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ATTITUDES TO INCOME INEQUALITY AS AN ELEMENT OF SOCIAL CAPITAL¹

This article presents the results of research on an aspect of social capital, i.e. attitudes to inequality, which has seldom been investigated. The aims of this article are to analyze spatial variance in such attitudes within Poland, compare these results with research carried out in other countries, and investigate the nature of the intention-behavior gap regarding attitudes to inequality. The study method combined experimental economics with a questionnaire and was carried out in April-June 2014, based on a sample of 1,540 students studying in 16 regional capitals of Poland. Our results indicate that any correlations between declarations and observed behavior are very weak, both at the level of individuals and regions. The declared attitude to inequality seems to be associated with the wealth of the region a student comes from, rather than actions that promote income equality. A comparison of the results obtained in the Ultimatum Game in various countries indicates that Polish students show a relatively high level of aversion to inequality, together with a relatively strong aversion to punishing individuals for proposing an unequal distribution of resources.

Keywords: inequality, social capital, experimental game theory, Poland, ultimatum game
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1. INTRODUCTION

The study of economic growth and development is undoubtedly a key field in economics. Ever since the dawn of economics as a field of research, economists have aimed to explain the mechanisms of the origins of wealth, as well as elucidate the determinants of, and barriers to economic development and effectiveness. The resulting economic systems are simultaneously factors in determining the emergence of inequality and imbalance in the level of development in time, space and society. Theories and models of the process of economic growth have been formulated at various levels: from the micro to the global scale. Less attention has been

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paid to the distribution of the resulting wealth between various social groups or individuals, even though this problem seems to be of no less importance in the present climate of increasing social and regional inequality.

In recent years, there has been a growing discussion regarding the question of the distribution of the wealth that we create. This was the result of, amongst other things, recent economic crises of a global nature and the increasingly visible problem of poverty. Such developments are reflected in the work of Nobel prize winners such as A. Sen (Sen 1973, 1992) and J. Stiglitz (Stiglitz 1994, pp. 49–50), as well as the activities of the World Bank and the International Monetary Fund (IMF) (see Birdsall and Londono 1997; Deininger and Squire 1996; Ostry and Berg 2011).

Without considering how wealth is distributed, we can only carry out a superficial analysis of how wealth is created. In reality, the way in which wealth is now distributed influences how it will be created in the future and vice versa, the amount of wealth now being created affects how it will then be distributed. Thus as J. Stiglitz writes, there is ultimately no reason to consider the effectiveness of wealth creation in isolation from the distribution of wealth (Stiglitz 1994, pp. 49–50). Regarding the question of the origins of unjustified inequality, the financier G. Soros notes that an excess of competition relative to the level of cooperation can lead to instability and excessive inequality (Soros 1997; from: Szopa 2005, p. 249). The recent global economic crisis seems to confirm this hypothesis: it is increasingly argued that the sources of the economic recession were a crisis in moral values² and inequality (Rutkowski 2016). The authors agree with the view of Soros that the effectiveness and fairness of the economic system are inseparable due to the nature of social capital.

The nature of the relationship between wealth creation and distribution is very complex. In this article, we specifically consider one aspect of this relationship – an analysis of attitudes towards inequality, which can arguably be a component of social capital influencing both the level of economic development and the way in which wealth is distributed.

The goal of this article is to analyze attitudes to inequality amongst Polish students. One of the aims is to investigate spatial variation in such attitudes from the point of view of both regional differences and variations between

² Evidence for such a crisis are: the irresponsibility of governments who promise too much, the demand for profit in the financial sector, fabrication of financial data and ratings, the short-term thinking of politicians and excessive consumption at the cost of future generations.

urban and rural areas. The other aims are to investigate the gap between the declarations and the observed behavior and compare the attitudes of Polish students with those of students from other countries. To achieve these goals, a study was carried out on a sample of 1,540 students in the period April-June 2014, in 16 regional capitals of Poland. The study method combined experimental economics (the Ultimatum Game) with a questionnaire. This research gives an insight into the nature of social capital in Poland, in particular with regard to a rarely investigated aspect, attitudes towards inequality. Spatial variation in these attitudes are investigated and a comparison with the results of research from other countries is made. The combination of experimental economics with a questionnaire enables a comparison of the results obtained by both approaches.

The research described in this article is innovative in developing knowledge about social capital, not just because it considers a relatively unknown area, i.e. attitudes towards inequality, but also due to the methods employed³. Thanks to the use of experimental game theory it was possible not just to record the declarations made by the study group, but also observe the actions resulting from an individual's attitude towards inequality, which is rare in such studies. Another important aspect of our study is that the use of experimental game theory allows us to make some comparisons with other societies. Such a comparison enables us to assess the influence of social capital in Poland on the distribution of wealth.

This article consists of eight sections, including the introduction. Section 2 introduces the notion of social capital. The relation of social capital with the affluence of society, as well as income and wealth inequality, is considered in Section 3. Section 4 briefly considers the relation between social capital and religious culture and identity. Section 5 presents the study methods used to investigate attitudes to inequality, together with a description of the methods applied in the authors' research. Section 6 describes the declarations made and behavior observed in the Ultimatum Game from the point of view of social capital in Poland and the gap between declarations and behavior. A comparison with the results of studies in other countries is given in Section 7. Section 8 gives a conclusion of the results.

³ Research on the relation between attitudes to inequality and social capital have been carried out in Japan, purely on the basis of the General Social Survey, GSS (Yamamura 2012). M. Theiss (2006) analysed the relation between social capital and income at the micro (individual) level, based on the declarations; this analysis was on income inequality rather than attitudes towards income inequality.

2. SOCIAL CAPITAL

It is impossible to give a precise definition of social capital, since there is no generally accepted or coherent interpretation of this term. Social capital can be analyzed at various levels (from individuals to groups and then to society as a whole), from various points of view (structural, i.e. analysis of social networks; normative, i.e. analysis of norms and moral values, as well as behavioral, such as analysis of behavior in particular circumstances). Social capital can be defined using a positivistic approach (using objective measures), or normatively (using subjective descriptions). It can be treated as a private good, club good or public good. The following aspects are considered in many definitions of social capital: trust, social networks, the common good, cooperation, engagement and mutual benefit. However, none of these elements appear in all of the definitions of social capital.

