SOCIAL

POLICY

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ASSESSMENT OF THE INTERACTION OF SOCIAL CAPITAL AND INCOME INEQUALITY

Given the nature of social capital, the foundations of its formation, and the important role it plays in economic development, a hypothesis of a possible correlation between social capital and income distribution can be put forward. This research is an attempt to enrich the small number of analyzes related to the testing of this hypothesis by discussing the issue in the context of the interaction between social capital and income distribution in Armenia and in general. To address the research problem, the tools of correlation and panel regression analysis are used and compared with the results of the expert survey dedicated to the assessment of public social capital in the Republic of Armenia. As a result of the analysis of both the Republic of Armenia and the panel data of different countries, a statistically significant relationship is reported between the social capital, its elements, and income distribution, which is also in line with the opinions of participant experts on the same issue. Obtained results are summarized by causal inference terminology and a causal graph of relationships is proposed.

Introduction. The interaction between economic results and social capital is a less clear and visible phenomenon, and sometimes it can be mediated by the influence of several other related phenomena. Significantly, the authors discussing the interaction between economic growth and social capital often come to the idea of inclusive growth when describing the transmission mechanisms of this interaction, the idea of which directs the research arrows to the problem of equal distribution of incomes.

Based on the essence of social capital, the foundations of its formation, and the important role it plays in economic development, it is possible to put forward a hypothesis of a possible interaction between social capital and income distribution. In the paper, an attempt is made to enrich the works devoted to the verification of this hypothesis, which are only a few. Note that in most of these works the interaction of the public elements of social capital with the socio-economic indicators of the country is not considered at all. We have tried to fill this void through our research.

Literature Review. Authors discussing the interaction between economic growth and social capital often reach the idea of inclusive growth when describing the mechanisms of transmission of this interaction (e.g. Thomas and Hedrick-Wong 2019;[1] Soumyananda 2014,[2] 2012;[3] Mayilyan 2012,[4] etc.). Yet, there are only a few studies on the direct interaction between social capital and income distribution, some of which we will present below.

Thus, B. Kennedy and his co-authors tested the hypothesis that growing inequality between the rich and the poor is the result of declining social cohesion or social capital, which, in turn, is linked to an increase in armed killings and violent crime. The analysis revealed a high correlation between income inequality, the number of violent armed crimes, as well as between social capital (negative correlation). In turn, both interpersonal trust in society and group membership are correlated with the number of armed violent crimes (negative correlation). The analysis showed that the impact of the increase in income inequality (measured by the Robin Hood index)[5] on armed murder and violent crime is partly due to the distortion of social capital. As income inequality increases, so does the level of social distrust, which, in turn, is linked to the level of armed murder and violent crime. B. Kennedy and his co-authors define social

[1] Thomas, H. and Hedrick-Wong, Y. (2019), *Pathways* to inclusive growth: social capital and the bottom of the pyramid 1, Inclusive growth, Emerald Publishing Limited, Bingley, pp. 57-73, https://doi.org/10.1108/978-1-78973-779-020191006.

[2] Soumyananda D. (2014), Inclusive growth through the creation of human and social capital, *International Journal of Social Economics 41(10)*:878-895, DOI:10.1108/IJSE-07-2013-0157.

[3] Soumyananda D. (2012), Social capital formation ensuring inclusive growth: A development mechanics for backward region, *MPRA Paper No. 66261*, 28 pages, Online at https://mpra.ub.uni-muenchen.de/66261/.

[4] Mayilyan F. (2012), The role of social capital in the process of formation and realization of human capital [Роль социального капитала в процессе формирования и реализации человеческого капитала] [Rus], Bulletin of Tomsk State University 1(17), pp. 51-62.

[5] The index is the vertical distance between the Lorentz's curve and the equal income distribution line. In other words, this is the share of the income (in the range [0,1)) that needs to be passed from the rich to the poor to achieve equality.

capital as the per capita membership density and the level of interpersonal trust in each state. The latter, as most commonly, is calculated based on some questions from well-known surveys (in this case, General Social Survey (GSS)), such as "most people can be trusted", "You can not be too careful", "people are helpful", etc.[6]

