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An analysis of the approaches to measuring trust

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Subject. An unstable environment has a significant effect on the functioning of society and its sustainable development. One of the factors determining the potential for sustainable development is trust. To study the potential of trust as a factor of stability in society it is necessary to measure the level of trust. This is, however, hindered by the lack of a unified approach and the limitations of the existing approaches.

The purpose of our study was to analyse the main approaches to measuring the level of trust in a community and to identify the limitations of each approach. We analysed the survey-based and the experiment-based approaches, as well as cases of the indirect assessment of the level of trust based on social dysfunctions and using econometric tools.

Methodology. To achieve our purpose, we studied the relevant literature by both Russian and international scholars and methodological guidelines of international organisations concerning the subject. We also used the dialectical method and performed an analysis.

Conclusions. In this article, we systematised the existing methods and approaches to measuring the level of trust in society and analysed the main advantages and disadvantages of the survey- and experiment-based approaches that are most commonly used to measure trust. We also studied the cases of measuring the level of trust based on social dysfunctions and social capital. Taking into account the limitations of the existing methods and approaches, we considered the possibility of using mathematical modelling in order to search for connections between various socio-economic parameters and the level of trust (the article presents a model with latent variables and describes its advantages). As a result, we determined the strengths and the limitations of the existing approaches to measuring trust and identified the need for further research in the area and elaboration of these approaches.

Keywords: trust, survey-based approach, experiment-based approach, social dysfunctions.

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Introduction

Lately, economic studies have been focusing more on the issue of trust as a factor facilitating sustainable social and economic development (Dementyev, 2021; Polterovich, 2022). This topic merges to some extent with the problem of an effective institutional environment. The two, however, do not coincide completely because the former includes such problems as interpersonal trust and social capital. To determine the degree of influence that trust has on social and economic development, we should first consider the existing approaches to measuring the level of trust. In this article, we attempt to review and systematise the most common approaches to assessing the level of trust in society.

The level of trust is important for studies focusing on specific problems and moral aspects of life in a community, as well as for a comprehensive assessment of the well-being of the society, the prospects of its sustainable development, and the effectiveness of the state. Therefore, various studies focus on different types of trust. The most common types are interpersonal, general, and institutional trust. Before we move on to the characteristics of each type of trust, let's define the term trust. Trust is the belief of the trustor that the trustee will behave according to the trustor's expectations. As follows from the definition, the trustor is a person who grants their trust, and the trustee is a person being trusted. Interpersonal trust is based on the expectations of particular persons; institutional trust is based on the belief that certain social norms (formal and informal) will be followed and the belief that these norms are effective and fair. General trust is trust towards other members of society that the trustor belongs to. The trustor believes that society shares their values and principles. General trust differs from institutional trust in that the former is aimed directly at the trustee (Tryndina & Ustyuzhina, 2023), while institutional trust is indirect.

The information regarding the level of interpersonal trust is used to form the World Happiness Report, which is used as an alternative to GDP when comparing the level of well-being in various countries (Helliwell et al., 2017). General trust is more often studied than interpersonal and institutional trust. Thus, following the guidelines of the United Nations Economic Commission for Europe (UNECE) and the Organisation for Economic Co-operation and Development (OECD) (OECD, 2017), the estimate of the level of general trust is used to assess the possibility of sustainable development in communities. General trust is the focus of the following studies: M. Rosenberg (Rosenberg, 1957), R. Boarini et al. (Boarini et al., 2012), and S. Fleche et al. (Fleche et al., 2012). We should note, however, that some scholars measure both the level of general and interpersonal trust (Bertelsen et al., 2006). They do so, because people assess their abilities and form certain principles and values based on how comfortable they feel in a community with a certain level of trust and what limitations this level of trust imposes on each member of the community (Sen, 1992, 2009).

