{Gender} * X_{Gender} + \beta_{Education} * X_{Education} + \beta_{Marital\ Status} * X_{Marital\ Status} \\ + \beta_{Income} * X_{Income} + \beta_{Poor} * X_{Poor} + \beta_{Rich} * X_{Rich} + \epsilon$$

In the formulas stated above, Y_i represents the dependent variable showing the different measures for prosocial behaviour: generosity, altruism, and preference for income redistribution (average preferred tax rate and preferred progressivity). $\beta_{Constant}$ gives the constant coefficient. $\beta_{Kralingen-Crooswijk}$ gives the coefficient for whether a respondent is from Kralingen-Crooswijk, and $X_{i_{Kralingen-Crooswijk}}$ is the explanatory variable for whether a respondent is from Kralingen-Crooswijk. Furthermore, β_{Age} , β_{Gender} , $\beta_{Education}$, $\beta_{Marital\ status}$, β_{Income} , β_{Poor} and β_{Rich} give the coefficients for age, gender, educational level, marital status, income, whether someone is considered poor, and whether someone is considered rich, and X_{Age} , X_{Gender} , $X_{Education}$, $X_{Marital\ Status}$, X_{Income} , X_{Poor} , and X_{Rich} are the control variables for those stated. In addition, an error term ϵ is included in the formulas to account for a random error term of potential important effects not included in the model.

Results

This section covers the performed statistical tests (Mann-Whitney U tests & Student's T tests). Additionally, box plots are shown to visually display the differences between Hoogvliet and Kralingen-Crooswijk for each measure of prosocial behaviour. After that, it covers the MLRs with all relevant control variables. In addition, this includes accounting for whether a found effect is income related. To be able to show meaningful insights despite a relatively small sample size, the interpreted significance levels are set at *** = $p < 0.01$, ** = $p < 0.05$, and * = $p < 0.10$. The results are displayed with three decimal digits. The variables for whether someone is from Kralingen-Crooswijk (a neighbourhood with a high economic inequality), whether someone is considered rich (has a high-income), and whether someone is considered poor (has a low-income) are always interpreted, despite lack of statistical significance. The other control variables are only interpreted if statistical significance occurs. More detailed results per individual question for generosity, altruism, and preferred tax rate can be found in Appendix 3.

Statistical Tests

Generosity

To test whether economic inequality has an effect on people's generosity in the Netherlands (H1), we compare the generosity scores between Hoogvliet and Kralingen-Crooswijk using a Mann-Whitney U test. This tests whether the generosity scores of the two neighbourhoods come from the same population. The Mann-Whitney U test shows that the difference in generosity score between Hoogvliet and Kralingen-Crooswijk is insignificant ($n_{Hoogvliet} = 62$, $n_{Kralingen-Crooswijk} = 45$, $X_{Hoogvliet} = 4.960$, $X_{Kralingen-Crooswijk} = 4.989$, $p = 0.942$). Therefore, we cannot reject that the generosity scores from the two neighbourhoods come from the same population, because no statistical differences in the median between Hoogvliet and Kralingen-Crooswijk were found.

Plotting a histogram combined with doing a skewness and kurtosis test for normality showed whether this variable follows a normal distribution. This showed that normality cannot be rejected for the generosity scores. Therefore, we tested for a Student's T test, because it has more statistical power and can be used if normality holds.

The Student's T test shows that the difference in generosity score between Hoogvliet and Kralingen-Crooswijk is insignificant ($n_{Hoogvliet} = 62$, $n_{Kralingen-Crooswijk} = 45$, $X_{Hoogvliet}$

= 4.960, $X_{Kralingen-Crooswijk} = 4.989$, $p = 0.926$). The generosity scores in our sample between the neighbourhood with low economic inequality and the neighbourhood with high economic inequality do not differ much, because no statistical differences in the mean occur.

In Figure 1 below a boxplot can be found, displaying the difference in how the generosity score is spread out between Hoogvliet and Kralingen-Crooswijk. In addition, this shows the minimum, first quartile, median, third quartile, and maximum. This boxplot adds to the finding of the statistical tests that no significant differences are found between the generosity scores of Hoogvliet and Kralingen-Crooswijk, because the spreads are close to similar.