In another study, Vilhjalmsdottir A. and co-authors analyzed multilevel data on 5,958 students (15 and 16 years old) in 102 public schools in Iceland to examine whether income inequality in neighborhoods affects the emotional world of adolescents. The Vilhjalmsdottir A. and co-authors also analyzed whether the indicators of social capital - social trust and youth involvement in social networks - participate in the process. The results of the study showed that the equal distribution of income has a positive effect on the emotional state of individual adolescents. However, the results of the study do not prove the positive effect of social capital on mitigating the unequal distribution of income. In the work, the information on involvement in different groups and emotional state is obtained through questionnaires developed for participants. Income inequality, in turn, is measured by the Gini coefficient, the wage ratio of the highest and the lowest 90/10 percentiles, the median household income, the Robin Hood index, and other indicators.[7]

The International Monetary Fund (IMF) also has a study on this topic in which D. Gould and A. Hijzen use data from the American National Election Survey (ANES) and the European Social Survey (ESS) to determine whether the trend in declining social capital is due to rising income inequality. The results show that high levels of general inequality reduce individuals' sense of mutual trust.[8]

Another work dedicated to the issue is S. Josten's work, where the observed model (heterogeneous agents overlapping generations (OLG)) takes into account "endogenous growth" and "social capital". An individual can either become an active part of the network of interaction based on public trust, thus having a positive contribution to the common social capital, or isolate herself/himself from society by participating in the economic life of the society but not contributing to the social capital of the community. S. Josten concludes that the resources invested in social networks based on mutual trust and cooperation are key factors for long-term economic success and growth. Therefore, in addition to the economic-political transmission channels, there are also socio-economic channels that provide the link between income distribution and economic growth. In addition, one of the most important conclusions is that the one-time reduction of

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[6] Kennedy B., Kawachi I., Prothrow-Stith D., Lochner K., Gupta V. (1998), Social capital, income inequality, and firearm violent crime, *Social Science & Medicine, Volume 47*, Issue 1, Pages 7-17, ISSN 0277-9536, https://doi.org/10.1016/S0277-9536(98)00097-5.

[7] Vilhjalmsdottir A., Gardarsdottir R., Bernburg J., Sigfusdottir I. (2016), Neighborhood income inequality, social capital and emotional distress among adolescents: A population-based study, *Journal of Adolescence, Volume 51*, Pages 92-102, ISSN 0140-1971, https://doi.org/10.1016/j.adolescence.2016.06.004.

[8] Gould E. D., Hijzen A. (2016), Growing apart, losing trust? The impact of inequality on social capital, *IMF working paper*, Retrieved March 04, 2021, from imf.org/external/pubs/ft/wp/2016/wp16176.pdf.

inequality stimulates the development of human capital and the acceleration of economic growth in the short run. In the long run, however, it can even lead to deepening inequality as such reducing the effectiveness of individuals' learning and discouraging investment in human capital. Therefore, according to S. Josten, it is necessary to ensure the continuity of the income redistribution policy, both to control the level of income inequality, as well as to improve social capital and stimulate economic growth.[9]

From the most recently published works on the topic, the analysis by Petricova I. and Zhang W. is also worth our attention. The results of the study conducted by Petricova I. suggest that as local economic inequality rises, households' bridging social capital, measured through participation in efforts to resolve broader communal issues, declines whilst their bonding social capital, measured through membership in relatively demographically and socio-economically homogeneous voluntary associations, increases.[10] Zhang W. takes rural China as an example to explore the relationship between social capital, income, and the level of well-being of Chinese farmers. The article provides evidence that the level of happiness among farmers is positively correlated with higher income, more active participation in social activities, and reciprocal activities. That is, social capital is a strong predictor of happiness.[11]

In another work that differs from the others by the methodology, D. Stancato, D. Keltner and S. Chen have argued that deepening inequality between individuals reduces social capital. D. Stancato, D. Keltner and S. Chen test this hypothesis with scientific experiments conducted with the methods of game theory. D. Stancato, D. Keltner and S. Chen define social capital as a tendency to be keen on grouping and warmth in face-to-face interactions. In the work, the authors carry out two scientific experiments with the tools of game theory. In the first experiment, participants were assigned the roles of manager and assistant according to the degree of influence (high - manager, low - assistant) and income distribution equality (equal - $ 6 and 4, unequal - $ 9 and 1). At the end of the game, the participants were reminded about the money they earned during the game, and immediately answered some questions, such as the desire to group with a teammate (on a scale of 1 to 7), the participant's care, trust, etc. In general, according to the results of the first scientific experiment, income inequality reduces the desire of participants to team up. The first scientific experiment, however, according to D. Stancato, D. Keltner and S. Chen, has certain limitations. In particular, it relies on self-accountability (uses the online instant message chat platform). In addition, this experiment in testing the assumption of low interpersonal warmth, trust, and competence in the case of high-income inequality did not provide statistically significant results. For this

[9] Josten, S. (2004). Social capital, inequality, and economic growth. *Journal of Institutional and Theoretical Economics (JITE) / Zeitschrift Für Die Gesamte Staatswissenschaft,* 160(4), 663-680. Retrieved July 25, 2021, from http://www.jstor.org/stable/40752484.