The level of institutional trust is important for social and economic studies focusing on assessing the state's effectiveness, and particularly on the issues of market failures and areas assuming short-term losses resulting in long-term positive effects (for instance, education system and retirement system). Institutional trust is also considered in studies focusing on the well-being of society (Frey & Stutzer, 2005, 2006). The level of institutional trust determines the procedural utility (Benz et al., 2005)), which is studied in order to analyse the impact of the degree of transparency and effectiveness of the decision making process has on the general effectiveness of the decision made. In other words, it is assumed that the assessment of the fairness of the decision making process by society is often more important than the potential effect

of the decision itself. Figure 1 shows a scheme of the types of trust and the areas of social and economic studies focusing on these types.

We should note, however, that when analysing institutional trust, most scholars only consider institutions as forms of collective human activity, i.e. organisations, institutes, including the police, army, political parties, judiciary system, public administration bodies, and the government in general. In this case, what is considered is political trust, not institutional. Fewer studies focus on institutional trust as trust towards systems of established, reproducible, and ordered relationships between social actors, including formal and informal rules, individual and group incentives, social constraints, and ways of resolving conflicts of interests (institutions). Such institutions include, for instance, property, money, markets, etc.

Main approaches to measuring the level of trust

There are three main approaches to measuring the level of trust: 1) a survey-based approach; 2) an experiment-based approach; 3) an approach based on social dysfunctions. The survey-based approach involves surveys based on representative samples, where, in extreme cases, the question is worded as follows: “Would you rather say that you can trust most people or that you can never be too careful?”. Questions may be either direct

(Do you trust the state / a particular politician / a particular institution?) or indirect (Do you think most people follow traffic laws?). When the experiment-based approach is used, the participants of the experiment interact according to certain rules without knowing the purpose of the experiment. Thus, they provide researchers with data for further analysis. The third approach involves assessing the level of trust based on social dysfunctions and their manifestations. Social dysfunctions are undesirable consequences of the functioning of the social and economic system which have a negative effect on the community including the absence of the desired positive effect of the functioning of a social institution hindering the sustainable development of society.

The survey-based approach to measuring the level of trust

According to the guidelines of the OECD on measuring trust, questions used within the survey-based approach can be divided into three groups.

1. Evaluative questions are abstract questions focusing on whether the respondents trust particular trustees (certain individuals, state, society, or the existing institutions). In this case, the respondents should evaluate their attitude towards trustees. Common evaluative questions are the following: “Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?”

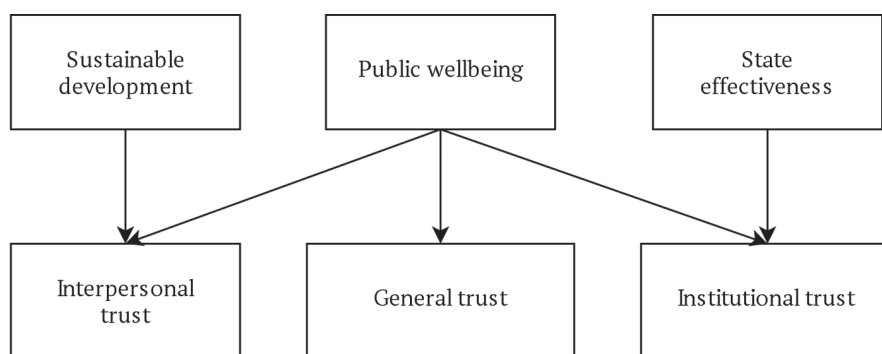


Fig. 1. Connection between the areas of social and economic studies and the types of trust (developed by the author)

(this question was designed by Rosenberg in his study of the level of misanthropy within communities (Rosenberg, 1957)). This wording also corresponds to general trust questions “Would you say that most people can be trusted, or that you cannot rely on anybody?”, “How much do you trust people you see for the first time?”, and “Would you say you should be careful when dealing with strangers?” (in some cases, respondents are suggested to evaluate how much they agree with certain statements using a suggested scale).