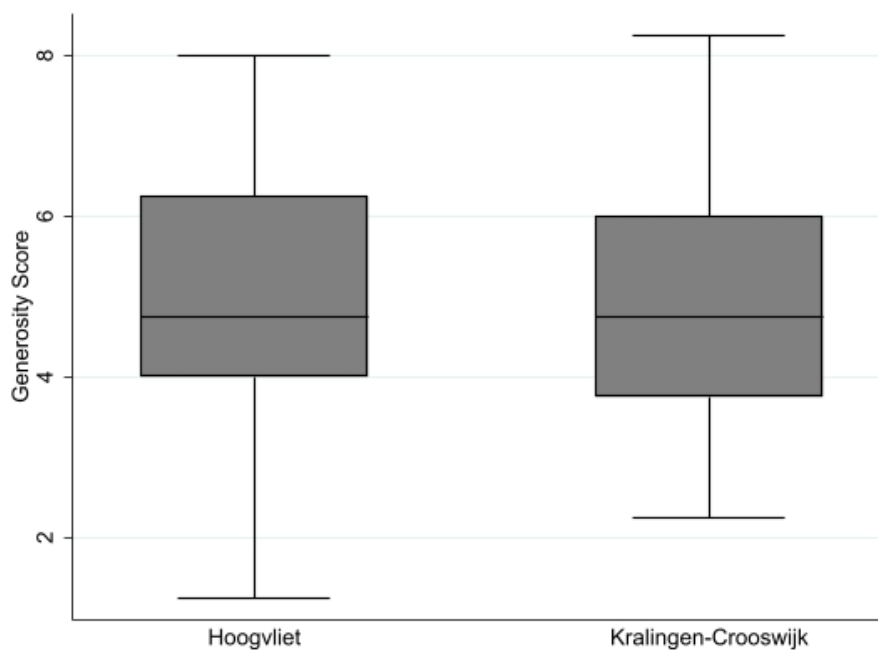


Figure 1. Boxplot Generosity Score

Altruism

To test whether economic inequality has an effect on people's altruism in the Netherlands (H2), we compare the altruism scores between Hoogvliet and Kralingen-Crooswijk using a Mann-Whitney U test. This tests whether the altruism scores of the two neighbourhoods come from the same population. The Mann-Whitney U test shows that the difference in altruism score between Hoogvliet and Kralingen-Crooswijk is insignificant ($n_{Hoogvliet} = 62$, $n_{Kralingen-Crooswijk} = 45$, $X_{Hoogvliet} = 4.540$, $X_{Kralingen-Crooswijk} = 4.422$, $p = 0.759$). Therefore, we cannot reject that the altruism scores from the two neighbourhoods come from the same population, because no statistical differences in the median between Hoogvliet and Kralingen-Crooswijk were found.

Plotting a histogram combined with doing a skewness and kurtosis test for normality showed whether this variable follows a normal distribution. This showed that normality cannot be rejected for the altruism scores. Therefore, we tested for a Student's T test, because it has more statistical power and can be used if normality holds.

The Student's T test shows that the difference in altruism score between Hoogvliet and Kralingen-Crooswijk is insignificant ($n_{Hoogvliet} = 62$, $n_{Kralingen-Crooswijk} = 45$, $\bar{X}_{Hoogvliet} = 4.540$, $\bar{X}_{Kralingen-Crooswijk} = 4.422$, $p = 0.685$). The altruism scores in our sample between the neighbourhood with low economic inequality and the neighbourhood with high economic inequality do not differ much, because no statistical differences in the mean occur.

In Figure 2 below a boxplot can be found, displaying the difference in how the altruism score is spread out between Hoogvliet and Kralingen-Crooswijk. In addition, this shows the minimum, first quartile, median, third quartile, and maximum. A few outliers can be found for Hoogvliet, but this is representative for a large population in which these outliers can occur. Because it is considered likely that a small percentage of these observations can occur, these are not excluded from the dataset. This boxplot adds to the finding of the statistical tests that no significant differences are found between the altruism scores of Hoogvliet and Kralingen-Crooswijk, because the spreads are close to similar.

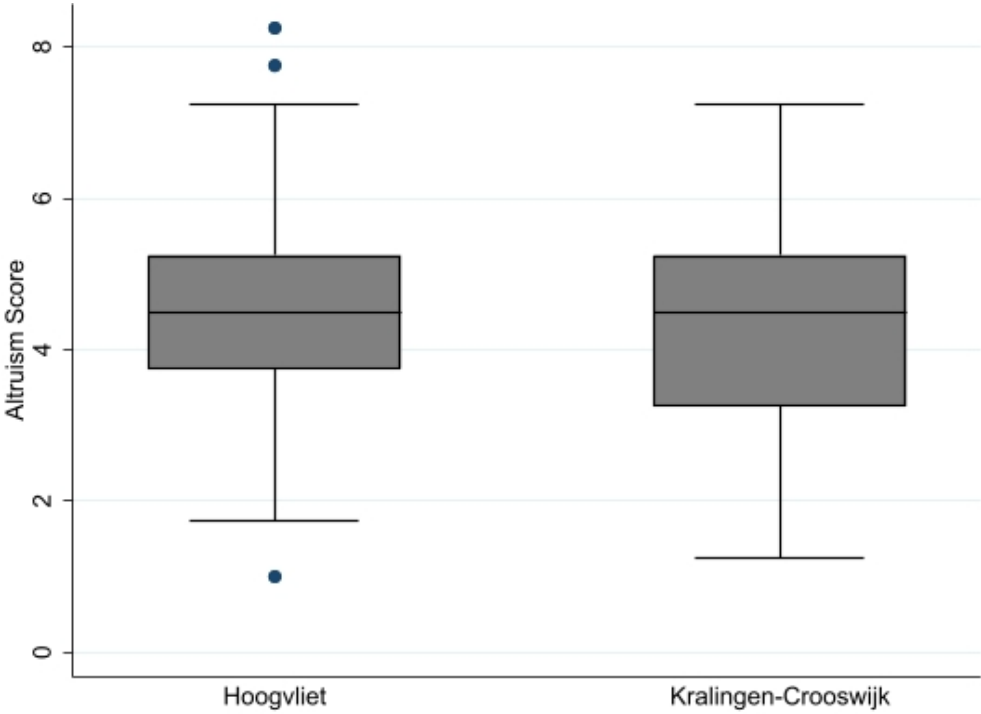


Figure 2. Boxplot Altruism Score

Preference for income redistribution

To test whether economic inequality has an effect on people's preference for income redistribution in the Netherlands (H3), we compare the preference for income redistribution between Hoogvliet and Kralingen-Crooswijk. In order to do this, we conducted Mann-Whitney U tests for the average preferred tax rate and the preferred progressivity.

Average preferred tax rate

A Mann-Whitney U test tested whether the average preferred tax rate of the two neighbourhoods come from the same population. The Mann-Whitney U test shows that the difference in average preferred tax rate between Hoogvliet and Kralingen-Crooswijk is statistically significant on a 5% significance level ($n_{Hoogvliet} = 62$, $n_{Kralingen-Crooswijk} = 45$, $X_{Hoogvliet} = 24.452$, $X_{Kralingen-Crooswijk} = 28.622$ $p = 0.043$). Therefore, we reject that the average preferred tax rates from the two neighbourhoods come from the same population, because statistical differences in the median between Hoogvliet and Kralingen-Crooswijk were found. The respondents from Kralingen-Crooswijk (high economic inequality) on average have a higher average preferred tax rate than the respondents from Hoogvliet (low economic inequality).

Plotting a histogram combined with doing a skewness and kurtosis test for normality showed whether this variable follows a normal distribution. This showed that normality can be rejected for the average preferred tax rate. Therefore, we cannot use a Student's T test and the Mann-Whitney U test is the test with the highest statistical power we can perform.