J. Coleman defines social capital on the basis of the characteristic traits of a society – social networks, norms and trust, which promote cooperation and the coordination of people's activities for the common good (Coleman 1988). According to R. Putnam, social capital relates to the characteristics of a society, such as trust, norms and engagement, which lead to a society becoming more effective and individuals coordinating their actions (Putnam 1995, p. 258). Similarly, F. Fukuyama defines social capital from the point of view of the effectiveness of group actions and understands it as the ability to cooperate resulting from the informal rules and norms within a group or organization that enable members to achieve common goals (Fukuyama 1997). N. Lin understands social capital as social networks and the resources resulting from these networks (Lin 2001, 3). Similarly, J. Czapiński stresses the power of networks, defining social capital on the basis of social networks regulated by moral norms or customs (and not only by the formal rule of law), which act as an interface between individuals and society in order to achieve cooperation („Diagnoza społeczna 2007. Warunki i jakość życia Polaków” – Social diagnosis 2007. Objective and subjective quality of life in Poland). Grootaert and van Bastelaer interpret social capital as the interactions between institutions, social networks and values which govern interpersonal relations and lead to socio-economic development (Grootaert and van Bastelaer 2002, pp. 3–4). Other authors stress the fundamental role of norms and values. For example, Knack understands social capital as the common values, norms, informal networks and membership of organizations which influence the ability of individuals to cooperate with others in order to achieve common goals (Knack 2002). Grootaert considers the norms and

social relations embedded in the social structure that enable cooperation between individuals to achieved specified goals (Grootaert 1998, pp. 1–2). Ostrom defines social capital in terms of the norms and rules, the distribution of power, understanding and expectations regarding the behavior of individuals and groups and even the structure of families (Ostrom 2000, p. 43).

The concept of social capital adopted by the authors of this article comes from the definitions of R. Putnam, J. Coleman and F. Fukuyama, based on the idea that social capital is expressed not only in the existence of social networks and trust, but also in the influence of these factors on observable forms of cooperation or altruism.

3. SOCIAL CAPITAL AS AN ELEMENT LINKING WEALTH AND THE LEVEL OF INEQUALITY

On one hand, a lot of research indicates that social capital is an important factor influencing productivity and economic growth (Hall and Jones 1999; Knack and Keefer 1997; Zak and Knack 2001; Temple and Johnson 1998; Whiteley 2000; Bjørnskov 2012; Dearmon and Grier 2009; Berggren, Elinder, and Jordahl 2008). This is due to the fact that high levels of social capital result in low transaction costs, reduced investment risk and an economic environment which is favorable to enterprise, cooperation and innovation. On the other hand, not only does the amount of wealth produced by a society depend on social capital, but also the distribution of wealth. Social capital is a factor determining how wealth is distributed, since the rules governing how wealth is divided depend on the norms and values embraced by society. Fairness in trading also depends on social capital. The sides undertaking a transaction understand their rights and obligations according to the social capital of society. However, social capital also influences how the sides interact and how gains from transactions are divided (Matysiak 2005, p. 218).

Aspects of social capital are often categorized as bonding or bridging (see Putnam, 1995). Depending on the form it takes, social capital can lead to increased or reduced social inequality. A high level of bonding capital, e.g. based on family relationships or close friendships, can have a strong influence on the level of income inequality. On the one hand, such capital can reduce the levels of inequality within a group since the related norms and values often lead to pressure on equalizing incomes within a group and curbing the activity of ambitious individuals. On the other hand, such social

capital may lead to increased inequality between different social groups, especially between those characterized by different levels and/or forms of social capital. Societies in which there is a high level of bridging capital (based on open, more informal relationships) can attain higher levels of wealth than more closed societies dominated by bonding capital, which may be closed to innovation, new experiences and the acquisition of knowledge, as well as not allowing ambitious individuals or individualists to thrive. Hence one can observe the indirect effect of social capital on social inequality – based on the influence of social capital on the development of groups and societies at various levels, e.g. local or regional.

However, feedback occurs since the level of social capital is in turn affected by society's level of development. This interaction can take both positive and negative forms. Banfield (1958) argued that increasing wealth may reduce the level of amoral familism and thus promote positive forms of social capital, which has been confirmed by empirical research (Sabatini 2008). Research has also indicated a strong correlation between income *per capita* and individual freedom, and according to Bilson (1982), the level of economic development influences the level of individual freedom, rather than vice versa. It has also been argued that wealthy individuals are more trusting, since the (economic) consequences of them being cheated are not dramatic. This is not the case for poorer individuals who are thus less trusting (Volland 2010). A high level of GDP *per capita* is normally associated with the satisfaction of the material needs of the majority of society. Such societies can thus concentrate on achieving non-material goals, including the formation of civil society, while the level of trust and openness also tend to rise.

However, economic growth can also lead to decreasing levels of social capital. The amount of time devoted to production and consumption means that less time is available to develop social networks. Higher levels of development are also associated with greater variability in the employment market. This changes the structure of society by increasing its heterogeneity, which is only positive to a certain degree: excessive variability in the employment market has negative effects on social ties. High professional and spatial mobility lowers people's feelings of security and stability. Alesina and La Ferrara (2000) show that the level of participation in groups requiring direct contact between members is low within heterogeneous societies, arguing that the resulting fall in social capital also has a negative effect on economic growth. In addition, the negative effect of economic growth on social capital is often associated with increasing economic inequality.

Social inequality, in particular income and wealth inequality, is deemed to be an important factor of social capital. Knack and Keefer (1997) showed that income inequality (as measured by the Gini coefficient) is strongly negatively correlated with the level of trust and cooperation in society. Alesina and La Ferrara (2000) found that the level of participation in organizations is significantly lower in regions with high levels of income inequality. Excessive inequality, associated with a feeling of economic injustice, leads to the erosion of belief in the morality and ethics of economic life. Such inequality, together with the accompanying poverty and social marginalization, reduces the level of trust and thus has a negative effect on the level of social capital. Exploitation destroys social ties, replacing them with suspicion and polarization (Sztudynger 2005, p. 28ff; Woźniak 2008, p. 132ff; Swianiewicz *et al.* 2008, p. 64).