[10] Petrikova, I. (2022), The effects of local-level economic inequality on social capital: Evidence from Andhra Pradesh, India. *The European Journal of Development Research 34*, 2850–2877 (2022). https://doi.org/10.1057/s41287-021-00495-w.

[11] Zhang W. (2022), Social capital, income and subjective well-being: evidence in rural China, *Heliyon*, Volume 8, Issue 1, 6 pages, https://doi.org/10.1016/j.heliyon.2021.e08705.

reason, the authors carried out the second scientific experiment through a conversation platform that is already being filmed. This allowed to create greater social involvement among the participants, as well as to analyze the audio-visual data. The results of the second experiment correspond to the results of correlation analysis, showing an inverse relationship between the level of social capital and income inequality. In addition, research shows that interacting in the context of inequality damages emotional responses, forcing participants to perceive their partner as less competent, warm, and moral.[12] *Interestingly, one of the elements of public social capital - interpersonal trust- is mostly discussed in all these works on the interaction between income distribution and social capital.*

There are even fewer studies analyzing social capital in Armenia. Among the researches dedicated to the public sphere and interpersonal relations, one can single out the extensive research named "Civic activism as a new component of the civil society of Armenia". The research project explores how nonprofit organizations (NGOs) interact with civil society activists, looking at these two actors from a broader perspective of participation in Armenian political culture. The research used a mixed methods approach, combining quantitative and qualitative techniques of analysis using primary and secondary data, the general picture of civic activism in Armenia and its interaction with the NGO sector with the wider community, using statistical analysis of secondary data in mapping, case studies of social mobilization, supplemented by focus group discussions, semi-structured interviews with key civic stakeholders.[13]

Another work related to the topic is the analysis authored by Sh. Kurkchyan. In the work, Sh. Kurkchyan studies the involvement of non-governmental organizations operating in the Republic of Armenia in the social networks and its impact on the level of the country's social capital through qualitative analysis of secondary data, as well as in-depth interviews conducted with NGO leaders (experts). According to the results of the analysis, the introduction of networks created by local NGOs to improve the quality of social capital expansion in Armenia is not enough. Social networks created by regional NGOs are weak, lack human and financial resources, and have competitive difficulties. However, local NGOs share the growing tendency toward the perception of the need for collaborative efforts through networks. These efforts are seen as creative, and effective and contribute to public confidence in NGOs.[14] In another paper published in the collection of materials from the same conference, A. Alexanyan theoretically analyzes the condition of trade unions in Armenia and their role in

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[12] Stancato D. M., Keltner D., Chen S. (2018), *The gap between us: income inequality reduces face-to-face social capital*, University of California, Berkeley, 35 pages, Retrieved March 04, 2021, from https://xlab.berkeley.edu/connect/Stancato_Income%20Inequality%20and%20Social%20Capital_MS.pdf.

[13] Paturyan Y. J., Gevorgyan V. (2016*), Civic Activism as a Novel Component of Armenian Civil Society*, American University of Armenia, 108 pages, https://tcpa.aua.am/files/2012/07/English-5.pdf.

[14] Kurkchian Sh. (2013), *The involvement of Armenian non-governmental organizations with social networks and contribution of these networks to improvement of social capital in Armenia*, CRRC Armenia, Conference proceedings, pp. 54-74, https://www.crrc.am/wp-content/uploads/2019/03/CRRC-Social_Capital-Conference-1.pdf.

the enrichment of social capital.[15] *In the listed works, however, the interaction of the public elements of social capital with the socio-economic indicators of the country is not studied. We have tried to fill this void through our research.*