In Figure 3 below a boxplot can be found, displaying the difference in how the average preferred tax rate is spread out between Hoogvliet and Kralingen-Crooswijk. In addition, this shows the minimum, first quartile, median, third quartile, and maximum. A few outliers can be found for Hoogvliet, but this is representative for a large population in which these outliers can occur. Because it is considered likely that a small percentage of these observations can occur, these are not excluded from the dataset. This boxplot adds to the finding of the statistical tests that significant differences are found between the average preferred tax rates of Hoogvliet and Kralingen-Crooswijk, because the spreads cannot be considered close to similar.

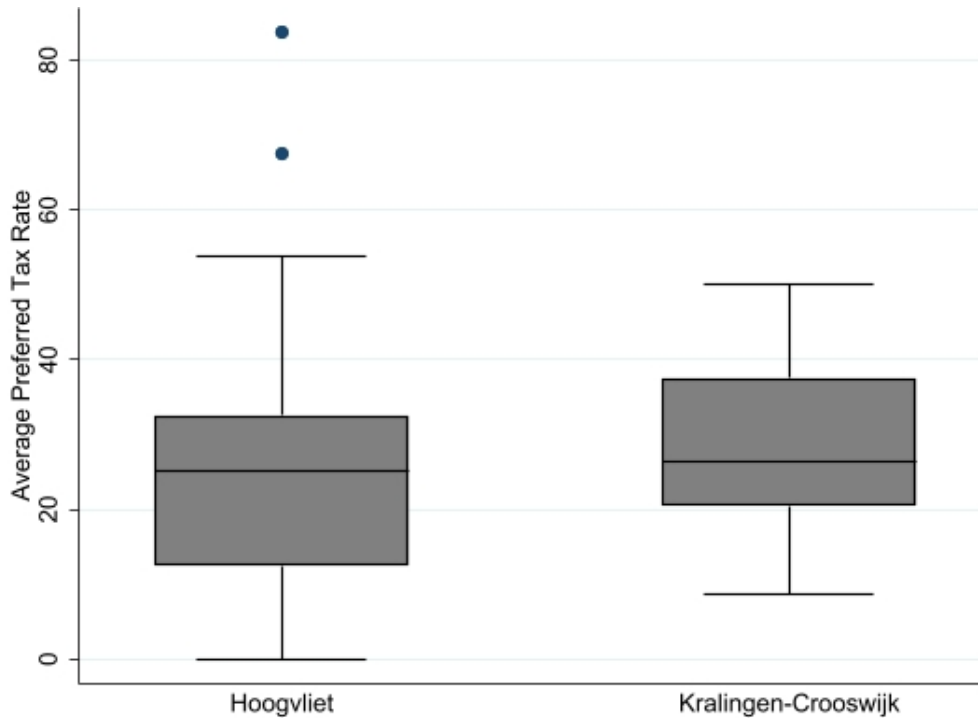


Figure 3. Boxplot Average Preferred Tax Rate

Preferred progressivity

A Mann-Whitney U test tested whether the preferred progressivity of the two neighbourhoods come from the same population. The Mann-Whitney U test shows that the difference in preferred progressivity between Hoogvliet and Kralingen-Crooswijk is insignificant ($n_{Hoogvliet} = 62$, $n_{Kralingen-Crooswijk} = 45$, $X_{Hoogvliet} = 165.886$, $X_{Kralingen-Crooswijk} = 157.450$ $p = 0.448$). Therefore, we cannot reject that the preferred progressivity from the two neighbourhoods come from the same population, because no statistical differences in the median between Hoogvliet and Kralingen-Crooswijk were found.

Plotting a histogram combined with doing a skewness and kurtosis test for normality showed whether this variable follows a normal distribution. This showed that normality can be rejected for the preferred progressivity. Therefore, we cannot use a Student's T test and the Mann-Whitney U test is the test with the highest statistical power we can perform.

In Figure 4 below a boxplot can be found, displaying the difference in how the preferred progressivity is spread out between Hoogvliet and Kralingen-Crooswijk. In addition, this shows the minimum, first quartile, median, third quartile, and maximum. A few outliers can be found for Hoogvliet, but this is representative for a large population in which these outliers can occur.

Because it is considered likely that a small percentage of these observations can occur, these are not excluded from the dataset. This boxplot adds to the finding of the statistical tests that no significant differences are found between the preferred progressivity of Hoogvliet and Kralingen-Crooswijk, because the spreads are close to similar.

