

Tamara Merkulova\*  
Tatiana Bitkova\*\*

## TRUST MEASUREMENT: COMPARATIVE ANALYSIS OF EXPERIMENTAL AND SOCIOLOGICAL METHODS

### Introduction

Trust is the most important factor determining the predictability of human behaviour. Numerous theoretical and experimental studies, which were conducted in the world show the importance of trust as a factor, which explains people's behaviour. The key issues of our paper are the following: analysis of the content of "trust" definition and the possibilities of trust measurement; exposition of sociological and experimental methods of trust measurement and comparison of their results; results of Public Good (PG) experiments, which were carried out in the Ukraine, and trust measurement. This set of the tasks defines the structure of the article.

### Concepts content and measurement capabilities

With all the variety of definitions<sup>1</sup> the following types of trust are distinguished in contemporary studies: *interpersonal one* (which, in its turn, is divided into *trust in strangers* and *trust in known others* – relatives, friends, etc) and *institutional one*, which is also analyzed by various state and public institutions (Newton 2013). These types of trust have their own features, which determine measurement capabilities.

One of the most general approaches to the content of trust is associated with the emerging expectation of the members of the community that other members will behave predictably in accordance with certain general rules, approved by the community (Ostrom 1998). Within this approach interpersonal trust has the most operational interpretation, according to which

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\***Tamara Merkulova** – Sc.D. in Economics, Full Professor, V. N. Karazin Kharkiv National University; research interests: economic modelling, input-output analysis, economic experiments; e-mail: [tammerkulova@gmail.com](mailto:tammerkulova@gmail.com)

\*\***Tatiana Bitkova** – Ph.D. in Economics, Associate Professor, V. N. Karazin Kharkiv National University; research interests: system dynamics; e-mail: [tbitkova@karazin.ua](mailto:tbitkova@karazin.ua)

<sup>1</sup>Review of trust definitions can be found, for example, in Newton (2013).

trust is detected under the following circumstances of agents' interaction. Firstly, one agent passes freely (without enforcement) to another agent some good (good is interpreted very broadly), not having the ability to control the further actions of the second agent or respond to them. Secondly, trust motivation should be provided: trust will bring greater benefit to the agent than distrust (if his partner justifies trust) and will bring losses – if the partner is unworthy of trust (Naef, Shupp 2009). Just such an interpretation allows to measure the level of trust by means of laboratory experiments using game theory.

Institutional trust definition is not as operational as interpersonal trust one. Using the expectation-based approach mentioned above one supposes, that trust in institutions (in the rules of the game, or in the organizations, which implement those rules) is formed in people, depending on how those institutions match their expectations. But if people are expecting from others some actions, their expectations from institutions are usually associated with the efficiency of their functioning and with certain reasonable values, on which they are based. Expectations depend not only on the conformity of institutional rules and regulations with these criteria, but also on the quality of the work of people and organizations, involved in the implementation of these rules and regulations. Trust in institutions can be projected on the people and organizations, as well as vice versa. The complex internal structure of institutional trust and definitional vagueness of the term make the task of its measuring more difficult.

### **Methods of trust measurement and comparison of their results**

There are two ways to measure trust – experimental one (by means of laboratory or field experiment) and sociological one (by means of survey, opinion poll). Both are widely used by researchers.

#### *Experimental method*

This method of trust level measuring is based on game approach in the framework of experimental economics, the main instrument of which is the laboratory experiment. Experiments are aimed at ascertaining the hypothesis of trust, according to which trust is an important behavioural factor, leading to deviation of behaviour from the theoretical forecast, based on the assumption of exclusively selfish preferences of economic agents. Experimental results allow to obtain quantitative estimates of interpersonal trust in a group of participants.

The basic design of the laboratory experiment to verify trust hypothesis is a game on trust (*Trust Game, hereinafter – TG*), having rather a long history. Reviews and examples can be found, for example, in: Berg et al.

(1995), Jonson, Mislin (2011), Cox (2004) and Cox et al. (2008). Trust Game simulates a situation, in which partners' trust can lead to better results (income), than a purely selfish behaviour. The core of the game is the following. Two players have equal initial funds (money), which they manage on their own (for example, 10 monetary units). The first player has two options: to leave the game or to transfer his money to the second player, thus inviting him to cooperate. If the first player quits the game, the game is over, and each of the players will remain with the initial fund (10; 10). If the first player decides to transfer his money to the second one, then the total sum of money is multiplied (for example, is tripled:  $10 \cdot 3 = 30$ ). Then a player No2 has two options: 1) to distribute the full amount of his own and other people's money ( $30 + 10 = 40$ ) between a player No1 and himself as follows: (15;25) – in response to cooperation; 2) to appropriate the entire amount of money himself – (0; 40). Therefore, by entrusting his money to a partner, the first player can increase his capital, receiving 50% of income on his initial contribution.