Research methodology. In this work, the assessment of the interaction between income distribution and social capital in the Republic of Armenia is carried out through quantitative and qualitative analysis methods of primary (expert survey) and secondary (official statistical organizations, Legatum Prosperity index, Caucasus Barometer, World Values Survey) data. In particular, similar to the methodology of our previous paper on the assessment of business social capital in the Republic of Armenia,[16] in this paper, an assessment of the social capital of the Republic of Armenia in the chain of non-commercial organizations, state and society was conducted (period: September 2021). The survey is conducted among 24 experts, including officials from the Ministry of Labor and Social Affairs, heads/experts of trade unions, non-governmental organizations, socio-economic research centers, and professors of economics and sociology; 42% of the experts carry out their main activity in the private-public, and 58% in the public sector, 75% of the participants belong to the 36-55 age group, 16.7% belong to the 18-35 age group, and 8.3% belong to the 56 and older age group. Moreover, in the scope of the testing phase, the questionnaire was initially sent to 5 experts, based on the preliminary analysis of whose answers some adjustments were made in the questionnaire. Assessing the uncertainty about the independence of opinions of experts, it should be noted that the average standard deviation of questions from 1 to 10 points is 0.39, which is a good result, given that when assessing the independence of opinions, the general variance should be large, not the opposite.[17] The results of the expert survey were compared with the Legatum Prosperity Index, Caucasus Barometer, World Values Survey, as well as the results of our previous expert survey on the assessment of the Republic of Armenia (RA) business social capital.[18] The hypotheses and results obtained from the secondary data analysis using correlation and panel regression analysis techniques were compared and verified by the expert survey results. The sub-model of the panel regression model was selected based on the Lagrange multiplier random effects, Redundant Fixed Effects tests, and Hausmann test results.[19]

Analysis and Discussion. In this paper, to answer the proposed research problem the analysis was performed in the following order. Firstly, the results of the expert survey on the assessment of public elements of the social capital of the

[15] Aleksanyan A. (2013*), Trade unions in Armenia: Factor of Social capita*l, CRRC Armenia, Conference Proceedings, pp. 96-105, https://www.crrc.am/wp-content/uploads/2019/03/CRRC-Social_Capital-Conference-1.pdf.

[16] Mayilyan F., Isayan L. (2022), Assessment of business social capital through expert survey (by the example of the republic of Armenia) [in Armenian*], Messenger of ASUE 2021(6),* pp. 46-57, https://asue.am/upload/files/science/banber/2021-year-6/4.pdf.

[17] See the same place.

[18] See same place.

[19] Gujarati, Damodar N., and Dawn C. Porter (2009*). Basic econometrics.* Boston, Mass: McGraw-Hill, 5th edition, 946 pages.

Republic of Armenia were summarized and analyzed, which were compared with the results of the Caucasus Barometer, the World Values Survey, as well as the results of our previous expert survey on the assessment of RA business social capital. Secondly, the interaction of social capital, economic outcomes, and income inequality indicators was discussed, first based on data from the Republic of Armenia and then from all available countries. Finally, the work was summed up by the experts' suggestions on the obstacles to raising social capital in Armenia, their causes, and priorities for overcoming the problems.

The results of the study of the RA public social capital (through an expert survey).

According to the results of the expert survey, in terms of cooperation - one of the most important elements of social capital – the situation in Armenia is as follows (Figure 1). On average, the highest level of cooperation exists between the "outside world" and non-governmental organizations, in which case, however, we have the largest standard deviation and the average absolute deviation from the median (MAD).
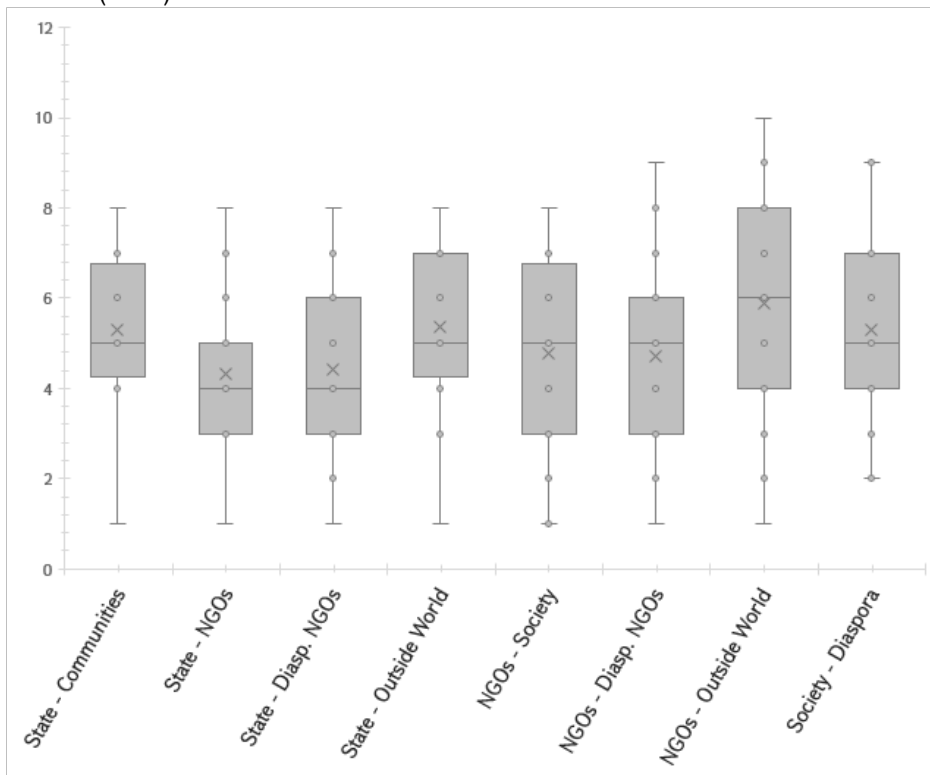