2. Questions based on people’s expectations can be used to measure the level of trust in a community by analysing responses to questions which reflect expectations of the respondents in particular situations. Some researchers believe (Morrone et al., 2009) that such questions allow for more accurate measurements because they are more specific and concern the behaviour of individuals in particular situations. However, the hypothetical nature of these situations may be a source of error. A typical question is worded as follows: “If you lost a purse or a bag with some valuable possessions, and some other person found it, do you think this person would give it back to you with all its contents?”.

3. Questions based on personal experiences of respondents. Contrary to the previous group, these questions can be used to measure the level of trust in a community based on the actual experience of respondents rather than on their expectations and assumptions. Such questions are often used in studies focusing on the violation of rights. They are used to measure the level of interpersonal and institutional trust in a community (a lower level of trust corresponds to a community where a larger number of respondents reported the violation of their rights and interests). A typical question can be worded as follows: “How often have you been discriminated against over the past 12 months?” (New Zealand General Social Survey (“New Zealand Ministry of Justice,” 2014)).

Questions designed within the survey-based

approach to measuring trust can also be divided into four groups based on what aspect of trust the studies focus on.

1. *Misanthropy* (Brehm & Rahn, 1997; Paxton, 1999): in this case, there are three main questions: Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people? (evaluation of the general eagerness to trust people); Do you think most people would try to take advantage of you or would they act fairly? (evaluation of the level of honesty and fairness in the community); Would you rather say that most people only care for themselves or that most people are eager to help others? (evaluation of the level of understanding in the community).

2. *General trust* (Newton & Zmerli, 2011): these questions aim to evaluate the level of trust in strangers and representatives of other ethnicities and religions on a scale from “trust completely” to “absolutely do not trust”.

3. *Trust in people you know* (Freitag & Traunmüller, 2009): the measuring system is similar to that used to assess the level of general trust but aims to evaluate how much the respondents trust their family members, neighbours, and people they know personally.

4. *Political trust* (Zmerli & Newton, 2008): respondents evaluate their level of trust in organisations, including police, state (government), political parties, and judiciary system on a scale from “trust completely” to “absolutely do not trust”.

While the presented above classification is based on how abstract the questions are and surveys using these questions have been conducted for decades, B. Robbins (Robbins, 2018) suggested that it is also necessary to study imaginary stranger trust and stranger-face trust. The Imaginary Stranger Trust questionnaire included questions regarding the reaction of the respondents in four situations involving interactions with imaginary strangers. During the Stranger-Face Trust study, the researchers generated six faces (of both

genders and three different races) and asked the respondents to assess their reactions in the same situations. The situations were as follows: 1) ability to keep secrets; 2) possibility of romantic relationships and building a family; 3) paying debts; 4) getting financial advice. The last situation demonstrates how ready the respondent is to trust other people and believe that they will give honest advice (within the limits of competence of the advisor) which will bring the maximum benefit to the respondent. The situations were chosen in order to make the results of the survey more representative by taking into account a wider variety of situations where trust is important. The situations had to be of general character and familiar to the respondents (those that the respondents experience on a daily basis). Another condition was that if a respondent assessed the situation incorrectly, it would result in noticeable losses in real life. Thus, keeping secrets was associated with reputation risks, romantic and family relationships implied that the respondent would not hesitate to leave a family member with the person. The study also assessed if the respondents were ready to lend a large sum of money (\$1000) and follow financial advice

given by a stranger. The described approaches to measuring the level of trust can be presented as follows (Fig. 2):

The largest survey-based study of trust is the World Values Survey. Other studies of this type are Eurobarometer, Afrobarometer, Latinobarometer, and Asia barometer (similar studies conducted in various regions) (Rothstein & Uslaner, 2005). Advantages of the survey-based approach are the large size of samples and the resulting validity of the results. Disadvantages include the so-called differential item functioning, which means that respondents from different countries belonging to different cultures react differently to the same questions (Justwan et al., 2018). Thus, the initial General Trust Question includes a phrase “most people” which is interpreted differently by respondents in Asia and in Western countries (Delhey et al., 2011).

