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Bachelor Thesis International Bachelor Economics and Business Economics

Analysis of the effect of altruism on different health outcomes in developed countries.

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Introduction

Rational economic theories are constructed around the idea of maximization of individual's payoffs (Sen, 1994). However, decision-making process in our lives mostly depends on social preferences and personal relations between humans. An example is going to be a dictator game, which in this case becomes the contradiction of common economic theories. When the participants of such game were asked to split 20 dollars between themselves and another person, only a quarter of the players decided to give a larger part to themselves, while the other three-quarters split the full amount equally (10$,10$) – it means that individuals care about others' preferences in different ways (Camerer, 2003). The example shown before introduces the importance of different behavioral concepts, which deny the idea of purely selfish population. Social preferences models can help to explain various decisions and show the valuation of others' payoffs during the calculation of own utility (Charness and Rabin, 2002). During the last 40 years, researchers explored multiple behavioral patterns, explaining the decisions that people make. Nevertheless, in this paper, the concept of altruism is going to be researched.

Altruism is a well-known concept introduced more than three centuries ago. It exists almost in each sphere of life, starting from parental education during childhood when they teach their children how to behave in society; and ending by large ecological problems that require donations made by individuals. Fehr and Schmidt (1999) stated that players have altruistic preferences when they appreciate any increase in the payoffs of other players. Therefore, such approach can be explained by the combination of their own and other players' payoffs. However, in order to explain the motivation behind the altruistic model of behavior, it is important to understand the motivation behind this concept and the ways to promote it. People with different backgrounds and cultures tend to make different decisions according to the situation. Dictator games can perfectly show that the decision-making process is not purely selfish. For example, the availability of the option of taking money from the recipient leads to less money given (Bardsley, 2008). Besides, individuals tend to give more money to relatives and friends than to the strangers (Brańas-Garza et al., 2010). Therefore, human altruism is shaped by a set of cognitive models for distinct types of relationships (DeScioli & Krishna, 2013).

Most of the authors explored altruistic behavior on the individual level, while the increase of such behavior on the macroeconomic level can also have positive consequences. For example, there is a popular belief that happiness promotes both mental and physical health (Argyle, 1997). On the other side, one of the major determinants of life satisfaction or happiness is altruism. Becchettia and Degli (2010) decided to understand the motivation behind self-reported happiness and check whether it is determined by different circumstances. The investment game, which is often used to test the assumption that individuals are self-interested, was conducted. The experiment showed that the amount given to trustees by trustors have a significant and positive effect on the self-declared happiness. It shows the importance of altruism in the happiness determination. Also, a good state of health promotes better

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aggregate GDP and GDP per capita (Swift, 2011). Therefore, altruistic behavior among the population might be beneficial for the government. Besides, if the belief is correct, then there is a possibility that such behavior may directly promote better health conditions. For example, on the monetary level, altruistic behavior may be expressed by the amount of charity donations made by individuals, which possibly leads to better health-care options available to those in need.

This research is both socially and economically relevant. It is socially relevant because it can help to introduce new government policies to make people healthier and happier. In addition, this paper is academically relevant, since larger sample size on macro-level was used. Data consists of several years and contains all of the developed countries in it and even altruism is analyzed in two different ways. It makes the research much more convincing and precise.

Combining all of the information available and mentioned above about altruism, the following research question is introduced:

"What is the effect of altruism on the health outcomes of the population of developed countries?"

This research aims to explore the impact of altruistic behavior, measured by the amount of charity donations and questionnaire showing the self-reported altruism, on the different wellbeing proxies including health, happiness, and other "population performance" characteristics. The research design will include two levels of analysis. The first one is donations and wellbeing on the aggregate (country) level. It may increase the public state trust level and promote government policy implications in the economic and healthcare sectors. On the other side, self-reported altruism and mental health will be analyzed on the individual level. It helps to understand which manifestations of altruism are associated with improved life satisfaction on individual level. Besides having a potential to provide an advice to government, this research introduces a new way of the altruistic behavior explanation by showing the aggregate effect.

Theoretical Framework

The research question shown above is broad and should be divided into smaller parts in order to get a more precise answer. Therefore, hypotheses are introduced to explore the topic from different perspectives. In order to understand the parts to be divided, it is important to know the motivation behind altruism. Altruistic behavior consists of different types of help – starting from moral help, which is helping a kid to find his relatives in the grocery store, for example, and ending with monetary help, which is charity donations made by the individuals. It is important to stop on the last point because there are different types of donations that exist. However, to answer the questions about altruism, only the donations by individuals should be included in the analysis. The reason is that charity donations

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made by companies and corporations allow them to reduce the tax payments and increase the brand image by showing how philanthropic are they. Therefore, such behavior becomes profit-maximizing, and is thus not necessarily altruistic.

By taking the concept of altruism on the monetary level, it is important to understand that charity is not similar among the developed countries. Therefore, altruism differs across countries, cultures, and even types of help. According to data, in developed countries, people prefer to donate money to charity, while in developing countries, people prefer to help strangers on the streets, Therefore, charity donations was chosen as a measure of altruism for developed countries.

As it was mentioned in the research question, the main idea of the research is to analyze the effects of altruism on health outcomes. Post (2005) showed that altruistic behavior is associated with greater well-being, health and longevity, while giving and not receiving support would lead to better health. In addition, there are positive relations between voluntarism, which is a part of altruism, and health. (Caro & Bass, 1997). However, these researchers did not account all of the important health outcomes. Therefore, this research will include three different variables which are going to be discussed further.

