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UNDERSTANDING THE PERCEIVED MAGNITUDE OF INEQUALITY: WHO BROKE THE SOCIAL LADDERS?

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Summary

In recent years, questions regarding economic inequalities have attracted an increasing number of research in the field on interdisciplinary social sciences. However, not enough attention has yet been paid for understanding the perceptions of economic inequalities and, particularly, the perceived size of inequalities in the society.

The central research question set in this analysis explores how the magnitude of economic inequality is perceived in European Union Member states and how possible variation in these perceptions can be explained. Seven theory-based hypotheses are formulated in order to test both individual and contextual country-level effects on perceived magnitude of inequality. Assumed explanations at individual level include different demographic characteristics, subjective social status, expectations towards social mobility and attitudes towards welfare state. Marco level factors, included in formulated hypotheses, consider selected macroeconomic parameters, post-Soviet heritage and typology of welfare regimes.

Standard Eurobarometer survey data (81.5) is chosen as the primary data set for statistical analysis. The designed methodological approach combines multiple and multilevel regression modelling in assessing explanatory capacity of chosen micro and macro-level indicators.

The results yield for diverse explanation of perceived magnitude of economic inequality, including both individual and contextual country-level factors. Findings also reveal that personal believes and attitudes carry the largest part in overall explanatory capacity of the presented research model. More specifically, lower self-placement in society, negative expectations of future social mobility and higher support for welfare state prove to be the most significant explanatory factors for amplified perceptions of inequality magnitude.

Contents

Introduction

Questions concerning economic inequalities and their dynamics in society have been among the topical issues in social sciences for centuries. From Thomas Malthus's essays first published in the midst of the French revolution (Malthus, 1809), to Ricardo's principal rules of scarcity (Ricardo, Gonner, & Li, 1819), Marx's exposed contradictions of capitalism and greed-driven accumulation (Marx, 1867), to Kuznets's curves optimistically connecting progress and development with growing welfare standards (Kuznets, 1955)– all of these milestones in social science thinking were discussing income and wealth disparities in society and proposing ways to regulate them[1]. However it appears that the recent economic downturn puts even more focus on questions around how societies and governments should cope with the increasing gap between the wealthiest and the poorest. The evidence that growing inequalities frequently lead to polarisation and fragmentation between communities, ethnic groups, regions and social classes (A. Alesina, Di Tella, & MacCulloch, 2004), and that they erode the level of trust and cooperation within the society (Kopasz et al., 2013) signals the pressing nature and relevance of this issue.

European citizens are among those who have perceived the changing socioeconomic climate in the most sensitive way, responding to a recent public opinion survey by indicating economic inequality is the greatest danger in the world (as opposed to religious and ethnic hatred, diseases, environmental problems, etc., chosen in other countries) (Pew Research Centre, 2014). Moreover, the comparative studies from before and after the start of the recent economic crisis showed that the attitudes towards inequality are embedded in European welfare principles and significantly differ from American acceptance of the same socioeconomic phenomenon (A. Alesina et al., 2004; Niehues, 2014; Osberg & Smeeding, 2004). Finally, another set of inequality research shows that the perceptions, and more specifically - subjective *misperceptions* of inequalities affect people's behaviour and political attitudes (Kunovich, 2012), employment patterns (Anderson & Galinsky, 2006; Niehues, 2014), democratic values (Chu, Bratton, Lagos, Shastri, & Tessler, 2008), as well as preferences towards redistributive government policies (Cruces, Perez-Truglia, & Tetaz, 2013). All in all, these briefly presented trends take place in one causal chain which starts from perceived levels of inequality -- whether perceived correctly or not -- and set in motion series of events that might even result in the destabilisation of national political systems and long-term recession periods (Petmesidou & Guillén, 2014). Therefore a task to explore and assess what drives these perceptions and make them differ from objectively measured realities is important not only for social scientists, but also policy makers and leaders of public organisations.

This leads to the main research question presented in this proposal: *how is the magnitude of economic inequality perceived in European Union Member states and how can possible variation in these perceptions be explained?* While there appears to be a number of studies on tolerance and attitudes towards economic

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[1] The selection of presented socioeconomic ideas follows the path suggested by Thomas Piketty (2014).

inequality[2], there is limited to no research on the perceived magnitude of inequality. Furthermore, even less attention has been paid towards the gap existing between measured and perceived levels of inequality and how it relates to individual and social factors. Therefore, the current research employs an analytical design combining multiple and multilevel research approaches. It starts from exploring the perceptions of inequality magnitude, controlling actual inequality levels and building explanatory model by gradually adding theory-based individual and contextual-country level factors. The results of this multiple regression analysis are then augmented by multilevel modelling, which adds a complementary layer to the answer of the main research question. More specifically, it allows to investigate to what degree the variation of perceived inequality magnitude could be attributed to the differences between European welfare states.

The first part of the research lays the theoretical framework for the analysis. In the light of the established theoretical background, the second part introduces the main research question, sub-questions and hypotheses. The third part presents the methodological approach, outlines the data used in the research and explains chosen methodological tools. The fourth section discusses the results starting from the descriptive and diagnostic analysis to complex statistical modelling. The final part concludes by providing the overall answer to the research question and discussing the key lessons for understanding perceptions of inequality magnitude that could be taken from this analysis and used in future research. The key findings from statistical analysis are presented directly in the text while supporting information on descriptive statistics is given in Annexes.

1. Theoretical approach

To begin with, the relevance of the presented research question and its focus on subjective rather than objective or measured levels of inequality dynamics is derived not only from the current academic and public debates on inequality in the European Union (Tamás, Medgyesi, & Tóth, 2010) and from all around the world (see, fo examlpe, evidence from Asia and Latin America, respectively Lü, 2014; Zmerli & Castillo, 2015). In recent years, more and more research has shifted attention from purely objective measurements of socioeconomic phenomena to perceptions and subjective evaluation of these issues. Relevant socio-psychological studies employing such rationale have been carried out on topics including unemployment (Mackonyte, Lomos, & van Oorschot, 2014), poverty (Bullock, Williams, & Limbert, 2003; Weiner, 2011), racial discrimination (Chou, Asnaani, & Hofmann, 2012), overall effects of relative deprivation and subjective social comparison processes (Olson, Herman, & Zanna, 2014). All of these studies brought back the century

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[2] The study employs the definition of "economic inequality" as primarily encompassing income and wealth inequalities; however, since it is impossible to perform ex-post verification of the exact meaning that survey respondents attributed to the term, the definition "inequality" is used interchangeably in a synonymous way without changing the scope of the study.

old sociological theorem that situations defined "as real", become real in their consequences (Thomas & Thomas, 1928).

This later statement is especially important in the light of recent studies on the magnitude of inequality and unemployment perceptions. As the results of 21 EU countries, plus Switzerland, Iceland, Norway and US, reveal, there are striking differences between inequality levels perceived by people in their societies and actual income distribution (Niehues, 2014). The common feature in these perceptions is the general tendency towards overestimation of inequalities (especially in the "bottom levels" of societies) and "minimization" of the middle class, however country-based variations in misperception levels were also detected. Another similar argument for overall overestimation of perceived scope of social problems was recently formulated in the analysis of perceived magnitude of unemployment (Mackonyte et al., 2014). To sum up, all aforementioned studies highlight the importance of the analysis of perceptions of social phenomena which opens the door for exploring ways to explain differences in these perceptions occurring between the individuals and societies.

1.1. Individual determinants of perceived inequality

In the beginning it is important to clearly distinguish two different aspects of inequality perception: perceived inequality and the perceived magnitude of inequality. The former is a subject of studies researching the cultural and social context, personal values and the formation of individual attitudes. An array of studies offer explanations to questions on how inequality is tolerated at the micro level, what causes negative and positive attitudes towards inequality and what contextual factors are driving these attitudes. Frequently such studies found evidence to support relative deprivation theory, generally stating that lack of access to certain goods possessed by other members of society amplifies negative assessments of inequality (Hagenaars, 2014; Olson et al., 2014; Osborne, Sibley, & Sengupta, 2015). Other, more frequent determinants of negative inequality perception include high poverty levels (Stranges, 2007) and positive welfare state attitudes (Horváth & Janky, 2012; Koster, 2008; Niehues, 2014). Overall, people's value judgements and perceptions towards inequality are an extensively studied sociological topic that has been analysed using both in-depth case studies and comparative analysis.

