



universität
wien

MASTERARBEIT / MASTER'S THESIS

Titel der Masterarbeit / Title of the Master's Thesis

„Individual attitudes towards income inequality
– the case of Hungary, Sweden, and the UK“

verfasst von / submitted by

Viktor Olivér Gyetvai

angestrebter akademischer Grad / in partial fulfilment of the requirements for the degree of
Master of Arts (MA)

Wien, 2022 / Vienna 2022

Studienkennzahl lt. Studienblatt / degree
programme code as it appears on the
student record sheet:

UA 066 642

Studienrichtung lt. Studienblatt / degree
programme as it appears on the student
record sheet:

Masterstudium Philosophy and Economics

Betreut von / Supervisor:

Univ.-Prof. Dipl.-Vw. Monika Gehrig-Merz, PhD

Table of contents

1. Introduction.....	1
2. Motivation and literature review	2
3. Philosophical theories on inequality and distributive justice.....	5
4. Empirical analysis	9
4.1. Hypotheses.....	9
4.2. Data.....	10
4.3. Methods	18
4.4. Econometric model.....	19
4.5. Results	21
5. Critical reflections.....	28
5.1. Technical reflections.....	28
5.2. Theoretical reflections	29
6. Conclusion	30
7. List of references.....	32
8. Appendix.....	36

Individual attitudes toward economic inequalities

– the case of Hungary, Sweden, and the UK

1. Introduction

There is an intensifying discussion on economic inequality and distributive justice (notable works include Rawls 1971, Nozick 1973, Dworkin 1981, Cohen 1992, Sen 1992). In 2016, 20% of global income was received by the top 1% of the population, while only 10% was received by the bottom 50% (Alvaredo 2018). The phenomenon of within-country economic inequalities of a similar degree seems to be especially interesting when most of the population expresses a preference in favour of the reduction of economic inequalities in a representative democracy. To explore some potential reasons for the (non-)persistence of high levels of economic inequality in democratic countries, I argue that we need to understand what determines individual attitudes towards economic inequalities and redistribution.

In my thesis, I aim to present some relevant theories on distributive justice and investigate the extent to which household income and other observable socio-economic factors influence attitudes towards economic inequality and redistribution. Using cross-tabulations and regression analysis on cross-sectional micro level survey data from 2002 and 2018 provided by the European Social Survey¹, I study the case of Hungary, Sweden, and the UK. I find that there is a large gap between attitudes in Hungary and the two other countries, with Budapest showing a strong support for redistribution despite its high GDP per capita figure. In Sweden, I observe a surprising trend that respondents with higher income levels tend to support redistribution significantly more than individuals in the lowest income quintile, which needs further investigation on a larger sample of individuals.

My thesis contributes to the growing literature on economic inequality, equity, and redistribution by providing an empirical analysis on the gap between attitudes of citizens (with different household income levels) towards income redistribution in three European countries representing three distinct traditions² of Europe. It also re-examines the aftermath of

¹ These data are available on a bi-annual basis.

² Hungary represents post-socialist Eastern European countries, Sweden represents Scandinavian welfare states, and the United Kingdom represents western liberal democracies. Further justification for why I chose these three countries can be found in Section 4.2.1.

the socialist era on such attitudes 30 years after the changes of political regimes in Eastern Europe.

My thesis proceeds as follows. In section 2, I present my motivation for researching this topic and introduce a brief overview of the existing literature in the context of my thesis. In section 3, I summarise some relevant philosophical theories on inequality. In section 4, I conduct an empirical analysis based on publicly available survey data provided by the European Social Survey (2002, 2018) to test my hypotheses and display the results of my analysis. In section 5, I critically reflect on what I have done so far including the limitations of this study. Section 6 concludes my thesis.

2. Motivation and literature review

Why would someone reject the idea of reducing (income) inequality at all if it could help many people living under inhumane conditions? There are several arguments and theories that may explain this phenomenon. Let me present three of them briefly.

The first one is short-term self-interest. The most common way in which governments redistribute income is via the tax system. Redistribution generally implies that people with higher pre-tax income pay higher taxes. Higher earners' immediate self-interest provides a reason to oppose redistributive measures.

The second one is a lack of trust with respect to the state's capacity to be the most efficient intermediary of redistribution. Even when a well-off person believes that she/he has a moral duty to help fellow citizens experiencing economic hardships, she/he might fear that some part of the contribution she/he pays to the state administration gets lost within the system (e.g. due to administrative costs, corruption, etc) and only a fraction of it is spent on helping those in need. As **Okun (1975)** put it – as a metaphor of a leaky bucket – in his widely known book, redistributed financial resources may “simply disappear in transit, so the poor will not receive all the money that is taken from the rich” (p. 91). Therefore, one might prefer to give direct donations to charity organisations or families in need instead of paying higher taxes to the government.

The third one is another aspect of Okun's leaky bucket and is thus closely related to the second one. There is a general assumption – about which anyone who seeks to increase the

total well-being of society³ would care – that is quite often mentioned by some economists (and corroborated by neoclassical economic theory) is that there is a *trade-off between efficiency and equity*⁴, so that these two cannot go hand in hand. According to this supposition, one cannot help the poor or reduce inequalities without paying its economic costs (e.g., some adverse consequences on the total well-being of society), and this way, urging a lower level of inequality will hamper *economic growth and efficiency*. In contemporary economic theory, it makes perfect sense, while it is hard to make a general and definitive verdict for or against it on real-world empirical data. Nevertheless, in the next sub-section, I will present some recent findings on the (non-)existence of this trade-off.

In my thesis, I have no intention of designing any policy proposals that could handle these three objections – for instance, which could theoretically reduce inequalities without any economic loss on the level of the whole society. Instead, I would like to elicit the main determinants that shape individuals' attitudes towards income redistribution. A better understanding of personal motivations could – in the long run – help us to discover if people tend to base their standpoint mainly on ethical grounds (e.g., whether they feel a duty to help others in trouble); because of a distrust of the government; based on the attitudes or the well-being of their environment; mostly following financial self-interest; or some other factors.

Trade-off between efficiency and equity

There are many investigations in the contemporary and recent scientific literature on whether the trade-off between *growth and equity* or *efficiency and equity* (mentioned as the third point in the previous subsection) really exists.

Some reject the idea of such a trade-off based on empirical data. For example, **Røed & Strøm (2002)** present three counterbalancing factors and argue that this trade-off is not inevitable. Analysing a panel of 104 countries during the period 1970-2010, **Brueckner & Lederman**

³ As an interesting piece of finding from the aspect of the well-being of the whole society, Verme (2011) shows that income inequality can even have a significant negative effect on life satisfaction. Furthermore, Wilkinson and Pickett (2010) argue that in wealthy countries, income inequality causes several social and health problems such as under-achievement in education, lower life expectancy, infant mortality, more teenagers giving birth to a child, higher levels of obesity, decline in public safety. Interestingly, they point out that such problems are more strongly caused by relative than absolute deprivation (Marquez 2011).

⁴ „Any insistence on carving the pie into equal slices would shrink the pie. That fact poses a trade-off between economic equality and efficiency.” (Okun 1975, p. 48)

(2015) find that on average, income inequality has a significant negative impact on transitional GDP per capita growth and the long-run level of GDP per capita. However, this effect takes very different values depending on the level of economic development – in poor countries, income inequality even has a significant positive effect on GDP per capita. Third, examining data on the OECD countries over 30 years, **Cingano (2014)** concludes that income inequality has a significant negative effect on subsequent economic growth, with the difference between low-income households and the rest of the population being the most important predictor. However, he finds no evidence that extremely well-off individuals pulling away from the rest of the population would have a harmful impact on growth. Fourth, **Berg & Ostry (2011)** find that if we examine growth in the long term, there may not be a trade-off between efficiency and equality. Finally, **Ostry, Berg & Tsangarides (2014)** analyse the link between growth, inequality, and redistribution on a large sample of developed and developing countries using pre-tax and post-tax inequality. They find that – controlling for the level of redistribution – a lower level of net inequality is correlated with faster and more durable growth, controlling for the level of redistribution; and that inequality impacts economic growth mainly via channels of human capital accumulation and fertility.

Some other authors like **Neves & Silva (2014)** take a more nuanced standpoint, arguing that a single, global pattern for the effect of inequality on growth does not exist, and therefore, researchers should put more emphasis on estimating this relationship on a regional or national level.

There are a wide range of papers that corroborate the existence of such a trade-off, and I shortly present the conclusion of the two most recent of these. With an aim to disprove earlier pieces of literature that deny the existence of a trade-off between efficiency and equity, in the period 1970-2014, **Andersen & Maibom (2020)** find that in most OECD countries, a larger tax burden is accompanied by higher level of equity and lower level of efficiency. As another instance, in a large panel of countries during the period 1965–2010, **Woo (2020)** finds that redistribution can involve a trade-off between equity and economic growth.

Based on these controversial results in the literature, it seems to me that the trade-off between equality and economic efficiency may or may not exist depending on some external conditions or the level of economic development of a country or region. In my thesis, I take the advice of **Neves & Silva (2014)** and focus on only three selected countries in my empirical analysis.

The case of Hungary, Sweden, and the UK

Turning to the three countries that I analyse in my thesis; I briefly present some existing results from the literature that are relevant to some of my hypotheses.

Regarding my first hypothesis on the effect of the socialist era, two papers find that in the 1990s, people living in Central and Eastern Europe (post-socialist countries) expressed significantly more egalitarian attitudes than those people who live in countries of Western Europe (**Redmond, Schnepf & Suhrcke 2002; Simkus & Robert 1995**). However, if we look at changes of attitudes over time in post-socialist countries, there are some contradicting results. For instance, **Austen (2002)** found that the tolerance of inequality was increasing in Hungary and Poland, **Alesina & Fuchs-Schündeln (2007)** discovered a similar trend in East Germany, suggesting that East Germans tend to support state intervention more than West Germans, but their attitudes could equalize after one or two generations. However, **Simkus & Robert (1995)** found that the tolerance of inequality did not change significantly in Hungary.

Comparing Sweden and the United Kingdom, **Svallfors (1993)** shows that people living in Sweden do not seem to be more leftist than citizens living in the UK and show much more significant age group differences regarding attitudes in the UK compared to Sweden.

Exploring some potential reasons for observed geographic dispersion of attitudes towards inequality, **Kuhn (2019)** and **Redmond, Schnepf & Suhrcke (2002)** find that people living in post-socialist countries tend to think that income level is not determined by meritocratic principles. Examining the impact of social mobility as well, **Steele (2015)** shows that people living in a country with greater social mobility support redistribution more, however, those individuals who benefit from upward mobility tend to support redistribution less.

3. Philosophical theories on inequality and distributive justice

In this section, I am going to present a non-exhaustive overview on some theories of distributive justice, inspired by Roemer's (1998) book.

Inequality – useful or harmful; fair or unfair?

Contrary to the widely held belief according to which Adam Smith considered inequality to be an essential and natural consequence of a soaring economy (since inequality may promote a higher level of efficiency of production), **Rasmussen (2016)** claims that Smith instead treated economic inequality as a double-edged sword, also articulating his concerns about

oppressive inequalities. According to Rasmussen, Smith emphasized that higher inequalities could make individuals feel a higher level of sympathy towards wealthier people, undercutting the morality and happiness of the whole society. Following a more careful reading of the *Wealth of Nations* (1776), Rasmussen elaborates, that in Smith's view, a proper measure of the wealth of a nation should be based on the revenues of the *labouring poor* instead of the property of the wealthy few or the king's treasury.

Not denying these concerns⁵, **Walraevens (2021)** adds that Smith cared more about the underlying reasons and sources of inequalities rather than their consequences. According to his interpretation of Smith's account, *natural* inequalities that arise from education, talents, or individual risk-taking should be regarded as efficient and *fair* since they can be derived from reasonably unequal earnings and may increase economic prosperity. By contrast, *artificial* or *unfair* inequalities emerge from government regulations and laws that restrict perfect liberty and prevent people from exercising their right to compete freely on the market and follow their own interest. In Walraevens' reading, Smith regarded fair and natural inequalities as useful since the wealth arising from prosperity can trickle down to those in need as well⁶; because of the hierarchy that follows from inequality maintains a stability of the society; and because inequality strengthens the natural competition between people in trading. Thus, according to this interpretation, it seems that Smith's distinction between fair and unfair inequality may offset his thoughts about some adverse effect of inequality, so that he stands mainly for the intact freedom of individuals regarding their trading activities.

Should we care more about the extent or the source of inequalities?

One of the most important parts of **John Rawls' (1971)** theory of justice is the difference principle that wishes to find an optimal level of inequalities that maximises lifetime expectations (measured in income and wealth) of the least advantaged members of the society. Thus, the difference principle only endorses inequalities which do not make the least advantaged class worse-off or even make them better-off. In general, Rawls (1999, p. 142)

⁵ Walraevens (2021) mostly agrees with the existence of this objection of Smith, but he puts it a bit differently. According to his interpretation, Smith emphasized that larger inequalities may increase social distance, weaken the sympathy of rich towards the poor, and endanger the social bonds and morality of a political community – in short, they may cause a *corruption of our moral sentiments*.