Life expectancy variable shows the longevity of the population. It is directly affected by altruism, since social support is associated with better longevity (Kawachi et al., 1996). Altruism is also associated with decreased mortality rate (Blazer,1992; House et al., 1982). Third health outcome is called perceived health status, which is an additional variable for hypotheses. It is important to include it in the hypotheses, because it is not a typical variable, that is precisely calculated, but it is based on a real-life feedback of individuals (that currently live in the country), which is a part of the "overall" health. Previous researchers showed the overall effect of altruism, while this part of the research will be focused more on developed countries and use charity donations as a variable for altruism. The following 3 hypotheses are combining different and equally important physical health outcomes:

H1: *Charity donations made by individuals have a negative effect on child mortality rate in developed countries*

H2: *Charity donations made by individuals have a positive effect on perceived health status in developed countries*

H3: *Charity donations made by individuals have a positive effect on life expectancy in developed countries*

In the second part of the research, more subjective hypothesis is going to be analyzed on the macro-economic level. Therefore, as it was mentioned before, life satisfaction will be used. Life satisfaction is a good measure and can be affected by people's altruism (Kahana et al., 2013). Volunteerism leads to a stronger will to live and higher life satisfaction (Hunter & Linn, 1980). In

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addition, the literature states that volunteers are more likely to report higher level of happiness (Throits & Hewitt, 2001) and lower level of depression (Musick & Wilson, 2003). However, previous researchers did not analyze the effect of self-reported individual's altruism on life satisfaction and happiness specifically in developed countries. Therefore, in order to explore altruism on the individual level, a survey will be used (Rushton, Chrisjohn & Fekken, 1981). Therefore, it leads to the introduction of the following hypothesis:

H4: *Altruism has a positive effect on life satisfaction of the population in developed countries*

Data

As it was mentioned before, the analysis is divided into two parts. First part consists of panel data and includes data on the aggregate level, where charity donations are the monetary type of altruism. Second part consists of individual cross-sectional data, where the enhanced survey provided by Rushton, Chrisjohn & Fekken (1981) was used to show the subjective part. Therefore, data sets will be also different.

First, macro-data will be presented. World Giving Index introduced by CAF (Charity Aid Foundation) in 2010 includes information about all types of altruistic behavior in different countries – data is provided yearly. CAF takes more than 150 thousand observations yearly and shows that there are huge differences among the countries. For instance, those in developed countries are most likely to donate the money to charity funds, while in the developing countries, people might be more likely to help strangers on the street. However, this research is built around the developed countries, therefore, only the data related to charity donations must be used, as it is the most common way of showing altruism in these countries. This data is measured as a percentage of population donating to charity. Charity Aid Foundation created a representative sample and asked them short questions related to their altruistic activities. Researchers did not ask the questions about the amounts of donations made by individuals; however, they approximated the percentage of the population of a particular country donating to charity. In this case, the amounts of donations are not possible to know, as most of the charity participants prefer not to disclosure such information. Therefore, due to the biases it is important to include control variables, which are associated with charity donations and health outcomes. Leung et al. (2010) provided a research, where they tried to find the determinants of health and show the importance of health. They included average household income, measured in dollars, the proportion of women as a gender variable, unemployment rate, measured in percentage, alcohol consumption, defined as annual sales of pure alcohol in litres per person aged 15 years and old and the proportion of daily smokers in each country. These variables are also affected by the level of altruism (Post, 2005; Lindbeck & Nyberg, 2006).

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To prove the first three hypotheses, the health outcomes data is required. Data from OECD will be considered for health outcomes, such as infant mortality rate, measured per 1000 live births, life expectancy, measured in years and perceived health status, measured in the percentage of population reporting good or very good level of health, while the data from CAF will represent the proportion of charity donations made by individuals. In addition to theoretical framework, the choice of these particular health outcomes can be explained as follows. Life expectancy is officially calculated variable based on the demographical, economic and gender factors. It is one of the strongest identifiers of a given population welfare. Data on life expectancy is precise and takes each person into account. Main advantage of perceived health status is that it is based on the real-life feedback of individuals that currently live in the country, but the disadvantage is that there is no precise scale of measurement and it can be strongly biased by current events in a life of individual. However, this variable allows to get access to the general wellbeing of the population through direct connection with a population. The last one is infant mortality rate. It is an aggregate variable for voluntary and healthcare sector.

For the fourth hypothesis, life satisfaction is proxied by the Happiness Index. Panel data might be calculated with World Happiness Report, which is about happiness of the population yearly in different countries starting from 2012. The data used to rank all of the developed countries is mostly from the Gallup World Poll, which measures 14 areas within its core questions, uses more than 375 thousand observations and measured on a scale from 1 to 10.

Second part is cross-sectional data used to prove the fourth hypothesis consists of individual's life satisfaction measured on a scale from 1 to 10. In order to provide cross-sectional data on the individual's level of altruism, survey provided by Rushton, Chirsjohn & Fekken (1981) was used. It consists of 20 questions related to altruism and measured on a scale from "never" to "always", while in our case it is on a scale from 1 to 5. However, this research included only 17 out of 20 questions, since the survey was created 40 years ago and some of the questions are out of date. Means of the answers to each question were taken into account. In addition, several profile questions related to age, gender, marriage status, household income and self-reported life satisfaction measured on a scale from 0 to 10, were asked. This survey was used in different previous researches explaining prosocial behavior (Penner & Filkenstein, 1998; Carlo & Randall, 2002). However, there are many other factors affecting someone's happiness or life satisfaction. Therefore, to make the analysis less biased, it is important to add control variables discussed previously.

Methodology

The methodological approach of this paper will include several statistical techniques to evaluate the hypothesis announced earlier and come up with an answer to the central research question. The four dependent variables: infant mortality rate, perceived health status, happiness index and life expectancy are used to evaluate the impact of altruism on socio-economic outcomes. To begin with, the first method

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used in this study is multiple linear regression, where the coefficients describing the relationship between the variables of interest are estimated using the Ordinary Least Squares method (OLS). Using OLS, the first four naïve Models 1, 2, 3 and 4 are constructed, which include only the level of altruism measured by the percentage of people involved in charity, so only β's from the formulas from models 9-12 below are used.

The first three models are not able to represent the genuine relationship between altruism and the proxies of socio-economic wellbeing. The central issue of the models is omitted variable bias. Obviously, there exist multiple factors, which have a significant impact on the level of donations in the country and the determinants of wellbeing of the population. Failing to account for these factors will lead the coefficients of $X_{i,t}$ to be unreliable. Therefore, this research will account for a number of confounders such as average household income, percentage of elderly population, percentage of females, unemployment rate, alcohol consumption per capita, and the percentage of people, who smoke cigarettes in the population. Using OLS, multiple regressions Models 5, 6, 7 and 8 are constructed with the additional control variables, so β's and γ's from the formulas from models 9-12 below are used.