The perceived magnitude of inequality, on the other hand, has gathered far less direct scientific attention, despite the fact that most recent studies have found that, for example, redistributive preferences of citizens are affected more by perceived inequality levels than the actual distribution of income or wealth within a given society (Cruces et al., 2013). Nevertheless, current scholars researching perceived inequality still offer several socio-demographic explanations that may lead individuals to over or under-estimate inequality levels. These

features could be grouped in four categories: *demographic variables, employment and education status, subjective social status, expectation of future social mobility and attitudes towards welfare state*[3].

Demographic variables include such indicators as gender (Rostila, Kölegård, & Fritzell, 2012), age (Loughnan et al., 2011; Mackonyte et al., 2014), community type and household composition (Keller, Medgyesi, & Tóth, 2010). *Employment and education status* encompass current occupation status and achieved formal education level (Mackonyte et al., 2014; Nielsen & Alderson, 1995). Demographic characteristics can be closely related to employment and education status. For example, scientists such as Portes and Landolt (1996, 2014) have demonstrated the negative effects certain demographic characteristics can have in relation to an individual's socioeconomic position. Age, household composition, education and employment status in particular have been researched as a part of "social clustering" that is found in societies, where members tend to associate themselves with those who have similar characteristics (Lin, 2000) and consequently have problems breaking out of their "social circles"(English & Carstensen, 2014). Two dominating explanations have been suggested to explain this phenomenon. First, a structural explanation, stating that social groups occupy different economic standing in the society, which means that based on historical and institutional developments some groups (particularly women, elderly, uneducated people etc.) are more likely to be disadvantaged than others and therefore are more likely to experience inequalities in life (Lin, 2000). Second, a homophily based explanation states that individuals tend to interact and share similar attitudes with others with familiar characteristics (Lin, Ensel, & Vaughn, 1981; Lin, 1999). Both of these explanations finally lead to a higher degree of social insecurities. Lack of feeling of social security has also recently been found to have similarly large effect on individuals with regards to the perception of inequalities and other social conditions prevailing in society, such as being under the poverty threshold (Dorling & Dorling, 2015). This way previous scientific research reveals existing connection between socio-demographic patterns and perceived magnitude of economic and social inequalities.

Another important element regarding perceptions of income inequality and previously addressed by scholars is the s*ubjective status* of the person and their *expectation of future social mobility*. This explanation builds on so-called Meltzer-Richards or the Prospect of Upward Mobility (POUM) hypothesis (A. F. Alesina & Giuliano, 2009; Benabou & Ok, 1998). It states that people with below average incomes *today* might not see inequality as a necessarily negative phenomenon, and consequently would not support or demand redistribution, if they believe that they or their children might still "move upward on the economic ladder in the future where progressive taxation will hurt them" (Engelhardt & Wagener, 2014). Alternatively, if the prospect of social upward mobility is significantly low, people see their situation as the result of a vicious circle of inequalities existing in society and demand redistribution (Niehues, 2014). In other words, it shows

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[3] The categorical framework of socioeconomic indicators was primarily adopted from Keller et al. (2010) research on inequality intolerance.

that future social prospects might be very important for an individuals and the way they perceive inequality. Amplification of inequality may be caused perceived negative prospects of social mobility, while high social mobility expectations might in turn trigger downgrading or underestimating the actual levels of existing inequalities.

Finally, previous micro level studies on inequality perception also suggest to look at personal attitudes towards welfare state and personal responsibilities of one's wellbeing (A. Alesina et al., 2004; Keller et al., 2010; Nielsen & Alderson, 1995). Attitudes towards larger welfare states are found to be linked to higher levels of poverty and inequality intolerance (Bullock et al., 2003; Jost, Glaser, Kruglanski, & Sulloway, 2003) as well as inclination to see the social situation in the society worse than it actually is (Kluegel & Smith, 1986). Overall, "support for progressive policies appears to be largely related to perceiving poverty as a structural problem" (Bullock et al., 2003, p.53), which would therefore amplify its perceived magnitude. Furthermore, in my own research I have previously strategically proved and concluded that the "perception of growing poverty is largely associated with belief that poverty is caused by societal rather than individual or fatal reasons" (Raižytė, 2015), which further shows that personal attitudes play an important role in overall perception of socioeconomic phenomena.

1.2. Country level factors contributing to inequality misperception

Although there exists a variety of different socio-demographic and socioeconomic characteristics attributed to individuals, these individuals also live in different social contexts, clustered by their nation states and consequent socio-political and cultural backgrounds. Previous research has repeatedly made suggestions to look at cross-country variations regarding perceptions of socioeconomic phenomena more attentively (Agnello & Sousa, 2014).

One of the most historically prevailing explanations why individual perceptions towards social phenomena differ across European countries is the different post-communist and post-socialist background existing in Europe. Scholars have repeatedly raised arguments and empirically proved their assumptions that citizens of the former countries of Soviet Union (namely, current EU members Estonia, Latvia and Lithuania) and Soviet satellite states that were under the Warsaw Pact (current EUR members Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia and former East German). (Andrews & Leigh, 2009; Jones, 1981) experience lasting influence of distrust in public offices (Borowski, 2014; Marková, 2004), amplified perception of corruption (Kenisarin & Andrews-Speed, 2008; Sapsford & Abbott, 2006) and overall differing attitudes towards welfare principals in comparison to mature Western European democracies (Polese, Morris, Kovács, & Harboe, 2014). Moreover, most recent research directly questioning inequality perceptions in Europe also revealed post-communist historic background to be the most significant macro level factor included in the analysis (Keller et al., 2010). Overall, the research addressing the legacy of so-called "Soviet heritage" allows

establishing a theoretic link between such historical background in the country and perceived higher magnitude of inequality in these countries.

Another line of macro level arguments regarding the perceptions of inequality is drawn based on ever growing discussion and analysis of Esping-Andersen's welfare regimes in Europe. Keller, et al. (2010), suggest that based on differing social values found in traditional regime types (namely between the most contrasting liberal and social democratic types (Esping-Andersen, 1990, 2002)), citizens from "social democratic regimes", like Sweden or Denmark, would be more likely to see inequality as a negative phenomenon than citizens of "liberal regime" countries, like the United Kingdom or Ireland. However, arguments assigning a particular regime type to a trend of perception towards inequality still require further analysis, since scholars working in this field find validations for contradicting arguments and end up concluding that life satisfaction (and consequent social reality perception) depends on a country's economic status rather than its welfare regime (Fahey & Smyth, 2004). Even more diverse discussions regarding the role of Esping-Andersen's welfare regimes are introduced with further modifications of the original typology. Fenger (2007) argues that in order to capture the uniqueness of Central Eastern European (CEE) countries, they should be included in three separate groups: former USSR states, successful CEE countries and developing CEE countries (Fenger, 2007). This three-type clustering of post-socialist European Union state is also suggested by Javornik (2014), based on a familialism approach to understanding care policies, but her proposition of countries' distribution to the clusters differs. The original typology was also modified throughout the years, suggesting distinctive Latin or Mediterranean types (Saint-Arnaud, Bernarnd, 2003). Finally, Achterberg and Yerkes (2009) examine processes of convergence between different welfare states and conclude that although no general trend towards neo-liberalization or retrenchment could be proven, there is an overall tendency towards increasing number of similar features between liberal and social democratic welfare states which draw them closer together . In the presence of such large-scale socioeconomic and socio-political movements, it is not surprising that clear distinctions between the welfare regimes cannot be easily established. Nevertheless, the existing evidence from previous scholarly work supports the argument to include welfare regimes as a possible factor affecting variation in inequality perceptions in European countries.

In addition to previously discussed theoretical concepts allowing classification of countries according to certain socio-political factors, over the years researchers have also developed socio-economic explanations why certain sociological phenomena have been assessed differently in countries across Europe. In relation to the current analysis, the most convincing arguments come from scholars arguing that individual perception of social reality can be influenced by country's overall economic status (expressed as GDP growth levels) (Tamás et al., 2010), the rate of unemployment (Mackonyte et al., 2014) and relative poverty levels (Niehues, 2014; Raižytė, 2015). Moreover, the economic developments that took place since the beginning of the recent economic and financial crisis, which started in 2008, led to the construction of another important macro level

indicator - fiscal austerity volume -- which refers to [explain] implemented by national governments. The implementation of fiscal austerity volume has led to "accelerated income inequality" in the view of some academics (Beckfield, 2006; Guajardo, Leigh, & Pescatori, 2011; Karger, 2014). Moreover, severe fiscal consolidation measures implemented by a number of countries across the EU have polarised societies and increased the number of people highly dissatisfied with worsened socioeconomic conditions (Sommers & Woolfson, 2014) and growing inequalities (Figari, Paulus, Sutherland, & others, 2015). Scholars have argued that the consequences of "the effects of fiscal consolidation packages on household incomes… [such as]…cuts in spending on public services" would have potentially larger effects than the economic downturn itself (Avram et al., 2013). Other papers have added to the argument by proving that various fiscal consolidation measures are typically associated with an increase in poverty and a rise in the income gap (Smeeding, 2000), as well as a growth in economic inequalities in general (Agnello & Sousa, 2014; Ball, et al, 2013). Overall, the existing scholarly work builds a strong basis for hypotheses connecting the discussed macroeconomic parameters, individual level characteristics and perceived magnitude of economic inequalities in the society.