A study by Fischer and Torgler (2013) carried out in 26 countries indicates that increases in income inequality are significantly associated with a fall in generalized trust. This was true both for those with above average earnings and those with below average earnings. It is not only the attitudes of those who are economically unsuccessful, which lead to a decrease in social capital, but even those who are relatively well-off become less trusting.

Relative poverty is associated with frustration and dissatisfaction. This often results from a feeling that those who are well off are exploiting the rest of society, particularly when income inequality does not result from market forces and competition, but from inequality in the distribution of power, privileges and rights. Such a situation does not increase distrust to specific wealthy individuals, but to higher levels of distrust in general. Relative poverty also leads to dissatisfaction with the structure of society. Less well-off individuals may blame the state and its institutions for such income inequality, which reduces both generalized trust and vertical trust (i.e. trust towards the state and its institutions).

Sociologists have observed a cause-effect relationship between relative poverty and social protests, crime as well as drug addiction (Canache 1996; Stiles, Liu, and Kaplan 2000). Relative poverty also leads to increased tax evasion (lower tax morale) and reduced feelings of civic responsibility (Fischer and Torgler 2013, p. 9), causing the erosion of social capital.

Hence the speed and nature of economic growth can increase or decrease the level of social capital and lead to either the strengthening or weakening of societal norms and values, including those norms which influence the distribution of wealth. Simultaneously the pace and character of economic

growth, as well as the distribution of wealth, depend on social capital, in particular on the level of altruism, as well as attitudes towards inequality and injustice. These relationships have not yet been investigated in detail.

4. SOCIAL CAPITAL AND RELIGIOUS CULTURE

Social capital, including society's attitude to wealth creation and inequality, is also modulated by the history and the culture of society, in particular its religiosity. The terms "Protestant work ethic" and "Catholic collectivism" are well-used. For example, Cukur *et al.* (2004) in a study carried out in the USA, Turkey and the Philippines show that religiosity is associated with conservative and collectivist views. However, Ali *et al.* (1995) found no significant difference between the mean strength of a measure of work ethic between Protestants and Catholics in North America, which suggests that any such effects are modulated by the underlying culture.

The influence of Roman Catholicism in Poland is well-known. Over 90 percent of Poles state that they are Roman Catholic and a large majority of the population attend mass at least once a month (Grzymala-Busse and Slater 2018). In addition, religiosity is strongly entwined with national identity. This strong association between Catholicism and the sense of national identity developed through the period of partitions (which began at the end of the 18th century) in opposition to the religious affiliation of the occupying powers (Protestant Prussia and Orthodox Russia). After World War II the population of Poland was ethnically homogeneous and the strength and authority of the Catholic Church was bolstered by its opposition to communism, a Polish Pope and the church's influence in the Solidarity movement (Grzymala-Busse and Slater 2018). Putnam *et al.* (1994) and Growiec (2011) view Catholicism as being a hierarchical religion where social capital is dominated by bonding capital. However the authority of the Catholic Church results, to a large degree, from its opposition to "foreign authorities" and, as Grzymala-Busse and Slater (2018) note, over 70 percent do not want church influence over votes, governments or policy.

Hoffmann (2013) notes that at the level of how an individual in a society behaves, the effects of religiosity are ambiguous. This is due to the fact that, as Huber and Huber (2012) note, religiosity is a multi-faceted trait. For example, the external dimension of religiosity (the visible participation in religious practices and rituals) is very prominent in Polish religious life. Turska-Kawa (2018) finds that, particularly in the rural east of Poland,

attendance at mass is associated with finding out about what is happening in the community life and maintaining social links. She also finds a positive association between civil engagement and the regularity of church attendance, particularly among middle-aged women. However, other factors have more influence on civil engagement, e.g. males attend church services less regularly, but are more engaged in civic affairs. She also argues that there is a large degree of internal differentiation within the group of church attenders, e.g. a large proportion of church goers maintain the external dimension of religion without practicing the internal dimension (the personal practice of religion, such as prayer) or believing in the doctrines. For these reasons, one should look both at the effect of religiosity at the level of individuals (i.e. how do those practicing religion differ from those who do not practice religion in a given society) and the effect of religiosity at the level of society (i.e. how does the behavior of Poles differ from the behavior of people in other countries). How the behavior of Poles differs from those from other countries will naturally not be fully attributable to religiosity but due to Poland's religious homogeneity, religiosity is likely to play a very important role in defining such differences.

5. METHODS OF STUDYING ATTITUDES TOWARDS INEQUALITY AND THE RESEARCH METHOD APPLIED

Attitudes towards inequality are most often investigated with the aid of surveys. For example, in the "Social Diagnosis" survey, respondents are asked the following question: "Should we aim to ensure that everyone's income is more or less equal?" In the International Social Survey Program the following questions are posed in the section on social inequality: "Are the differences between incomes in country too large?", "Is it the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes?", "Should the government spend less on benefits for the poor?", "Do you think that people with high incomes should pay a larger share of their income in taxes than those with low incomes, the same share, or a smaller share?", as well as "Is it just or unjust – right or wrong – that people with higher incomes can buy better health care than people with lower incomes?". The General Social Survey, carried out in the USA, asks the following questions: "What is your opinion of the following statement? It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes", "Do you agree or disagree that inequality

continues to exist because it benefits the rich and powerful?”, “Should personal income be determined solely by one's work, or should everybody get what he/she needs to provide a decent life for his/her family?”

One weakness of such surveys is the limited reliability of the answers given as reflections of the real attitudes of the respondents. Hence, other approaches to observing aversion to inequality have been suggested. One alternative seems to lie in “quasi-experiments”, e.g. “the leaky bucket” (Amiel, Creedy, and Hurn 1999; Pirttilä and Uusitalo 2010) and the experimental game theory. Essentially, the “leaky bucket” experiment is also a form of survey in which the respondent’s aversion to risk is measured using an experiment in which wealth is to be redistributed, but such a redistribution is associated with administrative costs, hence the name “leaky bucket”. Respondents are asked what level of “leakage” is acceptable in order to achieve a given level of redistribution.