Finally, despite including multiple control variables to the previous models, the problem of omitted variable bias is not completely erased. The reason is that various macro-level and socio-economic factors, which are relevant, in the present case remain unknown, or impossible to measure, for example, the degree of democracy in the government, or mentality of the population. However, it seems feasible to explore the advantages of panel dataset used for this research and add year- and country-fixed effects to the existing models. This way, it will be possible to capture the year-specific unobservable changes in the level of infant mortality rate, perceived health status, happiness, and life expectancy. Moreover, the country-fixed effects will allow to account for country-specific unobservable determinants of the dependent variables, which do not vary over time. This method will allow to obtain more robust results by lowering the strength of omitted variable bias, so the conclusions of this research are more internally valid. Thus, the second method used by this research is panel dataset regression (xtreg in STATA), which results in the four Models 9, 10, 11 and 12 that will look as follows:

$$9.\ Y_{i,t}^{CM} = \alpha + \beta * X_{i,t} + \gamma^1 * C_{i,t}^1 + \cdots + \gamma^n * C_{i,t}^n + T_t + I_i + \varepsilon_{i,t}\ ;$$

$$10.\ Y_{i,t}^{PH} = \alpha + \beta * X_{i,t} + \gamma^1 * C_{i,t}^1 + \cdots + \gamma^n * C_{i,t}^n + T_t + I_i + \varepsilon_{i,t}\ ;$$

$$11.\ Y_{i,t}^{HI} = \alpha + \beta * X_{i,t} + \gamma^1 * C_{i,t}^1 + \cdots + \gamma^n * C_{i,t}^n + T_t + I_i + \varepsilon_{i,t}\ ;$$

$$12.\ Y_{i,t}^{LE} = \alpha + \beta * X_{i,t} + \gamma^1 * C_{i,t}^1 + \cdots + \gamma^n * C_{i,t}^n + T_t + I_i + \varepsilon_{i,t}\ ,$$

where $Y_{i,t}^{CM}$ is child mortality rate in country i at time t, $Y_{i,t}^{PH}$ is perceived health status, $Y_{i,t}^{HI}$ is happiness index, $Y_{i,t}^{LE}$ is life expectancy at birth, $X_{i,t}$ is the percentage of people involved in charity, $C_{i,t}^1$ to $C_{i,t}^n$ are

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the additional confounders, T_t is related to the fixed effects of year t, I_i refers to the fixed effects of country i, $\varepsilon_{i,t}$ is error term.

To evaluate the validity of the results obtained for the socio-economic wellbeing on macro level in the previous 9 models, this research will be extended to study the impact of altruism on life satisfaction on individual level. A survey consisting of 17 questions on altruistic behavior was conducted to observe, which specific manifestations of altruism are related to one's life satisfaction. Each question studied the frequency of a certain altruistic action in one's life. The response to each question contains the following options: "Never", "Once", "More than once", "Often", "Very often", each option is scored from 1 to 5 accordingly. The questions themselves can be found in Appendix. The average scores for the questions of a survey were used to obtain an altruistic score, which will be used in the calculations for this part. The possibility of combining all questions into one measure was assessed by calculating Cronbach's Alpha (Bland & Altman, 1997). In the present case, it is equal to 0.72, which demonstrates good internal reliability of the scales. Moreover, the respondents were asked to evaluate their own overall level of life satisfaction on a scale from 1 to 10. Finally, the survey collects information about the profile factors of the respondents: gender, age, income, and marital status. Therefore, the final two multiple linear regression models with and without additional profile variables on individual level will look as next:

$$13.\ Y_i = \alpha + \beta * X_i + \varepsilon_i \ ;$$

$$14.\ Y_i = \alpha + \beta * X_i + \delta_1 * C_{i,1} + \cdots + \delta_n * C_{i,n} + \varepsilon_i \ ,$$

where Y_i is life satisfaction of an individual, X_i is an altruistic score of an individual, $C_{i,1}$ to $C_{i,n}$ are the additional control variables, ε_i is error term.

All in all, there will be 14 models in total. The first 9 models are the OLS models with and without fixed effects that explore the central variables of interest on the country or macro level. The last two models are based on individual-level data and study the relationship between the level of life satisfaction and the various proxies of altruistic behavior.

Results
Part 1. Macro-level

Firstly, the accompanying descriptive statistics of the macro dataset can be found in Table 1 below. In brief, the average proportion of people making donations in all countries through all years of observation is 43.81%. The 'positive' indicators of wellbeing are quite high: the average life expectancy is 80.47 years, average perceived health score is 70.23, and average happiness index is 6.60. Moreover, the average child mortality rate is 3.44 by 1000 of new-born, while the average world rate was 28.9 in 2018. In addition, the average yearly household income is 33,638.32\$. The high indicators be attributed to the fact the research was based on the sample of developed countries with high quality of life. Finally,

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the average proportion of women is 51.10%, the average proportion of elderly population is 17.27, the average unemployment rate is 8.56%, the average yearly alcohol consumption is 9.73 liters per person and the average proportion of daily smokers is 18.90%.

Next, the primary analysis of the relationship between the main variables of interest begins with correlation coefficients and their significance levels. The correlations between all variables used for the macro part of this research can be found in Table 1 below. The correlation coefficients allow to track the co-movements of the variables, the strength and direction of this relationship. Nevertheless, they are not enough to argue about causality, as correlation might be caused by the third factor that affects both variables.

To begin with, Table 1 shows that the correlations between the main variables of interest are mostly moderate and highly significant. In brief, the proportion of people involved in charity is significantly positively related to the main dependent variables: happiness index (r=0.81, p=0.00), life expectancy (r=0.45, p=0.00), perceived health score (r=0.68, p=0.00), which is in line with theoretical predictions. This means that the proportion of people making donations moves in the same direction with the 'positive' indicators of wellbeing. In other words, in a country, where the proportion of people making donations is higher, the level of wellbeing is higher as well, however, it is not possible to say if one of the factors cause changes in another. Donations are also positively correlated with average income (r=0.65, p=0.00), which corresponds to the fact that people with stronger financial means are more likely to make donations. Meanwhile, it is moderately negatively associated with the proportion of elderly people (r=-0.40, p=0.00), proportion of women (r=-0.66, p=0.00), unemployment rate (r=-0.47, p=0.00), alcohol consumption (r=-0.30, p=0.00) and the proportion of daily smokers (r=-0.67, p p=0.00). The found correlations follow an assumption that older people, females, alcohol consumers and smokers might earn less and be less able to donate.