Although survey-based studies can include both direct questions (Do you trust the state / social institution / individual?) and indirect questions (How safe it is to drive a car in this city?), the obtained results might include errors. Thus, for instance, the respondents might feel pressure from the interviewer.

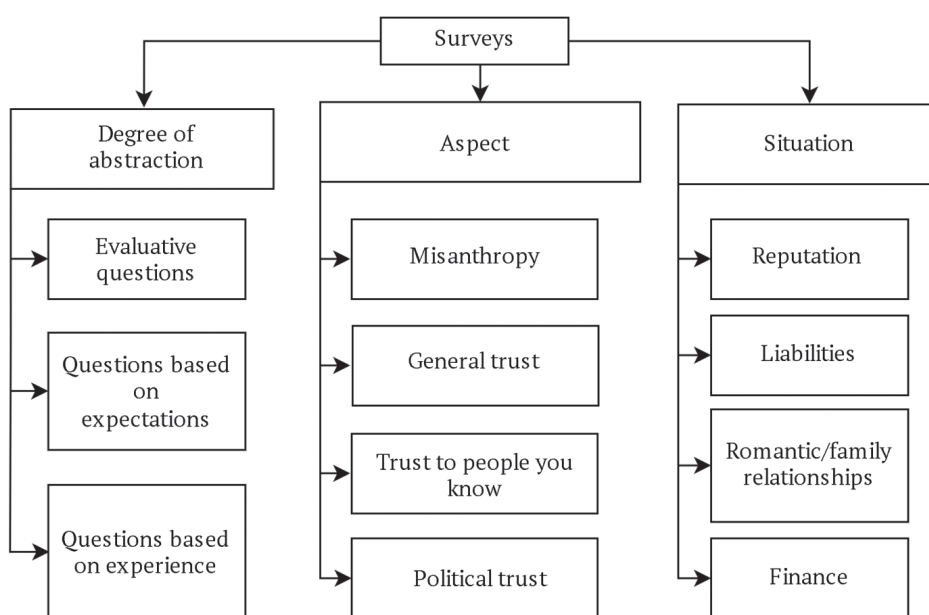


Fig. 2. Types of surveys measuring the level of trust (developed by the author)

They might also think that the organisers of the survey are not able to and are not going to maintain their anonymity. What is more, since trust is associated with moral and ethical issues, the respondents might provide socially-desired responses rather than their own point of view.

Misrepresentation of reality by respondents was analysed and described in the Balanced Inventory of Desirable Responding developed by Paulhus (Paulhus, 1991) and later revisited by Winkler (Winkler et al., 2006). There are two types of socially-desired responses: self-deceptive enhancement (a non-conscious inclination to perceive the situation as more positive than it actually is) and impression management (a conscious dissimulation of responses to create a socially desirable image of others). In other words, respondents want to present a more favourable image of themselves and might as well, either consciously or subconsciously, try to present a more favourable image of their environment.

The experiment-based approach to measuring the level of trust

The experiment-based approach to measuring the level of trust includes field and laboratory experiments and is actively used in behavioural economics. A key effectiveness factor for experiments concerning trust is that the participants receive an award as an incentive to natural reactions. This helps to eliminate to a certain extent such factors as the desire to conform to social norms, fear of being judged by the organisers of the survey, and ambiguity in the way the respondents interpret questions.