⁶ As Hont & Ignatieff (1983) pointed out, Smith justified this claim in *The Wealth of Nations* by giving an example of a diligent and thrifty peasant who could live better than an African king having control over the liberty and life of several thousands of servants. For more details on this, see Smith (1776/2010) I.i.11.

argues that it is acceptable that people with distinct talents receive different wages and that some inequalities are essential for the society as they provide incentives to make more effort and reach a higher level of production.

I shortly present two points of criticism articulated about Rawls' difference principle. One of them claims that in the framework of Rawls' theory, individuals can intentionally (and undeservedly) choose to be part of the least advantaged class⁷ of the society in order to gain benefits that are justified by the difference principle. **Schaller (1998)** makes an effort to reject this objection by articulating that the difference principle refers to lifetime expectations of typical individuals who belong to this class and argue that applying the difference principle do not discourage people from working, and therefore, it is irrelevant to determine who merits assistance within the least advantaged class.

Another point of criticism is articulated by **Cohen (1992)**, who argues that it is usually quite difficult to prove that the removal of a particular inequality would not benefit the least advantaged members of the society, and that the logic of Rawls' incentive-based argument for inequalities can be morally problematic⁸.

Contrary to Rawls, **Nozick (1973)** concentrates on *how* an income distribution is created instead of the extent of actual inequalities. Also called as an *entitlement theory* of justice, in his account, a distribution of wealth is essentially fair if all individuals are legitimately entitled to what they own. As Nozick puts it, inequalities between the *holdings* of individuals are necessarily fair if they arise from another (fair) distribution by legitimate means⁹.

⁷ The least advantaged class is not clearly defined in Rawls' theory, but he makes some attempts to define this class by assigning a wealth and wage limit to that of an average unskilled labourer or half of the median wealth and wage of the society.

⁸ As a metaphor to the situation that poor might worry that a higher tax rate will make rich people work less, he introduces an imaginary situation with parents who must pay to a kidnapper to avoid losing their child. "Children should be with their parents. Unless they pay him, this kidnapper will not return this child to its parents. So, this child's parents should pay this kidnapper." (Cohen 1992, p. 276). In this example, parents can prevent something bad (of greater importance) happening by paying, but the whole problem (as a threat) seems morally questionable. Cohen argues that this is also valid for the problem of the poor.

⁹ He also defines these three legitimate means in detail (Nozick 1973, p. 47).

Equality of opportunity and equality of outcome

Dworkin (1981) makes a clear distinction between a person's endowments (an external factor over which she/he has no influence) and preferences. He argues that a desirable form of equality would provide individuals with equal endowments but tolerate differences that stem from choices (made on a basis of individual preferences). As a result, people could be held responsible for their *preferences* and not their initial resources¹⁰.

The core idea of Dworkin's theory¹¹ lies in the distinction between factors for which an individual is responsible and others for which she/he is not responsible. **Roemer (2002)** also assigns telling labels to these categories: responsible factors and arbitrary factors (p. 456). In the framework of Dworkin's theory, an attractive notion of equality would equalise individuals' resources that arise from arbitrary factors and tolerate differences that arise from responsible factors.

Roemer (2002) considers such responsible and arbitrary factors essential to the notion of equality of opportunity. In his metaphor, he describes available outcomes as results of policy, circumstances, and personal effort. Here, policy depicts the impact of society on outcomes, circumstances denote an individual's actions and environment for which one cannot be held responsible, while personal effort aggregates all personal actions for which one should be held responsible. Assuming that the "playing field" is unequal (so that some individuals suffer some disadvantage in a way that they can only attain a lower level of welfare) as a result of different circumstances, a policy that wishes to provide equal opportunities adjusts the playing field such that personal effort becomes the only determining factor of outcome (e.g., the level of well-being that they achieve). As a result, differences might still arise, but exclusively arising from the level of personal effort made. Of course, this is distinct from an account in favour of the equality of outcome.

¹⁰ Roemer (2002) mostly supports this approach but also notes that it is quite difficult to distinguish between resources and preferences since resources often have a significant effect on preferences.

¹¹ Scheffler (2003) treats Dworkin as a representative of luck egalitarianism. However, Dworkin (2003) rejects this idea, arguing that his theory only claims that luck should play a less significant role in determining the distribution of income within the society, which is a less extreme standpoint than luck egalitarianism in Scheffler's interpretation, which suggests that inequalities that arise from unchosen attributes of an individual's circumstances are essentially unfair. More about luck egalitarianism can be found in Anderson (1999).

Should we measure inequality in terms of money at all?

There are two normative claims that are central to Amartya Sen's capability approach (Sen 1992, 1999). The first one states that the freedom to attain well-being is morally important, while the second one asserts that we should interpret well-being from the aspect of functionings and capabilities.

Focusing on the second claim, capabilities are understood as achievable actions and statuses (e.g., getting highly educated, participating in politics, living to old age, getting married, etc.), with other words, *substantive freedoms*¹² (contrary to formal freedoms and formal rights). Using this definition, functionings are understood as already accomplished capabilities. The ability to transform personal resources to a functioning is strongly conditional to some *conversion factors*, such as individual¹³ or socio-political circumstances. In the framework of this approach, being poor is interpreted as a deprivation of capabilities since poverty restricts the range of choices that are available to an individual (Robeyns & Byskov 2011).

In other words, people's ability to convert their income into actual opportunities can be highly different. As a result, the quantity of money that is available for an individual is a weak measure of one's quality of life. For instance, even two people with an equal level of financial resources could face two completely different standard of living due to one of them being physically disabled (Philips 2004). Therefore, this approach proposes focusing on what an individual can afford to do using such resources instead of one's mere financial resources.

4. Empirical analysis

In my empirical analysis, I aim to investigate the following research question: What factors influence individual attitudes toward economic inequality and redistribution? To which extent do they differ in Hungary, Sweden, and the UK? Is there a significant relationship between such attitudes and individual well-being?

4.1. Hypotheses

In this analysis, I will examine three main hypotheses.

¹² The capability approach bases its notion of well-being on such functional capabilities (or substantive freedoms) instead of utility, happiness, or access to resources.

¹³ Such differences could include gender, age, disabilities, special talents, inclination of becoming ill, etc. For more on this issue, see Sen (1999), p. 69.

Hypothesis 1: First, I expect that those generations of Hungarians who experienced the era of socialism in Hungary (=who were at least 18 years old before the regime change in 1989) hold more egalitarian attitudes than later generations. I also expect that such cross-cohort differences are less pronounced in Sweden and the UK. Comparing data from 2002 and 2018, I also suppose that these cross-country differences become weaker over time.

Hypothesis 2: Second, I expect that in regions with higher per capita GDP, individuals show less dismissive attitudes towards economic inequalities.

The intuition for this hypothesis is that absolute poverty (people being deprived of basic needs) is expected to be more prevalent in regions with lower per capita GDP. The proximity of people with high degree of material deprivation can be expected to trigger more empathy in the general population.

Hypothesis 3: Third, I expect to find a strong relationship between individual economic well-being and individual preferences for income redistribution.

In this respect, I also expect non-monotonicity in the upper half of the income distribution. I also aim to identify some potential background factors that have a significant impact on attitudes towards income inequality. As a general aim of my thesis, I would like to explore the underlying factors of such individual attitudes, identifying groups of individuals who stand strongly in favour of or against redistribution.

4.2. Data

The empirical analysis is based on micro-level data from the European Social Survey (ESS). These waves of *cross-sectional data* have been collected bi-annually since 2002 in more than 20 European countries. They have been collected through face-to-face computer-assisted personal interviews.

In the ESS dataset, there are more than 500 variables. Even though it is not a panel dataset (so that not the same individuals are asked in different waves of the survey), we still have an identification number for all respondents, and therefore, their individual characteristics (e.g., socioeconomic status) can be studied in detail as micro-level data.

The source questionnaire contains core modules that are present in each round and rotating modules that are changing between the different rounds, reflecting current social issues.

Core modules include information on respondents' media and internet use, social trust, political views, household information (size, composition, and income level of household; gender and age of household members), subjective well-being, religion, national and ethnic identity, socio demographic profile (gender and age, marital status, number of children, level of education, health condition, occupation), attitudes to human values, and attitudes to social and fairness issues (including income inequalities). Rotating modules include topics such as immigration, citizen involvement and justice and fairness in Europe (ESS 2018).

According to ESS sampling strategy, respondents are selected using strict random probability methods. The country-level samples aim to be representative for all people aged 15 or more living in a private household (regardless of their language, citizenship, or nationality). Moreover, it is not allowed to substitute non-responding individuals or households. Also, a minimum sample size of 1,500 respondents must be obtained in each country (except for countries with less than two million residents). All in all, the data is representative for each country that I aim to study.

Regarding data collection, a survey organisation and a National Coordinator are appointed by the national funding agency in each participating country. The survey organisation must conduct the survey in accordance with the ESS Specification. There are some key points within this specification. First, the fieldwork period consists of no less than 6 weeks between September of the survey year and January of the next year. Second, the general target of response rate is 70% and the target of non-contact rate is 3% at most. Third, interviewers must attempt to contact prospective respondents at least four times, of which at least once at the weekend and once in the evening. (ESS 2018)

4.2.1 Sample

In my analysis, I look at the first and last wave of the European Social Survey to be able to explore some changes over time in individual attitudes towards income redistribution. Therefore, I examine two snapshots of the survey: 2002 and 2018.

The 2002 sample contains 42,359 observations with 566 variables from 22 European countries. The sample of 2018 is a bit more extensive: it contains 49,519 observations with 572 variables from 29 European countries.

Hungary, Sweden, and the UK

The focus is restricted to 3 countries representing three distinct regions of Europe: Hungary, a post-socialist Eastern European country; Sweden, a Scandinavian welfare state; and the United Kingdom, a western liberal democracy.

There are four main reasons for choosing these three countries. First, attitudes are usually endogenous, and I assume that the attitudes of the citizens of these three countries with very distinct cultural and economic profiles¹⁴ are formed differently, which may help me to identify some underlying social reasons for individual attitudes. Second, Hungary represents post-socialist Eastern European countries, where people are expected to express more egalitarian attitudes. Third, Sweden represents Scandinavian welfare states, where income disparities are typically low, and which provide their citizens with a wide range of social benefits. Fourth, the United Kingdom represents western liberal democracies with a lower level of redistribution and a higher level of income inequalities.

I would expect that the three traditions represented by these three countries have clearly different attitude towards inequalities and government spending.

Western (liberal) democracies are usually described as economies with free market capitalism, low tax rates and a relatively low level of social transfers. We can expect that their citizens are less concerned about income inequalities.

Scandinavian welfare states, being highly democratic and having a market-based mixed economy, typically aim to promote social mobility by providing a strong social safety net for citizens, financed through higher tax rates. One can expect that their citizens are somewhat more concerned about income inequalities, but there may be a phenomenon of reverse causality (e.g., people could be less concerned about income inequalities due to a relatively lower level of inequality, higher level of well-being, and the social safety net working well).

Post-socialist European countries are typically described as not consolidated democracies (sometimes even hybrid regimes). Free market capitalism is quite a new arrangement for their citizens, and therefore, these countries may still show the aftereffects of the socialist era. Because of the relatively lower level of per capita GDP in these countries, poverty or

¹⁴ For instance, the latest Gini-coefficient was 0.275 in Sweden, 0.289 in Hungary and 0.366 in the UK. (OECD, 2021a)

underqualification challenges more often these countries, and their citizens might be the most concerned about income inequalities out of the three groups of countries.

Prime-age individuals

Within the two snapshots of 2002 and 2018 concerning the three countries, I decided to focus mostly on the prime-age individuals (respondents who are between 25 and 54 years old) within my sample. These individuals are potential active workers and will directly bear the consequences of income redistribution. Individuals within this age group have typically already finished their education, but retirement is not yet an option for them.¹⁵

4.2.2 Key variables

a) Target variable

Attitude towards income redistribution

The outcome variable used as the main dependent variable in regression analysis (and cross-tabulations) is an ordinal (1-5 scale) variable measuring respondents' attitudes about income redistribution. In particular, respondents are asked about the extent to which they agree with the following statement: *The government should take measures to reduce differences in income levels*. This variable is coded as: (1) Agree strongly, (2) Agree, (3) Neither agree nor disagree, (4) Disagree, (5) Disagree strongly. Therefore, higher values denote higher levels of tolerance towards income inequality, that is, a lower level of preference for income redistribution.

b) Individual-level explanatory variables

How education is measured

There is a difference between the sample of 2002 and 2018 in this regard (and some other variables as well). Most importantly, for the 2002 sample, the level of parents' education is not internationally comparable since all observations from Sweden are categorized as "not harmonizable".