The “Ultimatum” and “Dictator” games have been used in numerous studies in the field of experimental economics aimed at elucidating the level of aversion to inequality. In the Ultimatum Game (UG) (Güth, Schmittberger, and Schwarze 1982), used in our study, there are two players (A and B), who have to divide a certain amount of money between themselves. The identity of each player is unknown to the other. Player A proposes how this sum of money should be split (e.g. in percentage terms 50-50, 90-10, or 100-0). On the other hand, Player B must decide whether to accept this proposal or not: if he/she accepts this proposal, then the players obtain the payoffs appropriate to Player A’s proposal, if he/she rejects the proposal, then neither of the players receive anything. There is no possibility of negotiating or repeating the game. According to the assumption of economic rationality (that each player should maximize their expected payoff), Player B should accept any positive amount of money, since any amount is better than nothing. Given that Player A is rational and is convinced that Player B is also rational, Player A should offer the smallest possible positive amount to Player B, i.e. demand a large proportion for him/herself. For example, in our study the sum to be split was 20 zloty (approx. €4.60) and Player A must offer Player B an integer number of zlotys. Hence, the economically rational split should be 19:1. Another classic game which illustrates players’ attitudes towards inequality and unfair splits is the Dictator Game (Kahneman, Knetsch, and Thaler 1986), whose rules are even simpler. Player A has a certain amount of money and can transfer some of this amount to Player B. Player B is completely passive in this game. The proportion of the money transferred reflects Player A’s attitude to

inequality and, at the same time, his/her level of altruism, which is naturally related to one's attitude to inequality.

In the Ultimatum Game, the decisions of the players indicate their level of aversion to inequality. The decisions of Player A are motivated by a feeling of fairness, both internalized (resulting from the player's level of altruism, see Gintis 2003) and as a reaction to the possibility of being punished for behavior that is seen to be unfair. Proposals of even splits indicate a high level of altruism and aversion to inequality. The behavior of Player B also illustrates his/her attitude to inequality, since he/she can reject offers that are seen to be unfair, but at some cost to him/herself. The economically rational decision is to accept any positive amount. However, numerous experiments carried out in various countries indicate that around 50 percent of players reject offers of less than 20 percent of the pool (Camerer and Fehr 2015). Similarly, according to economic rationality, in the Dictator Game, Player A should not transfer any money to Player B. However, experiments carried out in recent years indicate that the majority of players transfer a positive amount of money and around one sixth of players transfer half of the pool (Engel 2011).

These results indicate that the assumptions made in economics regarding the behavior of *homo oeconomicus* have been justifiably criticized for their reductionism and ignoring the complex action of various moral considerations affecting the behavior of individuals (Rutkowski 2016). Player A often seems to anticipate the possibility of a negative reaction from Player B and normally offers from 30 to 50 percent of the pool.

The results from the Ultimatum Game seem to confirm the hypothesis of J. Duesenberry regarding relative incomes (Duesenberry 1949). He suggested that the level of satisfaction (utility) obtained by an individual from a certain level of consumption depends not only on the absolute value of his/her budget, but also on its value relative to the budgets of other individuals. This hypothesis is used as an explanation for Easterlin's happiness paradox: within a society there is a positive association between wealth and happiness, however when comparing different societies there is no association between happiness and wealth (Easterlin 1974). The Ultimatum Game is in its essence related to the theory of positional concerns. According to classical utility theory, it is assumed that individuals' level of satisfaction is defined only in absolute terms. However, according to the theory of positional concerns, the utility of an individual depends on consumption relative to other members of society. It follows that our attitudes and behavior are not associated with income in absolute terms, but with relative income (e.g. Clark and Oswald

1996; Ferrer-i-Carbonell 2005; Senik 2008). The theory of positional concerns also seems to be appropriate for explaining why social inequalities affect social behavior, including social capital.

The theory of positional concerns is naturally related to relative deprivation theory, which studies the association of interpersonal and intergroup relations to social inequality. This theory hypothesizes that the feeling of one's own (or one's own group) low status or wealth in comparison to other individuals or groups may be a source of a feeling of enmity to other individuals or groups. The term *relative deprivation* is associated with the negative feelings and behavior (including jealousy and aggression), which arise from poverty relative to others. Ruth López Turley argued that relative poverty can have a negative effect not only on one's psychological health and wellbeing, but also have a negative effect on social behavior (López Turley 2002)⁴.

The Ultimatum Game was used in our study to analyze the behavior of individuals with respect to questions of fairness (here, the question of the fair distribution of resources) and altruism. Altruistic behavior indicates a high level of social capital, as does aversion to the unfair distribution of resources. Such behavior results from societal norms and values which influence the distribution of wealth and thus the fairness of such a distribution. However, interpreting the results from this game is problematic. An excessively high level of aversion to inequality may indicate a high level of bonding capital which might have negative consequences. It is difficult to elucidate the precise motivation of individuals or differentiate between behavior which results from an internalized preference for fairness, and behavior that results from acknowledging the possible reaction of others to actions seen to be unfair, i.e. expectations regarding the behavior of others according to social norms. The decisions of players are motivated by their level of altruism and aversion to risk. It may be assumed that proposals of equal or near equal splits reflect a high level of social capital. However this

⁴ Clark and D'Ambrosio (2015) describe in detail the subject of attitudes to inequality. They analyze it at a different level (that of individuals) and in a different context (one's own wellbeing), using two different approaches: normative and comparative. As well as carrying out an overview of the theoretical approaches to this subject, they present a review of the studies conducted on this subject, including experimental studies whose role is underlined. The authors conclude that this subject area is complex and scarcely investigated. In addition, one cannot talk about attitudes to inequality as a one-dimensional trait and an individual's attitudes may change over time.

is the effect of a combination of factors which are difficult to disentangle: altruism, aversion to inequality (propensity for fairness), the importance placed on fairness and attitude towards risk.