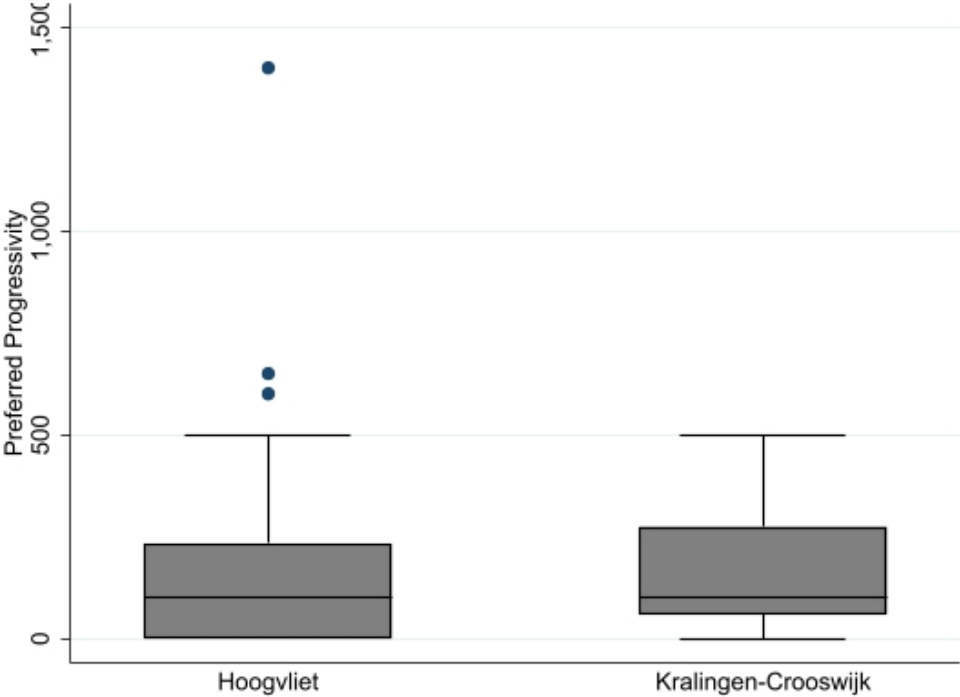


Figure 4. Boxplot Preferred Progressivity

MLRs
Generosity

To see the effect of the control variables and specifically income-related factors on generosity, a MLR was ran with the generosity score as the dependent variable and a dummy for whether someone is from Hoogvliet (=0, low economic inequality) or Kralingen-Crooswijk (=1, high economic inequality) as the independent variable. There is controlled for age, gender, educational level, marital status, income, whether someone belongs in the ‘poor’ group, and whether someone belongs in the ‘rich’ group. Table 6 below shows the results of this regression.

Table 6. Multiple Linear Regression - Generosity

Generosity	Coefficient	Standard Error	T-Value	P-Value	[95% Confidence Interval]	Significance
Kralingen-Crooswijk	.428	.575	0.74	.459	-.719 1.575	
Age	.013	.017	0.76	.45	-.021 .047	
Gender: base Male	0	.	.	.	.
Female	1.22	.33	3.69	0	.561 1.878	***
Education: base HAVO	0	.	.	.	.
HBO	-.39	1.364	-0.29	.776	-3.11 2.33	
MBO	-.541	1.416	-0.38	.704	-3.365 2.283	
VMBO	-2.486	1.448	-1.72	.091	-5.375 .404	*
VWO	-1.552	1.438	-1.08	.284	-4.422 1.317	
WO Bachelor	-1.476	1.314	-1.12	.265	-4.097 1.145	
WO Master	-.228	1.289	-0.18	.86	-2.799 2.342	
Rather Not Say Educational Level	-2.416	1.317	-1.83	.071	-5.043 .211	*
Marital Status: base Married	0	.	.	.	.
Divorced after Marriage	.463	.756	0.61	.542	-1.046 1.972	
Divorced after Partnership	1.399	.801	1.75	.085	-.199 2.997	*
Unmarried	-.206	.554	-0.37	.711	-1.312 .9	
Partnership	-.194	.771	-0.25	.802	-1.731 1.343	
Widowed after Marriage	-.429	.53	-0.81	.421	-1.486 .628	
Rather Not Say Marital Status	-.398	.696	-0.57	.569	-1.787 .991	
Income	0	0	0.29	.774	0 0	
Poor	-.108	.57	-0.19	.85	-1.246 1.029	
Rich	-.532	.794	-0.67	.505	-2.116 1.052	
Constant	4.144	1.713	2.42	.018	.727 7.561	**
Mean dependent variable	4.941	SD dependent variable			1.699	
R-squared	0.334	Number of observations			89	
F-test	.	Probability > F			.	
Akaike criteria. (AIC)	343.748	Bayesian criteria. (BIC)			386.054	

*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$

This table shows that living in Kralingen-Crooswijk compared to living in Hoogvliet on average increases the generosity score with 0.428 points, *ceteris paribus*. This finding does not show statistical significance, caused either by their being no relationship or due to lack of statistical power because of a relatively small dataset. Females on average have a higher generosity score of 1.220 points compared to males, *ceteris paribus*. This result is statistically significant on a 1% significance level with a p-value of 0. People who did VMBO on average have a lower generosity score of 2.486 points compared to people who did HAVO, *ceteris paribus*. This result is statistically significant on a 10% significance level with a p-value of 0.091. People who rather not say their educational level on average have a lower generosity score of 2.416 points compared to people who did HAVO, *ceteris paribus*. This result is statistically significant on a 10% significance level with a p-value of 0.071. People who are divorced after partnership on average have a higher generosity score of 1.399 points compared to people who are married, *ceteris paribus*. This result is statistically significant on a 10% significance level with a p-value of 0.085. People with a low-income on average have a lower

generosity score of 0.108 points compared to people with a regular-income, *ceteris paribus*. People with a high-income on average have a lower generosity score of 0.532 points compared to people with a regular income, *ceteris paribus*. These findings do not show statistical significance, caused either by their being no relationship or due to lack of statistical power because of a relatively small dataset.

Altruism

To see the effect of the control variables and specifically income-related factors on altruism, a MLR was ran with the altruism score as the dependent variable and a dummy for whether someone is from Hoogvliet (=0, low economic inequality) or Kralingen-Crooswijk (=1, high economic inequality) as the independent variable. There is controlled for age, gender, educational level, marital status, income, whether someone belongs in the ‘poor’ group, and whether someone belongs in the ‘rich’ group. Table 7 below shows the results of this regression.