The most famous laboratory experiment focusing on trust is the Trust Game first conducted by Berg et al. (Berg et al., 1995). In the Trust Game, there are two participants that are anonymously paired (the participants interact with each other indirectly through the organisers of the experiment). One of the participants is given a certain amount of money

(e.g. \$10) and is told to give some of this money to the second player. The first player is also told that the amount of money they choose to send will be doubled and some of it may later be sent back to them by the second player (the game can have one or several rounds). Thus, if both players act out of rational self-interest, they will choose to send nothing. Otherwise, if the players want to avert inequality (Fehr & Schmidt, 2011), they will send each other equal amounts of money. The first player will act out of an assumption that their partner, having received the doubled sum, will try to balance the situation (if the first player believes that the second player acts rationally and tries to avert inequality, they will send the whole sum; otherwise, they will send nothing). Assuming that both participants show a preference for reciprocity (Falk & Fischbacher, 2006), rather than a preference for self-interest, the second player will be gradually sending back larger amounts of money parallel to their growing inclination towards reciprocity. Although the experiment was designed over 20 years ago, it is still used by researchers to study the level of trust in society (occasionally with certain amendments).

One of the most famous field experiments is the experiment with a wallet. The organisers of the experiment left a wallet with a set amount of money in public places in various cities. The number of returned wallets was considered to be the trustworthiness index of the community as a whole and was used to compare various regions both statically and dynamically (the experiment was described by Felte (Felte, 2001)).

Advantages of the experiment-based approach to measuring trust include a higher level of honesty on the part of the respondents and, consequently, more natural reactions in the designed situations. However, the number of respondents is significantly smaller and the quality of the obtained results depends significantly on how accurately the experiment is designed.

Another drawback of the experiment-based approach is often considered to be the fact that most of the participants of such experiments are students, whose responses and reactions in a large number of situations differ from those of other people (Levitt & List, 2007) (we should also note that in economic experiments, responses by economics students differ from responses by other students (Bolton & Ockenfels, 2006)). In other words, a prevailing number of students among the respondents makes the results of the experiments less representative. Another factor that researchers believe to affect the validity of the results of experiments is the size of the reward: in some experiments (the dictator game (Carpenter et al., 2005; Forsythe et al., 1994; List & Cherry, 2008), the gift exchange game (Fehr et al., 2014)) it does not have any effect; in other experiments such as the ultimatum game (a classical splitting experiment used to measure the level of self-interest), the size of the reward does not affect the behaviour of the first participant, but has a negative correlation with the behaviour of the second player (Cameron, 1999; Hoffman et al., 1998; Munier & Zaharia, 2002; Slonim & Roth, 1998); in the centipede game (an experiment aiming to assess the preferences of the participants: whether they are inclined to take the money or to wait and get more after a few rounds), a smaller reward results in a lower level of mutual trust (Parco et al., 2002). We should also note that experiments usually focus on measuring trust in strangers, i. e. general trust.

In some cases, surveys are combined with experiments. A survey conducted before an experiment helps to assess the initial perspective and values of the participants, which to a certain degree determine the motivation of the participants to trust their partners in the experiment (positive expectations, self-interest, inequity aversion, effect of the size of the reward) and their further strategy.

Despite their popularity and the fact that they can complement each other and thus compensate for the drawbacks, the experiment- and survey-based approaches to measuring trust are characterised by a common fault: people who agree to participate in surveys and experiments initially demonstrate a higher level of trust than those who do not (distrust towards strangers or the organisation conducting research may be a reason for not participating in it). Therefore, the results obtained using these methods can demonstrate an overestimated level of trust. This means that it is necessary to develop an approach that would ensure an impersonal assessment. Figure 3 shows the main types of errors common for experiment- and survey-based approaches to measuring trust.

An approach to measuring trust based on social dysfunctions and social capital

The third approach to measuring the level of trust in a community is by assessing the level of social dysfunctions. Social dysfunction is an undesirable consequence that results when the structure of a social system is maladapted to the functions it is intended to perform. Inefficiency of the social and economic system and its elements can result in the creation of other instruments to solve the existing problems, as well as in neglect of the existing norms of behaviour and ways of resolving conflicts. In other words, the level of trust in a community is reflected by the presence or absence of behaviour which deviates from the formal and informal norms of the community. For instance, the fact that people follow (or do not follow) the traffic regulations and the crime rate in the country can indicate the level of trust (both general and institutional).