Our analysis is based partly on a study using experimental economics. The field of experimental economics uses an empirical approach to test the assumptions of economic theories. Since the 1950s the development of experimental economics has been closely intertwined with the game theory, whose importance is reflected by the awarding of several Nobel prizes in economics to researchers in this field⁵. The results of the research have often shown that classical assumptions regarding the egotistical behavior of individuals are not valid. Individuals are not only motivated by the desire for profit, but also show altruism, apply norms of reciprocation, trust, aversion to inequality and feelings of injustice. These traits may be used as indicators of the level of social capital within a given society. Experiments can illustrate the preferences of players, which traditional approaches such as surveys, questionnaires and interviews, are often unable to do. Experimental economics enables us to observe the behavior of individuals in various situations, while ensuring psychological realism (participants obtain payoffs, or incur costs, according to the behavior observed), which allows us to make more reliable inferences.

This article uses data obtained from a study carried out in April-June 2014 involving 1,540 individuals – students at state universities located in 16 capitals of the administrative regions in Poland. Between 88 and 100 individuals participated in each region⁶. The study group completed a questionnaire and took part in three experimental games: the Trust Game, (TG), the Public Goods Game, (PGG) and the Ultimatum Game (UG). This article concentrates on the results from the Ultimatum Game. The amount to be split between the two players was 20 zloty (approx. €4.60). Half of the players, i.e. 770 individuals, took the role of Player A, while the remainder took the role of Player B.

⁵ In 1978 – H. Simon, 1994 – J. Harsanyi, J. Nash and R. Selten, 2002 – R. Aumann and T. Schelling, 2007 – L. Hurwicz, E. S. Maskina, R. B. Myerson, 2012 – L. Shapley, A. Roth

⁶ More information on the design of the study can be found in: Markowska-Przybyła and Ramsey (2014) and Markowska-Przybyła and Ramsey (2015).

6. THE ATTITUDE OF POLISH STUDENTS TO INEQUALITY – DECLARATIONS AND OBSERVATIONS

The mean transfer proposed by Player A was 9.03zł (45.16 percent of the pool). The most common proposal was an even split (10zł). The economically rational proposal of a 1zł transfer was only offered by one individual. The offer was refused in only 34 cases, such that 27 of these offers were below 10zł (50 percent of the funds available). The likelihood of an offer being refused was only weakly associated with the proposal. Additionally, those taking the role of player B generally behaved rationally from the point of view of classical game theory and very rarely punished Player A for proposing an unfair split. Only approximately one in nine (11.4 percent) of those taking the role of Player B punished Player A for proposing an uneven split. In fact, ten of the 22 individuals who were offered nothing (i.e. a split of 20-0) actually accepted this proposal⁷. The actions of Player A showed a greater deviation from the conventional assumptions of economic rationality, since the amounts offered to Player B were most often much greater than the classical solution.

The decisions of the players were also analyzed on the basis of their declarations regarding inequality and injustice. The following two questions were asked in the questionnaire:

- What is your opinion of income differentials in society?
- If somebody acts unfairly towards you, how do you react?

The answer to the first question was on a three-point scale which was increasing in the level of aversion to inequality (level of support for government intervention): 1 – They are the result of market forces and are thus generally fair, 2 – Variation in incomes are inevitable and to a certain degree good, but the government should control them, 3 – The government should actively counteract variation in incomes.

The answer to the second question was on a four-point scale decreasing in the strength of the student's reaction to perceived inequality at a personal level: 1 – I would try to get my own back, even if that would involve a change in my plans and the incurrance of significant costs, 2 – I would try to get my own back, if the costs of reacting are small, 3 – I would only try to get my own back, if the opportunity of reacting without incurring any costs arose, 4 – I would not react.

⁷ The small percentage of individuals rejecting offers (including even highly uneven splits) might be an indication of the high level of acceptance of authoritarianism among students, as suggested by K. Growiec. According to her, such behavior is associated with high levels of bonding capital. (Growiec 2011).

Since behavior in the Ultimatum Game is expected to depend both on the individual's attitude towards inequality and observance of societal norms, the answer to the following question (the "strategy question") will also be considered. This question is: "Which of the following types of strategy is most likely to lead to success?" *There were four possible answers:*

- a) Cooperation in accordance with the law.
- b) Cooperation on the borders of the law.
- c) Individual effort in accordance with the law.
- d) Individual effort on the borders of the law.

Hence this question considers two dimensions: cooperation/individual effort and adherence to the law. From the arguments made above, individuals who either declare cooperation or adherence to norms to be successful are expected to offer more when in the role of Player A, therefore those giving answer d) are expected to offer the least on average.

According to statistical tests and measures of variation, aversion to inequality or injustice, as measured by offers in the Ultimatum Game and answers to the question regarding reaction to personal injury, does not show much variation according to region, sex or size of home town (see Table 1). More significant differences in aversion to inequality were observed on the basis of declared support for government intervention. Males show a significantly greater readiness to react to personal injury ($p = 0.001$, Mann-Whitney test). On the other hand, females declare a higher level of support for government intervention to reduce inequality ($p < 0.001$, Mann-Whitney test). Although the level of regional variation in aversion to inequality is not great (coefficient of variation 0.04 – 0.06 according to all three measures), some differences do exist. Support for government intervention to reduce inequality varies according to region ($p < 0.001$, Kruskal-Wallis test). Such support is highest in the Lubuskie, Świętokrzyskie and Podkarpackie regions, which are all rural and provincial (Lubuskie is in the south-west and the other two are in the south-east). Similarly, the inhabitants of small towns express greater support for government intervention ($p < 0.001$, Kruskal-Wallis test) and tend to offer more equal shares in the Ultimatum Game ($p = 0.014$, Kruskal-Wallis test). The mean amount transferred in the Lubuskie region (where the largest mean offer was observed) was more than 25 percent greater than in the Pomorskie (Gdańsk) region (where the smallest mean offer was observed, although overall these differences were not significant). These facts may well be related to the positive association in Poland between income and large urban centers (Kopacz-Wyrwal 2014).