1.3. Findings from theoretical explorations

All in all, while the overviewed studies offer a number of approaches to analyse (mis)perceived inequality, none of them tries to incorporate these perspectives into a single, methodologically sound basis. The research design proposed in this model attempts to carry out this task.

To sum up, all previously addressed individual and country level determinants of inequality perception draw a map of possible triggers that might affect a person's assessment of inequality magnitude and influence its inflation or, in less frequent cases, deflation. However, very few recent academic studies have made an attempt to connect personal level characteristics with contextual country-level factors driving personal attitudes. Consequently there are not many well-established theoretical explanations relating certain country level macroeconomic/macro-social patterns and individual inequality perceptions. This knowledge gap in existing literature is addressed by combining two analytical approaches simultaneously exploring interdependencies of micro and macro level indicators. Multiple regression and multilevel modelling are used together in order to establish the list of significant predictors and later to cluster individuals within boundaries of different states, analysing how much of inequality magnitude perceptions lay within national context people are embedded in.

2. Research question and hypothesis

The overview of different academic theories and scientific explanations exploring perception of economic inequality and linking it with different individual socioeconomic characteristics and contextual socio-political

factors brings back the main research problem, which seeks to connect these two explanatory levels into one research model and raise the question *how is the magnitude of economic inequality perceived in European Union Member states and how can possible variation in these perceptions be explained?*

Based on scholary works presented in the previous section, the first hypothesis was be derived directly from the research question and assume that the *perceived magnitude of economic inequality tend to be higher than the actual economic inequality rates in the EU countries (H1).* Further analysis examines how and to what extent the perceived magnitude of inequality is explained by variation in individual-level socioeconomic characteristics and socio-political attitudes. On the basis of reviewed academic theories and previous relevant scientific evidence two main hypotheses are looked at on this level. First, the assumption that *different levels of perception of inequality magnitude are found among individuals of different demographic criteria (H2),* including different gender (1), age (2), community type (3), household composition (4), employment status (5) and education levels (6) is tested. Since there were no clear indications in the literature how exactly each type (or combination) of these criteria should affect inequality perception the hypothesis is constructed only on the basis of the assumed difference in perceived magnitude rather than direction (i.e. smaller or larger).

Secondly, still looking at individual level differences, the analysis investigates to what extent subjective status and prospects of social mobility influence perception of inequality magnitude. This part of analysis will be carried out assuming that *low subjective socioeconomic status (7) and low expectation of future social mobility (8) amplify the perceived magnitude of inequality (H3).* The last micro level factor is used in order to accept or disprove the assumption that *support for larger welfare state is associated with perceived high inequality magnitude (H4).*

The second part of multiple analysis introduces contextual macro level variables and asks to what extent the perceived magnitude of inequality is explained by variation of country-level socio-political characteristics. To answer this question, first it is assumed that *(H5) perceived magnitude of economic inequality increases in countries having lower GDP rates (H5.1), higher unemployment (H5.2) and poverty (H5.3) rates and higher level of fiscal austerity measures implemented by government in the wake of recent economic crisis (H5.4).* Furthermore, following the evidence found in the previous research, it is also assumed that *the heritage of the history of Soviet ruling increases the perceived inequality magnitude (H6).* Last but not least, the contextual explanatory factors are extended to included typology of welfare regimes. Taking its argument form a number of scholars' work, the last hypothesis assumes that *perceived levels of inequality magnitude significantly differ across welfare regime types (H7).*

Finally, after testing all listed hypotheses the analysis finally asks whether there are clustering structures behind the micro level sampling, which ''customize'' the effects on perceived inequality magnitude across countries (Snijders, 2011). Although the literature sources do not provide enough support to build theory-based hypothesis towards between and within-country differences with regards to perceived inequality

magnitude, it is important ask this explorative question for two main reasons. First it allows to formulate a more comprehensive answer to the main research question by addressing a possible non-independence of factors causing different perceptions of inequality magnitude across countries. Secondly, this multilevel approach steps outside the more conventional methodological tool box and paves the way for additional prospective analysis.

3. Data management and research design

3.1. Data limitations and sample selection

Despite highly increased scholarly interest in the trends and dynamics of both objective and subjective inequality in recent years, the available survey data for wide scope analysis remains limited. While economic inequality metrics are counted annually by several international organisations and agencies (e.g. Eurostat, IMF, World Bank), the attitudes and perceptions of inequality are rarely the subject of these large international survey programmes. Moreover, the most frequently used data sources for statistical analysis of such tendencies - the International Social Survey Programme (ISSP): Social Inequality wave and European Values Study (EVS)/ World Values Survey (WVS) – present three main areas of limitations regarding the current research.

First, the majority of academic studies approaching the topic of perceived inequality stress the fact that latest data obtained from the most widely used data set - ISSP surveys - are from 2009, and from 2008 in term of EVS. This means that by the year 2015 these surveys present more historic rather than current data on the issue and, moreover, cannot reflect on the impact of the recent economic crisis, which has been named the "game-changer" of socioeconomic climate by academics (Atkinson & Morelli, 2011; Hein, Truger, & van Treeck, 2012; Petmesidou & Guillén, 2014). Therefore, although these datasets allow to analyse longitudinal perspective dating from 1980's, the latest evidence they offer reflect a period economic growth, rather than the realistic picture of the socioeconomic context in place since the Great Recession started in Europe (Grauwe, 2009; Hemerijck, 2009).

Secondly, the coverage of European countries offered by ISSP survey data on inequality only portrays twenty of the 28 EU Member states. While it does constitute the overall majority and therefore could be used in studying micro level data, aggregation to the macro level not only limits the number of total cases of analysis, but also distorts the picture by excluding countries like Greece, Ireland, Lithuania, Romania and others. Taking into account the importance of the socioeconomic lessons learned from these countries (Armingeon & Baccaro, 2012; Atkinson & Morelli, 2011; Petmesidou & Guillén, 2014) it would be incorrect to analyse social climate in EU while excluding these countries from the model.

Third, although ISSP and EVS survey data dominate the field of inequality research, none of them specifically tackles the question raised in this study, specifically the perceived magnitude of inequality. There is only one

direct question in the ISSP study that could potentially be applied as a dependent variable[4] for perceived levels of inequality. Other questions, as well as the entire EVS database, are applicable to analyses exploring attitudes towards inequality and preferred government actions, so they are more suited for value studies rather than perception-behavioural studies (Costa & Dias, 2014).

Therefore, the main data for the current research are obtained from the Standard Eurobarometer survey, wave of 2014 (81.5), and contains 272910[5] individual responses to questions that specifically tackled social climate problems, including economic inequalities, poverty and social exclusion. The Eurobarometer surveys have been previously used for inequality related research in longitudinal perspective (Solt, 2008) and in cross-sectional analysis (Keller et al., 2010). Overall, the survey answers are used to build the index for perceived inequality magnitude (IPI) and serve as a source of all micro-level independent variables, required for hypothesis testing. In addition, macro level data are gathered from three main sources: 1) literature used for building a theoretical framework, in relation to the typology of post-soviet countries and welfare regimes; 2) the report on "Structure of government debt", regarding volumes of austerity (Eurostat, 2014); 3) Eurostat database regarding macroeconomic variables, including the control variable - *Gini index,* which is the most frequently used indicator of distribution of income inequality (The World Bank Data Sets, 2014). The use of selected data sets in operationalisation of research hypotheses is further discussed in the following sections.

3.2.   Operationalisation of variables

3.2.1. Dependent variable

The main dependent variable used to measure the perception of inequality magnitude is constructed as an index from answers to three questions in Eurobarometer survey: 1) (QA2) how do you judge the way inequalities and poverty are addressed in your country; 2) (QA5) how widespread the poverty is in your country; 3) (QA7) to what extent do you agree that income differences between people are far too large in our society. The response rubric to each question was a Likert scale from 1 to 4, where 1 indicated the strongest feelings on mismanaged inequalities, highly widespread poverty and largest perceived income differences, respectively, and 4 indicated the reversed attitudes (i.e. the perception that inequalities are well-managed, poverty is not at all widespread and income differences are not large[6]).