One of the manifestations of a low level of institutional trust is large scale corruption, which is measured using an expert method by Transparency International within the framework of the Global Corruption Barometer.

The Global Corruption Barometer provides aggregated answers to the following questions. How do you think the scale of corruption has changed in your country over the past three years? (Possible answers: has increased, has decreased, hasn't changed). Assess the level of corruption in the following public institutions on a scale from 0 to 10 (where 0 means not corrupt, 10 means very corrupt). (Institutions: political parties, parliament, police, business, media, public officials, judges, the clergy, the military, education system). How efficient do you think the government is in combating corruption? (Possible answers: efficient, inefficient, can't say).

Social dysfunctions can be measured based on the scale of shadow economy in the country, which in turn can be assessed using expert and mathematical methods (based on the evaluation of monetary aggregates). V. V. Krivopuskov (Krivopuskov, 2013) suggests

both measurable indirect indicators of the level of trust, including the moral atmosphere in the society, and indicators that are hard to measure: social tension, degree of social differentiation, and the proneness to conflict in society.

The moral atmosphere in society includes: 1) an estimate of the social and economic situation; 2) the crime rate; 3) number of children in vulnerable situations; 4) and an estimate of the number of economic crimes. It is calculated as the geometric average of these indicators. The social and economic situation was assessed using the Gini coefficient; the crime rate was presented as a number of crimes committed per 100,000 people; the number of children in vulnerable situations was evaluated based on the number of children in orphanages (including neglected children, cases of family abuse, and the portion of troubled families) per 100,000 people.