Table 1. The attitudes of Polish students to inequality and injustice according to the Ultimatum Game and answers in the questionnaire

	Mean percentage offered in the Ultimatum Game	What is your opinion of income differentials in society? (mean on a three-point scale)	If somebody acts unfairly towards you, how do you normally react? (mean on a four-point scale)
dolnośląskie	46.62	2.03	3.01
kujawsko-pomorskie	46.96	2.18	2.83
lubelskie	45.98	2.12	2.86
lubuskie	49.32	2.31	2.95
łódzkie	45.00	2.23	2.83
małopolskie	45.16	2.13	3.20
mazowieckie	41.54	2.09	2.95
opolskie	48.59	2.18	2.98
podkarpackie	44.12	2.38	2.94
podlaskie	43.22	2.07	2.81
pomorskie	39.37	2.00	2.79
śląskie	45.94	2.07	2.91
świętokrzyskie	43.52	2.38	2.81
warmińsko-mazurskie	47.30	2.11	2.73
wielkopolskie	46.35	2.07	2.93
zachodniopomorskie	41.89	2.07	3.06
coefficient of variation	0.06	0.05	0.04
max/min	1.25	1.19	1.17
Kruskal-Wallis test for analysis of variance according to region	0.121	0.000	0.227
Female (F)	45.40	2.21	2.95
Male (M)	44.63	2.00	2.76
F/M	1.02	1.11	1.07
Mann-Whitney test for a difference between means according to sex	0.474	0.000	0.001
Rural (number of inhabitants less than 5 thousand).	45.55	2.31	2.91
Small town (5 – 20 thousand inhabitants)	48.78	2.10	2.86
Medium-sized town (20 – 100 thousand inhabitants)	43.15	2.13	2.95
Large town/city (above 100 thousand inhabitants)	44.42	2.05	2.87
max/min	1.13	1.13	1.03
Kruskal-Wallis test for analysis of variance according to size of home town	0.014	0.000	0.366
Overall	45.16	2.16	2.90

Source: authors' own research.

An analysis of the correlation between these measures of aversion to inequality and GDP *per capita* in 2013 (aggregated at the level of regions) indicated only one significant correlation: students in poorer regions declared a greater acceptance of government intervention to reduce inequality (see Table 2).

Table 2
Spearman's coefficients of correlation at regional level between the measures of aversion to inequality and GDP *per capita* for the 16 Polish regions

	Mean percentage offered in the Ultimatum Game	What is your opinion of income differentials in society?	If somebody acts unfairly towards you, how do you normally react?	GDP per capita in 2013
Mean percentage offered in the Ultimatum Game	1.000	0.279	0.134	-0.185
What is your opinion of income differentials in society?	0.279	1.000	-0.001	-0.522*
If somebody acts unfairly towards you, how do you normally react?	0.134	-0.001	1.000	0.346
GDP per capita in 2013	-0.185	-0.522*	0.346	1.000

* correlation significant at the 5% level (two-sided test), n=16

Source: authors' own research and data from the Polish Statistical Office (GUS).

Although there are no significant associations between the answers of the students to the questions regarding inequality and injustice and the amount offered in the Ultimatum Game at regional level, there is a weak, but significant, association between the amount transferred in the Ultimatum Game and the student's level of support for government intervention to reduce inequality at individual level (see Table 3). Hence, the student's stated aversion to income inequality is weakly associated with the amount he/she offers in the Ultimatum Game and is unrelated to the strength of his/her reaction to personal injury. It seems reasonable to assume that individuals who have an aversion to income inequality see that it is the government's, and not the individuals' role to counteract inequality.

The amount offered to Player B in the Ultimatum Game is not correlated with any other, more classical, indicators of social capital (see Table 4): e.g. expressed generalized trust (measured on a five-point scale), membership of organizations or social networks, which were analyzed on the basis of the regularity of social contact with each of three groups (family, close friends and acquaintances) measured on a seven-point scale. However, there are

Table 3

Spearman's coefficient of correlation between measures of aversion to inequality at individual level

	Percentage offered in the Ultimatum Game	What is your opinion of income differentials in society?	If somebody acts unfairly towards you, how do you normally react?
Percentage offered in the Ultimatum Game	1.000	0.091*	0.056
What is your opinion of income differentials in society?	0.091*	1.000	0.012
If somebody acts unfairly towards you, how do you normally react?	0.056	0.012	1.000

* correlation significant at the 5% level (two-sided test), n=770

Source: authors' own research.

Table 4

Spearman's coefficient of correlation at individual level between measures of aversion to inequality and other indicators of social capital

	Percentage offered by Player A in the Ultimatum Game	What is your opinion of income differentials in society?	If somebody acts unfairly towards you, how do you normally react?
In your opinion, can the majority of people be trusted?	0.009	-0.031	0.095**
Are you an active participant in any organization?	-0.047	-0.052*	0.068**
Level of contact with family	0.043	0.062*	0.033
Level of contact with close friends	0.060	-0.007	-0.060*
Level of contact with acquaintances	0.043	0.008	-0.014
Transfer in the Public Goods Game	0.155**	0.003	0.037
Amount Returned in the Trust Game	0.170**	0.091*	0.042

*.correlation significant at the 5% level, ** correlation significant at the 1% level (two-sided tests), n=770

Source: authors' own research.

clearly significant positive, although not very strong, correlations between the offers made in the Ultimatum Game (which depend on a combination of factors) and both the transfers made in the Public Goods Game (an obvious

indicator of cooperative behavior, since there is no possibility of reciprocation) and the proportion of money returned in the Trust Game (an obvious measure of trustworthiness)⁸.

There is a significant association between the amount offered in the Ultimatum Game and the answer given to the strategy question ($p < 0.01$, analysis of variance, see Table 5). Those stating that a strategy based on individual effort on the borders of the law is most likely to lead to success, offer on average significantly less than either of the two groups stating that such a strategy involves acting in accordance with the law ($p < 0.01$, test of least significant difference). Overall, it seems that the legal dimension is more strongly associated with the amount offered than the dimension of cooperation/individual effort.

Table 5

Mean amounts offered by Player A according to the answer to the strategy question

Strategy	Mean	Std. dev.	N
Cooperation in accordance with the law	9.24	2.61	357
Cooperation on the borders of the law	8.78	2.97	121
Individual effort in accordance with the law	9.33	2.24	97
Individual effort on the borders of the law	8.14	3.50	70

Source: authors' own research.