These particular questions were selected based on findings of previous research which suggested that there is a high correlation between perceptions on inequality and poverty (Raižytė, 2015). In order validate this

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[4] Question 14 in the 2009 ISSP Social Inequality survey asks individuals to describe the perceived stratification of society in terms of pyramid, egalitarian, and reversed pyramid structures.
[5] Covering all 28 EU Member States
[6] The question QA7 originally had a reversed scale of values, value 1 corresponding to most positive perceptions towards management of inequalities and value 4 the most negative; however for the purpose of consistency it was recoded following the value logic of questions QA2 and QA5.

assumption, both correlation and factor analysis were carried out using answers to the above-mentioned questions. First, a non-parametric Spearman's rho coefficient was chosen for measuring correlations between selected variables[7]. As seen in Table 1 below, there is a statistically significant (p<.005)[8] relationship between all the selected variables. Although correlation degrees are not strong[9], varying from .294 to .361, together they show a clear pattern indicating that selected questions A2, A5 and A7 can be further used for creating an aggregated index.

Table 1. Bivariate correlation analysis between components of the index of perceived inequality magnitude

			(A5) Poverty - extent in country	(A7) Situation: way addressing poverty
Spearman's rho	(A2) Statements on poverty - too large income differences	Correlation coef.	,345[**]	,294[**]
		Sig. (2-tailed)	0,000	0,000
		N	26661	25491
	(A5) Poverty - extent in country	Correlation coef.		,361[**]
		Sig. (2-tailed)		0,000
		N		25513
**. Correlation is significant at the 0.01 level (2-tailed)				

Source: author's calculations on Eurobarometer survey (81.5) dataset

Furthermore, a confirmatory factor analysis was run for these same variables in order to verify their compatibility (Brown, 2015). According to KMO (Kaiser-Meyer-Olkin) Measure of Sampling Adequacy, the sample represents the overall value of 0.632, which is above the required minimum (KMO=0.5; Field, 2013) suggested for successful factor construction. As expected, all three individual variables[10] group into one single factor, which explains 55.44% of common variance. All in all the confirmatory factor analyses regarding the dependent variable shows that the theoretical assumptions towards high degree of correlation between indicators on inequalities and poverty can be accepted and therefore it is possible to construct a dependent variable using a common index.

The method chose for constructing the index is the mean based computation of values (Miller & Acton, 2009). Using the mean based computation of values a new continues variable is created ranging from 1 (1 indicating the strongest perceptions on the smallest magnitude of inequality) and 4 (indicating the largest perceived magnitude of inequality). The responses containing "don't know" values (less than 3% of total responses) were

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[7] Non-parametric test was selected because assumption of normal distribution of values was violated in terms of responses to question QA7 (Field, 2013)

[8] All references to statistical significance levels here and further in the paper are based on (Cumming, 2013; Field, 2013)

[9] This paper adopts the scientific interpretation of correlation degrees stating that coefficient values between .0 and .25 show a low degree of correlation, between .25 and .75 a moderate degree and between .75 and 1.0 a high degree (Field, 2013).

[10] The communalities of each variable (i.e. the proportion of each variable's variance that can be explained by the factor) in the factor correspond to: A2 – 0.533, A5 – 0.605 and A7 – 0.525 (Brown, 2015).

replaced with an average value for that question (and were hence included in the analysis), Furthermore, the created inequality perception index (IPI) was tested for correlations with the initial components and showed a statistically significant high degree of correlation with all of them (Spearman's rho 0.708 with QA2, 0.757 with QA5 ad 0.56 with QA7, p<.005) proving that the new computed index is a valid measure representing both the initial values and the summative indication of an individual's perceptions towards magnitude of inequality (the descriptive statistics of the inequality perception index as well as other variables is presented in Table 5 in Annex 2.

3.2.2. Independent micro-level variables

According to hypothesis (*H2*) presented in section 2, six demographic characteristics were used from Eurobarometer survey: gender, age, household composition, community type, current employment status and years spent in formal education. The descriptive statistics regarding these indicators is presented in Table 4, Annex 1., which also includes reference categories for created dummy variables, which were necessary in order to run chosen statistical models (Cohen, Cohen, West, & Aiken, 2013).

Furthermore, following the next hypothesis (*H3*), two variables were added to the analysis, measured by questions: "How could you place yourself in society, based on the scale 1 to 10 ('1' corresponds to "the lowest level in the society" and '10' corresponds to "the highest level in the society")?" and "What are your expectations for the next twelve months: will your life and living conditions get: better (corresponds to '1') , remain the same ('2') or get worse ('3')?. Finally, the last micro level independent variable for measuring welfare state attitudes (*H4)*, was operationalised by survey question "Which of these two statements comes closest to your view?: The Government should take more responsibility to ensure that everyone is provided for (1); People should take more responsibility to provide for themselves (2), It depends (3)". Answer to all of these questions were also re-coded into dummy variables (presented in the same Table 4) in order to use them in regression model[11].

3.3.3. Independent macro-level variables

In order to answer how economic inequality magnitude is perceived in the EU countries, the key control variable, used in all subsequent analysis is the actual level of economic inequalities in the country, measured by the Gini index, which shows average the income distribution of a country's residents (Ravallion, 2003). The Gini index is used in the analysis in its percentage form, 0 representing total equality and 100% - total inequality. It is taken from Eurostat and is used in testing all hypothesis as control factor for perceived magnitude of inequality.

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[11] Answer options "Don't know" were also present in each question, but since they were chosen by less than 3% of all respondents in each question they were treated as missing values in regression modelling and list-wise excluded.

The following country level variables, also extracted directly from the Eurostat include GDP per capita level in euros in 2014, poverty rates (2014) and long term unemployment rates (2014). An additional variable on fiscal consolidation volume is taken as synthesized measure form published Eurostat report and is operationalised as "impact of consolidation on general government debt" in its percentage form (Eurostat, 2014). All descriptive information of the macro level variables is included in Table 5, Annex 2.

The two remaining hypotheses are addressed including Soviet heritage and welfare regime typology as macro level dummy variables. First, two separate variables are created for testing Soviet heritage hypothesis. First, "the former USSR country" variable[12] and also "former USSR countries + Warsaw Pact countries" variable[13], which expands the variable from countries that were in the Soviet Union to countries that spent the Cold Was under Soviet influence (Huntington et al., 1993). The variable on welfare regimes *(H7)* is constructed based on Ferrera's (2005) and with Guarnizo-Herreño's et al. (2014) edition, applying the following classification: Sweden, Finland, and Denmark -

Scandinavian regime; the UK and Ireland - Anglo-Saxon; Austria, Belgium, France, Germany, Luxemburg and Netherlands - Bismarckian; Greece, Italy, Portugal and Spain – Southern; and Czech Republic, Estonia, Hungary, Poland, Slovakia and Slovenia - Eastern. Furthermore, the remaining countries, unaccounted under typology, which was selected on the basis of the widest coverage of the EU Member States, were categorized based on their geographical position. Bulgaria, Romania, Lithuania and Latvia were added to the Eastern type, while Cyprus and Malta were grouped under Southern type[14].

3.3. Methodological approach

The main objective of this research is to investigate how the magnitude of economic inequality is perceived in European Union countries and how the possible variation in these perceptions can be explained. The findings of literature review revealed the complex list of factors assumingly embedded in the possible explanation, which calls for a quantitative research approach and a methodological tool, which could handle the assessment of the relationship between a dependent variable and multiple independent variables. As many scholars in the field acknowledge, ordinary least squares multiple linear regression (or multiple regression, in short) is "unquestionably" the most widely used statistical technique to study this kind of relationship (see, inter alia, Aiken et al., 1991; Allison, 1999; Cohen et al., 2013; Pedhazur, 1997). From the two main types of multilevel analysis – predictive and causal - this research will apply causal regression approach, where independent

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[12] Created dummy variable is constructed were '1' corresponds to Lithuania, Latvia and Estonia and '0' corresponds to the rest of EU countries

[13] Created dummy variable is constructed were '1' corresponds to Lithuania, Latvia, Estonia, Bulgaria, Romania, Poland, Croatia, Czech Republic and Slovakia and '0' corresponds to the rest of EU countries.