All 'positive' proxies of wellbeing such as life expectancy, perceived health status, and happiness index, have a similar pattern of their correlations with the explanatory variables. First, they are all positively correlated between each other, which follows from the fact that they describe the same term – wellbeing. Next, they are positively related to average income (r=0.60, 0.60 & 0.80 respectively, p=0.00), which is related to the fact that wellbeing is largely dependent on financial situation of a country. They are also negatively associated with the proportion of women (r=-0.75, -0.80 & -0.74 respectively, p=0.00), unemployment rate (r=-0.12, -0.22 &-0.52, p=0.07, p=0.00, p=0.00 respectively), alcohol consumption (r=-0.52, -0.57 & -0.28 respectively, p=0.00) and the proportion of smokers (r=-0.41, -0.52 & -0.65, p=0.00). Perceived health and happiness index are negatively associated with the proportion of elderly population (r=-0.13 & -0.24, p=0.06 & p=0.00 respectively), which might indicate that health worsens with age, as well as the ability to enjoy life. Meanwhile, for life expectancy the association is positive (r=0.23, p=0.00).

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Finally, the correlations of infant mortality with the explanatory variables are opposite, as it is a 'negative' indicator of wellbeing. It is negatively associated with life expectancy (r=-0.47, p=0.00), happiness index (r=-0.11, p=0.10) and elderly population (r=-0.31, p=0.00). In addition, it is positively related to the proportion of women (r=0.25, p=0.00), unemployment rate (r=0.12, p=0.07), alcohol consumption (r=0.02, p=0.00) and the proportion of smokers (r=0.15, p=0.03).

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Table 1: Correlations between the macro-variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Population making donations, %	43.81	.19	1									
2. Life expectancy, years	80.47	2.53	.45***	1								
3. Perceived health, score	70.23	12.18	.68***	.69***	1							
4. Happiness index, score	6.60	.82	.81***	.55***	.69***	1						
5. Average income, *1000$	33,64	9881.15	.65***	.60**	.60***	.80***	1					
6. Infant mortality, by 1000	3.44	1.07	.07	-.47***	-.04	-.11*	-.11	1				
7. Elderly population, %	17.27	2.91	-.40***	.23***	-.13*	-.24***	-.05	-.31***	1			
8. Proportion of women, %	51.10	1.11	-.66***	-.75***	-.80***	-.74***	-.66***	.25***	.22**	1		
9. Unemployment rate, %	8.56	4.84	-.47***	-.12*	-.22***	-.52***	-.49***	.12*	.06*	.26***	1	
10. Alcohol consumption, liters	9.73	1.83	-.30***	-.52***	-.57***	-.28***	-.22***	.02***	-.21**	.52***	-.03	1
11. Daily smokers, % of population	18.90	4.19	-.67***	-.41***	-.52***	-.65***	-.53***	.15**	.24***	.57***	.48***	.39***

Note: *** Correlation is significant at the 0.01 level (2-tailed)
** Correlation is significant at the 0.05 level (2-tailed)
* Correlation is significant at the 0.1 level (2-tailed)

The next step is to explore the results obtained from simple and multiple regression models for the four dependent variables. As can be seen from Table 2 below, there are 12 models in total, so three for every dependent variable. To begin with, the simple linear regressions Models 2, 3 and 4 indicate that every percentage-point increase in the proportion of people involved in charity is associated with 0.42-point increase in perceived health (p=0.00), 0.03-point increase in happiness index (p=0.00) and

0.06-point increase in life expectancy (p=0.00). The observed relationships support hypotheses 2, 3 and 4. The coefficient of donations in Model 1 with infant mortality is insignificant. The explanatory power of the significant Models 2, 3 and 4 ranges from 20.20% to 66.11%.

The coefficients obtained from these naïve linear regressions are not reliable enough to argue about the effect of altruism on wellbeing. The central issue is the fact that the coefficients of donations level might be biased by numerous socio-economic factors, which affect wellbeing and altruism of a certain country at the same time. Therefore, the Models 5, 6, 7 and 8 account for several important confounders and estimate new regression coefficients of the level of altruism. This way, every additional percentage point increase in the proportion of people making donations is associated with 2.12-point increase in infant mortality (p=0.00), 21.57-point increase in perceived health (p=0.00), 1.57-point increase in happiness index (p=0.00), and 1.82-point increase in life expectancy (p=0.00). The R-squared associated with these models ranges from 29.35% to 81.77%. The results contradict the first hypothesis about the relationship between altruism and infant mortality but support the other three hypotheses.

The other control factors are associated with the variables of interest as follows. Every additional 1000 dollars of household income are associated with 0.02-point increase in infant mortality (p=0.06), 0.03-point increase in happiness (p=0.00) and 0.04-point increase in life expectancy (p=0.00). Every additional percentage-point in the proportion of elderly population is associated with 0.13-point decrease in infant mortality rate (p=0.00) and 0.40-point increase in life expectancy (p=0.00). Every percentage point in unemployment rate is associated with 0.03-point increase in child mortality (p=0.01), 0.01-point decrease in happiness (p=0.03) and 0.10-point increase in life expectancy (p=0.00). Every percentage-point increase in the proportion of women is associated with 0.57-point increase in infant mortality rate (p=0.00), 4.96-point decrease in perceived health score (p=0.00), 0.18-point decrease in happiness (p=0.00) and 1.55-point decrease in life expectancy (p=0.00). Every additional liter of alcohol consumption per capita is only associated with 1.54-point decrease in perceived health (p=0.00). Lastly, every additional percentage point in the proportion of daily smokers is only associated with 0.05-point increase in infant mortality (p=0.01).

Finally, the last four models exploited the advantage of panel data and accounted for the country- and time-fixed effects, besides the donations level and other confounders. In it important to mention that these models are the most convincing, as they allow to minimize the effect of omitted variable bias. However, Models 9, 10, 11 and 12 show that the proportion of people, who make donations in the country, lost its significance, and is not associated with any of the proxies of wellbeing. The possible explanation might be the fact that the unobserved factors captured by country and year fixed effects explain the measures of wellbeing used in this research, while the level of donations is not associated with them. Meanwhile, the adjusted R-squared of the corresponding models ranges from

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12.52% to 72.34%. The drop in R-squared is due to use of panel data type of regression analysis in the last four models and reporting the adjusted R-squared.