Table 7. Multiple Linear Regression - Altruism

Altruism	Coefficient	Standard Error	T-Value	P-Value	[95% Confidence Interval]	Significance
Kralingen-Crooswijk	.553	.522	1.06	.292	-.487 1.594	
Age	.011	.016	0.68	.5	-.021 .043	
Gender: base Male	0	.	.	.	.
Female	.412	.436	0.94	.349	-.459 1.282	
Education: base HAVO	0	.	.	.	.
HBO	.61	.514	1.19	.239	-.416 1.636	
MBO	.543	.471	1.15	.252	-.396 1.482	
VMBO	.036	.74	0.05	.961	-1.44 1.513	
VWO	-.603	1.045	-0.58	.566	-2.687 1.482	
WO Bachelor	.241	.746	0.32	.748	-1.248 1.729	
WO Master	-.006	.616	-0.01	.992	-1.236 1.224	
Rather Not Say Educational Level	-1.837	.553	-3.32	.001	-2.941 -.733	***
Marital Status: base Married	0	.	.	.	.
Divorced after Marriage	1.155	.691	1.67	.099	-.225 2.534	*
Divorced after Partnership	1.851	.893	2.07	.042	.07 3.632	**
Unmarried	.195	.445	0.44	.662	-.692 1.083	
Partnership	-.236	.626	-0.38	.707	-1.484 1.012	
Widowed after Marriage	1.675	.713	2.35	.022	.253 3.098	**
Rather Not Say Marital Status	1.573	.617	2.55	.013	.342 2.804	**
Income	0	0	0.44	.66	0 0	
Poor	.136	.543	0.25	.803	-.947 1.219	
Rich	-.831	.648	-1.28	.204	-2.123 .461	
Constant	2.934	1.182	2.48	.016	.575 5.293	**
Mean dependent variable	4.511	SD dependent variable	1.477			
R-squared	0.233	Number of observations	89			
F-test	.	Probability > F	.			
Akaike criteria (AIC)	331.280	Bayesian criteria (BIC)	373.586			

*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$

This table shows that living in Kralingen-Crooswijk compared to living in Hoogvliet on average increases the altruism score with 0.553 points, *ceteris paribus*. This finding does not show statistical significance, caused either by their being no relationship or due to lack of statistical power because of a relatively small dataset. People who rather not say their educational level on average have a lower altruism score of 1.837 points compared to people who did HAVO, *ceteris paribus*. This result is statistically significant on a 1% significance level with a p-value of 0.001. People who are divorced after marriage on average have a higher altruism score of 1.155 points compared to people who are married, *ceteris paribus*. This result is statistically significant on a 10% significance level with a p-value of 0.099. People who are divorced after partnership on average have a higher altruism score of 1.851 points compared to people who are married, *ceteris paribus*. This result is statistically significant on a 5% significance level with a p-value of 0.042. People who are widowed after marriage on average have a higher altruism score of 1.675 points compared to people who are married, *ceteris paribus*. This result is statistically significant on a 5% significance level with a p-value of 0.022. People who rather not say their marital status on average have a higher altruism score of 1.573 points compared to people who are married, *ceteris paribus*. This result is statistically significant on a 5% significance level with a p-value of 0.013. People with a low-income on average have a higher altruism score of 0.136 points compared to people with a regular-income, *ceteris paribus*. People with a high-income on average have a lower altruism score of 0.831 points compared to people with a regular income, *ceteris paribus*. These findings do not show statistical significance, caused either by their being no relationship or due to lack of statistical power because of a relatively small dataset.

Preference for income redistribution

To see the effect of the control variables and specifically income-related factors on the preference for income redistribution, MLRs were ran with the average preferred tax rate (table 8) and the preferred progressivity (table 9) as the dependent variables, and a dummy for whether someone is from Hoogvliet (=0, low economic inequality) or Kralingen-Crooswijk (=1, high economic inequality) as the independent variable. There is controlled for age, gender, educational level, marital status, income, whether someone belongs in the ‘poor’ group, and whether someone belongs in the ‘rich’ group. Tables 8 and 9 below show the results of these regressions.

Average preferred tax rate

Table 8. Multiple Linear Regression - Average Preferred Tax Rate

Average Preferred Tax Rate	Coefficient	Standard Error	T-Value	P-Value	[95% Confidence Interval]	Significance
Kralingen-Crooswijk	3.44	3.779	0.91	.366	-4.099 10.979	
Age	-.122	.118	-1.04	.302	-.357 .112	
Gender: base Male	0	.	.	.	.
Female	-2.356	3.724	-0.63	.529	-9.785 5.073	
Education: base HAVO	0	.	.	.	.
HBO	.099	4.327	0.02	.982	-8.534 8.732	
MBO	3.652	5.392	0.68	.5	-7.105 14.409	
VMBO	-7.624	6.531	-1.17	.247	-20.652 5.404	
VWO	8.434	6.991	1.21	.232	-5.513 22.381	
WO Bachelor	-8.063	5.307	-1.52	.133	-18.651 2.524	
WO Master	3.664	4.41	0.83	.409	-5.133 12.461	
Rather Not Say	.766	4.563	0.17	.867	-8.337 9.87	
Educational Level						
Marital Status: base	0	.	.	.	.
Married						
Divorced after Marriage	3.798	5.067	0.75	.456	-6.31 13.906	
Divorced after Partnership	-14.748	4.088	-3.61	.001	-22.903 -6.593	***
Unmarried	-4.898	4.416	-1.11	.271	-13.708 3.911	
Partnership	1.532	4.274	0.36	.721	-6.994 10.057	
Widowed after Marriage	-6.778	5.625	-1.21	.232	-18 4.443	
Rather Not Say Marital Status	15.405	5.204	2.96	.004	5.023 25.788	***
Income	0	0	-0.40	.692	0 0	
Poor	2.633	4.981	0.53	.599	-7.303 12.57	
Rich	.119	5.407	0.02	.982	-10.667 10.905	
Constant	32.586	9.346	3.49	.001	13.941 51.232	***
Mean dependent variable		25.615	SD dependent variable		13.101	
R-squared		0.229	Number of observations		89	
F-test		.	Probability > F		.	
Akaike criteria (AIC)		720.314	Bayesian criteria (BIC)		762.620	

*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$

This table shows that living in Kralingen-Crooswijk compared to living in Hoogvliet on average increases the average preferred tax rate with 3.440%, *ceteris paribus*. This finding does not show statistical significance, caused either by their being no relationship or due to lack of statistical power because of a relatively small dataset. People who are divorced after partnership on average have a lower average preferred tax rate of 14.748% compared to people who are married, *ceteris paribus*. This result is statistically significant on a 1% significance level with a p-value of 0.001. People who rather not say their marital status on average have a higher average preferred tax rate of 15.405% compared to people who are married, *ceteris paribus*. This result is statistically significant on a 1% significance level with a p-value of 0.004. People with a low-income on average have a higher average preferred tax rate of 2.633% compared people with a regular-income, *ceteris paribus*. People with a high-income on average have a higher average preferred tax rate of 0.119% compared to people with a regular income, *ceteris paribus*. These

findings do not show statistical significance, caused either by their being no relationship or due to lack of statistical power because of a relatively small dataset.