[14] In the multiple regression the variable was recoded into 4 dummy variables using Scandinavian regime as a reference category.

micro and macro variables are theory based and regarded as causes of the dependent variable (i.e. perceived inequality magnitude) (Hayes, 2006). The independent variables are entered in the overall model on step-by-step basis, starting from the key control variable, which is the index of actual inequality, then moving to micro-level and macro-level explanatory variables(Cohen et al., 2013). This way the results of statistical tests allow to determine the contribution of each set of independent variables into the overall capacity of the regression model to explain variance in perceived magnitude of inequality. Furthermore, all necessary assumptions are tested before running the actual regression analysis in order to see whether any data parameters violate the standard requirements for this statistical modelling which could in turn significantly distort the results (Aiken et al., 1991). These are presented and discussed in the following section.

The second part of the statistical approach uses primary components of multilevel models in order to estimate how much the ''effects'' of independent variables are applied to each individual level (level-1) and how much of their variance can be explained by nesting individuals within nation states (Gelman & Hill, 2006), i.e. varying between second level (level-2) units – countries (Heck, et al., 2013). The application of the multilevel method has been proven in the diverse field of sociological topics including welfare state generosity and poverty reduction (Brady, Fullerton, & Cross, 2009), women's bargaining power in the labour market (Iversen & Rosenbluth, 2006), role on inequalities in secularization of political attitudes (Karakoç & Bacskan, 2012) and effects of economic crisis on workers' mobilisation (Martin & Brady, 2007). Although, the theories studied in the section 1 do not specifically prescribe the simultaneous existence of between and within-county effects on perceived magnitude of inequality, this exploratory step of the analytical approach complements the main research question by testing the degree of non-independence in the effects on inequality perception across micro-level (Hox, 2010). In short, it provides an estimation how explanatory the effects on inequality perception are ''customized'' across countries, indicating clustering structures behind the micro level sampling in the initial dataset (Snijders, 2011). Therefore, it provides vary valuable information for the current research.

Both multiple regression and multilevel modelling are performed using SPSS 20.0 statistical software. All calculations of descriptive statistics, diagnostic tests and recoding procedures, which were used preparing variables for the analysis, were also carried out in the same software package. The following section gives an overview of the key results from running the analysis. The section presents the results of the study first briefly presenting the descriptive statistics and results of diagnostic tests. The second part focuses on results of multiple regression, and the third – on findings from multilevel modelling.

4. Research results

4.1. Descriptive and diagnostic statistics

The descriptive findings of the analysis not only help to set the scene for more complex statistical modelling, but are also essential in testing the first hypothesis, which assumes that *perceived magnitude of economic inequality tend to be higher than the actual economic inequality rates in the EU countries (H1).* The overall mean of index of perceived inequality magnitude (IPI) is 3,17 on a 1-4 scale (where 1 corresponds to lowest and 4 – to highest levels of perceived inequality magnitude) with a standard error (SE) of 0.003 (SD=0.54). It shows a relatively well distributed data, slightly skewed towards right, which indicates perceptions of inequality magnitude to be higher than average. The Gini index, on the other hand, has an average value of 29,8, which indicates below average value on the absolute scale (1-100), (SE=0.65, SD=3,58). In addition, a histogram plot on aggregated level also shows much more dispersed values.

Moreover the comparison of aggregated country means, visually presented in Figure 1, shows a great variance in the comparative ratio of perceived and actual levels of inequality across countries. For example, countries like Slovenia, Slovakia, Czech Republic, Hungary forms a patterns which reveals a much higher perceived inequality magnitude than the average, indicated by the main correlation line, draw in the figure. In contrast, Luxembourg, Malta and Denmark are particularly obvious cases where higher actual income inequalities produces lower perceived inequality rates, in comparison to other countries. Furthermore the results show that on the aggregated macro-level the correlation between the variables is strong (0.535, Spearman's rho, p<0.005), but the calculated R^2, indicating the variance of IPI explained by Gini index, is still only 0.288 (p<.005), which corresponds to only 29% of explained variation of inequality perception. In other words, it shows that more than two thirds of the variation in perception of inequality magnitude even on aggregated level cannot be explained by actual inequality levels. Together with previously shown descriptive comparisons it allows to accept the first hypothesis and further conduct the analysis, seeking to investigate what causes the variation of inequality perceptions of micro-level.

Figure 1. The correlation between actual and perceived levels on inequality (country level aggregation)
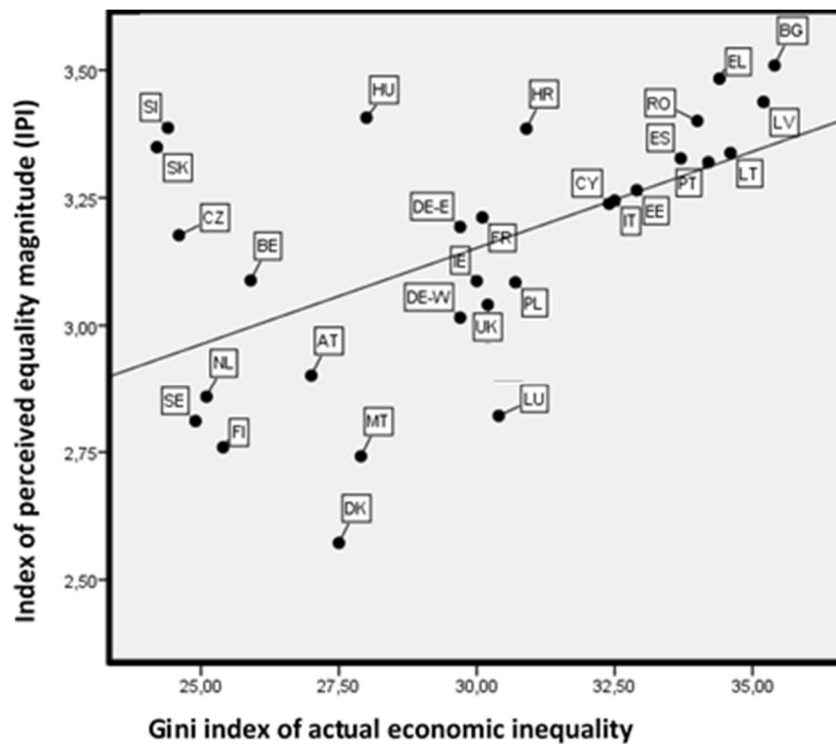
Source: author's calculations on Eurobarometer survey (81.5) dataset and Eurostat data

4.2. Diagnostic statistics: testing assumption for regression modelling

Several key assumptions have to be checked before running multiple regression analysis in order to avoid type I and type II errors occurring in the model interpretation stages (Cohen et al., 2013). These assumptions include testing for multivariate normality, linear relationship, multi-collinearity, auto-correlation and homoscedasticity (Cohen et al., 2013; Mason & Perreault Jr, 1991).

The normality assumption, tested by histogram plot and drawn normality curve (Field, 2013) shows a good normal distribution of the main dependent variable. While independent macro level continuous variables (i.e. GDP per capita, poverty, unemployment rates and fiscal consolidation) are more problematic in terms of fitting the normality curve (especially in terms of fiscal consolidation) the normality assumption regarding the overall large sample (N=27910) of the survey can still be accepted. In terms of other micro-level dichotomous variables which are recoded and included in multiple regression as dummy variables, the rule suggested by scholars is to create categories that would encompass no less than 15% of the population (Cohen et al., 2013). This rule is maintained and small categories (less than 3% of sample), corresponding to "don't know" answers are further treated as missing data (i.e. cases are excluded list-wise).

Linearity assumption between continuous variables is also accepted after testing it by Spearman's rho bivariate correlations. Each pair with the dependent variable forms a statistically significant (p<.001) weak to medium correlation (ranging from 0.034 to 0.354, Spearman's rho), indicating that variables can be included in linear modelling (Snijders, 2011). Multi-collinearity is checked again by assessing correlation matrix (there are no correlations found higher than 0.08, Spearman's rho (Field, 2013)) and Variance Inflation Factor (similarly, VIF<10,(Field, 2013). While the latter measurement is mildly violated between dummy variables representing age, overall the non-multicolinearity assumption can be accepted with noted abovementioned limitation.