¹⁵ Considering the issue of retirement, I could have also simply removed retired respondents from older age groups to keep more observations in the sample, but unfortunately, that could have caused selection bias: I assume that it is not caused by random chance whether someone retires at the age of 55 or 70, for instance.

However, there is a standardized measure in the 2018 sample for both mother's and father's education, based on the International Standard Classification of Education (ISCED)¹⁶. As a supplementary variable, we also have information about the number of years that respondents spent in full-time education.

In order to simplify the analysis (and facilitate the possibility of interaction with other variables), in the sample of 2018, I also created a new variable for *father's education* consisting of only three different education levels: uneducated, educated and highly educated. These levels are based on ISCED categories and are roughly compatible to the distinction of less than completed high school (uneducated), completed high school or bachelor's degree (educated), higher than bachelor's degree (highly educated).

Income

Measuring income in survey data often proves to be a serious challenge since income is a very personal and sensitive type of data, thus many people do not intend to share her/his level of income (non-response) or be unwilling to admit very low and/or extremely high wages (measurement error).

In the case of the 2018 sample, household income *decile* information of most respondents is available: for each country, the income decile ranges are determined in advance by ESS, and respondents only have to categorise themselves into one of the ten available income ranges¹⁷. The large number of missing values for this variable (which can be explained by many respondents' unwillingness to share sensitive or personal information) constitutes a major challenge. In order to obtain as much information about respondents' (and their household's) financial situation as possible, I complement the household income decile variable with information provided by the ESS about respondents' feeling about their household income, available as an ordinal variable (on a 1-4 scale, where 1 denotes very difficult to cope, 4 denotes living very comfortably) with much fewer missing values.

¹⁶ It contains the following 7 levels: ES-ISCED I (less than lower secondary), ES-ISCED II (lower secondary), ES-ISCED IIIb (lower tier upper secondary), ES-ISCED IIIa (upper tier upper secondary), ES-ISCED IV (advanced vocational, sub-degree), ES-ISCED V1 (lower tertiary education, BA level), ES-ISCED V2 (higher tertiary education, >=MA level).

¹⁷ In the data of 2002, the situation is slightly different: household income is not measured in income deciles (10%), instead, the income distribution is divided into twelve categories. Also, there are no observations in this variable in Hungary in the sample of 2002.

Town size of domicile

In cross-tabulations identifying groups of individuals who are most or least in favour of income redistribution, I plan to include respondents' *town size of domicile*, which is an ordinal variable on a 1-5 scale (where 1 stands for *farm home in countryside* and 5 stands for *big city*).

c) Regional and country-level explanatory variables

Gini-coefficient

I use the Gini-coefficient as the country-level measure of income inequality. The Gini-coefficient provides a standardised measure for the level of income inequality in a particular society (in most cases, a country). In short, it compares the cumulative proportions of the population and the cumulative fraction of income that they earn (OECD, 2021a). The value of the Gini-coefficient ranges from 0 (perfect equality) to 1 (perfect inequality).

The ideal would be to use the Gini-coefficient estimates provided by the OECD (2021a) as they are relatively stable over time. Unfortunately, there is no available estimates for the years around 2002 for Hungary and Sweden. (For instance, regarding Sweden, the closest year available estimate is from 2013.)

Therefore, I use estimates provided by the World Bank (2018a) for all three countries (the estimate for 2002 in the case of the United Kingdom, the estimate for 2003 in the case of Hungary, and the estimate for 2004 in the case of Sweden)¹⁸. The Gini-index values published by the World Bank that I use in my analysis are as follows: for 2002, 0.299 (Hungary), 0.253 (Sweden), 0.351 (United Kingdom); for 2018, 0.296 (Hungary), 0.300 (Sweden), 0.351 (United Kingdom)¹⁹. I add these values to the dataset as percentages (between 0 and 100).

Per capita GDP

Another important macro-level variable that I use in my analysis is the annual per capita Gross Domestic Product of the country of respondent. Gross Domestic Product is a widely

¹⁸ As a small remark, I should note that the Gini-index of World Bank seems a bit more volatile than it should theoretically be (e.g., in Hungary, there is a 5-percentage-point increase from 2004 to 2005 and a 6-percentage-point decrease next year).

¹⁹ Unfortunately, some of these values for 2018 are significantly different from OECD's Gini-coefficient values, which are 0.289 for Hungary, 0.275 for Sweden, and 0.365 for the United Kingdom (even the ascending order of countries is different).

used economic indicator that measures the value added created by the production of goods and services in a country during a certain period. At the same time, GDP also measures the income earned from the production of such goods and services. (OECD, 2021b) The per capita GDP is calculated by dividing the annual GDP by the population and aims to show the relative well-being of different countries.

In my analysis, I make use of two different measures linked to per capita GDP.

The first one is the annual per capita GDP of Hungary, Sweden, and the UK in 2002 and 2018 reported by the World Bank (2018). The observed annual per capita GDP values are as follows: for 2002, 6,655.33 USD (Hungary), 29,899.20 USD (Sweden), 29,982.62 USD (United Kingdom); for 2018, 16,410.19 USD (Hungary), 54,589.06 USD (Sweden), 43,043.23 USD (United Kingdom). I included the values of this variable measured in 1,000 USD in the dataset so that the numbers are comparable across countries.

The second one is the PPP-based annual per capita GDP, which is weighted by purchasing power parity in each country. By also considering differences in the price level across countries, this indicator allows for more meaningful cross-country comparisons in terms of actual well-being. The observed PPP-based annual per capita GDP values are as follows: for 2002, 14,526.39\$ (Hungary), 30,926.51\$ (Sweden), 28,997.06\$ (United Kingdom); for 2018, 31,829.55\$ (Hungary), 53,553.31\$ (Sweden), 47,145.88\$ (United Kingdom). The values of this variable were added to the dataset measured in 1,000 current international dollars.

Regional per capita GDP

Per capita GDP of a region in which a particular respondent lives is an essential information to test my second hypothesis since it facilitates finding a link between the well-being of the region in which an individual lives and her/his attitudes towards income inequality. Such a regional-level analysis can help to gain a much more sophisticated picture, than a mere cross-country comparison.

The ESS dataset provides information on the geographical region in which each respondent lives in the form of NUTS (Nomenclature of Territorial Units for Statistics) codes. These statistical regions – that provide a consistent and uniform breakdown of territorial units to facilitate regional statistics for the EU and the United Kingdom – have three distinct levels. NUTS 1 is the largest unit, mostly containing groups of regions or states. NUTS 2 is the second largest unit, usually consisting of regions or provinces. NUTS 3 mostly contains counties, small regions, groups of districts or municipalities.

Even though the three-digit NUTS code is available for individuals from Hungary and the two-digit NUTS code is available for respondents from Sweden, only the NUTS 1 code is reported in the case of respondents from the United Kingdom. Given that I aim to use a roughly similar number of regions from each country, I make use of the 12 available regions for the UK (NUTS 1) and 8-8 regions in the case of Sweden and Hungary (NUTS 2).

With the help of these regions, I can also make use of an internationally comparable indicator for economic output at the regional level: the PPS²⁰-based regional per capita GDP (Eurostat 2020). This figure measures the regional aggregated income divided by the population and weighted by the regional price level. The fact that a value of 100 represents the EU average helps to interpret this indicator.²¹

Together, NUTS codes and PPS-based regional per capita GDP figures provide an opportunity to attach data on regional-level per capita economic output to all individuals in the database.

4.2.3. Summary statistics of key variables

Year	Variable	Country	Observations	Mean	Standard Deviation	Min	Max
2002	Attitude towards income redistribution (1=totally support, 5=totally oppose)	Hungary	1,633	1.83	0.89	1	5
		UK	2,022	2.50	1.02	1	5
		Sweden	1,947	2.33	0.93	1	5
	Household income (in 12 categories)	Hungary	0	-	-	-	-
		UK	1,784	6.92	2.52	1	12
		Sweden	1,866	6.91	1.88	1	12
	Subjective income (1=coping very hard, 4=living comfortably)	Hungary	1,680	2.50	0.78	1	4
		UK	2,036	3.25	0.73	1	4
		Sweden	1,986	3.44	0.69	1	4
	Gender (1=male, 2=female)	Hungary	1,685	1.52	0.50	1	2
		UK	2,052	1.53	0.50	1	2
		Sweden	1,995	1.49	0.50	1	2
	Age (years)	Hungary	1,685	46.14	18.25	15	94
		UK	2,047	48.54	18.38	15	98
		Sweden	1,995	46.26	18.59	15	94
	Years spent in education	Hungary	1,684	11.65	3.73	3	21
		UK	2,041	12.71	3.41	7	22
		Sweden	1,991	12.01	3.50	6	20
	Town size (1=farm home in countryside, 5=big city)	Hungary	1,684	3.05	1.16	1	5
		UK	2,049	3.06	0.91	1	5
		Sweden	1,994	3.03	1.14	1	5

²⁰ Purchasing Power Standard

²¹ The exact figures can be found in Appendix 1.

Year	Variable	Country	Observations	Mean	Standard Deviation	Min	Max
2018	Attitude towards income redistribution (1=totally support, 5=totally oppose)	Hungary	1,643	1.73	0.81	1	5
		UK	2,194	2.26	0.99	1	5
		Sweden	1,513	2.32	0.94	1	5
	Household income decile	Hungary	994	5.15	2.75	1	10
		UK	1,853	5.21	2.98	1	10
		Sweden	1,438	6.07	2.55	1	10
	Subjective income (1=coping very hard, 4=living comfortably)	Hungary	1,588	2.71	0.70	1	4
		UK	2,185	3.28	0.77	1	4
		Sweden	1,525	3.59	0.63	1	4
	Gender (1=male, 2=female)	Hungary	1,661	1.58	0.49	1	2
		UK	2,204	1.55	0.50	1	2
		Sweden	1,539	1.49	0.50	1	2
	Age (years)	Hungary	1,661	49.98	18.48	15	89
		UK	2,188	52.27	18.41	15	90
		Sweden	1,539	52.20	19.30	15	90
	Father's education (ISCED)	Hungary	1,530	2.96	1.32	1	7
		UK	1,709	2.58	2.10	1	7
		Sweden	1,394	3.13	2.17	1	7
	Years spent in education	Hungary	1,649	12.29	3.39	4	22
		UK	2,193	14.25	3.76	8	25
		Sweden	1,522	13.70	3.94	6	25
	Town size (1=farm home in countryside, 5=big city)	Hungary	1,660	3.09	1.12	1	5
		UK	2,204	3.10	0.96	1	5
		Sweden	1,533	3.17	1.21	1	5

4.3. Methods

To test my first hypothesis, I conduct a Kruskal-Wallis rank test, which is the equivalent of the more frequently used F-test in the context of ordinal dependent variables. This test shows whether there is a statistically significant difference between the two age groups in terms of their attitudes towards income redistribution: the younger age group (born before 1971) and the older age group (born after 1971). For this analysis, I include all individuals in the sample since a restriction to prime-age individuals would result in the number of observations for the older age group in the case of the 2018 sample being very small²².

Turning to my second hypothesis, I first plot per capita GDP against the mean attitude towards income redistribution at the regional and country levels and inspect whether there is any trend and if so, in which direction. For the country-level analysis, I include observations

²² Individuals born in 1971 or before were at least 47 years old in 2018. Therefore, only individuals aged between 47 and 54 years would be involved in the older age group in 2018, leading to a massive disproportion between the size of the two age groups.

from both 2002 and 2018. For the region-level analysis, I only include observations from 2018 as I have no thorough public data on per capita regional GDP for the year 2002.

To test my third hypothesis, I use two complementary methods. First, using cross-tabulation, I try to identify sub-groups of individuals who are the most in favour of income redistribution and sub-groups of individuals who are the most reticent towards income redistribution. Second, I use regression analysis so that I can explore the effect of various variables on attitudes towards redistribution. Since the attitudes that I aim to explain are measured as an ordinal variable (1-5 scale), the most appropriate method would be an ordered logistic regression (Menard 2002, Wooldridge 2010). However, if we can treat the ordinal dependent variable as continuous, then an Ordinary Least Squares regression (OLS) can also be used. To treat an ordinal variable as if it was continuous, we need to be able to realistically assume that the gap between each category (e.g., strongly agree and agree; neutral and disagree; etc.) is roughly equal: if this is not the case, using OLS can lead to distortions and problems regarding the interpretation of coefficient estimates (Allen & Seaman 2007, Williams & Quiroz 2020). In a sharply different view, Robitzsch (2020) provides some reasons for why we can regard an ordinal variable as continuous in most cases.

In our case, I shall argue that it is reasonable to assume that the difference – between the five available responses that measure attitudes – is close to equal. I also argue that the interpretation of OLS regressions is straightforward and far easier than in the case of ordered Logit. Hence, this benefit might exceed the drawback of potential distortions caused by the simplifying assumptions of equal gaps between neighbouring categories. The details of the econometric model are presented in the next section.