Preferred progressivity

Table 9. Multiple Linear Regression - Preferred Progressivity

Preferred Progressivity	Coefficient	Standard Error	T-Value	P-Value	[95% Confidence Interval]	Significance
Kralingen-Crooswijk	-28.393	55.926	-0.51	.613	-139.962 83.177	
Age	3.657	3.096	1.18	.242	-2.52 9.834	
Gender: base Male	0	.	.	.	.	.
Female	59.357	45.285	1.31	.194	-30.983 149.698	
Education: base	0	.	.	.	.	.
HAVO						
HBO	-69.874	59.705	-1.17	.246	-188.983 49.235	
MBO	-51.241	64.463	-0.79	.429	-179.842 77.36	
VMBO	-236.966	60.797	-3.90	0	-358.252 -115.68	***
VWO	-15.816	136.05	-0.12	.908	-287.229 255.596	
WO Bachelor	-29.949	75.453	-0.40	.693	-180.474 120.575	
WO Master	11.435	62.595	0.18	.856	-113.439 136.309	
Rather Not Say	65.348	64.97	1.01	.318	-64.264 194.96	
Educational Level						
Marital Status: base Married	0	.	.	.	.	.
Divorced after Marriage	43.063	51.301	0.84	.404	-59.281 145.407	
Divorced after Partnership	128.676	106.409	1.21	.231	-83.604 340.955	
Unmarried	110.913	120.368	0.92	.36	-129.214 351.04	
Partnership	51.883	84.421	0.61	.541	-116.533 220.299	
Widowed after Marriage	1.294	53.994	0.02	.981	-106.421 109.009	
Rather Not Say	-68.963	81.966	-0.84	.403	-232.481 94.556	
Marital Status						
Income	.001	.002	0.28	.781	-.004 .005	
Poor	-51.243	66.108	-0.78	.441	-183.125 80.64	
Rich	-56.622	83.509	-0.68	.5	-223.217 109.974	
Constant	-15.908	204.528	-0.08	.938	-423.93 392.113	
Mean dependent variable		166.882	SD dependent variable		199.046	
R-squared		0.161	Number of observations		89	
F-test		.	Probability > F		.	
Akaike criteria. (AIC)		1212.178	Bayesian criteria. (BIC)		1254.485	

*** = p < 0.01, ** = p < 0.05, * = p < 0.10

This table shows that living in Kralingen-Crooswijk compared to living in Hoogvliet on average decreases the preferred progressivity with 28.393%, *ceteris paribus*. This finding does not show statistical significance, caused either by their being no relationship or due to lack of statistical power because of a relatively small dataset. People who did VMBO on average have a lower preferred progressivity of 236.966% compared to people who did HAVO, *ceteris paribus*. This result is statistically significant on a 1% significance level with a p-value of 0.

People with a low-income on average have a lower preferred progressivity of 51.243% compared to people with a regular-income, *ceteris paribus*. People with a high-income on average have a lower preferred progressivity of 56.622% compared to people with a regular income, *ceteris paribus*. These findings do not show statistical significance, caused either by their being no relationship or due to lack of statistical power because of a relatively small dataset.

Discussion

This section starts with a recap of the topic. Then, a summary of the main results are covered. Next, the main results are linked back to what was expected beforehand, by checking whether the hypotheses hold and why (not). After that, the limitations of this study are discussed. Finally, suggestions for future research are provided.

Recap of the Topic

This study tested the effect of economic inequality on people's prosocial behaviour in the Netherlands. A between-subject design was used, comparing two neighbourhoods in Rotterdam serving as a proxy for the Netherlands: Hoogvliet (neighbourhood with a relatively low economic inequality) and Kralingen-Crooswijk (neighbourhood with a relatively high economic inequality). To fully cover people's prosocial behaviour, three different measures for prosocial behaviour were analysed: generosity, altruism, and preference for income redistribution. In addition, this study covered to which extent income plays a role in (potential) effects. It is interesting to analyse the results of this study, because of the priority contradicting studies in this field, and the lack of research about this topic in the Netherlands.

Summary of the Main Results

Economic inequality on people's prosocial behaviour

No statistical evidence has been found for an effect of economic inequality on people's generosity and altruism. However, in case the lack of statistical significance is caused by the low amount of observations, this study provides suggestive evidence that a higher economic inequality increases people's generosity and altruism. This study did find an effect of economic inequality on people's preference for income redistribution, providing statistical evidence that a higher economic inequality increases people's average preferred tax rate. On the contrary, a higher economic inequality does seem to decrease the preferred progressivity, but this finding lacks statistical significance.

Low-Income vs High-Income

An effect of economic inequality on rich people's prosocial behaviour did not find statistical significance. However, in case the lack of statistical significance is caused by the low amount of observations, this study provides suggestive evidence that higher-income people under a higher economic inequality tend to be less generous and altruistic than lower-income people. In addition, this study provides suggestive evidence that higher-income people under a

higher economic inequality tend to prefer a lower average tax rate and have a lower preferred progressivity than lower-income people. It cannot be established with certainty that these effects are caused by the level of economic inequality or by whether someone has a higher or a lower-income, because this difference could also be found under a lower economic inequality.

Further Findings

Some interesting findings can be derived from the effect of the control variables on people's prosocial behaviour. This shows a statistically significant result that women are more generous than men. Furthermore, there is suggestive evidence that people that are married are less generous and altruistic than people that are divorced. No noteworthy effects from control variables on people's preference for income redistribution can be derived from the results.

Main Results vs Hypotheses

In this part, we look back at the hypotheses and see whether they hold or not.