The no-autocorrelation requirement is measured by Durbin-Watson test which checks the null hypothesis that the residuals are not linearly auto-correlated (Cohen et al., 2013). As a rule of thumb values of between 1.5 and 2.5 show that there is no auto-correlation in the multiple linear regression data. The test value in selected data set is 1.69, therefore no-autocorrelation assumption is also accepted. Finally, the scatterplots are used to check for homoscedasticity (i.e. assumption that the variance of errors is the same across the sample (Snijders, 2011). The histogram of standardized residuals, associated with inequality perception index, demonstrates almost perfect normality (i.e. very little disturbances from the normality curve, which is probably associated with large sample size). The P-P plot further shows very little to no deviations from the line of least squares, calculated for sample data. All in all, the assumption on normal distribution of errors can also be accepted.

Overall, the diagnostic statistics allows to accept all key assumptions used for data modelling in typical linear regression designs. In simple terms: all abovementioned tests, used to measure reliability of data selected for regression modelling, indicate that current regression model is likely to produce robust and trustworthy results and not be significantly tempered by structural deficiencies of the entered variables. Therefore, type I or type II errors should be avoided and minor violations, detected through the course of the tests should not lead to serious biases(Pedhazur, 1997). This allows to finally move to testing the remaining hypothesis and applying the methodological framework for answering the research question.

4.3. Results of multiple regression

The overall multiple regression model was built in stages. Each stage includes variables, used to address hypotheses raised from literature review. Table 2 (see below) provides summary results of the overall modelling exercise.

The main regression output presented in Table 2 shows the development of six models (plus zero model, which is only used to test relationship between dependent and control variable) from individual to contextual -country level factors. The results shown in the main model summary lines indicates that the main regression model fit criteria, given as R^2,(Pedhazur, 1997) remains statistically significant (p<.001) within each model and overall aggregates the value of 0.275, which means that collectively all independent variables explain around 28% of variance in perceived inequality. More importantly, the

positive and also statistically significant (p<.001) gradual change in R^2 shows that each set of included factors (micro and macro-level) adds unique strength to overall explanatory capacity of the entire model. This finding alone indicates that hypotheses raised from theoretical discussions finds preliminary support in empirical data (although coefficient analysis is further needed to see whether assumed negative and positive influence of certain variables could be confirmed).

Hypothesis 1 and control Model O: Actual inequality:

The zero model statistically assess how much of the variation in the inequality perception index can be explained just by actual inequality size in the country at micro level. It tells that 6,4% of the perceived inequality magnitude can be predicted by actual average inequality rates ($R^2 = 0,064$, p<0.001). This result signifies two main things. First that actual inequality in the country is an important statistically significant predictor and must be controlled for in all following models. Secondly, it confirms the findings presented at aggregated level descriptive analysis and supports the argument that the actual inequality explains relatively small part of perceived inequality magnitude's values. To put this in the terms of the statistical findings, the gap between actual and perceived inequality within the analysed sample of individuals, accounts for almost 94% of all observed values, meaning that the vast majority of perceived inequality's variation indeed depend on other factors. Moreover, the positive change Gini coefficient also indicates every percentage shift in Gini value on average increases IPI by 0,04 units.

Table 2. Results of multiple regression analysis: effects on dependent variable IPI (index of perceived inequality magnitude)

	Model 0: Actual inequality		Model 1: Demographic characteristics		Model 2: Subjective social status		Model 3: Support for welfare state		Model 4: Macroeconomic factors		Model 5: Soviet heritage		Model 6: Welfare regimes	
	Unstd. B	Std. B	Unstd. B	Std. B	Unstd. B	Std. B	Unstd. B	Std. B	Unstd. B	Std. B	Unstd. B	Std. B	Unstd. B	Std. B
(Constant)	2,06***(0,03)		2,24***(0,03)		2,47***(0,04)		2,66***(0,03)		3,51***(0,04)		3,71***(0,04)		2,95***(0,09)	
Gini coeff.	0,04***(0)	0,25	0,03***(0)	0,23	0,03***(0)	0,2	0,03***(0)	0,17	0*(0)	-0,03	-0,01***(0)	-0,07	0,01**(0)	0,05
Gender (ref.cat. female)			-0,08***(0,01)	-0,07	-0,07***(0,01)	-0,07	-0,06***(0,01)	-0,06	-0,05***(0,01)	-0,05	-0,05***(0,01)	-0,05	-0,05***(0,01)	-0,05
Age (ref.cat. 15-24 years old)														
24-39 years old			0,07***(0,02)	0,05	0,05**(0,02)		0,05***(0,02)	0,04	0,07***(0,01)	0,05	0,07***(0,01)	0,05	0,07***(0,01)	0,05
39-55 years old			0,09***(0,02)	0,07	0,06***(0,02)	0,05	0,06***(0,02)	0,05	0,09***(0,02)	0,07	0,08***(0,02)	0,06	0,08***(0,02)	0,07
older than 55			0,02(0,02)	0,02	0,02(0,02)	0,02	0,03*(0,02)	0,03	0,05***(0,01)	0,05	0,05**(0,01)	0,04	0,05***(0,01)	0,05
Settlement type (ref.cat. middle size town)														
Rural area			0,04***(0,01)	0,03	0,03***(0,01)	0,03	0,04***(0,01)	0,03	0 (0,01)	0	0(0,01)	0	0 (0,01)	0
Large city			0,03**(0,01)	0,02	0,03***(0,01)	0,03	0,03**(0,01)	0,02	0,01(0,01)	0,01	0(0,01)	0	0(0,01)	0
Household type (ref.cat. single without children)														
Single with child/-ren			0,03*(0,02)	0,01	0,02(0,02)	0,01	0,02(0,01)	0,01	0,02**(0,01)	0,01	0,02(0,01)	0,01	0,01(0,01)	0,01
Non-single without child/-ren			-0,05***(0,01)	-0,04	-0,03***(0,01)	-0,03	-0,03**(0,01)	-0,03	-0,03***(0,01)	-0,03	-0,03***(0,01)	-0,03	-0,03***(0,01)	-0,03
Non-single with child/-ren			-0,02*(0,01)	-0,02	0(0,01)	0	0(0,01)	0	-0,03**(0,01)	-0,02	-0,03*(0,01)	-0,02	-0,03**(0,01)	-0,02
Age of leaving full time education (ref.cat. less than 15 years old)														
Between 16 and 19			-0,01(0,01)	-0,01	0,02*(0,01)	0,02	0,02(0,01)	0,02	-0,02(0,01)	-0,01	-0,02(0,01)	-0,01	-0,03**(0,01)	-0,03
After 20			-0,18***(0,01)	-0,16	-0,1***(0,01)	-0,09	-0,09***(0,01)	-0,08	-0,08***(0,01)	-0,07	-0,08***(0,01)	-0,07	-0,08***(0,01)	-0,07
Still studying			-0,25***(0,02)	-0,11	-0,16***(0,02)	-0,07	-0,15***(0,02)	-0,07	-0,16***(0,02)	-0,07	-0,16***(0,02)	-0,07	-0,17***(0,02)	-0,08
Employment status (raf.cat. not employed)			-0,07***(0,01)	-0,07	-0,04***(0,01)	-0,04	-0,03***(0,01)	-0,03	-0,03***(0,01)	-0,03	-0,03***(0,01)	-0,03	-0,03***(0,01)	-0,03

	Model 0: Actual inequality		Model 1: Demographic characteristics		Model 2: Subjective social status		Model 3: Support for welfare state		Model 4: Macroeconomic factors		Model 5: Soviet heritage		Model 6: Welfare regimes	
Self-placement in society (ref.cat. higher level)														
Middle level					0,02***(0,01)	0,02	0,01***(0,01)	0,01	0***(0,01)	0	0***(0,01)	0	0***(0,01)	0
Lower level					0,18***(0,01)	0,1	0,15***(0,01)	0,09	0,12***(0,01)	0,07	0,12***(0,01)	0,07	0,11***(0,01)	0,06
Expectations towards living conditions (ref.cat. will get worse)														
Remaining the same					-0,14*(0,01)	-0,13	-0,12(0,01)	-0,11	-0,1 (0,01)	-0,09	-0,1(0,01)	-0,09	-0,1(0,01)	-0,09
Will get better					-0,29***(0,01)	-0,23	-0,24***(0,01)	-0,19	-0,2***(0,01)	-0,16	-0,2***(0,01)	-0,16	-0,19***(0,01)	-0,15
Responsibility over providing better welfare (ref.cat. on national government)														
On people themselves							-0,27***(0,01)	-0,24	-0,24***(0,01)	-0,21	-0,24***(0,01)	-0,21	-0,24***(0,01)	-0,21
It depends							-0,1***(0,01)	-0,07	-0,07***(0,01)	-0,05	-0,07***(0,01)	-0,05	-0,08***(0,01)	-0,05
People at risk of poverty rates (2014)									0,01***(0)	0,08	0,01***(0)	0,11	0*(0)	0,04
GDP per capita (2014)									0***(0)	-0,22	0***(0)	-0,24	0**(0)	-0,1
Long-term unemployment rates (2014)									0,01***(0)	0,09	0,01***(0)	0,1	0,02***(0)	0,16
Fiscal consolidation volume (2014)									0*(0)	0,01	0(0)	0	0(0)	0
Former USSR countries (ref.cat. no)											0,17***(0,02)	0,08	0,09***(0,02)	0,04
Former USSR+Warsaw Pact countries (ref.cat. no)											-0,07***(0,01)	-0,06	-0,17***(0,01)	-0,14
Welfare regime (ref.cat. Scandinavian)														
Anglo-Saxon													0,15***(0,02)	0,08
Southern													0,05(0,03)	0,03
Bismarckian													0,19***(0,01)	0,14
Eastern													0,36***(0,04)	0,32