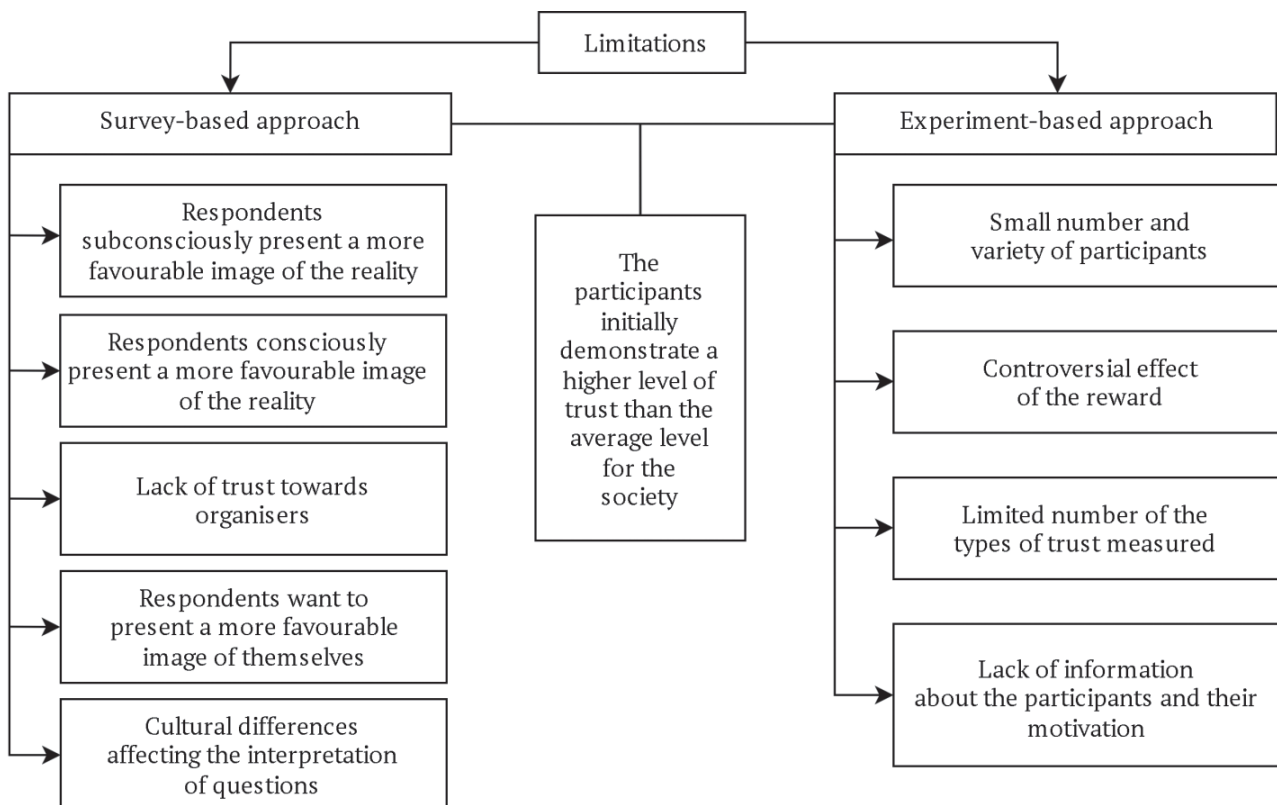


Fig. 3. Main types of limitations common for experiment- and survey-based approaches to measuring trust (developed by the author)

Trust and social capital

Trust within a community is closely connected with the idea of social capital, which means the quality of networks within the community. The term is defined differently, for instance as “networks and values whose functioning enabled the elite to pass their privileges on through generations” (Bourdieu, 2018), as “resources embedded in social networks which make it easier for social actors to reach their goals” (Coleman, 2009), or as “socially favourable norms and values” (Putnam, 1993). In other words, some researchers measure trust based on the following assumption: social capital is the closest parameter to trust and therefore can be used to assess the level of trust in a community. This approach is shared by S. Knack and P. Keefer (Knack & Keefer, 1997), J. Helliwell and R. Puntam (Helliwell, 2004; Puntam, 1993), A. Morrone, N. Tontoranelli, and G. Ranuzzi (Morrone et al., 2009), P. Strugis et al. (Sturgis et al., 2014), I. Algan and P. Cahuc (Algan & Cahuc, 2014). However, there is no unified approach to measuring the social capital as well. Thus, R. Puntam (Putnam, 1993) suggested assessing the social capital based on the civic engagement of the population and its self-organisation abilities (election turnout, membership in non-governmental organisations). Social capital can be evaluated using the human development index, which in turn depends on the life expectancy, education index, and income index. The human development index is calculated as the geometric average of the three indices. In Russia, social capital is commonly calculated based on a consolidated index of social capital including several measurable objective indices.

A model with latent variables

An interesting approach to measuring the level of trust is a mathematical model using latent variables (Justwan et al., 2018; King

et al., 2004). Unlike classical methods based on mathematical modelling and regression analysis, in this model, the resulting variables are known measurable parameters closely connected with trust, while the explanatory variable is an unknown value corresponding to the level of trust. The authors of the model use the following groups of parameters: 1) parameters based on the results of surveys; 2) institutional parameters characterising the level of democracy and bureaucracy in the community, an estimate of the scale of corruption and degree of independence of the judiciary system; 3) socio-psychological parameters including the degree of social differentiation based on the level of income and ethnicity; 4) biological and environmental parameters.

The above listed factors were used as resulting variables which helped to predict the most likely value of the latent parameter (trust). A Markov chain Monte Carlo (MCMC) method was used for modelling. Based on the assumptions regarding the statistical characteristics of the initial data, a large number of iterations were performed to determine the most probable value of trust. In other words, the researchers performed a reverse sampling of the explanatory factor based on the known resulting variables.

This method takes into account the effect of a large number of parameters characterising the social capital and social dysfunctions. A drawback of this method is the subjectivity in choosing the parameters connected with trust and the quality of links between these parameters and trust as well as between each other. In other words, researchers subjectively determine the pool of factors and assess their connection with trust afterwards. Thus, they can omit an important factor. Also, the dynamics of some factors may correlate with the dynamics of the level of trust, but not necessarily explain it.