4.4. Econometric model

As mentioned before, the variable that measures respondents' attitudes towards income redistribution is given in the form of a 1-5 scale – in other words, an ordinal variable. On this scale, 1 stands for a strong preference for income redistribution and 5 stands for a strong rejection of income redistribution. Being the variable that I aim to explain, this will be denoted as Y .

My independent variables – which will help explain the variance of attitudes – include the following ones:

- X_1 : Father's level of education (transformed into three levels – uneducated, educated, highly educated –, ordinal)

- X_2 : Gender (dummy) – male = 1, female = 2
- X_3 : Year of birth (interval)
- X_4 : Feeling about household income (how comfortably copes with present income, 1-4 scale, 1 denotes very difficult to cope, 4 denotes living very comfortably)
- X_5 : Gini-coefficient of respondents' country in 2018 (in %)
- X_6 : Per capita GDP of respondent's country in 2018 (in 1,000 USD)

I expect that a higher level of father's education will make individuals more tolerance towards income inequality, as a higher level of education is usually associated with a higher level of economic well-being. I assume that females and older people will be more in favour of redistribution. I also suppose that a higher level of household income and per capita GDP will have a positive impact on the tolerance of inequality since people experiencing a better standard of living probably find redistribution less necessary. A larger Gini-coefficient will probably have a negative effect on the tolerance towards income inequality since higher levels of inequalities can create higher demand for redistribution. Therefore, my regression model is formulated as follows²³:

$$Y_i = \alpha + \beta_1 * father's\ education_i + \beta_2 * gender_i + \beta_3 * year\ of\ birth_i + \beta_4 * decile_{c_i(income_i)} + \beta_5 * gini_{c(i)} + \beta_6 * gdp\ per\ capita_{c(i)} + \varepsilon_i$$

where α indicates the constant, $\beta_1, \beta_2, \dots, \beta_6$ mark the coefficients of the explanatory variables and ε denotes the error term of the regression model²⁴.

I assume that these six variables are exogenous since individuals usually cannot choose their parents' education level, their own year of birth, gender, income, and country-level indicators, even though they can indirectly affect their own income level (e.g., by achieving a higher level of education) and to a limited extent, choose the country they would like to live in.

According to the correlation matrix (Appendix 11) of these variables, there is a strong negative relationship between Gini-coefficient and per capita GDP (-0.5311) and a weak positive relationship between father's education and respondent's income decile (0.2068). Although the former coefficient is relatively large, I do not consider it as a clear multi-collinearity between independent variables that could significantly distort the regression output.

²³ In the regression equation, $decile_{c(i)}$ is the income decile function for country c .

²⁴ Two alternative regression models are included in Appendix 12 and Appendix 13.

4.5. Results

4.5.1 Age group differences in 2002 and 2018

To test my first hypothesis, I conducted a Kruskal-Wallis rank test on the data of both 2002 and 2018 for each country to determine if attitudes towards income inequality were different between the two complementary age groups: the younger age group (born after 1971) and the older age group (born in 1971 or before).

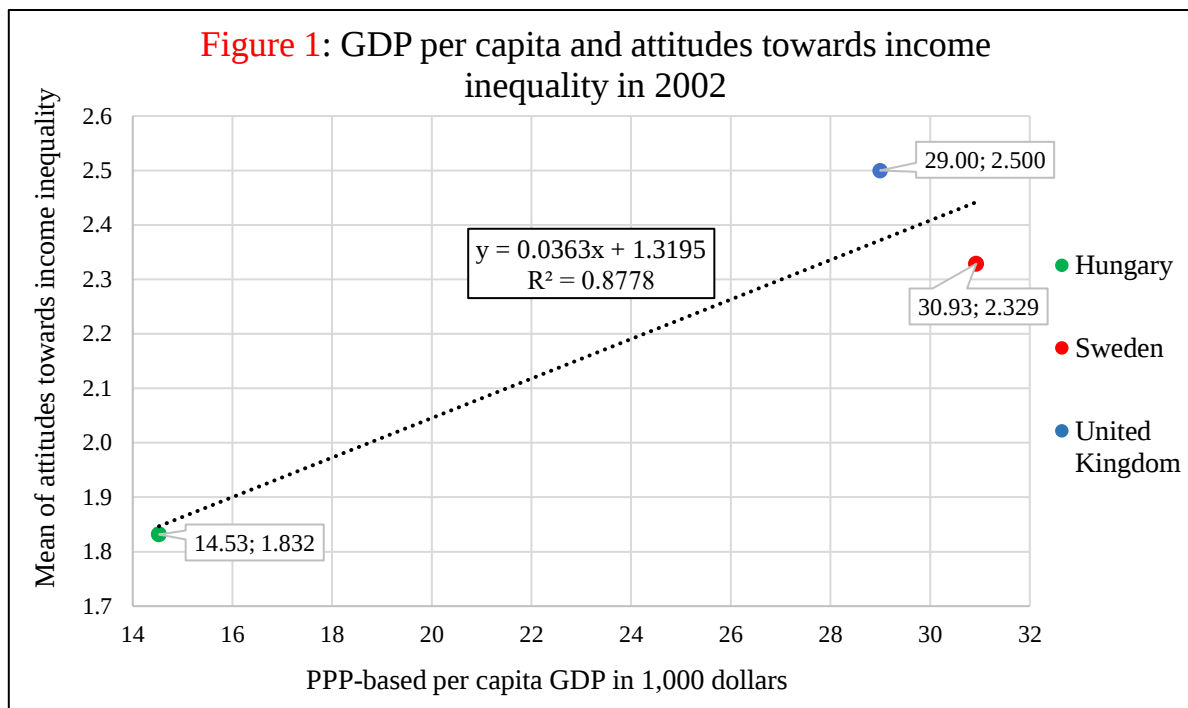
For the 2002 sample, the Kruskal-Wallis test suggests that individuals born before 1971 are on average more in favour of redistribution than individuals born after 1971 in the case of Hungary ($\chi^2(1) = 15.466, p = 0.0001$), whereas no statistically significant difference in attitudes towards inequality is found for the United Kingdom ($\chi^2(1) = 0.665, p = 0.4149$) and Sweden ($\chi^2(1) = 2.986, p = 0.0840$). These findings do not contradict the first part of my hypothesis.

In 2018, the test showed that there was a statistically *insignificant* difference between the attitudes of the two age groups in Hungary ($\chi^2(1) = 2.222, p = 0.1360$) and the United Kingdom ($\chi^2(1) = 2.040, p = 0.1533$), whereas in the case of Sweden individuals born before 1971 are more in favour of reducing income inequality than those born after 1971 ($\chi^2(1) = 6.278, p = 0.0122$).

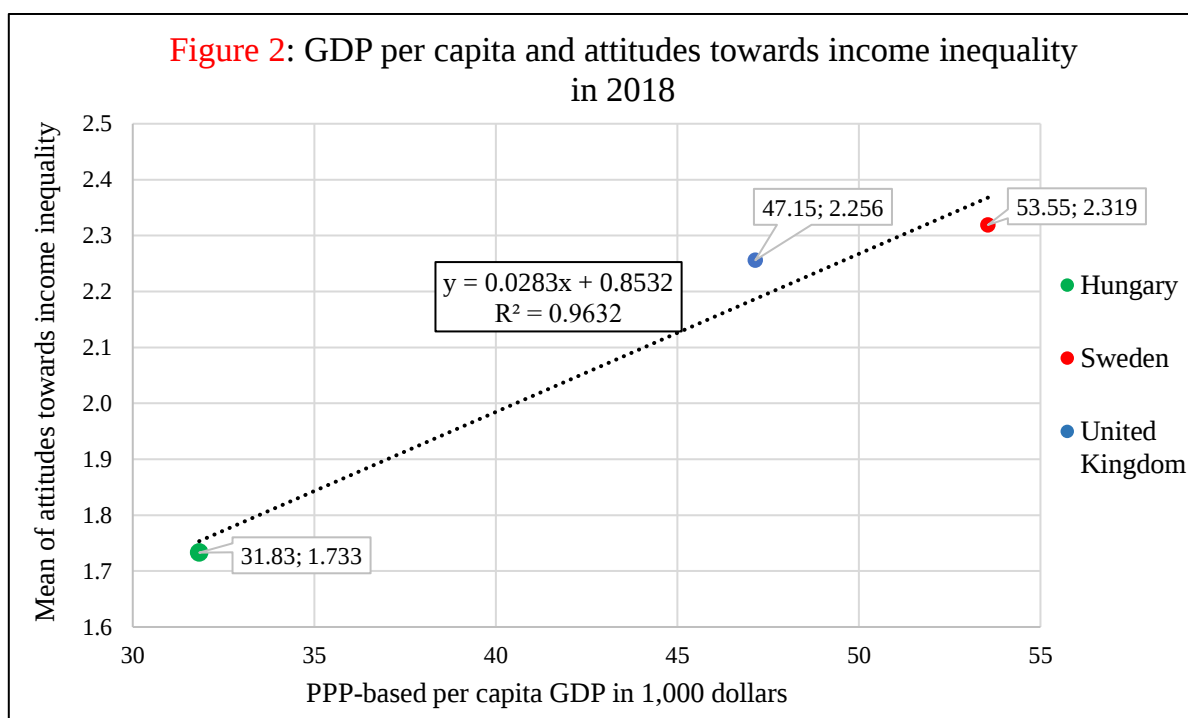
I cannot reject the hypothesis according to which those generations of Hungary who experienced the era of socialism in Hungary show a significantly different (more dismissive) attitude towards income inequalities than later generations, and that this difference becomes weaker over time. Also, I cannot reject the hypothesis according to which, unlike in Hungary, these intergenerational differences are not statistically significant in Sweden and the UK in 2002. However, – even though in 2018, such differences become statistically insignificant in Hungary (to the level of the UK) that reduces cross-country differences – the intergenerational gap becomes statistically significant in Sweden on a 5% significance level, which is a minor but unexpected change.

4.5.2 Per capita revenue in regional and cross-country context

In a cross-country context, although data from both the 2002 and the 2018 suggest that in countries with higher per capita GDP, respondents are more tolerant towards income inequality, this trend is simply due the stark difference along both dimensions between Hungary on one side and the two other countries on the other (see [Figure 1](#) and [Figure 2](#)).



Notes: The graph depicts a dotted linear trend line. (On the vertical axis, 1 = strongly supports redistribution, 5=strongly opposes redistribution)



Notes: The graph depicts a dotted linear trend line. (On the vertical axis, 1 = strongly supports redistribution, 5=strongly opposes redistribution)

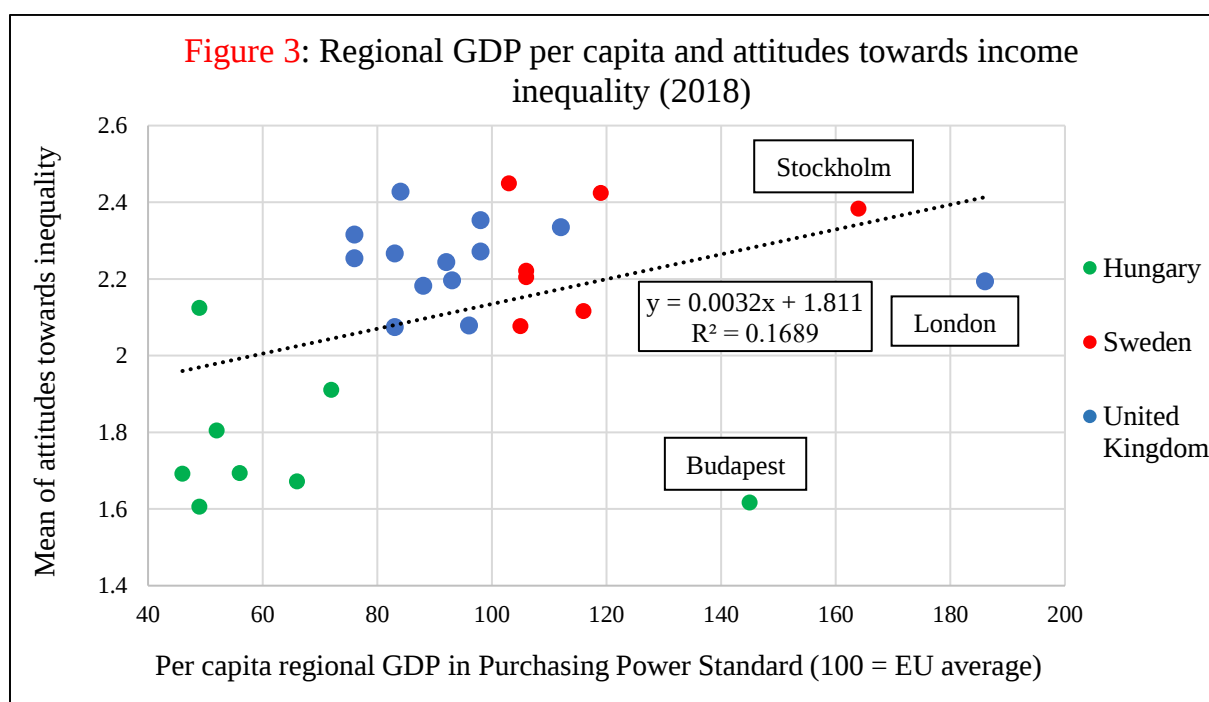
All three countries experienced substantial growth in terms of their PPP-based per capita GDP between 2002 and 2018. The biggest relative increase was observed in the case of Hungary, for which the figure doubled between 2002 and 2018, decreasing the gap relative to the other

two economies. Sweden's narrow advantage over the UK in terms of PPP-based per capita GDP increased over the same period.