Selfish behaviour model predicts that a player No1, foreseeing partner's selfish choice in his/her own favour, will prefer to quit the game. Nash equilibrium here is (10;10): each participant remains with his initial capital. However, the game has a more efficient solution for both participants – (15;25) – provided that the first participant trusts his capital to a partner. Many laboratory experiments<sup>2</sup> have shown that the outcome of the game significantly deviates from Nash equilibrium. For example, in (Cox 2005) the following results are presented: of 30 participants, acting as No1 players, 13 have chosen exiting the game, and 17 players have trusted their funds to No.2 players. Of the latter, 13 participants chose to keep all the funds for themselves, and only 4 participants have shared money with the partners.

*Sociological method. The level of interpersonal and institutional trust is measured by means of surveys*

#### *Interpersonal trust*

As is known, the most extensive sociological research of the level of trust, such as the General Social Survey (GSS, <http://gss.norc.org>), World Values Survey (WVS), European Social Survey (ESS, <http://www.>

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<sup>2</sup>Design of the experiments varies, depending on a set of tasks, among which is studying the influence of various factors (such as initial capital, the coefficient of its multiplication, awareness of the participants and other) on participants' choice. Variations of Trust Game (TG) is Dictator Game – DG (Engel, 2010), and their combination – TG-DG, in which the difference between such behavioural characteristics as trust and reciprocity is studied (Fehr, Gächter 2000, Fehr, Gintis 2007).

europesocialsurvey.org) measure the level of interpersonal trust according to respondents' answers to the question: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?". Answers to such a question may be given with varying degrees of accuracy<sup>3</sup>. Studies of trust, realized in Poland, Ukraine and Russia<sup>4</sup>, use a similar approach for interpersonal trust measurement<sup>5</sup>.

However, as a tool of trust level measurement, the question cited above was criticized for two main positions. Firstly, the question is not correct from point of view of blending of trust and caution, which are not mutually exclusive characteristics of behaviour. Thus, the results of the study, conducted with using GSS methodology (Miller, Mitamura 2003), show that Japanese students demonstrate more trust in other people than the American ones. At the same time, while exploring separately trust and caution, researchers note, that American students are more trustful, but at the same time more cautious, than Japanese ones.

Secondly, the problem of interpretation arises in treatment of a person (a subject of trust), with respect to whom trust is measured. A respondent may think that the "majority of people" includes only strangers or that it's a mixed pool, where there is some portion of more or less familiar people (the known others) (Reeskens, Hooghe 2008). Respondent's individual interpretation of "majority" affects his response. These arguments of critique were taken into account, for example, in the study, which was conducted in the framework of German Social-Economic Panel (SOEP) by the modified GSS procedure<sup>6</sup>.

#### *Institutional trust*

Trust in institutions is detected by using a similar question: "Do you trust political parties, social organizations, etc.?". OESD in its questionnaires

<sup>3</sup>Yes/no; more detailed: completely agree/rather yes/ rather no/do not agree; on a point scale, as in ESS – from 1 to 10.

<sup>4</sup>Extensive panel studies are conducted by Razumkov Center sociological service (<http://razumkov.org.ua>, Ukraine), by the "Public Opinion" Foundation (<http://fom.ru>, Russia) and Non-governmental polling and sociological research organization Levada Center ([www.levada.ru](http://www.levada.ru), Russia), by Central Statistical Office (<http://stat.gov.pl>) and by the Centre for Public Opinion Research (<http://www.cbs.pl>) in Poland.

<sup>5</sup>"Can one trust in the majority of people or in the relationships with people one should be very careful?" (Levada Center).

<sup>6</sup>The question was divided into 2 parts. In the first part respondents were asked to evaluate their attitude to the statements: "In general, you can trust people" and "Nowadays, you can not rely on anybody" (Naef, Shupp 2008, p. 6). The second part of the question refined the category of people, with respect to which trust is measured: "How much do you trust strangers you meet for the first time" and "When dealing with strangers it is better to be cautious before trusting them" (ibid., p. 7).

recommends the following wording of this question: “For each [institution], please indicate whether you tend to trust it or tend not to trust it” (OECD 2011)<sup>7</sup>. Or the following modification of the question may be used: “Do you support the activities of. . . ?”<sup>8</sup>.