In order to investigate more closely the relation between the amount offered in the Ultimatum Game and the answers given in the questionnaire, a regression model was constructed. Starting from a model which included all the variables from the questionnaire that were significantly associated with the amount transferred in the Ultimatum Game according to the appropriate univariate test, a stepwise procedure was applied in which variables that were found to be non-significant in the regression model were removed until all the remaining variables were significant. It should be noted that categorical variables with k levels were coded using $k-1$ binary variables. For example, the answer to the question regarding government policy on inequality (three possible answers) was coded using two binary variables, denoted by X_3 and X_4 . Variable X_3 is equal to 1 if and only if the answer states that the government should control inequality and X_4 is equal to 1 if

⁸ The rules of the Trust Game and the Public Goods Game and an analysis of the behavior observed in these games can be found, e.g. in Markowska-Przybyła and Ramsey (2014, 2016a, 2016b).

and only if the answer states that the government should act to reduce inequality. The answer stating that wage inequalities are fair since they result from market forces corresponds to both of these variables taking the value zero. The model obtained is of the following form:

$$Y = 8.520 + 0.638X_1 - 1.238X_2 + 0.634X_3 + 0.606X_4 - 0.001X_5,$$

where X_3 and X_4 are defined above, X_1 is equal to 1 if the student states that the strategy most likely to bring success involves acting in line with the law and 0 if the student states that such a strategy involves acting on the boundaries of the law, X_2 is equal to 1 if the student is a member of a sports/recreation club and 0 otherwise, X_5 is the population of the city in which the student studies (in thousands). The mean amount offered by those stating that income differences are fair since they result from market forces, offer less in the Ultimatum Game than those who state that the government should act to control or reduce inequality (by around 7 percent on average). It should be noted that there is no significant difference between the amounts offered by those stating that the government should reduce levels of inequality and those stating that the government should just control inequality. As argued above, the amount offered in the Ultimatum Game depends both on the observance of social norms (either internalized or in order to avoid punishment) and attitudes towards inequality. The regression equation suggests that both of these factors are of similar strength (those stating the strategy most likely to bring success involves observance of the law, give on average around 7 percent more than those stating that such a strategy involves acting on the boundary of the law). The regression equation also indicates that both, students studying in large cities and members of sports/recreation clubs, tend to offer less. It is possible that members of sports clubs frame the game in a different way to other participants and obtain utility from “winning a game”, i.e. obtaining more money than the other player (see also Markowska-Przybyła and Ramsey, 2016b).

Since religious observance is particularly high in Poland (see Grzymala-Busse and Slater, 2018), it is natural to ask what effect this has on attitudes towards inequality. Members of religious organizations declared a lower level of readiness to react to personal injury and a higher level of generalized trust. However, no association was observed between membership of a religious organization and the amount transferred in the Ultimatum Game, attitude towards government intervention to control/reduce inequality

or declared willingness to react to damage to public property, thus at individual level, religious affiliation is not associated with observed behavior in Poland.

The declarations of students regarding their attitude to inequality and injustice seem not to be associated with their observed behavior, either at individual level or regional level. This forces us to question the results of the questionnaire. Although the questions asked do not correspond exactly to the situations in which behavior is observed, the empirically observed correlations are insignificant or at best marginally significant, which should lead to reflection. From the point of view of social capital seen as the ability of a society (group) to cooperate for the common good, offering even splits in the Ultimatum Game would seem to be a more appropriate indicator of social capital rather than giving a particular answer in a questionnaire regarding attitudes to inequality or injustice. This seems to be confirmed by the relatively large correlation between the offers made in the Ultimatum Game and the empirically observed measures of cooperation and trustworthiness (behavior in the Public Goods Game and the Trust Game).

7. ATTITUDES TO INEQUALITY – AN INTERNATIONAL COMPARISON

The results from the studies based on the Ultimatum Game give us a rare opportunity to compare, from an international perspective, behavior which can be used as an indicator of social capital. With this aim in mind, we use the results of a meta-analysis carried out by Oosterbeek, Sloof, and Kuilen (2004), who compared the results from 37 articles based on a total of 75 studies using the Ultimatum Game⁹. The mean proportion offered by Player A was 40 percent. On average, 16 percent of the offers were rejected. Analysis indicates that there is a slight negative correlation between the value of the money to be split and the proportion offered to Player B. The rate of rejection is negatively correlated with both the proportion of funds offered and total amount of money available (see e.g. Cameron, 1999). Some subtle differences between the behavior of players according to country were

⁹ We do not include here studies in which the participants did not obtain the monetary payoffs resulting from the rules of the game, in which Player A only had a limited number of possible proposals (e.g. 2 or 3), three-player games, games in which the players were not anonymous, or games in which collective decisions were made.

observed. These differences were more apparent in the behavior of respondents (Player B). Table 6 presents the results from studies based on the Ultimatum Game in various countries.

Table 6
Results of the Ultimatum Game in various countries

Country	Number of studies	Mean offer by Player A as a percentage of the funds available	Mean rejection rate of offers
Peru	1	26.00	4.80
Spain	1	26.66	29.17
Chile	1	34.00	6.70
United Kingdom	2	34.33	23.38
Ecuador	2	34.50	7.50
Sweden	1	35.23	18.18
Mongolia	2	35.50	5.00
Germany	1	36.70	9.52
Romania	2	36.95	23.50
Bolivia	1	37.00	b.d.
Tanzania	4	37.50	19.25
Austria	1	39.10	16.10
France	3	40.24	30.78
Papua New-Guinea	2	40.50	33.50
Eastern USA	22	40.54	17.15
Israel	5	41.71	17.73
Holland	2	42.25	9.24
Western USA	6	42.64	9.41
Zimbabwe	2	43.00	8.50
Slovakia	3	43.17	12.67
United Kingdom ¹⁰	1	43.80	15.00
Kenya	1	44.00	4.00
exYugoslavia	1	44.33	26.67
Japan	3	44.73	19.27
Poland	1	45.16	4.40
Honduras	1	45.70	23.05
Indonesia	4	46.63	14.63
Malaysia	1	48.49	6.98
Paraguay	1	51.00	0.00

Source: Oosterbeek, Sloof, and Kuilen (2004), Chuah *et al.* (2007) and authors' own studies.