In Hungary and the UK, attitudes became slightly more in favour of income redistribution between 2002 to 2018, whereas they remained unchanged in Sweden. The difference between Hungary on the one hand versus the other two countries on the other in terms of mean attitudes has not changed significantly over the period.

Turning to comparisons across regions, the sharp difference in terms of both attitudes and per capita GDP between regions of Hungary on the one side and regions of the other two countries on the other is not surprising in light of the observed country-level differences. Comparison across regions reveals that capital cities are clearly outliers in terms of per capita GDP. Therefore, it is worth looking at the trends both with and without these regions.

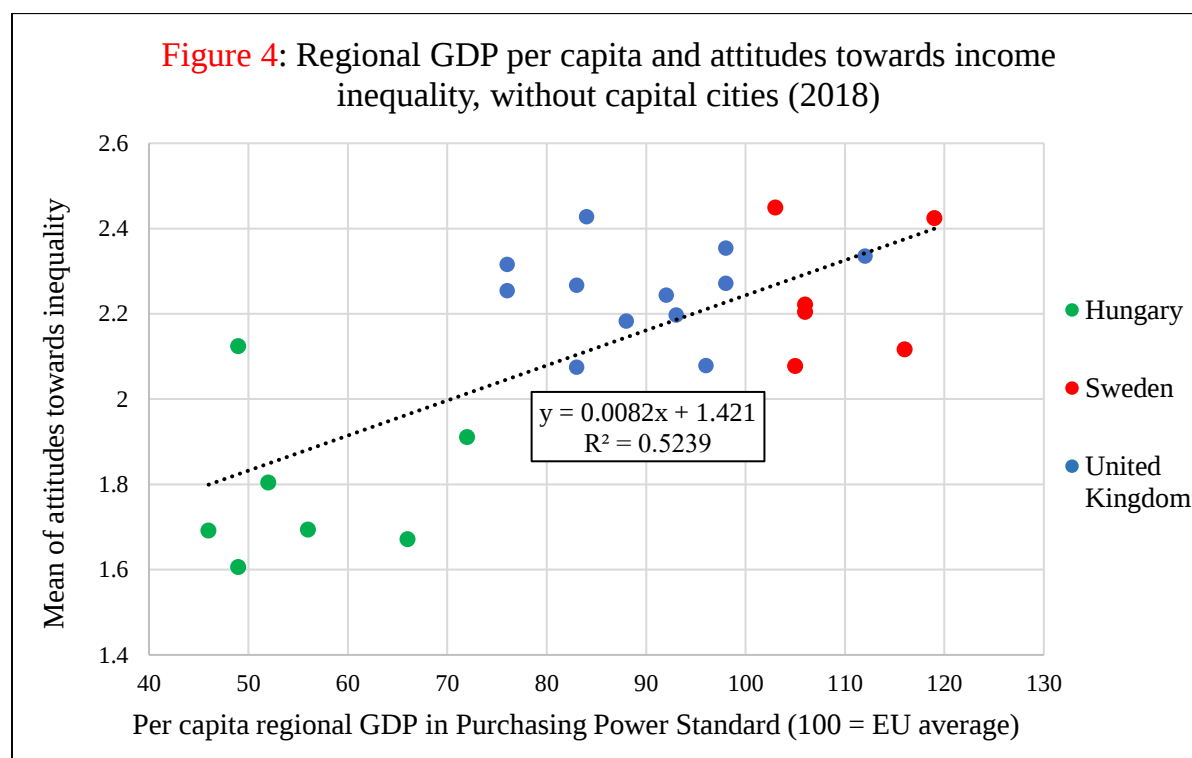
When plotting attitudes towards inequality against PPP-based per capita GDP at the regional level in **Figure 3** (with the inclusion of capital cities), a weak positive trend²⁵ is observed, implying that in regions with higher per capita GDP, respondents tend to be less supportive of income redistribution.



Note: The graph depicts a dotted linear trend line.

²⁵ The value of R^2 (0.1689) suggests that this univariate model can explain around 16.9% of the variance of attitudes around their mean, although it should be noted that the R^2 statistic tells nothing about the strength of association, and it is mechanically inflated when the number of observations is low.

Figure 4 presents the same plot as Figure 3 but now without the capital cities. As expected, the observed positive trend is now stronger with less deviations around the trendline^{26,27}.



Note: The graph depicts a dotted linear trend line.

The way in which most observations from each country form a separate cluster in Figures 3 and 4 already suggests that the strength and/or direction of the association observed within each country differs from the clear positive trend found in the pooled analysis.

When reproducing Figure 3 with observations from only one country at a time, the link between per capita regional GDP and attitudes becomes very weak in all three cases with a slightly negative trend in the case of Hungary (implying that higher standard of living goes hand in hand with slightly higher preference for income redistribution), a slightly positive trend in the case of Sweden (suggesting that higher standard of living goes together with slightly lower preference for income redistribution), and a very slightly negative trend in the case of the UK (see Appendix 5). All these trends, however, become zero once capital cities are excluded from the analysis (i.e., when reproducing Figure 4 with observations from only one country at a time). (see Appendix 5). From all regions, Budapest seems to be the strongest

²⁶ Data from Figure 3 and Figure 4 can be found in a tabular form in Appendix 3.

²⁷ The value of R^2 (0.5239) suggests that this second univariate model can explain around 52.4% of the variance of the attitudes

outlier²⁸ with its second most pro-redistribution mean attitude and the third largest per capita GDP.

4.5.3 Individual well-being

Now, I examine the relationship between household income and individual preferences on income redistribution (supplemented by other factors such as age, gender, father's education, country-level well-being, and country-level inequality) both on a joint sample of the three countries and a country-level. I run these regression models among individuals aged between 25 and 54 years (prime-age individuals).

First, on the pooled sample of the three countries²⁹, there is a statistically significant effect of respondents' household income quintile on individual attitudes only between the lowest and highest quintile ($p = 0.000$). The coefficient suggests that – for all other factors remaining unchanged – individuals in the highest income decile are 0.319 units more tolerant towards income inequalities on a 1-5 scale than individuals in the lowest income decile. I also find a statistically significant impact of gender, females being more in favour of income redistribution than males by 0.118 units on a 1-5 scale ($p = 0.009$). Regarding macro-level variables, in countries with a one percentage-point higher level of income inequality, people tend to favour redistribution by 0.012 units on a 1-5 scale ($p = 0.030$); while respondents living in a country with 1,000 dollars higher per capita GDP tend to support redistribution less by 0.16 units on a 1-5 scale ($p = 0.000$). The overall explanatory power (also known as goodness of fit) of this regression model is around 8.64 percent ($R^2 = 0.0864$).

On the pooled sample of the three countries, substituting per capita GDP and Gini-coefficient by a simple *country* variable, we can find that on average, respondents living in the United Kingdom show 0.519 units more tolerant attitudes towards income inequality than individuals

²⁸ This finding on Budapest is slightly contradictory to the findings of Kapitány & Molnár (2007, p. 215) on data from 2002, which claim that people living in Budapest are less in favour of introducing measures to help the poor compared to people living in other types of settlements (even though this was not a regional comparison). However, several public opinion polls show that there are a higher proportion of left-wing voters in Budapest compared to other parts of Hungary (see Bíró-Nagy & Kadlót 2012, Bíró-Nagy et al. 2016, Gerő & Szabó 2020). These three papers also find that inhabitants of Budapest are mostly dissatisfied with the work of the Hungarian government since 2010. As a potential explanation for Budapest being an outlier, this disapproval may affect their judgment on the economic situation of the society, increasing the odds that such individuals will answer that the government *should* reduce income inequalities.

²⁹ All regression coefficients of this original regression model can be found in Appendix 15.

from Hungary ($p = 0.000$), while individuals from Sweden³⁰ tend to be 0.594 units more tolerant towards income inequality than respondents from Hungary.

Substituting household income (categorised into deciles) by a subjective evaluation³¹ of household income, I observe that compared to individuals finding it very difficult to cope on their household income, those who cope on their income are on average 0.358 units less supportive towards redistribution ($p = 0.003$) on a 1-5 scale. Moreover, individuals who live comfortably on their household income support redistribution by 0.473 units less than those who find it very hard to cope on their income ($p = 0.000$), for all other factors remaining unchanged. In this model, father's education also has a significant effect: individuals with a highly educated father tend to be 0.148 unit less dismissive towards income inequalities than individuals with an uneducated father. Other variables have a very similar effect as in the original model, while the overall explanatory power of this regression model is around 9.26% ($R^2 = 0.0926$).

Summarizing the most important results of the pooled sample of the three countries, we cannot reject the hypothesis that income has a significant effect on attitudes, but on this sample, it seems to have the most significant effect in the highest income quintile. In addition, per capita GDP also has a significant positive effect on the tolerance of income inequalities. However, a higher level of inequality (measured by Gini-coefficient) also seems to have a *positive* effect on the tolerance of inequalities, which contradicts my expectation of a negative relationship.

Now, I will turn to country-level³² regression models. First, in Hungary, we can experience a statistically significant difference between the lowest income quintile and the remaining four quintiles. Individuals in the second income quintile tend to support redistribution by 0.281 units less than respondents in the first quintile ($p = 0.046$), on a 1-5 scale. Also, people in the third quintile tend to support redistribution by 0.279 units less than individuals in the first quintile ($p = 0.047$). Moreover, those who are in the fourth quintile seem to support

³⁰ Sweden's surprisingly high level of tolerance towards income inequality can be partly explained by the fact that Sweden has the lowest Gini-coefficient. Respondents are asked if they want the government to reduce income inequalities, and Swedish respondents may not find it necessary due to the relatively low level of inequality.

³¹ Coefficients of this alternative regression model can be found in Appendix 14.

³² All regression coefficients can be found in Appendix 15.

redistribution by 0.278 units less than respondents in the lowest quintile ($p = 0.050$). Finally, individuals in the fifth quintile seem to support redistribution by 0.294 units less than people in the first quintile ($p = 0.039$). Age ($p = 0.462$) and gender ($p = 0.449$) have no significant impact, while on average, Hungarian respondents with a highly educated father support redistribution 0.564 units less than those with an uneducated father ($p = 0.009$), on a 1-5 scale.

Second, in the United Kingdom, compared to the lowest income quintile, we can find a statistically insignificant effect on attitudes in the second and fourth quintile. However, individuals in the third income quintile tend to support redistribution by 0.3 units less than people in the lowest quintile ($p = 0.020$), on a 1-5 scale. In addition, people in the fifth quintile tend to support redistribution by 0.413 units less than individuals in the first quintile ($p = 0.001$). Age ($p = 0.959$) and father's education ($p = 0.116, 0.790$) do not have a significant effect, while on average, female respondents tolerate inequalities 0.219 units less than males ($p = 0.003$), on a 1-5 scale.

Third, in Sweden, we can find a statistically insignificant difference between the highest and the lowest quintile. However, surprisingly, respondents in the second income quintile tend to support redistribution by **0.723 units more** than individuals in the lowest quintile ($p = 0.003$), on a 1-5 scale. More, people in the third quintile tend to support redistribution by **0.783 units more** than individuals in the first quintile ($p = 0.001$). Finally, individuals in the fourth quintile seem to support redistribution by **0.541 units more** than people in the first quintile ($p = 0.015$). Age ($p = 0.585$), gender ($p = 0.668$) and father's education ($p = 0.892, 0.649$) do not have a significant effect on attitudes.³³

Finally, I now try to identify groups of individuals who are most and least in favour of income redistribution. Based on our previous investigations, we could see that those individuals who live in Hungary are clearly the least tolerant towards income inequality out of the three countries. On a regional level, we could highlight Northern Hungary and Budapest as the two most egalitarian regions. In addition to these insights, we can observe several breakdowns of respondents into different groups in Appendix 8, Appendix 9, and Appendix 10.

According to Appendix 8, uneducated respondents between 35-44 years support redistribution most (based on both the sum of strongly agree and agree, and if we only consider strong agreements), while highly educated respondents between 45-54 years are least in favour of

³³ Further country-level differences can be seen in Appendix 6 and Appendix 7. For the regression outputs in detail, see Appendix 14 and Appendix 15.

income redistribution. Based on Appendix 9, respondents aged between 35-44 years who earn a lower than median wage are the least tolerant towards inequality, while individuals between 45-54 years who earn a larger than median wage are the most tolerant towards income inequality. Following Appendix 10, females living in country villages stand most strongly in favour of redistribution, while males living in farm home or countryside patronise income redistribution the least.