	Model 0: Actual inequality	Model 1: Demographic characteristics	Model 2: Subjective social status	Model 3: Support for welfare state	Model 4: Macroeconomic factors	Model 5: Soviet heritage	Model 6: Welfare regimes
Model summary							
R	0,253	0,331	0,39	0,446	0,505	0,509	0,524
R²	0,064***	0,11***	0,152***	0,199***	0,255***	0,259***	0,275***
Std. Error of the Estimate	0,53	0,52	0,5	0,49	0,47	0,47	0,46
R Square Change	0,064***	0,045***	0,043***	0,047***	0,056***	0,004***	0,015***

Source: author's calculations on Eurobarometer survey (81.5) dataset and Eurostat data
Note * p < .05, ** p < .005, *** p < .001. (Statistical significance was calculated based (Field, 2013); numbers in parentheses represent standard errors.

Table 3. Summary results of multilevel modelling: effects on dependent variable IPI (index of perceived inequality magnitude)

	Empty Model	Model 0: Actual inequality	Model 1: Dem. character.	Model 2: Subjective status	Model 3: Welfare attitudes	Model 3: Welfare regimes	Model 4: Socialist heritage	Model 5: Macroeconomic factors
Residual	0,234*** (0)	0,234*** (0)	0,227*** (0)	0,221*** (0)	0,21*** (0)	0,212*** (0)	0,212*** (0)	0,213*** (0)
Intercept [subject = country]	0,061*** (0,02)	0,043*** (0,01)	0,041*** (0,01)	0,034*** (0,01)	0,031*** (0,01)	0,014*** (0)	0,012*** (0)	0,006***(0)
Wald Z	3,853***	3,843***	3,84***	3,827***	3,834***	3,747***	3,733***	3,48***
ρ	0,20678	0,15523	0,15298	0,13333	0,12863	0,06194	0,05357	0,027397

Source: author's calculations on Eurobarometer survey (81.5) dataset and Eurostat data
Note * p < .05, ** p < .005, *** p < .001. (Statistical significance was calculated based (Field, 2013); numbers in parentheses represent standard errors.

Hypothesis 2 and Model 1: Demographic characteristics

The comparison between control model and the first model, shows that addition of all demographic level variables, while controlling for Gini index, increases the explanatory capacity of the model by 4,5%. Overall it shows that demographic variables together with actual inequality level, explains 11% of perceived inequality magnitude.

A closer look at the list of all cofounding variables in this model indicates high statistical significance of each of them shows that each of them is statistically significant and therefore has the effect on inequality perception. Therefore, the hypothesis assuming dependence between perceived inequality and demographic criteria can be accepted. Moreover, standardized B values which allow to compare influence of independent variables show that the most significant effect of inequality perception is derived from years of education. People who left formal education after the age of 20 are, on average, perceiving inequality magnitude 0.18 index points lower, in comparison to people who left education system before the age of 15 or had no formal education at all. Also, high optimism is found among people were still studying: they on average perceive inequality 0.25 index point lower than individuals I reference category. The analysis also revealed that statistically higher inequality magnitude perception is found among women (perceived 0.08 index point higher IPI than men) and among people whose household composition includes children (no matter, whether they from household alone or with partner). The perception of inequality magnitude also seems to be increasing with age. Finally, both residents of rural and city areas perceive larger inequality magnitude than people living in middle size towns and, non-surprisingly, unemployed respondents perceive 0.07 higher inequality that employed individuals.

Hypothesis 3 and Model 2: Subjective socioeconomic status

Addition of two variables measuring subjective socioeconomic status increases model's capacity by 4,3% and allows independent variables (actual inequality, demographics and subjective status) to explain 15,2% of variance of perceived inequality magnitude. Furthermore, the addition of self - placement in society and social mobility prospects also confirms the theoretical suggestions, formulated by H3. Middle and lower self-placement in society, on average, increase perceived inequality magnitude by 0.02 and 0.18 index points in comparison to the higher placement. The expected tendency is also confirmed by expectations of social mobility: believing in better conditions in the future decreases perceived inequality by 0.29 index points in comparison to individuals who expect their living conditions to get worse. Therefore third hypothesis is accepted.

Hypothesis 4 and Model 3: Support for welfare state

The largest increase in explanatory capacity on the model per variable is brought by indicator of support for more welfare state. This indicator alone increase model's overall capacity by 4,7 % and bring overall variance explained (by Gini index and all individual level variables) to 19,9%. Furthermore, the findings also confirms the hypothesis, showing that people, who believe that responsibility for ensuring better wellbeing and welfare should rest on individuals themselves see inequality, on average, 0.27 index point lower in comparison to people who think that provision of welfare in the primary responsibility of the government. People who are unsure also perceive inequality slightly lower than welfare state supporters.

Hypothesis 5 and Model 4: Macroeconomic factors

A first set of country level variables is introduced in model 4. It helps to increase explanatory strength of the regression by unique 5,6% points. Together with all previously entered individual-level factors that are now controlled for, the macroeconomic factors constitutes a model which explains 25% of IPI. Both higher poverty and unemployment rates, as expected are increasing perceived inequality magnitude rates. Meanwhile individual effects of GDP rate and fiscal consolidation volume seem to be small to be capture by changes in inequality perception index. All in all, statistical evidence found support for partial confirmation of the fifth hypothesis.

Hypotheses 6 and 7: Models including Soviet heritage and welfare state regimes.

Finally the last two models examines the relationship between in the perceived equality magnitude and Soviet (socialist) heritage and welfare regime types. First hypothesis founds a rather conflicting answer within statistical evidence. While individuals from former Soviet countries really seem to perceive higher magnitude of inequality (by 0.17 index point in comparison to the rest of EU countries), the assessment of all countries from post-soviet shows lower perception of inequality than the rest of EU. With regards to welfare regimes, the analysis indeed find the evidence that perceptions of inequality magnitude differ across welfare states. The results suggest that individuals from all welfare regimes in comparison to Scandinavian, perceive higher levels of inequality. The largest difference is identified between Scandinavian and Eastern welfare regime types, where citizens from the latter regime type perceive 0.36 index point higher inequality in comparison to their Nordic neighbours. Finally, the last two model increase regression's capacity by respective 0.04% and 1.5%.

Overall, the multiple regression model allows to explain 27,5% of variance in perceived inequality magnitude, which is considered an acceptable model's strength even in predictive regression designs (Cohen et al., 2013). It increases its explanatory strength from just 6.4%, initially explained by the control variable. The added 21,5% (all of which have statistical significance) show the reliability of the

application of selected theoretical framework. The last past of the analysis adds the multilevel aspect to the research and asks whether there are any higher level structures, clustering the effects of the individual and country-level factors, just examined in multiple regression.

4.4. Results of multilevel modelling

Table 3, presented above, shows selected results from multilevel analysis, since this research is only interested to estimate the degree of non-independence in the outcome variables across individual level units. This estimate is called the interclass correlation coefficient (ICC, marked ρ in Table 3) and is used to describe the amount of variance in the dependent variable explained by the grouping structure (i.e. country in this research) (Hox, 2010).

The higher the ICC, the more homogeneous are the units (Gelman & Hill, 2006) (i.e. individual substantially vary on the basis of their country of origin).

The empty model provided in Table 3 shows that before introducing any explanatory factors (including the control variable - Gini index), 20,7% of the total variance in perceived inequality magnitude is accounted for by differences countries. However, after introducing the explanatory variables, prescribed by the hypothesis, the ICC score gradually drops until only 2,7%. This indicates that after introducing explanatory factors interclass variability in perceived inequality magnitude is reduced and "nesting" on individuals only explains 2,7% of variance explained by introduced factors.