Conclusions

Currently, there are three approaches to measuring the level of trust in communities: a survey-based approach, an experiment-based approach, and an approach based on social dysfunctions and social capital. While the first two approaches provide a direct assessment of the level of trust, the third approach is rather indirect. All the three approaches have their own advantages and disadvantages. Thus, the survey-based approach allows for measuring various types of trust (interpersonal, general, and institutional), unlike the experiment-based approach, which focuses on interpersonal trust. Besides, the survey-based approach involves more respondents and is more representative as compared to the experiment-based approach thanks to a wider variety of respondents as compared to the participants of experiments who are most often students. However, the limitation of the survey-based approach (contrary to the experiment-based approach) is the fact that respondents often perceive reality and moral values in a distorted way and want to present a more favourable image of themselves. They are also not motivated to act naturally (during experiments this problem is solved by introducing a reward). Even when the two approaches are combined, the results are still

not accurate enough, because people who agree to participate in surveys and experiments have a higher level of trust from the start.

An indirect approach to measuring trust based on social dysfunctions and social capital lacks some of the drawbacks connected with conscious and subconscious behaviour of the respondents and participants of experiments. However, it involves searching for and justifying the connections between socio-economic parameters and the level of trust in a community. There is also a tendency towards using the econometric apparatus which involves choosing relevant factors for different types of trust. We should note, that despite the variability of studies concerning the level of trust, institutional trust is viewed entirely as trust towards institutions as organisations, rather than systems of collective expectations. In other words, studies focusing on trust towards the state, analyse the level of trust to people in power (politicians, political parties, parliament, etc.) rather than the belief in the fairness of the decisions made and the inevitability of sanctions.

Conflict of interest

The author declares the absence of obvious and potential conflicts of interest to the publication of this article.

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Анализ подходов к оценке уровня доверия

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Предмет. Современные условия нестабильной внешней среды оказывают сильное воздействие на функционирование общества и возможность его устойчивого развития. Одним из факторов, определяющих внутренний потенциал общества к повышению уровня устойчивости, является доверие. Исследование потенциала доверия как фактора стабильности и устойчивости общества связано с необходимостью оценки его уровня, которая затрудняется отсутствием единого подхода и искажениями, присущими существующим подходам.

Целью данной работы является изучение основных подходов к оценке уровня доверия в сообществе и идентификация характерных для них ограничений и искажений. Автором были проанализированы опросный и экспериментальный подходы, а также приведены примеры косвенной оценки уровня доверия через социальные дисфункции и с использованием эконометрического аппарата.

Методология. В рамках данной работы для достижения поставленной цели была изучена актуальная отечественная и зарубежная экономическая литература и методологические указания международных организаций по тематике, также использовался диалектический метод и метод анализа.

Выводы. В статье была произведена систематизация существующих методов и подходов к оценке уровня доверия в обществе, проанализированы основные преимущества и недостатки опросного и экспериментального подхода как двух доминирующих в исследованиях, посвященных теме доверия. Были изучены примеры оценки уровня доверия в сообществе через социальные дисфункции и социальный капитал, также исходя из ограничений существующих методов и подходов была рассмотрена возможность применения инструментов математического моделирования для поиска взаимосвязей между различными социально-экономическими показателями и уровнем доверия (приведен пример модели с латентными переменными и описаны преимущества ее потенциального применения). В итоге были сделаны выводы о возможностях и ограничениях существующих подходов к оценке уровня доверия и необходимости дальнейшей работы в области их совершенствования.

Ключевые слова: доверие, опросный подход, экспериментальный подход, социальные дисфункции.

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Конфликт интересов

Автор декларирует отсутствие явных и потенциальных конфликтов интересов, связанных с публикацией настоящей статьи.

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