The other control variables are associated with the four proxies of wellbeing as follows. Every 1000 dollars of household income is only associated with 0.04-point increase in life expectancy (p=0.04). Every additional percentage point in the proportion of elderly population is associated with 0.55-point increase in perceived health score (p=0.08), 0.05-point increase in happiness (p=0.09) and 0.15-point increase in life expectancy (p=0.00). Every additional percentage point in the proportion of women is associated with 1.18-point increase in infant mortality (p=0.03), 2.49-point decrease in perceived health score (p=0.06) and 1.12-point decrease in life expectancy (p=0.00). Every additional percentage point in unemployment rate is associated with 0.08-point increase in infant mortality rate (p=0.01) and 0.05-point decrease in happiness (p=0.00). Every additional liter of alcohol consumed per capita is only associated with 0.95-point increase in perceived health (p=0.00). Finally, every additional percentage point in the proportion of daily smokers is not significantly associated with any proxy of wellbeing in the last four regressions.

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Table 2: OLS regressions of the proxies for wellbeing on the proportion of people making donations

Dependent variable	**Infant Mortality**						**Perceived Health Score**					
	Model 1		Model 5		Model 9		Model 2		Model 6		Model 10	
Independent variable	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Constant	3.28***	.16	-25.56***	5.21	-52.19**	26.34	51.71***	3.61	317.37***	27.43	188.36***	65.85
Donations	.37	.34	2.12***	.45	.16	.56	42.27***	1.94	21.57***	3.88	-1.76	2.68
Income, 1000$			.02*	.00	.000	.00			.04	.00	.11	.00
Elderly population			-.13***	.03	-.14	.09			.18	.24	.55*	.31
Proportion of women			.57***	.10	1.18**	.54			-4.96***	.55	-2.49*	1.32
Unemployment rate			.03**	.01	.08**	.03			.14	.11	.05	.12
Alcohol consumption			-.06	.05	-.18	.12			-1.54***	.34	.95***	.32
Daily smokers			.05***	.02	-.05	.04			.20	.15	.10	.12
Country fixed effects	-		-		YES		-		-		YES	
Year fixed Effects	-		-		YES		-		-		YES	
R^2/R^2 adjusted	.46%		29.35%		12.52%		46.60%		72.83%		17.58%	
F	1.20		16.43		161.56		137.30		144.58		15511.85	
Prob > F	.28		.000		.00		.00		.00		.00	
Number of observations	217		217		217		217		217		217	

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

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Table 2 continued: OLS regressions of the proxies for wellbeing on the proportion of people making donations

Dependent variable	Happiness Index						Life Expectancy					
	Model 3		Model 7		Model 11		Model 4		Model 8		Model 12	
Independent variable	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Constant	5.11***	.16	14.10***	1.99	18.18***	6.59	77.94***	.47	150.38***	6.14	134.48***	12.62
Donations	3.40***	.09	1.57***	.21	-.05	.20	5.79***	.81	1.82***	.60	.40	.34
Income, 1000$			.03***	.00	-.00	.00			.04***	.04	.04**	.00
Elderly population			.00	.01	.05*	.03			.40***	.04	.15***	.04
Proportion of women			-.18***	.04	-.22	.13			-1.55***	.12	-1.12***	.25
Unemployment rate			-.01**	.01	-.05***	.01			.10***	.02	-.00	.01
Alcohol consumption			.03	.02	.02	.03			.05	.06	-.06	.05
Daily smokers			-.01	.01	.00	.01			-.04	.03	.02	.02
Country fixed effects	-	-	-	-	YES		-	-	-	-	YES	
Year fixed Effects	-	-	-	-	YES		-	-	-	-	YES	
R^2/R^2 adjusted	66.11%		81.77%		31.17%		20.20%		75.39%		72.34%	
F	478.88		148.73		566.56		51.18		107.93		1864.86	
Prob > F	.00		.00		.00		.00		.00		.00	
Number of observations	217		217		217		217		217		217	

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

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Part 2. Individual level

The summary statistics of the individual-level dataset can be found in Table 3 below. In brief, the average altruistic score of all respondents is 2.82, while the average life satisfaction is 7.33. The proportion of males who completed the survey is higher than females – 68.71%. Next, the average age of the respondents is 41.95 years, the average income is 2391.44, and the proportion of married respondents is 70.07%.

The individual-level analysis of the relationship between altruism and wellbeing starts with the correlation coefficients in Table 3 below. As can be seen, there are not many significant correlations between the answers to the questions about altruism, life satisfaction and the control variables. As expected, life satisfaction is positively correlated with the altruism score (r=0.33, p=0.00), which indicates that life satisfaction and altruism co-move, however, it is not the evidence for causation. Furthermore, the altruistic score is positively associated with income (r=0.31, p=0.00), which might be attributed to the fact that people with higher income might have more opportunity to donate. Next, life satisfaction score is positively associated with multiple manifestations of altruism: giving money to charity (r=0.17, p=0.04), giving money to a stranger in need (r=0.30, p=0.00), making change for a stranger (r=0.16, p=0.06), helping to carry a stranger's belongings (r=0.16, p=0.06), delaying an elevator for stranger (r=0.14, p=0.10), allowing someone to go ahead of them in a lineup (r=0.20, p=0.02), offering a sit in public transport to a stranger (r=0.18, p=0.03), looking after neighbor's pets or children (r=0.19, p=0.02), pointing out a clerk's error (r=0.17, p=0.06), or doing volunteer job (r=0.33, p=0.00). Moreover, life satisfaction is also strongly positively correlated with income (r=0.72, p=0.00), which follows an assumption that stronger financial means are able to satisfy more needs of an individual and enhance his or her life satisfaction.

Next, the regressions of life satisfaction on the scores for questions about altruism from Table 4 below will allow to track the changes in life satisfaction associated with altruistic score. Model 13 does not account for the explanatory variables and shows that every additional point of altruistic score is associated with 7.5-point increase in life satisfaction score (p=0.00). The altruistic score explains 49.69% of the variation in life satisfaction of the respondents. Next, the model, which lowers the effect of omitted variable bias is Model 14. It accounts for several confounders in the relationship between altruism and life satisfaction. As can be seen, every additional point of altruistic score is associated with 4.64-point increase in life satisfaction score (p=0.00). Moreover, every additional 1000 dollars of income is associated with 0.4-point significant increase in life satisfaction. The explanatory power of Model 14 is 63.65%. The findings of these two models support the fourth hypothesis claiming that the combined result of various manifestations of altruistic behavior is associated with higher happiness or life satisfaction, showing that at individual and self-reported level in the developed countries.