Although some more rigorous calculations are needed in order to estimate trustworthy weights of between and within-county variation's coefficients (which is not the objective of this research), this preliminary modelling exercise already allows to connect previous multiple regression results with the multilevel analysis. More specifically, it confirms the independence of individual and country-level effects explored in the findings of the multilevel regression. To put it in statistical terms, the multilevel model shows that only 2,7% of the overall 27,5% of variance in IPI explained by independent variables can be attributed to the nesting of individuals, hence the multiple regression is sufficient methodological tool to examine this phenomenon.

5. Conclusion and discussion

"The miracle of your mind isn't that you can see the world as it is.
It's that you can see the world as it isn't." (Kathryn Schulz, 2011)

The central research question raised in this analysis asked how the magnitude of economic inequality is perceived in European Union Member states and how possible variation in these perceptions can be explained. After exploring theoretical debates presented by social scientists over the years and covering multidisciplinary perspectives, seven well-grounded hypotheses were formulated. Complex methodological approached, designed for the analysis allowed to investigate both individual and contextual factors possibly effecting the perceptions of inequality magnitude. The findings of the analysis, therefore, allow to confirm that the perceived size of inequality is most likely caused by a number of factors, including demographic characteristics, personal believes and contextual attributes. Together they form a puzzle where each part reinforces the other and together help to explain how and why we perceive inequality in a certain way.

Answering the research question, first it should be noted that perceptions of inequality magnitude in EU countries indeed differ and tend to be higher than actual inequality rates. Important explanatory factors to these differences proved to be the demographic characteristics as well as macroeconomic performances of the studied countries, showing that both micro and macro-level variables are equally relevant in explaining perceptions of social phenomena. In addition, both heritage of the past of Soviet ruling and current classification of countries into welfare regimes also were confirmed as important parts in explaining variation of perceived inequality magnitude. However, the most significant parts of the puzzle proved to be the subjective social status and attitudes towards welfare state. A significant line was drawn between higher self-placement in the society, more optimistic attitudes towards social mobility and more positive (i.e. lower) perception of inequality magnitude. The other personal attitude-related factor showed that attributing more responsibilities for wellbeing for the welfare state is related to higher perceived inequalities.

Both of the findings prove that "social ladders", although imaginary, really affects how we see reality. Being on the "upper step" and not in need of immediate support, from either welfare state or family, might easily result in believing that everybody should be able to reach that upper rung or thinking that individuals in the society are all equally equipped to achieve their goals and have proper support on their individual journeys. However, most recent social and economic realities across the EU show that this is not necessarily the truth. This research proves how uncertainties towards future, low economic status or perceived hopelessness in current situation might result in misperceptions of social realities and frequently, even amplifications of negative social phenomena which in turn could have even more society-damaging consequences.

Although the findings of this analysis provide very broad answer to research question it greatly contributes to the overall understanding of perceived inequality magnitude. By applying complex statistical design which combined micro and macro –level variables in meaningful and statistically robust way, the analysis narrows the knowledge gap, which was evident after examining previous scholar works. The chosen statistical approach and seven independent assumptions allowed this research to assess both individual and contextual country-level factors on perceived inequality magnitude in combined way. Moreover, the results of this research could also be seen in much broader scope than just the analysis of the perceptions of inequality magnitude. Along with the growing academic interest in the perceptions of socioeconomic and socio-political phenomena in the societies, it would particularly interesting to see how discoveries of this research could be compared to perceived scale of poverty, volumes of relative deprivation, size of the generosity of welfare state or even magnitude of various forms of social investments and protection the person gets from the state during his or her lifetime. The old paradigm of "perceived reality" becoming "real" is especially important to consider in modern social sciences which try to investigate emerging patterns in the societies in the era of fast information exchange and equally fast ways to spread misinformation which could help to establish misconceptions of social reality.

Furthermore, although the presented research demonstrates an overall highly robust and reliable analysis, the limitations of the constructed analytical framework should be addressed. The major caveat of the study is the arbitrary construction of the index of perceived inequality magnitude (IPI). Although the variables selected as index's components were both theoretically grounded and statistically validated in terms of intra-compatibility, the scales of IPI and actual Gini index, used as control variable, were essentially different. Therefore, the arguments about levels of "misperceived" of inequality magnitude should be formulated with caution, always referring to the ratio between aforementioned indicators, rather than their raw values. The verification and possible elaborations of the index would also be welcomed steps in any future research

Finally, it is important to note that this research does not try mark misperceptions of inequality magnitude as *wrongly* perceived social realities. The way individuals see the world is determined by *X* number varying factors, including unique elements from persons' past and previous experiences in life, as well as future expectations, determined, once again, by a long and probably non-exhaustive array of influences. However, any research in to this "miracle" of human perceptions and the way we see puzzles of the world is in itself a fascinating way to explore the building elements of social reality that we all live in. Whether these elements appear to be solid well-defined *bricks* or swinging *rungs* of the rope-ladder can essentially determine what society we are building today and hoping to live in in the future.

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7. Annexes

7.1. Annex 1.

Table 4. Descriptive statistics of micro-level variables

Variable	Operationalisation	N	Percent of total population	Mean	Std. deviation
Gender	Male	12650	45,32	n/a	n/a
	Female	15260	54,68	n/a	n/a
Age	*exact	27910	100	50,11	18,63
Age (recoded as used in the analysis)	15 - 24 years	3083	11,05	n/a	n/a
	25 - 39 years	5719	20,49	n/a	n/a
	40 - 54 years	6810	24,4	n/a	n/a
	55 years and older	12298	44,06	n/a	n/a
Household type	Single household (HH) without children	8074	28,9	n/a	n/a
	Single HH with children	1697	6,1	n/a	n/a
	Multiple HH without children	8934	32,0	n/a	n/a
	Multiple HH with children	8771	31,4	n/a	n/a
	Other	348	1,5	n/a	n/a
	Refusal	86	-	n/a	n/a
Community type	Rural area or village	9591	34,36	n/a	n/a
	Small/middle town	10795	38,68	n/a	n/a
	Large town	7501	26,88	n/a	n/a
	Don't know	23	0,08	n/a	n/a
Current employment status	Employed	12882	46,16	n/a	n/a
	Not employed	15028	53,84	n/a	n/a
Years when respondent left formal education	Up to 15	4562	16,35	n/a	n/a
	16-19	11447	41,01	n/a	n/a
	20+	9207	32,99	n/a	n/a
	Still Studying	2016	7,22	n/a	n/a
	No full-time education	296	1,06	n/a	n/a
	Don't know/ refuse to answer	382	1,37	n/a	n/a
Self-placement in society (1-lowest; 10-highest)	*exact	27910	100	5,40	1,587
Self-placement in society (recoded as used in the analysis)	High level (1)	6630	23,8	(pseudo mean) 1,99	(pseudo std. deviation) 0,69
	Middle level (2)	14235	51,0		
	Low level (3)	6236	22,3		
	Don't know/Refusal (99)	809	2,9		
Expectation towards social mobility	The expectations towards future: the living situation: Will get better (1)	6937	24,9	(pseudo mean) 1,85	(pseudo std. deviation) 0,59
	Stay the same (2)	17054	61,1		
	Will get worse (3)	2997	10,7		
	Don't know/Refusal (99)	922	3,3		
Attitudes towards welfare responsibilities	The Government should take more responsibility	13110	47,0	n/a	n/a
	People should take more	9789	35,1	n/a	n/a

responsibility				
It depends	4330	15,5	n/a	n/a
Don't know	681	2,4	n/a	n/a
Total:	Number of respondents	27910	100	-	-

Source: author's calculations on Eurobarometer survey (81.5) dataset

7.2.   Annex 2.

Table 5. Descriptive statistics of macro-level variables

	N	Mean	Std.error of mean	Std. deviation	Min.	Max.	Skewness	Std. error of skewness
Gini coeff. of equalised disposable income (2013)	27910	29,82	0,02	3,67	24,20	35,40	-0,07	0,01
GDP per capita (2014)	27409	23923,51	75,48	12495,94	5800,00	45600,00	0,25	0,01
People at risk of poverty rates (2014)	27910	25,37	0,05	8,03	14,60	48,00	0,89	0,01
Long-term unemployment rates (2014)	27910	5,22	0,02	4,01	1,50	19,50	1,84	0,01
Fiscal consolidation volume (2014)	26394	4,33	0,03	4,17	0,00	14,90	1,44	0,02

Source: author's calculations on Eurostat dataset (2015)