5. Critical reflections

In this section, I present some critical reflections – including some potential distortions and limitations – on my analysis from both some technical and some theoretical aspects.

5.1 Technical reflections

Distortion of self-declared data

Second, there is extensive evidence on measurement error (Asher 1974; Bound, Brown & Mathiowetz 2001; Kapteyn & Ypma 2007), response error (Hawkins & Coney 1971) and total error³⁴ (Olson 2006) in the literature on the distortion of self-declared survey data. Income can be especially easily misrepresented in such a survey since people might be unwilling to admit very low and/or extremely high wages.

Selection bias

Selection bias (Vella 1998) is also an important source of distortion. For instance, being difficult to be reached by interviewers, the least and most well-off segment of the society might be underrepresented. (In the case of the least well-off segment, comprehension skills may also be limited if social disadvantage already started in school underperformance or early school leaving.) However, sampling strategy and stratification (see Section 4.2) elaborated by ESS may partly offset this challenge.

An important disadvantage of the ESS dataset is that in the different rounds, not the same individuals and households are interviewed (in short: it is not a panel dataset). Therefore, a comparison between 2002 and 2018 might be misleading, even though that may also be offset by the sampling strategy of ESS.

³⁴ Including non-response error and other biases as well.

Regression analysis: OLS instead of logistic regression

Attitudes are measured on a 1-5 ordinal scale, which is statistically more difficult to handle than a continuous variable. Even though I found it reasonable to assume that the differences between each point of the scale are roughly even, it remains a simplifying assumption that causes at least some distortion on the results. In this regard, it is also a clear challenge that the distribution of responses in this variable are skewed, that is, significantly more respondents choose “Strongly agree” or “Agree” than “Disagree” or “Strongly disagree”.

Missing values

The high proportion of missing values – especially regarding income – should also be mentioned. As a very personal and sensitive type of data, it is not surprising that many people do not intend to share her/his own or household-level income. In effect, there might be a bias caused by those omitted answers on income.

Sample size

There are more than 1,500 respondents from each country, which can be considered as a large-sample survey. However, due to the many missing variables and the several aspects of the analysis (including age restrictions to prime-age individuals), there are some cases in which only a few dozens of individuals are present in some categories, making standard error and the chance of distortion large, and drawing general conclusions becomes more difficult.

5.2. Theoretical reflections

Wealth and income

First, many argue (Brulé & Shuter 2019; Piketty & Saez 2014) that wealth is a much more important indicator of economic inequality than income, and therefore, it would make more sense to analyse differences in wealth instead of income. Unfortunately, individual wealth is even less observable than individual income: people can usually hardly estimate the total value of their assets, especially if we think of more than just money (e.g., real estate, investments, tangible assets, etc). Therefore, after reviewing publicly available data, I decided to choose to analyse – the more measurable – income, even if it raises clear theoretical objections.

Objections to Gross Domestic Product

GDP is perhaps the most frequently used macroeconomic indicator. However, many authors question whether it can accurately describe the well-being of a society. For instance, Costanza

et al. (2014) argue that GDP ignores many important aspects, such as environmental effects and social costs. They also propose alternative measures of well-being, such as GPI (genuine progress indicator) or Better Life Index (BFI).

Even if GDP is a good indicator of economic transactions, that could be a legitimate objection towards my analysis that it is perhaps not the best indicator of the standard of living. However, the reason why I still chose it is that it is one of the most widely accessible economic indicators, we can analyse it on a regional level as well, and as a per capita figure, it is somewhat connected to the average income level of individuals in a society, which is closely related to my research question.

Money is only part of the picture

As already mentioned in Section 3, Amartya Sen's capability approach suggests that we should not measure well-being in pure terms of money or resources, but instead, focus on what an individual can afford to do using her/his resources. Based on his account, I think there is a need for a more detailed analysis and understanding of individuals in terms of their happiness, health, life expectancy, access to the labour market, participation in political activities etc.

6. Conclusion

In my thesis, I looked at some factors that may influence individual attitudes toward economic inequality and redistribution, focusing on Hungary, Sweden, and the UK.

Through the investigation of the first hypothesis, I find that (1) those generations of Hungary who experienced the era of socialism in Hungary show a significantly different (more dismissive) attitude towards income inequalities than later generations, and that this difference becomes weaker over time; (2) such intergenerational differences were not statistically significant in Sweden and the UK in 2002; and (3) that these intergenerational differences become insignificant in Hungary, remain insignificant in the UK, and become significant in Sweden.

Examining my second hypothesis, I find that (1) in a cross-country context, respondents living in a country with higher PPP-based per capita GDP tend to be significantly more tolerant towards income inequality in both 2002 and 2018 (mainly arising from the difference between Hungary and the two other countries); (2) in a regional context, there is a weak positive relationship between regional per capita GDP and tolerance towards inequality, and a very

clear positive trend without including capital cities, with Budapest being the most striking outlier.

As for my third hypothesis, I find that compared to individuals in the lowest income quintile, (1) people in the highest income quintile have significantly less dismissive attitudes towards income inequality on the joint sample of the three countries; (2) people in all other income quintiles are less in favour of redistribution in Hungary, but differences between the higher four quintiles seem remarkably insignificant; (3) only people in the third and fifth income quintile seem to support redistribution less in the UK. Unexpectedly, in Sweden, respondents in the second-, third-, and fourth income quintile tend to support redistribution **more**³⁵ than individuals in the lowest income quintile. In addition, gender only has a significant effect in the UK (with females being more egalitarian), while a highly educated father makes respondents more tolerant towards inequality only in Hungary.

Regarding groups of individuals, I find that respondents in Hungary, uneducated people between 35-44 years, lower-than-median earning individuals in the same age group, and females living in the countryside tend to support redistribution most. In contrast, highly educated respondents between 45-54 years, individuals from the same age group with a higher-than-median income, and males living in farm home or countryside tend to be least in favour of income redistribution.

As a proposal for the deeper understanding of the relationship between individual well-being and attitude towards inequality, I suggest that more extensive further research should be done including more than one post-socialist country from Eastern Europe so that it can turn out whether the enormous attitude-gap between the attitudes of Hungary and the two other countries is rather *ad hoc* or systematic. In addition, the surprising results among prime-age individuals in Sweden should also be examined on a larger sample. In such investigations, one could also attempt to employ a deeper measure of well-being (such as happiness, life expectancy, or a complex indicator of living standards) than mere income or wealth.

³⁵ As already mentioned in Section 5.1, sample sizes are especially small when I analyse prime-age individuals, and therefore, the counter-intuitive and surprising result observed in Sweden should be further investigated on a larger sample in the future.

7. List of references

- Alesina, A., & Fuchs-Schündeln, N. (2007). Good-bye Lenin (or not?): The effect of communism on people's preferences. *American Economic Review*, 97(4), 1507-1528.
- Allen, I. E., & Seaman, C. A. (2007). Likert scales and data analyses. *Quality progress*, 40(7), 64-65.
- Alvaredo, F. (2018). *The World Inequality Report: 2018*. Cambridge, MA and London, England: Harvard University Press.
- Andersen, T. M., & Maibom, J. (2020). The big trade-off between efficiency and equity—is it there? *Oxford Economic Papers*, 72(2), 391-411.
- Anderson, E. S. (1999). What is the Point of Equality? *Ethics*, 109(2), 287-337.
- Austen, S. (2002). An international comparison of attitudes to inequality. *International Journal of Social Economics*.
- Berg, A. G., & Ostry, J. D. (2011). Equality and Efficiency: Is there a trade-off between the two or do they go hand in hand? *Finance & Development*, 48(003).
- Bíró-Nagy, A. & Kadlót, T. (2012). A baloldal és a fiatalok Magyarországon. [The left and the youth in Hungary.] Policy Solutions. Retrieved from: https://www.policysolutions.hu/userfiles/elemzes/25/fes_policy_solutions_a_baloldal_es_a_fiatalok.pdf
- Bíró-Nagy, A., Kadlót, T., & Závecz, T. (2016). Az elégedetlen szavazók Magyarországon. [Dissatisfied voters in Hungary.] Friedrich-Ebert-Stiftung. Retrieved from: <https://library.fes.de/pdf-files/bueros/budapest/12995.pdf>
- Boucoyannis, D. (2013). The equalizing hand: why Adam Smith thought the market should produce wealth without steep inequality. *Perspectives on Politics*, 11(4), 1051-1070.
- Bound, J., Brown, C., & Mathiowetz, N. (2001). Measurement error in survey data. In *Handbook of econometrics* (Vol. 5, pp. 3705-3843). Elsevier.
- Brueckner, M., & Lederman, D. (2015). Effects of income inequality on aggregate output. *World Bank Policy Research Working Paper*, no. 7317.
- Brulé, G., & Suter, C. (2019). Why wealth matters more than income for subjective well-being? In *Wealth(s) and subjective well-being* (pp. 1-13). Springer, Cham.
- Cingano, F. (2014). Trends in Income Inequality and its Impact on Economic Growth. *OECD Social, Employment and Migration Working Papers*, no. 163. OECD Publishing, Paris.
- Cohen, G. A. (1992). Incentives, inequality, and community. *The Tanner lectures on human values*, 13, 263-329.

- Costanza, R., Kubiszewski, I., Giovannini, E., Lovins, H., McGlade, J., Pickett, K. E., Ragnarsdóttir, K.V., Roberts, D., De Vogli, R. & Wilkinson, R. (2014). Development: Time to leave GDP behind. *Nature News*, 505(7483), 283.
- Dworkin, R. M. (2003). Equality, luck and hierarchy. *Philosophy & Public Affairs*, 31(2), 190-198.
- ESS (2018). European Social Survey Round 9 Sampling Guidelines: Principles and Implementation. The ESS Sampling and Weighting Expert Panel.
- European Social Survey Round 9 Data (2018). Data file edition 3.1. NSD - Norwegian Centre for Research Data, Norway - Data Archive and distributor of ESS data for ESS ERIC
- Eurostat (2020). GDP per capita in EU regions. Retrieved from: <https://ec.europa.eu/eurostat/documents/2995521/10474907/1-05032020-AP-EN.pdf/81807e19-e4c8-2e53-c98a-933f5bf30f58>
- Gerő, M. & Szabó, A. (2020). A magyar társadalom politikai integrációja. [Political integration of Hungarian society.] Kovách Imre (Ed.): *Mobilitás és integráció a magyar társadalomban. Budapest: Argumentum Kiadó–Társadalomtudományi Kutatóközpont*, 89-126. Retrieved from: https://tk.hu/uploads/files/2019/mob_pol2019_online.pdf
- Gorr, M. (1983). Rawls on natural inequality. *The Philosophical Quarterly* (1950-), 33(130), 1-18.
- Hont, I., & Ignatieff, M. (1983). Needs and justice in the Wealth of Nations: an introductory essay. In *Wealth and Virtue* (pp. 1–44). Cambridge University Press.
- Kapitány, Zs. & Molnár, Gy. (2007). Bizonytalanság és a jövedelmek újraelosztása iránti igény Magyarországon. [Uncertainty and the need for income redistribution in Hungary.] *Közgazdasági Szemle*, 54, 201-232.
- Kuhn, A. (2019). The subversive nature of inequality: Subjective inequality perceptions and attitudes to social inequality. *European Journal of Political Economy*, 59, 331-344.
- Le Grand, J. (1990). Equity versus efficiency: the elusive trade-off. *Ethics*, 100(3), 554-568.
- Marquez, X. (2011). Is income inequality unjust? Perspectives from political philosophy. *Policy Quarterly*, 7(2).
- Menard, S. (2002). *Applied logistic regression analysis* (Vol. 106). Sage.
- Neves, P. C., & Silva, S. M. T. (2014). Inequality and growth: Uncovering the main conclusions from the empirics. *Journal of Development Studies*, 50(1), 1-21.
- Nozick, R. (1973). Distributive justice. *Philosophy & Public Affairs*, 45-126.

OECD (2021a). Income inequality (indicator). doi: 10.1787/459aa7f1-en (Accessed on 05 November 2021)

OECD (2021b). Gross domestic product (GDP) (indicator). doi: 10.1787/dc2f7aec-en (Accessed on 05 November 2021)

Okun, A. M. (1975). *Equality and efficiency: the big tradeoff*. The Brookings Institution.

Ostry, M. J. D., Berg, M. A., & Tsangarides, M. C. G. (2014). *Redistribution, inequality, and growth*. International Monetary Fund.

Phillips, A. (2004). Defending equality of outcome. *Journal of political philosophy*, 12(1), 1-19.

Piketty, T., & Saez, E. (2014). Inequality in the long run. *Science*, 344(6186), 838-843.

Rasmussen, D. C. (2016). Adam Smith on what is wrong with economic inequality. *American Political Science Review*, 110(2), 342-352.

Rawls, J. (1971). *A theory of justice*. Harvard University Press.