H1: Economic inequality has an effect on people's generosity in the Netherlands.

There is not enough statistical evidence to support this hypothesis; therefore, we cannot establish an effect of economic inequality on people's generosity in the Netherlands. There is not enough evidence to support that H1 holds. Despite lack of statistical significance, this study provides suggestive evidence that a higher economic inequality increases people's generosity.

H2: Economic inequality has an effect on people's altruism in the Netherlands.

There is not enough statistical evidence to support this hypothesis; therefore, we cannot establish an effect of economic inequality on people's altruism in the Netherlands. There is not enough evidence to support that H2 holds. Despite lack of statistical significance, this study provides suggestive evidence that a higher economic inequality increases people's altruism.

H3: Economic inequality has an effect on people's preference for income redistribution in the Netherlands.

There is enough statistical evidence to support this hypothesis; therefore, we cannot reject H3. This study found that economic inequality increases people's average preferred tax

rate. This indicates that a higher economic inequality increases people's preference for income redistribution.

Limitations

There are some limitations to this study. First, a relatively small dataset was used. Lack of insignificant results is likely caused by too little observations or there being no relationship. Executing this research on a larger scale provides more accurate and meaningful results. Second, the gathered observations from Hoogvliet and Kralingen-Crooswijk significantly differ in characteristics, as displayed in Appendix 2. This is also likely caused by an insufficient amount of observations, causing a limitation to this study. Third, there is possible social-desirability bias, described as the tendency of respondents to present themselves in a more flattering fashion (Ricee, 2021). This causes respondents to give more socially accepted or politically correct answers. Within the survey, people are answering questions about their own prosocial behaviour, giving room to overestimate their own prosocial behaviour and falling for this bias. Possible causes for this could be to try to impress the researcher, or to trick themselves into feeling better about their own prosocial behaviour. Fourth, the dependent variables for prosocial behaviour are measured subjectively from the answers of the respondents. This causes room for measurement errors, even when respondents have the intention to answer truthfully. Fifth, low incentives have been used, which caused a lower response rate and possibly less accurate answers given by the respondents. Lastly, the data modification in this study reduces the statistical power and accuracy of the results. For example: a fair amount of observations was excluded from the regressions, because of respondents rather not sharing their income, reducing the statistical power of the regressions. In addition, the middle point of the income intervals was taken and the incomes above €100.000 were estimated, reducing the accuracy of the regressions. Furthermore, the changes applied in order to analyse the preferred progressivity decreased the validity of the findings. Most problems arising from the data modification could be resolved by increasing the sample size.

Suggestions for Future Research

This study can be used as inspiration for future research. Conducting this research on a larger scale with a sufficient amount of observations can increase the accuracy and statistical power of the effects of economic inequality on people's prosocial behaviour in the Netherlands. In addition, this could provide a more elaborate overview of the role income and other demographics play in these effects. Furthermore, this research can be conducted in other

countries to see to which extent found effects differ on a national level. Moreover, future research could use different methods to measure prosocial behaviour, to decrease the limitations of subjective measurements where respondents judge themselves on their prosocial behaviour.

Conclusion

This section briefly goes over the main findings of this thesis. Next, it is discussed what these main findings mean. Finally, practical implications of these results are discussed.

Main Findings

This study found statistical evidence that a higher economic inequality increases people's average preferred tax rate in the Netherlands. In addition, there is a positive correlation between economic inequality and people's generosity and altruism. Economic inequality and people's preferred progressivity have a negative correlation.

Zooming in on the prosocial behaviour of high-income people in the Netherlands under a higher economic inequality shows suggestive evidence that higher-income people are less generous and altruistic than lower-income people. In addition, higher-income people under a higher economic inequality seem to prefer a lower average tax rate and have a lower preferred progressivity than lower-income people.

Meaning of the Main Findings

Despite lack of statistical significance, the findings of this study suggest that a higher economic inequality increases people's overall prosocial behaviour. It shows that a higher economic inequality increases the average preferred tax rate people have, which is an indicator for income redistribution and considered prosocial. Also, the conducted analysis shows that a higher economic inequality could increase people's generosity and altruism. More frequent and bigger differences between the rich and poor could possibly cause people to want to reduce these differences. Therefore, helping each other out more and acting more prosocial.

Moreover, the correlations found in this study suggest that higher-income people overall are less prosocial than lower-income people under a higher-economic inequality in the Netherlands. A possible explanation of this correlation could be that higher-income people could feel more entitled to their wealth. Therefore, being less willing to help others than lower-income people.

Practical Implications

This study provides two practical implications. First, this study shows the importance for governmental organisations to take into account the effects on prosocial behaviour an increased economic inequality can have. This is different for each country, city, and

neighbourhood, but cannot be forgotten to give additional thought in making political decisions. This study shows that it does not always mean that decreasing or increasing the wealth-gap is the right decision in terms of policy, but should be adapted per situation considering all circumstances. In short, increasing awareness of this topic to policymakers.

Second, the findings of this paper stretch the importance of testing the external validity of behavioural studies to researchers. The findings of this paper are in line with some prior conducted studies, but also contradict the findings of prior conducted studies. This indicates that different groups of people can display different prosocial behaviour, based on their nationality, income level, age, gender, educational level, or any other demographic that might alter their behaviour. All in all, this shows that it is of great importance that researchers keep testing relationships in different settings and with various demographics.

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Appendix 1: Leafleting Technique

I distributed 300 flyers each per neighbourhood (600 flyers total). The flyers looked as follows:



Figure 5. Flyers used for leafleting in Hoogvliet and Kralingen-Crooswijk

Below you find two pictures of me doing the leafleting in the neighbourhoods:



Figure 6. Leafleting in the neighbourhoods

While leafleting, I came across a relevant observation for my research. In the neighbourhood with a relatively high economic inequality (Kralingen-Crooswijk) there was a prime example of why this neighbourhood has a relatively high economic inequality. In the Vlinderstraat relatively rich and relatively poor people lived literally next to each other. On one side of the street (left) there were smaller and older houses, while on the other side of the street (right) there were bigger and newer houses. Taking the values of these homes as a proxy for the income of the people living in these houses shows perfectly how lower and higher income individuals live next to each other. Hence, a relatively high economic inequality. The houses can be seen in the figure below.