In percentage terms, the offers made by Polish students were relatively large in comparison to the other studies presented in Table 6. Higher mean

¹⁰ Chuah *et al.* (2007).

proportions were only observed in some South American and Asian countries. In Western Europe the proportion offered varied from 26.7 to 43.8 percent. In Central Europe (excluding Poland), these proportions varied from 36.95 to 44.33 percent. It could be argued that the high proportion offered, results from the relatively small size of the pool (in absolute terms), while the purchasing power of the money available is comparable with the pool size in Western European countries. Therefore it may be concluded that Poles exhibit a relatively strong pro-equality norm. The frequency with which very small offers were rejected in Poland is particularly low, thus it can be said that Poles exhibit a low level of negative reciprocity.

Earlier studies indicate that cultural differences are factors determining the variation between the mean offers made by Player A in various studies. Other studies also indicate subtle differences between behavior in the Ultimatum Game in various societies: (Roth *et al.* 1991) – differences between the behavior of individuals from the USA, the then Yugoslavia, Japan and Israel, (Buchan, Croson, and Johnson 2004) – differences between the behavior of students in the USA and Japan, (Henrich *et al.* 2001) – and the differences between the behavior of individuals from 15 smaller societies.

Oosterbeek *et al.* (2004) consider the effect of respect for authority on offers and acceptance rate in the Ultimatum Game at the level of societies. They found that the mean offer is lower in countries with a high level of respect for authority, but acceptance rates are unaffected (controlling for the mean proportion offered). Growiec (2011) argues that Polish society exhibits a relatively high level of authoritarianism, particularly in its religious culture. However the nature of this authoritarianism is not straightforward and strongly entwined with the concept of “solidarity”. When the association between individual behavior and religiosity amongst Poles is taken into account, the relatively large offers and low rejection rates observed in Poland are unsurprising.

CONCLUSION

Attitudes to social inequality and injustice are components of social capital which have rarely been analyzed, although studies show that social inequalities and attitudes towards them are important factors of social capital. Understood in terms of the norms and values shared by a society, social capital affects the level of social inequalities via the behavior and interactions resulting from those norms. Therefore social capital may act as

one of the intermediary elements linking the level of development and the level of inequality.

The study has enabled a comparison of the behavior of Poles in the Ultimatum Game with those from other countries in which Poles show a high level of what may be called solidarity, while exhibiting a low level of negative reciprocation. This may well be largely due to Poland's specific religious, cultural and historical heritage. However, the study shows that there is only a very weak association between the attitudes declared, either at the level of individuals or regions, regarding inequality and reciprocation and behavior in the Ultimatum Game, although those who state that the government should act to control or reduce the level of income inequality in Poland do offer significantly more than those who state that income inequality is fair since it results from the workings of the free market. The expressed attitude to inequality seems to be more strongly associated with the wealth of a region¹¹ than with an individual's commitment to reducing income inequality. It seems that members of the study group see that income equality is an issue for the government to solve (if they regard it as a problem at all). In addition, classical measures of social capital such as expressed generalized trust, level of activity in social networks (with family, close friends and acquaintances) and activity in more formal networks (organization membership), are also very weakly or even not significantly correlated with any of the measures of aversion to inequality. The results from the other games (the Public Goods Game and the Trust Game) show that those who show solidarity in the Ultimatum Game (offer an even distribution of the pool) tend to show a higher level of cooperative behavior in the form of trust and trustworthiness. The coexistence of these elements, which one might expect to act synergistically, is thus probably a better measure of social capital than indicators based on expressed views or on social networks.

According to statistical tests and measures of variation, aversion to inequality or injustice, as measured by offers in the Ultimatum Game and the answers to the question regarding reaction to personal injury, does not show much variation according to region, sex or size of home town. More

¹¹ The wealth of participants was not directly observed by the authors. This conclusion was made on the basis of analyzing the correlation between GDP *per capita* and the mean percentage offered by Player A aggregated at regional level. Thus this result should be treated with skepticism, since aggregated data very often show higher levels of correlation than individual data. This conclusion should be verified using future studies.

significant differences in aversion to inequality were observed on the basis of declared support for government intervention. Although the level of regional variation in declared aversion to inequality is not great, some differences do exist. Support for government intervention to reduce inequality varies according to region. Such support is highest in the Lubuskie, Świętokrzyskie and Podkarpackie regions, which are all rural and provincial and relatively poor. Similarly, inhabitants of small towns where incomes are on average smaller than in large towns or cities, express greater support for government intervention and tend to offer more equal shares in the Ultimatum Game. The mean amount transferred in the Lubuskie region (where the largest mean offer was observed) was more than 25% greater than in the Pomorskie (Gdańsk) region (where the smallest mean offer was observed, although overall these differences were not significant).

The comparison with the results from experimental games carried out in other countries is intended mainly to be illustrative. Such comparisons can be laden with errors resulting from the fact that, for example, the games used might have slightly different rules, payoffs are in different currencies and the study groups may differ in nature. However, they can also bring insights into behavior of individuals, which are difficult to obtain in any other way, enabling us to assess the level of social capital in a society.

A comparison of the results from the Trust Game carried out in various countries corroborate the low level of generalized trust expressed by Poles. However, these results seem to be in conflict with the relatively high transfers and offers made in the Public Goods Game (Markowska-Przybyła and Ramsey 2017) and the Ultimatum Game. These results may be indicative of the strength of bonding capital compared to bridging capital in Poland (see (Growiec 2011)). Finding new methods of assessing social capital may enable us to elucidate subtle elements of social capital in Poland.

International comparisons are often based on the level of expressed generalized trust, organization membership and participation in elections. Such measures indicate that the level of social capital is low, but are affected by Poland's history (e.g. obligatory membership in organizations during communism meant that organizational membership is now naturally low, (Roszkowska 2014)). This opinion that measures of social capital applied in Western Europe cannot be directly translated into the context of Central Europe (including Poland) is shared by Herbst (2008, p. 25ff).

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