Rawls, J. (1999). *A theory of justice: Revised edition*. Harvard university press.

Redmond, G., Schnepf, S. V., & Suhrcke, M. (2002). *Attitudes to inequality after ten years of transition*. Florence: UNICEF Innocenti Research Centre.

Robeyns, I. & Byskov, M. F. (2011). The Capability Approach. *The Stanford Encyclopedia of Philosophy* (Winter 2021 Edition).

Robitzsch, A. (2020). Why ordinal variables can (almost) always be treated as continuous variables: Clarifying assumptions of robust continuous and ordinal factor analysis estimation methods. In *Frontiers in Education*, 5(177).

Røed, K., & Strøm, S. (2002). Progressive Taxes and the Labour Market: Is the Trade-off Between Equality and Efficiency Inevitable? *Journal of Economic Surveys*, 16(1), 77-110.

Roemer, J. E. (1998). *Theories of distributive justice*. Harvard University Press.

Roemer, J. E. (2002). Equality of opportunity: A progress report. *Social Choice and Welfare*, 19(2), 455-471.

Schaller, W. E. (1998). Rawls, the difference principle, and economic inequality. *Pacific Philosophical Quarterly*, 79(4), 368-391.

Scheffler, S. (2003). What is Egalitarianism? *Philosophy and Public Affairs*, 31(1), 5-39.

Sen, A. (1992). *Inequality reexamined*. Harvard University Press.

Sen, A. (1999). *Development as freedom*. Oxford University Press.

- Simkus, A., & Robert, P. (1995). Attitudes Toward Inequality: Cross-National Comparisons and Class Divisions in Hungary. *International Journal of Sociology*, 25(4), 85-102.
- Singer, P. (1972). Famine, affluence, and morality. *Philosophy & public affairs*, 229-243.
- Smith, A. (1776). An inquiry into the nature and causes of the wealth of nations: Volume One. London: printed for W. Strahan; and T. Cadell, 1776.
- Steele, L. G. (2015). Income inequality, equal opportunity, and attitudes about redistribution. *Social Science Quarterly*, 96(2), 444-464.
- Svallfors, S. (1993). Dimensions of inequality: A comparison of attitudes in Sweden and Britain. *European Sociological Review*, 9(3), 267-287.
- Verme, P. (2011). Life satisfaction and income inequality. *Review of Income and Wealth*, 57(1), 111-127.
- Walraevens, B. (2021). Adam Smith's view of economic inequality. *Cambridge Journal of Economics*, 45(1), 209-224.
- Williams, R. A., & Quiroz, C. (2020). *Ordinal regression models*. SAGE Publications Limited.
- Woo, J. (2020). Inequality, redistribution, and growth: new evidence on the trade-off between equality and efficiency. *Empirical Economics*, 1-41.
- Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data*. MIT press.
- World Bank (2018a). World Development Indicators. *Gini index*.
- World Bank (2018b). World Development Indicators. *GDP per capita*.

8. Appendix

Appendix 1: Abstract in English

There is an intensifying discussion on growing economic inequalities. In this paper, I aim to present some relevant theories on distributive justice and discover which factors influence individual attitudes towards economic inequality and redistribution, focusing on individual well-being and household income. Using cross-sectional survey data from 2002 and 2018 provided by the European Social Survey, I study the case of Hungary, Sweden, and the UK, which represent three different traditions of Europe. I find that there is a huge gap between attitudes in Hungary and the two other countries, with Budapest showing a strong support for redistribution despite its high GDP per capita. In Sweden, I observe a surprising trend that respondents with higher income levels tend to support redistribution significantly more than individuals in the lowest income quintile, which needs further investigation on a larger sample of individuals.

Appendix 2: Abstract in German

Es gibt eine sich verschärfende Diskussion über wachsende wirtschaftliche Ungleichheiten. In diesem Beitrag möchte ich einige relevante Theorien zur Verteilungsgerechtigkeit vorstellen und herausfinden, welche Faktoren die individuelle Einstellung zu wirtschaftlicher Ungleichheit und Umverteilung beeinflussen, wobei ich mich auf das individuelle Wohlergehen und das Haushaltseinkommen konzentriere. Unter Verwendung von Querschnitterhebungsdaten aus den Jahren 2002 und 2018, die vom European Social Survey bereitgestellt wurden, untersuche ich den Fall von Ungarn, Schweden und dem Vereinigten Königreich, die drei verschiedene Traditionen Europas repräsentieren. Ich finde, dass es eine große Diskrepanz zwischen den Einstellungen in Ungarn und den beiden anderen Ländern gibt, wobei Budapest trotz seines hohen Pro-Kopf-BIP eine starke Unterstützung für Umverteilung zeigt. In Schweden beobachte ich einen überraschenden Trend, dass Befragte mit höherem Einkommen dazu neigen, Umverteilung wesentlich stärker zu unterstützen als Personen im untersten Einkommensquintil, was einer weiteren Untersuchung an einer größeren Stichprobe von Personen bedarf.

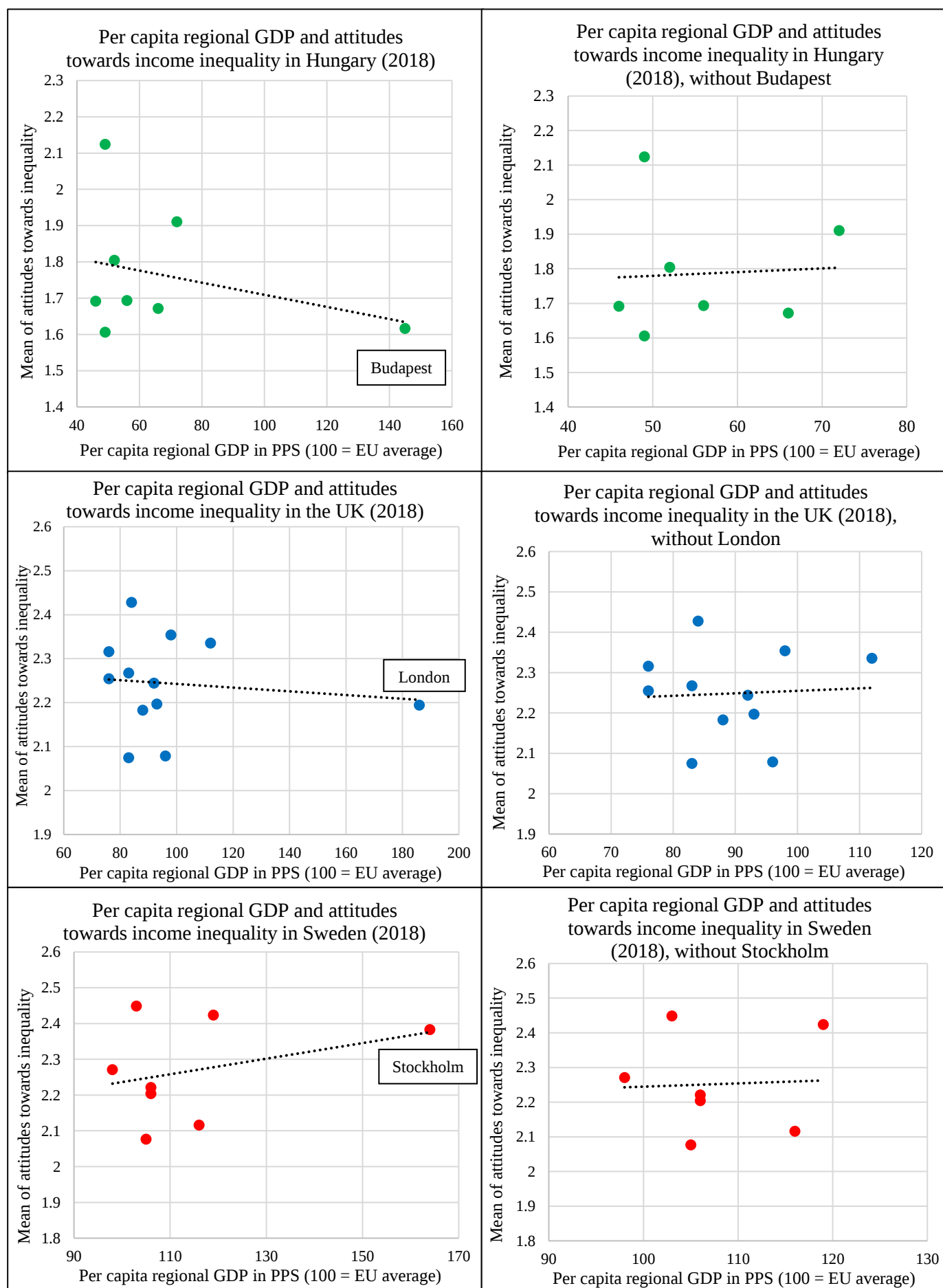
Appendix 3: Per capita regional GDP and mean of attitudes to income redistribution (2018)

Region	Per capita regional GDP in PPS	Mean of attitudes towards inequality	Standard error of mean	Observations
Northern Great Plain (HU)	46	1.691525	.0446528	295
Northern Hungary (HU)	49	1.605634	.047264	213
Southern Transdanubia (HU)	49	2.12381	.1105226	105
Southern Great Plain (HU)	52	1.804348	.0512231	230
Pest (HU)	56	1.693333	.0594018	225
Central Transdanubia (HU)	66	1.671362	.0513342	213
Western Transdanubia (HU)	72	1.910256	.062596	156
North East (UK)	76	2.254386	.0879403	114
Wales (UK)	76	2.315789	.1017904	95
Northern Ireland (UK)	83	2.074627	.1048646	67
Yorkshire and the Humber (UK)	83	2.26699	.0657054	206
East Midlands (UK)	84	2.427711	.0775286	166
West Midlands (UK)	88	2.182432	.0824993	148
South West (UK)	92	2.243902	.0701513	205
North West (UK)	93	2.196721	.0647463	244
Scotland (UK)	96	2.078652	.0710172	178
East of England (UK)	98	2.353712	.0686895	229
North Middle Sweden (SE)	98	2.271429	.0822617	140
South Sweden (SE)	103	2.449074	.0658607	216
Middle Norrland (SE)	105	2.076923	.1145805	65
East Middle Sweden (SE)	106	2.221198	.0597583	217
Smaland and the islands (SE)	106	2.204545	.0735242	132
South East (UK)	112	2.335347	.0539374	331
Upper Norrland (SE)	116	2.116071	.0758325	112
West Sweden (SE)	119	2.423841	.0544744	302
Budapest (HU)	145	1.616505	.0488329	206
Stockholm (SE)	164	2.382979	.0537483	329
London (UK)	186	2.194313	.067357	211
Total		2.113084	.013046	5350

Appendix 4: Mean of attitudes towards income redistribution in the three countries

Year	Attitudes towards income redistribution	United Kingdom	Hungary	Sweden	Total
2002	Mean	2.500	1.832	2.329	2.246
	Standard error of mean	.023	.022	.024	.013
	Observations	2,022	1,633	1,947	5,602
2018	Mean	2.256	1.733	2.319	2.113
	Standard error of mean	.021	.020	.024	.013
	Observations	2,194	1,643	1,513	5,350

Appendix 5: Link between per capita regional GDP and attitudes towards redistribution (2018)



Appendix 6: Mean of attitudes towards income redistribution over each income quintile of respondents in Hungary, Sweden, and the UK (2018)

Household income		United Kingdom	Hungary	Sweden	<i>Total</i>
1st quintile	Mean	2.088	1.474	2.245	1.957
	Standard error of mean	.042	.045	.078	.032
	Observations	469	212	146	827
2nd quintile	Mean	2.201	1.752	2.137	2.059
	Standard error of mean	.051	.054	.053	.031
	Observations	364	230	263	857
3rd quintile	Mean	2.278	1.772	2.179	2.116
	Standard error of mean	.054	.054	.047	.031
	Observations	319	216	352	887
4th quintile	Mean	2.213	1.728	2.364	2.181
	Standard error of mean	.051	.055	.048	.031
	Observations	381	185	390	956
5th quintile	Mean	2.527	1.847	2.563	2.405
	Standard error of mean	.061	.071	.057	.038
	Observations	320	151	287	758
<i>Total</i>	Mean	2.244	1.707	2.306	2.140
	Standard error of mean	.023	.025	.025	.015
	Observations	1,853	994	1,438	4,285

Appendix 7: Mean of attitudes towards income redistribution among prime-age individuals over each income quintile of respondents in Hungary, Sweden, and the UK (2018)

Household income		United Kingdom	Hungary	Sweden	<i>Total</i>
1st quintile	Mean	1.982	1.448	2.720	1.932
	Standard error of mean	.071	.082	.196	.059
	Observations	168	58	26	252
2nd quintile	Mean	2.179	1.784	2.123	2.049
	Standard error of mean	.076	.091	.103	.052
	Observations	156	97	76	329
3rd quintile	Mean	2.291	1.735	2.150	2.099
	Standard error of mean	.074	.080	.080	.047
	Observations	152	98	134	384
4th quintile	Mean	2.135	1.781	2.369	2.166
	Standard error of mean	.060	.080	.061	.039
	Observations	223	96	218	537
5th quintile	Mean	2.478	1.860	2.530	2.366
	Standard error of mean	.074	.090	.075	.047
	Observations	205	101	169	475
<i>Total</i>	Mean	2.222	1.783	2.356	2.117
	Standard error of mean	.031	.030	.037	.019
	Observations	904	450	623	1,977