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Table 3: Correlations between the individual-level variables

	Mean	SD	18	19	20	21	22	23
Question 1	3.33	.94	.24***	.17**	.00	.06	.13	.02
Question 2	2.83	.97	.32***	.30***	-.01	-.08	.30***	.14*
Question 3	3.33	1.08	.05	-.01	-.30**	.08	-.08	-.07
Question 4	1.64	.98	.25***	.13	-.11	.10	.09	.08
Question 5	2.26	1.02	.30***	.10	-.19	-.08	.02	-.01
Question 6	3.70	.78	.17**	.11	-.11	-.13	.13	-.06
Question 7	2.58	.95	.24***	.16*	-.01	-.12	.18**	.04
Question 8	2.79	.88	.25***	.16*	-.05	.01	.11	.05
Question 9	3.90	.83	.21**	.14*	-.03	.02	.14*	.10
Question 10	3.4	.83	.21**	.20**	.04	-.13	.21**	-.14*
Question 11	1.99	.98	.18**	.09	-.05	.01	.10	-.08
Question 12	2.3	1.04	.23***	.13	-.08	.18**	.03	-.03
Question 13	3.81	.83	.24***	.18**	-.10	-.04	.23**	.01
Question 14	2.73	.97	.31***	.11	-.11	.16*	.08	.05
Question 15	2.25	1.04	.19**	.19**	-.07	-.10	.09	-.05
Question 16	2.94	.91	.16*	.17*	-.22***	-.06	.05	.10
Question 17	2.32	1.18	.35***	.33***	-.01	.05	.21***	.14*
18. Altruistic score	2.82	.22	1					
19. Life satisfaction	7.33	2.33	.33***	1				
20. Gender, % male	68.71	.47	-.01	-.03	1			
21. Age, years	41.95	10.59	.05	-.06	.05	1		
22. Income, $ per month	2391.44	2684.69	.31***	.72***	.17**	-.02	1	
23. Marriage, % married	70.07	.46	.14*	.04	-.18**	.00	.04	1

Note: *** Correlation is significant at the 0.01 level (2-tailed)
     ** Correlation is significant at the 0.05 level (2-tailed)
     * Correlation is significant at the 0.1 level (2-tailed)

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Table 4: OLS regressions of individual life satisfaction on manifestations of altruism

Dependent variable	Life satisfaction			
	Model 13		Model 14	
Independent variable	b	SE	b	SE
Constant	-13.78***	1.69	-6.19**	3.11
Altruism	7.50***	.59	4.64***	1.13
Gender			.05	.34
Age			-.01	.01
Income (/1000)			.40**	.00
Married			-.19	.23
R²	49.69%		63.65%	
F	160.48		28.85	
Prob > F	.00		.00	
Number of observations	135		133	

Note: * p < 0.1, ** p < 0.05, *** p < 0.01

Discussion and Conclusion

One of the central questions of the modern research is wellbeing of the population and factors that determine it. Wellbeing is a broad term, which combines various physical, psychological, economic, social, and environmental aspects, which might enhance, as well as diminish one's quality of life (Lange & Joireman, 2008). Various rankings are published assigning scores to the countries with the highest quality of live, people are encouraged to participate in national surveys to explore the level of happiness, numerous researches investigate the level of life satisfaction. Governments all around the world design policies and regulations to satisfy most people of the population (Pholphirul, 2014). This requires constant development of the knowledgebase regarding the issues that prevent from having flourishing life for the greatest number of people.

Some of the determinants of wellbeing, such as income, health status, employment status, level of social security, level of democracy, or social connections are well-established and broadly researched (Pholphirul, 2014). Meanwhile, the mechanisms behind the psychological determinants of wellbeing remain vague (Post, 2005). According to the modern vision on wellbeing, the level of happiness or life satisfaction does not rely solely on satisfaction of individual's own needs and requests. It is suggested that a person's prosperity depends on his social status, the social connections, and the level of

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integration into the environment that he or she lives in (Kumar & Dixit, 2018). Moreover, the experimental evidence of Dictator games suggests that sharing wealth with others, despite having an opportunity to leave everything for themselves, is a popular way of behavior of the players. This argues in favor of a positive connection between sharing or inequality aversion and a feeling of satisfaction from the obtained result (Brañas-Garza et al., 2010). Voluntary provision of gratuitous help, sacrificing own selves in favor of another person, and actions focused on societal benefits which might contradict private, are united within the term Altruism (Brown et al., 2003).

This research tried to establish the link between altruism and multiple proxies of wellbeing on country-level and individual level of observation. The motivation of using two types of data is that aggregate-level data shows the effect of only one type of altruism – the proportion of people, who donate to charity in a certain country. Additionally, the individual-level data allows to track, which actions of altruism are indeed associated with one's life satisfaction. It allows to discuss the concept of altruistic behavior more broadly and decide, what type of behavior should be stimulated to enhance life satisfaction through altruism. Therefore, this section is dedicated to the interpretation of the findings of this study, theories that explain them, limitations of the chosen methods and recommendations for future research.

Interpretation of results

The first findings to discuss are the results of OLS models of the four proxies of wellbeing: infant mortality, perceived health status, happiness index and life expectancy on the level of donations on aggregate level. It is important to mention that within the framework of this research, the most convincing are Models 9, 10, 11 and 12, which include control variables as well as country- and year-fixed effects. The reason is that the strength of omitted variable bias, which leads to false conclusions about the relationship between dependent and independent variable, is lowest in these models. The theoretical predictions suggested that donations are a powerful source of extra budget that is spent on healthcare provision and support of socially weak groups of a population (Post, 2005). Therefore, it was assumed by the hypotheses 1, 2 and 3 that more donations are associated with lower level of infant mortality longer life expectancy and higher perceived health status. Moreover, altruism adds to the feeling of social integrity, develops social networks, lowers concern about social status, and is associated with empathic emotions from giving (Pholphirul, 2014). Therefore, hypothesis 4 predicted that the level of donations positively affects life satisfaction, proxied by happiness index, and perceived health status. The findings of all four regression argue that there is no significant relationship between the level of donations of a certain country and none of the wellbeing factors, similarly to the findings of Brown et al. (2003). The results do not allow to support, neither to reject any of the hypotheses of this research.

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One of the possible reasons that might explain such findings is reverse causality between wellbeing and the level of altruism. It goes without saying that in more developed countries with larger GDP per capita and higher quality of life, people have enough money to satisfy their private requests and start to think more about those in need, which brings the level of donations up. In order to tackle this issue in the future, more robust methods such as, for example, instrumental variable approach might be used. Another explanation might be the fact that the proportion of people who make donations indeed does not influence wellbeing on aggregate level, as the unobserved factor captured by the time- and country-fixed effects were found to vanish significance of the level of donations. As was mentioned before, the research is based on OECD countries, where the quality of life is already quite high, so the governments of those countries satisfy most of the population with their own sources, while donations do not add significant value to the level of wellbeing.