Figure 7. High Economic Inequality in the Vlinderstraat (Kralingen-Crooswijk)

Below you find a list of streets where the flyers were distributed:

Table 10. Streets used for leafleting

Hoogvliet	Kralingen-Crooswijk
Tormentil, Kaperhoekseweg, Kamille, Erica, Honsdraf, Roek, Zwaluw, Tureluur, Rietspors, Reiger, Plevier.	Gerdesiaweg, Dijkstraat, Honingbijstraat, Hommelstraat, Vlinderstraat, Waterjufferstraat, Dr. Zamenhofstraat, Albert Verweystraat, Helene Swarthstraat, Vredenoordkade, Boezemkade.

For both neighbourhoods there were 11 streets each in which the flyers were distributed.

Appendix 2: Comparison Demographics per Neighbourhood

Table 11. Two-Sample T Tests with Equal Variances

	Observations HV	Observations KC	Mean HV	Mean KC	Difference	Standard Error	T-Value	P-Value
Age	62	44	48.178	41.318	6.859	3.354	2.05	.044
Gender	62	45	1.839	1.578	0.261	0.092	2.8	0.005
Educational Level	62	45	3.081	5.089	-2.008	0.345	-5.8	0
Marital Status	62	45	2.484	3.734	-1.25	0.335	-3.75	0.001
Income	62	45	4.613	5.045	-0.431	0.474	-0.9	0.364

HV = Hoogvliet & KC = Kralingen-Crooswijk

Table 11 above shows two-sample t tests of equal variances between the two neighbourhoods Hoogvliet and Kralingen-Crooswijk. When the demographics of the two neighbourhoods in our sample already differ much, this could have an effect on the results. A low enough p-value indicates that the two groups are significantly different. This is the case for age (0.044), gender (0.005), educational level (0) and marital status (0.001), causing a limitation to this research.

Appendix 3: In-Depth Results per Individual Question

Table 12. In-Depth Results per Individual Question – Generosity Activities (Student’s T Test)

Activities	T-Value	P-Value	Mean HV	Mean KC
Voluntary work	-0.241	0.810	1.984	2.044
Contribute to the foodbank	0.774	0.441	0.758	0.600
Donate stuff (for example: clothes) you no longer need	0.742	0.460	2.645	2.511
Give money to a homeless person	-0.313	0.755	1.355	1.422
Donate part of your income to a church, (sport)club or a comparable organisation	-0.770	0.443	0.823	1.022
Pay for your friend’s food or drinks	-1.813	0.073*	2.565	2.889
Donate to charity	0.426	0.671	2.435	2.333

*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$. HV = Hoogvliet & KC = Kralingen-Crooswijk. The respondents had to answer the following question: “State for the following activities how often you have done them.” There are five answer-options ranging from never to very often. The score of the mean is always between 0 and 4. The higher the mean, the higher the generosity.

Table 13. In-Depth Results per Individual Question – Generosity Statements (Student’s T Test)

Statements	T-Value	P-Value	Mean HV	Mean KC
“I do not find it important to give money to charity.”	-0.970	0.334	2.435	2.689
“If someone needs money, I expect someone else (so not you) to resolve this.”	-0.751	0.454	2.403	2.578
“When I buy food or drinks for a friend, I hope that he/she pays for it next time.”	2.228	0.028**	2.435	1.867

*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$. HV = Hoogvliet & KC = Kralingen-Crooswijk. The respondents had to answer the following question: “State for the following statements whether you agree with them.” There are five answer-options ranging from totally agree to totally disagree. The score of the mean is always between 0 and 4. The higher the mean, the higher the generosity.

Table 14. In-Depth Results per Individual Question – Altruism Activities (Student’s T Test)

Activities	T-Value	P-Value	Mean HV	Mean KC
Help a stranger find the way	-2.071	0.041**	2.500	2.778
Help a stranger exchange money	0.667	0.506	1.371	1.222
Donate blood	-.030	0.977	0.903	0.911
Help a stranger carry stuff	-0.887	0.377	1.629	1.800
Keep the elevator door open for a stranger	0.050	0.960	2.742	2.733
Let someone in front of you in the supermarket line	1.784	0.077*	2.355	2.022
Be honest that you are not paying enough in the supermarket	-0.722	0.472	1.161	1.311
Lend a neighbour that you do not know very well something (for example: plates or tools)	0.303	0.763	1.597	1.533
Help a disabled or elderly person cross the street	0.857	0.394	1.500	1.311
Offer someone your seat in public transport	1.839	0.069*	2.403	2.067

*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$. HV = Hoogvliet & KC = Kralingen-Crooswijk. The respondents had to answer the following question: “State for the following activities how often you have done them.” There are five answer-options ranging from never to very often. The score of the mean is always between 0 and 4. The higher the mean, the higher the altruism.

Table 15. In-Depth Results per Individual Question – Preferred Tax Rate (Student’s T Test)

Income	T-Value	P-Value	Mean HV	Mean KC
Gross Income of €30.000 per Year	-1.189	0.237	15.064%	17.622%
Gross Income of €60.000 per Year	-1.135	0.259	22.113%	25.133%
Gross Income of €90.000 per Year	-1.22	0.225	27.645%	31.578%
Gross Income of €120.000 per Year	-2.054	0.043**	32.984%	40.156%

*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$. HV = Hoogvliet & KC = Kralingen-Crooswijk. The respondents had to answer the following question: “Tax income is mostly used to redistribute money using payments and subsidies. The more tax paid, the more money available for redistribution. Imagine someone has a gross income of €XXX.XXX per year, how much percentage in tax do you think this person should pay?” The respondent had to answer with a whole number between 0 and 100. The higher the mean, the higher the preferred tax rate.