Appendix 8: Attitudes toward income redistribution over level of education and age group (in Hungary, Sweden, and the UK, among prime-age individuals, 2018)

Level of education	Age group	Attitude	Frequency	Percent
Uneducated	25-34 years	Agree strongly	36	34.62
Uneducated	25-34 years	Agree	38	36.54
Uneducated	25-34 years	Neither agree nor disagree	23	22.12
Uneducated	25-34 years	Disagree	5	4.81
Uneducated	25-34 years	Disagree strongly	2	1.92
Uneducated	35-44 years	Agree strongly	49	38.58
Uneducated	35-44 years	Agree	50	39.37
Uneducated	35-44 years	Neither agree nor disagree	19	14.96
Uneducated	35-44 years	Disagree	8	6.30
Uneducated	35-44 years	Disagree strongly	1	0.79
Uneducated	45-54 years	Agree strongly	72	29.63
Uneducated	45-54 years	Agree	121	49.79
Uneducated	45-54 years	Neither agree nor disagree	37	15.23
Uneducated	45-54 years	Disagree	12	4.94
Uneducated	45-54 years	Disagree strongly	1	0.41
Educated	25-34 years	Agree strongly	98	29.79
Educated	25-34 years	Agree	129	39.21
Educated	25-34 years	Neither agree nor disagree	73	22.19
Educated	25-34 years	Disagree	25	7.60
Educated	25-34 years	Disagree strongly	4	1.22
Educated	35-44 years	Agree strongly	95	27.38
Educated	35-44 years	Agree	171	49.28
Educated	35-44 years	Neither agree nor disagree	57	16.43
Educated	35-44 years	Disagree	22	6.34
Educated	35-44 years	Disagree strongly	2	0.58
Educated	45-54 years	Agree strongly	114	32.02
Educated	45-54 years	Agree	132	37.08
Educated	45-54 years	Neither agree nor disagree	71	19.94
Educated	45-54 years	Disagree	35	9.83
Educated	45-54 years	Disagree strongly	4	1.12
Highly educated	25-34 years	Agree strongly	73	26.26
Highly educated	25-34 years	Agree	119	42.81
Highly educated	25-34 years	Neither agree nor disagree	57	20.50
Highly educated	25-34 years	Disagree	26	9.35
Highly educated	25-34 years	Disagree strongly	3	1.08
Highly educated	35-44 years	Agree strongly	80	22.22
Highly educated	35-44 years	Agree	167	46.39
Highly educated	35-44 years	Neither agree nor disagree	70	19.44
Highly educated	35-44 years	Disagree	35	9.72
Highly educated	35-44 years	Disagree strongly	8	2.22
Highly educated	45-54 years	Agree strongly	60	22.39
Highly educated	45-54 years	Agree	105	39.18
Highly educated	45-54 years	Neither agree nor disagree	69	25.75
Highly educated	45-54 years	Disagree	30	11.19
Highly educated	45-54 years	Disagree strongly	4	1.49

Appendix 9: Attitudes toward income redistribution over income level and age group (in Hungary, Sweden, and the UK, among prime-age individuals, 2018)

Income level	Age group	Attitude	Frequency	Percent
Below median	25-34 years	Agree strongly	73	27.24
Below median	25-34 years	Agree	122	45.52
Below median	25-34 years	Neither agree nor disagree	49	18.28
Below median	25-34 years	Disagree	18	6.72
Below median	25-34 years	Disagree strongly	6	2.24
Below median	35-44 years	Agree strongly	68	31.19
Below median	35-44 years	Agree	106	48.62
Below median	35-44 years	Neither agree nor disagree	30	13.76
Below median	35-44 years	Disagree	12	5.50
Below median	35-44 years	Disagree strongly	2	0.92
Below median	45-54 years	Agree strongly	97	35.93
Below median	45-54 years	Agree	102	37.78
Below median	45-54 years	Neither agree nor disagree	53	19.63
Below median	45-54 years	Disagree	16	5.93
Below median	45-54 years	Disagree strongly	2	0.74
Larger than median	25-34 years	Agree strongly	82	26.03
Larger than median	25-34 years	Agree	126	40.00
Larger than median	25-34 years	Neither agree nor disagree	72	22.86
Larger than median	25-34 years	Disagree	32	10.16
Larger than median	25-34 years	Disagree strongly	3	0.95
Larger than median	35-44 years	Agree strongly	100	21.98
Larger than median	35-44 years	Agree	223	49.01
Larger than median	35-44 years	Neither agree nor disagree	80	17.58
Larger than median	35-44 years	Disagree	44	9.67
Larger than median	35-44 years	Disagree strongly	8	1.76
Larger than median	45-54 years	Agree strongly	93	21.04
Larger than median	45-54 years	Agree	191	43.21
Larger than median	45-54 years	Neither agree nor disagree	102	23.08
Larger than median	45-54 years	Disagree	49	11.09
Larger than median	45-54 years	Disagree strongly	7	1.58

Appendix 10: Attitudes toward income redistribution over town size and gender (in Hungary, Sweden, and the UK, among prime-age individuals, 2018)

Town size	Gender	Attitude	Frequency	Percent
Farm or home in countryside	Male	Agree strongly	4	9.76
Farm or home in countryside	Male	Agree	18	43.90
Farm or home in countryside	Male	Neither agree nor disagree	13	31.71
Farm or home in countryside	Male	Disagree	3	7.32
Farm or home in countryside	Male	Disagree strongly	3	7.32
Farm or home in countryside	Female	Agree strongly	8	18.18
Farm or home in countryside	Female	Agree	19	43.18
Farm or home in countryside	Female	Neither agree nor disagree	15	34.09
Farm or home in countryside	Female	Disagree	2	4.55
Country village	Male	Agree strongly	79	31.98
Country village	Male	Agree	99	40.08
Country village	Male	Neither agree nor disagree	47	19.03
Country village	Male	Disagree	19	7.69
Country village	Male	Disagree strongly	3	1.21
Country village	Female	Agree strongly	119	36.84
Country village	Female	Agree	132	40.87
Country village	Female	Neither agree nor disagree	47	14.55
Country village	Female	Disagree	20	6.19
Country village	Female	Disagree strongly	5	1.55
Town or small city	Male	Agree strongly	117	28.40
Town or small city	Male	Agree	170	41.26
Town or small city	Male	Neither agree nor disagree	81	19.66
Town or small city	Male	Disagree	41	9.95
Town or small city	Male	Disagree strongly	3	0.73
Town or small city	Female	Agree strongly	146	28.46
Town or small city	Female	Agree	218	42.50
Town or small city	Female	Neither agree nor disagree	103	20.08
Town or small city	Female	Disagree	41	7.99
Town or small city	Female	Disagree strongly	5	0.97
Suburbs or outskirts of big city	Male	Agree strongly	42	20.19
Suburbs or outskirts of big city	Male	Agree	97	46.63
Suburbs or outskirts of big city	Male	Neither agree nor disagree	40	19.23
Suburbs or outskirts of big city	Male	Disagree	26	12.50
Suburbs or outskirts of big city	Male	Disagree strongly	3	1.44
Suburbs or outskirts of big city	Female	Agree strongly	50	23.47
Suburbs or outskirts of big city	Female	Agree	100	46.95
Suburbs or outskirts of big city	Female	Neither agree nor disagree	47	22.07
Suburbs or outskirts of big city	Female	Disagree	14	6.57
Suburbs or outskirts of big city	Female	Disagree strongly	2	0.94
A big city	Male	Agree strongly	45	25.28
A big city	Male	Agree	79	44.38
A big city	Male	Neither agree nor disagree	35	19.66
A big city	Male	Disagree	15	8.43
A big city	Male	Disagree strongly	4	2.25
A big city	Female	Agree strongly	67	28.88
A big city	Female	Agree	100	43.10
A big city	Female	Neither agree nor disagree	47	20.26
A big city	Female	Disagree	17	7.33
A big city	Female	Disagree strongly	1	0.43

Appendix 11: Correlation³⁶ matrix of explanatory variables included in original regression model to explain attitudes towards income redistribution among prime-age individuals (25-54 years) in Hungary, Sweden, and the UK (2018)

	Income decile	Year of birth	Father's education	Gender	Gini-index	Per capita GDP
Income decile	1					
Year of birth	-0.0886	1				
Father's education	0.2068	0.1451	1			
Gender	-0.0555	0.0324	0.0315	1		
Gini-index	-0.119	0.0170	-0.1828	0.0643	1	
Per capita GDP	0.1590	0.0397	0.1403	-0.0491	-0.5311	1

Appendix 12: Alternative econometric model including country effects

$$Y_i = \alpha + \beta_1 * father's\ education_i + \beta_2 * gender_i + \beta_3 * year\ of\ birth_i + \beta_4 * decile_{c_i(income_i)} + \beta_5 * country\ effect_{c(i)} + \varepsilon_i$$

Appendix 13: Alternative econometric model including subjective household income instead of income decile

$$Y_i = \alpha + \beta_1 * father's\ education_i + \beta_2 * gender_i + \beta_3 * year\ of\ birth_i + \beta_4 * subjective\ income_i + \beta_5 * gini_{c(i)} + \beta_6 * gdp\ per\ capita_{c(i)} + \varepsilon_i$$

³⁶ Correlation coefficients are obtained using Spearman's rank correlation that allows the presence of ordinal variables among explanatory variables. -1 indicates a perfect negative relationship, 0 indicates no relationship, 1 indicates a perfect positive relationship between two variables.

Appendix 14: Coefficients and standard errors of OLS regression with subjective income to explain attitudes towards income redistribution among prime-age individuals (25-54 years) in Hungary, Sweden, and the UK (2018)

Independent variable	Regression coefficient (and standard error)
constant	6.698
	(4.723)
Difficult on present income	0.137
	(0.129)
Coping on present income	0.358**
	(0.121)
Living comfortably on present income	0.473***
	(0.123)
Year of birth	-0.003
	(0.002)
Educated father	0.069
	(0.060)
Highly educated father	0.148*
	(0.061)
Female	-0.099*
	(0.041)
Gini-coefficient	0.012*
	(0.005)
Per capita GDP of respondent's country	0.012***
	(0.002)
Number of observations	2,056
R ²	0.0926

* p < 0.05, ** p < 0.01, *** p < 0.001. Baseline of regressions: males with uneducated father and a feeling that it is very difficult to cope on their household income. Standard errors are indicated in parentheses.

Appendix 15: Coefficients and standard errors of main OLS regressions to explain attitudes towards income redistribution among prime-age individuals (25-54 years) in Hungary, Sweden, and the UK (2018)

Independent variable	Regression model				
	Original	Country effect	Hungary	Sweden	UK
constant	4.150	4.764	8.192	8.149	2.551
	(5.288)	(5.297)	(9.295)	(9.577)	(8.740)
2nd income quintile	0.119	0.119	0.281*	-0.723**	0.191
	(0.088)	(0.088)	(0.141)	(0.243)	(0.126)
3rd income quintile	0.101	0.101	0.279*	-0.783**	0.300
	(0.086)	(0.086)	(0.140)	(0.227)	(0.129)
4th income quintile	0.127	0.127	0.278*	-0.541*	0.104
	(0.082)	(0.082)	(0.141)	(0.221)	(0.119)
5th income quintile	0.319***	0.319***	0.294*	-0.384	0.413**
	(0.084)	(0.084)	(0.142)	(0.227)	(0.120)
Year of birth	-0.002	-0.002	-0.003	-0.003	0.000
	(0.003)	(0.003)	(0.005)	(0.005)	(0.004)
Educated father	0.061	0.061	0.130	-0.016	0.143
	(0.064)	(0.064)	(0.179)	(0.118)	(0.091)
Highly educated father	0.112	0.112	0.564**	0.054	0.024
	(0.066)	(0.066)	(0.216)	(0.117)	(0.091)
Female	-0.118**	-0.118**	-0.060	-0.034	-0.219**
	(0.045)	(0.045)	(0.079)	(0.079)	(0.073)
Gini-coefficient	0.012*				
	(0.006)				
Per capita GDP	0.0160***				
	(0.002)				
Country effect (Sweden)		0.594***			
		(0.065)			
Country effect (UK)		0.520***			
		(0.063)			
Number of observations	1710	1710	429	574	707
R ²	0.0864	0.0864	0.0473	0.042	0.0394

* p < 0.05, ** p < 0.01, *** p < 0.001. Baseline of regressions: males with uneducated father and a household income in the lowest income quintile. In case of country effects, Hungary is the baseline. Standard errors are indicated in parentheses.