We can address the above comments towards the first form of the question, which is about the ambiguity of interpretation of trust and its addressee. Distrust in the representatives of an institute can be projected on the system of rules and regulations itself. Thus, a negative answer to the question “Do you trust in trade unions?” can mean respondent’s lack of trust in trade unions’ functionaries, and can express his negative attitude towards the necessity and effectiveness of this institution in general, or in its particular design. Or, for example, among those, who do not trust in church, there is a significant part of convinced atheists and people, who believe that church representatives are compromising it by their own behaviour.

From the point of view of these observations the accuracy of the second question is higher. Firstly, it does not require special clarification of what does “support” mean. Although the interpretation of trust is reduced here to support, in this context it may be justified. Support of somebody’s activity means, that this activity corresponds to the expectations of a respondent, to his ideas about the correctness of the behaviour of a person – either of a specific one (the president, for example), or of a group of people, staff, community (government, NGOs and other). Secondly, institute activity is perceived by people as the activity of its representatives. For example, while answering the question about their attitude towards president’s activities, people first of all evaluate the activities of a particular person in this position, and do not express their attitude to the institute of presidency. Therefore, the question about support can reveal, rather, the level of interpersonal trust of a special kind – trust in the representatives of the institutions.

### Comparison of the results of experiments and surveys

A lot of research<sup>9</sup> is devoted to the comparison of experimental data and the results of interpersonal trust-measurement surveys/polls. The main critical remarks of the polls-based method, boil down to incorrectness of a question-indicator and to lack of strictness of “trust” definition. As is noted in (Naef,

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<sup>7</sup>Variants of answers are: trust it a great deal /tend to trust it/tend to distrust it, distrust it greatly/ not sure or don’t know.

<sup>8</sup>“Do you support the activities of the President Ukraine?” ([http://razumkov.org.ua/ukr/poll.php?poll\\_id=67](http://razumkov.org.ua/ukr/poll.php?poll_id=67))

<sup>9</sup>A review can be found in Naef, Shupp (2009).

Shupp 2009), the first systematic study of the correlation between experimental results and polls ones was undertaken in 2000 (Glaeser et al. 2000): it was shown that the answers to GSS question do not correlate with the results of TG experiments. The study, which was conducted in the framework of SOEP, using modification of GSS methodology, has confirmed, that survey results are consistent with those of TG experiments. This allowed the authors to conclude, that experimental results can serve as a valid assessment just of the level of trust in strangers (Naef, Shupp 2009). Criticism of experimental method is mainly associated with the structure of the participants in the experiment, i.e. with the representativeness of the sample: as a rule, these are students, what means that a pool with sufficiently homogeneous set of attributes (among which, at least, are age and education) takes part in experiments.

This problem with experimental method is general in nature, regardless of the specific experiments. It emerged together with experimental economics, and rather an extensive discussion and numerous studies are devoted to it. Analysis of the problem suggests, firstly, ascertainment whether “student” features are essential when testing specific hypotheses; secondly – ascertainment of this in controlled experiment and with using participants selection procedure. There is rather a great cumulative experience of comparative experiments, differing in the composition of participants: students and “non-students”. Researchers present different results. In a number of experiments it was found out, that the behaviour of “non-students” usually doesn’t differ from students behaviour, and there were no significant differences in the results of the experiments (Smith et al. 1998, Dyer et al. 1989). Some studies showed, that students have offered to their partners smaller contributions, than non-students (Fu et al. 2007), however, in some experiments with a representative composition of the participants no significant differences in students behaviour were found (Carpenter et al. 2007). In a study (Naef, Shupp 2009) students, on the contrary, passed to their partners contributions, which were 21% larger, than those of non-students.

### **Measurement of trust in the Ukrainian society**

Measurement of trust in the Ukraine is carried out through surveys. The results of experimental studies of trust are not presented in publications, and there is reason to believe that such studies were not conducted in the Ukraine – at least, by domestic researchers. This situation reflects the fact, that experimental economics is not yet sufficiently developed in Ukrainian scientific space. However, one can talk about some advancing, bearing in mind “Public Good” (PG) experiments, which we’ve conducted with the students

of Ukrainian universities<sup>10</sup>. The results of these experiments<sup>11</sup> provide an opportunity to make certain assessments, regarding trust, which we will use for comparison with polls results. Under the terms of PG experiment a participant can make some contribution of his income to the general fund, in which the total contribution of all the participants is multiplied by a given coefficient, and then is divided equally between all the participants. In the game there is a possibility to obtain benefits on condition of cooperation. However, if a participant contributes, but his partners do not support him (the decision about contribution is taken independently and anonymously), then he will suffer losses. These terms are known to all the participants, therefore making contribution testifies that a participant trusts in his partners. Strictly speaking, there is another motivating factor – participant’s altruistic system of preferences, so we assume that an experiment can give us an upper estimate of trust.