The individual-level study is based on the results of a survey, which asks people about the frequency of some altruistic actions in their lives. OLS Model 14 also controls for several demographic variable and is therefore more convincing to base the conclusions on. According to the findings, the majority of altruistic manifestations is indeed significantly positively associated with the reported level of life satisfaction of the respondents, similarly to Borgonovi (2008) and Pholphirul (2014). As can be seen from Appendix, there is no single type of actions, which has the highest value as a determinant of one's happiness. The results show that various manifestations of altruism, material, or non-material, are positively associated with happiness. Donating money or goods to a charity or to a stranger in need, various forms of non-material help, or support provided to other people have a significant positive association with life satisfaction on individual level. The findings approve hypothesis 4, which claimed that altruism is positively related to life satisfaction. The mechanisms behind this association have a deep psychological background. Primary, the process of giving might shift the attention of a person from what he or she lacks to what he or she has and teaches to appreciate it (Kumar & Dixit, 2017). Moreover, volunteering stimulates people to put aside their own problems, teaches to be more respectful to others, and lowers the level of selfishness (Post, 2005). The positive emotion evoked by helping others, loving-kindness and compassion are related to better mental health, which in turn, positively affects one's general wellbeing (Ricard, 2011). By volunteering, people feel more useful and even more human, which is an essential emotion for prosperous life (Fredrickson, 2013).

Limitations and Recommendations

The method chosen to analyze the macro-level data used for this research is multiple linear regression, where the coefficients of the independent variables are estimated using the Ordinary Least Squares method. Moreover, the models of all dependent variable were extended to include the country- and year-fixed effects, which enhanced the reliability of the findings. However, the methodology of this study has several important limitations. The fixed effects models allow to control for time-invariant

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country-specific and the year-specific changes in the dependent variables. Despite this, the models do not control for many unobservable time-variant factors, which affect the level of donations and wellbeing and are specific for each country. This way, the problem of omitted variable bias is not completely removed, meaning that the coefficients of the level of donations might not represent the true relationship between altruism and the wellbeing proxies used in this research. Therefore, the future research may account for more confounding factors, which affect wellbeing and the level of donations at the same time. Furthermore, the future studies should use more robust econometric techniques to study the topic. Next, there is a high chance of reverse causality between wellbeing and donations. For example, higher child mortality might stimulate people to donate to charity organizations, which provide healthcare to newborns with severe illnesses. Moreover, it is possible that people, who are happier or have a higher life satisfaction, are willing to share what they have and donate to charities, which enhances the level of donations. However, the other econometric methods, such as Instrumental Variable approach, can deal with reverse causality, which is recommended for the future research.

The individual-level data and the methodological approach for it also have some serious drawbacks. Primary to all, the central variable of interest – life satisfaction relies on a subjective evaluation of the respondents about their own lives. The problem is that the answer to the question about life satisfaction might be significantly affected by the recent events of one's life, which results in the imprecise estimates of life satisfaction. The future research may try to overcome this issue by evaluating the level of life satisfaction with a broader range of questions or by observing individuals during several periods of time to be able to account for individual fixed effects. Next, the method used to analyze this data is also multiple linear regression using OLS. Despite controlling for several demographic factors, the constructed model is likely to suffer from endogeneity bias. People, who possess certain traits such as helpfulness, kindness, sacrifice, or graciousness act in an altruistic way more often than others. Since it is nearly impossible to accurately conceptualize and measure all factors, which explain why people act altruistically, multiple linear regression will not produce unbiased coefficients for the effect of altruistic behavior on happiness. Moreover, there is a high chance of self-selection to participate in the survey. Therefore, altruistic people are more likely to fill it out, which results in a biased sample. This leads to several recommendations for the future studies. Primary to all, the researchers might try to lower the strength of bias by controlling for some personality traits, which might explain altruistic behavior. Next, an experiment may be conducted, where part of the participants is randomly assigned to volunteering work, and the level of happiness is compared between those who volunteer and those who do not.

Conclusions and Implications

This research further highlights the importance of studying the non-material determinants of wellbeing and the mechanisms behind them. This study did not establish significant association between

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altruism and wellbeing on aggregate level, however, several issues were highlighted, which gives ground for further investigation of the topic. From the other side, a link between altruistic behavior and life satisfaction on individual level was supported by obtaining significant positive relationship between the two. At the same time, the results need to be checked for validity by applying more robust statistical techniques to reach more convincing conclusions.

Altruistic behavior can be seen as a result of globalization, mental development of human beings, enhanced quality of life especially in the developed countries, and more attention paid to the psychological factors, which constitute one's wellbeing. From the other side, altruism by itself might result in higher levels of happiness or life satisfaction and development of positive personality traits. It helps to lower the detrimental effect of social inequality, stimulate people to care less about the relative income, unite people by extending their social networks, which are the important predictors of one's happiness. Altruism does not limit itself to helping those in need, donating food and clothes or volunteering in charity organizations. It also concerns global long-term aspects of life such as care about the environment, care about future generation and their wellbeing, saving the natural sources, ensuring prosperity of the economy in total by sacrificing own benefits. Therefore, governments of all countries should promote altruistic behavior and volunteering as the activities valued by the society and that may enhance the feeling of usefulness and make one's life more meaningful. Altruism should be perceived as a tool to achieve sustainable development in economy globally, as well as the way to reach inner peace and fulfillment of an individual personality. Finally, this research argues that the link between various manifestations of altruism and wellbeing is undoubted and quite deep. A more extensive research should be conducted to explore the causes of altruistic behavior, the character traits inherent for volunteers, their inner motivations, and beliefs.

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Appendix:

Q1: I have given money to a charity.

Q2: I have given money to a stranger who needed it (or asked me for it).

Q3: I have donated goods or clothes to a charity.

Q4: I have donated blood.

Q5: I have helped push a stranger's car out of the snow (dirt).

Q6: I have given directions to a stranger.

Q7: I have made change for a stranger.

Q8: I have helped carry a stranger's belongings (books, parcels, etc.).

Q9: I have delayed an elevator and held the door open for a stranger.

Q10: I have allowed someone to go ahead of me in a lineup (at Xerox machine, in the supermarket).

Q11: I have given a stranger a lift in my car.

Q12: I have let a neighbour whom I didn't know too well borrow an item of some value to me (e.g., a dish, tools, etc.).

Q13: I have offered my seat on a bus or train to a stranger who was standing.

Q14: I have offered to help a handicapped or elderly stranger to cross the street.

Q15: I have before being asked, voluntarily looked after a neighbour's pets or children without being paid for it.

Q16: l have pointed out a clerk's error (in a bank, at the supermarket) in undercharging me for an item.

Q17: I have done volunteer work for a charity.

Q18: How old are you?

Q19: Are you married?

Q20: What is your gender?

Q21: What is your income?

Reference list:

Argyle, M., 1997. Is happiness a cause of health?. *Psychology & Health*, 12(6), pp.769-781.

Bardsley, N. (2007). Dictator game giving: altruism or artefact?. *Experimental Economics*, *11*(2), 122-133.

Becchettia, L., & Degli Antoni, G. (2010). The sources of happiness: Evidence from the investment game. *Journal Of Economic Psychology*, *31*(4), 498-509.

Bland, J., & Altman, D. (1997). Statistics notes: Cronbach's alpha. *BMJ*, *314*(7080), 572-572.

Blazer, D. (1992). Social isolation among older individuals: The relationship to mortality and morbidity. In R. L. Berg and J. S. Cassells (Eds.), The second fifty years: Promoting health and preventing disability (pp.243–262). *Washington, DC: National Academy Press*.

Borgonovi, F. (2008). Doing well by doing good. The relationship between formal volunteering and self-reported health and happiness. *Social Science & Medicine*, *66*(11), 2321-2334.

Brañas-Garza, P., Cobo-Reyes, R., Espinosa, M., Jiménez, N., Kovářík, J., & Ponti, G. (2010). Altruism and social integration. *Games And Economic Behavior*, *69*(2), 249-257.

Brown, S. L., Nesse, R. M., Vinokur, A. D., & Smith, D. M. (2003). Providing social support may be more beneficial than receiving it: Results from a prospective study of mortality. *Psychological Science*, 14, 320–327.

Camerer, C. (2003). Behavioural studies of strategic thinking in games. *Trends In Cognitive Sciences*, 7(5), 225-231.

Carlo, G., Randall, B.A. The Development of a Measure of Prosocial Behaviors for Late Adolescents. *Journal of Youth and Adolescence* **31,** 31–44 (2002).

Caro, F., & Bass, S. (1997). Receptivity to Volunteering in the Immediate Postretirement Period. *Journal Of Applied Gerontology*, *16*(4), 427-441.

Charness, G. and Rabin, M., 2002. Understanding Social Preferences with Simple Tests. *The Quarterly Journal of Economics*, 117(3), pp.817-869.

Erasmus University Rotterdam

DeScioli, P., & Krishna, S. (2013). Giving to whom? Altruism in different types of relationships. *Journal Of Economic Psychology*, *34*, 218-228.

Fehr, E., & Schmidt, K. (1999). A Theory of Fairness, Competition, and Cooperation. *The Quarterly Journal Of Economics*, *114*(3), 817-868.

Fredrickson, D. (2013). The Justice of Faith. *Dialog*, *52*(2), 121-127.

House, J. S., Robbins, C., & Metzner, H. (1982). The association of social relationships and activities with mortality: Prospective evidence from the Tecumseh Community Health Study. *American Journal of Epidemiology*, 116, 123–140.

Hunter, K. I., & Linn, M. W. (1980). Psychosocial differences between elderly volunteers and non-volunteers. *International Journal of Aging and Human Development*, 12, 205–213.

Kahana, E., Bhatta, T., Lovegreen, L., Kahana, B. and Midlarsky, E., 2013. Altruism, Helping, and Volunteering. *Journal of Aging and Health*, 25(1), pp.159-187.

Kawachi, I., Colditz, G. A., Ascherio, A., Rimm, E. B., Giovannucci, E., & Stampfer, M. J., et al. (1996). A prospective study of social networks in relation to total mortality and cardiovascular disease in men in the USA. *Journal of Epidemiology and Community Health*, 50, 245–251.

Kumar, P., & Dixit, C. (2018). Radiology and radiation therapy. *Physics & Astronomy International Journal*, *2*(6).

Leung, A., Kier, C., Fung, T., Fung, L., & Sproule, R. (2010). Searching for Happiness: The Importance of Social Capital. *Journal Of Happiness Studies*, *12*(3), 443-462.

Lindbeck, A., & Nyberg, S. (2006). Raising Children to Work Hard: Altruism, Work Norms, and Social Insurance. *Quarterly Journal Of Economics*, *121*(4), 1473-1503.

Musick, M. A., & Wilson, J. (2003). Volunteering and depression: the role of psychological and social resources in different age groups. *Social Science & Medicine*, 56, 259-269.

Nixon, J., & Ulmann, P. (2006). The relationship between health care expenditure and health outcomes. *The European Journal Of Health Economics*, *7*(1), 7-18.

Penner, L. A., & Finkelstein, M. A. (1998). Dispositional and structural determinants of volunteerism. *Journal of Personality and Social Psychology, 74*(2), 525–537.

Pholphirul, P. (2014). Happiness from Giving: Quantitative Investigation of Thai Buddhists. *Applied Research In Quality Of Life*, *10*(4), 703-720.

Post, S. (2005). Altruism, happiness, and health: it's good to be good. *International Journal Of Behavioral Medicine*, *12*(2), 66-77.

Ricard, M. (2011). The Dalai Lama: Happiness through wisdom and compassion. *International Journal Of Wellbeing*, *1*(2), 274-290.

Rushton, J., Chrisjohn, R., & Cynthia Fekken, G. (1981). The altruistic personality and the self-report altruism scale. *Personality And Individual Differences*, *2*(4), 293-302.

Sen, A., 1994. The Formulation of Rational Choice. *The American Economic Review*, Vol. 84, No. 2, pp.385-390.

Swift, R. (2011). The relationship between health and GDP in OECD countries in the very long run. *Health Economics*, *20*(3), 306-322.

Thoits, P. A., & Hewitt, L. N. (2001). Volunteer work and well-being. *Journal of Health and Social Behavior*, 42(2), 115-131.

Van Lange, P., & Joireman, J. (2008). How We Can Promote Behavior That Serves All of Us in the Future. *Social Issues And Policy Review*, *2*(1), 127-157.