In our experiments, it was found that: 1) almost 100% of the participants made non-zero contributions; 2) average contribution was 50% of participant’s revenue and was a very stable value. If we assume that the scale of 0 (fully trust) to 10 (absolutely do not trust) corresponds to the scale of contributions (in % of the initial income) from 0 to 100, then the average participant’s contribution of 50% may correspond to the value of 5 on the scale of 0 to 10.

Let’s turn to the results of sociological research. For example, a survey conducted in Ukraine in 2012 in the framework of ESS, showed the index of trust in the countrymen equal to 3.3 points (Ukraina pletetsja... 2013) on a 5-point scale (1 – completely do not, 5 – fully trust). The same assessment (3.3) was obtained regarding the level of trust in neighbours and somewhat higher one – regarding trust in colleagues (3.4). Experimental assessment of 50% corresponds to 3 points on the survey scale. It also correlates with the results of surveys, conducted by the Institute of Sociology of National Academy of Sciences: the percentage of respondents, who have chosen “Generally trust”, while answering the question about trust in colleagues, is about 52% on average for 2002-2010 (Goch 2012, p. 245).

Finally, let’s focus on the comparison of interpersonal and institutional trust. The level of trust in institutions in Ukraine is measured by surveys, which give significantly lower scores compared to interpersonal trust. For example, Razumkov Center provides such data on the results of the survey, held in March 2015: only 3.9% of respondents fully support the activities

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<sup>10</sup>We’ve used PG experiment design, provided by dr. Benedict Herman.

<sup>11</sup>The results of our PG experiments are presented in Merkulova (2012) and Merkulova, Bitkova (2012).



of the Supreme Council (Verkhovna Rada), and 4.5% support government activity; the most trusted institution in the Ukraine now is the Church (66.2%) – (Otzinka gromadianamy...2015). For comparison among OECD countries (following OECD model of survey questionnaire procedure) the greatest level of trust in government is in Czech Republic (75%) and Norway (70%), the lowest one – in Slovenia (18%) and Greece (19%) (OECD 2014).

We'd like to note, that a similar pattern for the relation between interpersonal and institutional trust is observed in Poland, although the levels of both types of trust are higher than in the Ukraine: the results of polls in Poland (GUS 2015, pp. 2-3) confirm that the assessed level of interpersonal trust (in people in general) is 78%. Among the institutions most trusted in Poland is fire service (94%).

### Conclusions

In our opinion, the experimental and sociological data give grounds to say that in the Ukraine there is a combination of a high level of interpersonal trust and low level of institutional one. In the modern web world such a relationship can serve as a prerequisite for self-organization of the society, which begins to exist independently of the government, creating parallel structures due to self-ordering and displacing those institutions, which are illegitimate from the point of view of trust, or subordinating them. The potential of interpersonal trust in the Ukraine may become a real factor of positive changes, reducing the costs of transformation, and thus contributing to their implementation and effectiveness.

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**Keywords:** trust, laboratory experiment, sociological survey, PG game.

There are 2 ways of trust measuring – experimental (using laboratory or field experiment) and sociological one (survey). Both are widely used by researchers all over the world. Therefore, comparison of experimental and sociological results is a hot topic, considered in many scientific works. In Ukraine laboratory experiments are not yet widespread in studying of trust, and mostly sociological methods are used. The paper examines the following issues: comparative analysis of sociological and experimental methods of trust measurement; an overview of the basic laboratory experiments used to study trust and cooperation; comparative analysis “experiments versus surveys”: presentation of the results of laboratory experiments Public Good Game (PG), conducted by the authors in the Ukraine; matching of the results of sociological and experimental measuring of confidence in Ukraine.

The known laboratory experiments on verification of behavioral hypotheses, related to trust and cooperation, are the following: Trust Game (TG), Dictator Game (DG), a combination of TG-DG, Public Good Game (PG) and its modifications. Regarding the first three experiments, studies have shown that: 1) the outcome of the game significantly deviates from Nash equilibrium and the participants show deviation from self-regarding behavior; 2) experimental results may serve as valid assessments of the level of trust to people, namely trust to strangers.

We have conducted a number of PG experiments among the students in order to assess the level of trust and to compare it with the results of surveys in Ukraine. In our experiments, it was found that: 1) almost 100% of participants made non-zero contributions; 2) the average contribution was 50% of participant’s revenue and is very stable. Outcomes of experiments allow to talk about certain coherence with the results of sociological surveys to estimate trust, held in Ukraine.