Figure 1. *Distribution of answers to the question "Please assess the level of cooperation in Armenia in the following directions"[20]*

We have the lowest average assessment of the level of cooperation in terms of cooperation between the state, on one hand, and the RA and diaspora NGOs, on the other hand. The biggest consensus in the answers is on the relatively low rating of cooperation between the communities and the state, in which case we

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[20] Source: The expert survey results conducted in the scope of this analysis.

have the lowest deviation and the lowest MAD, which can be seen from the graph, considering the in-quartile interval (IQR) containing 50% of responses.
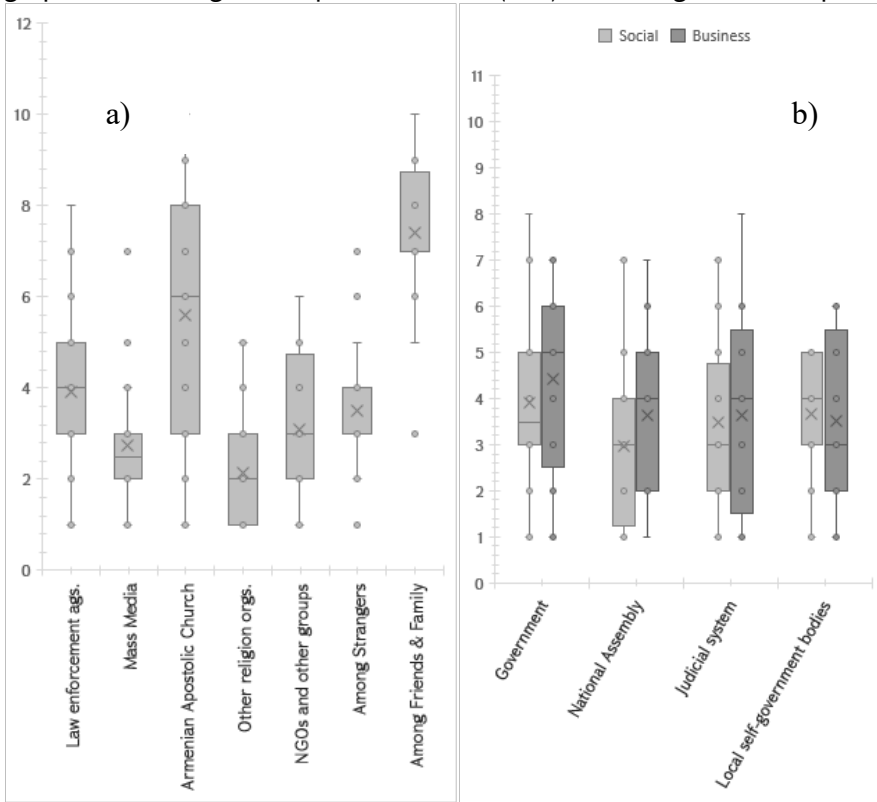

Figure 2. *Distribution of answers to the question "Please assess the level of trust in the Republic of Armenia in the following directions" a) questions that are included only in this questionnaire, b) questions that were also included in the business social capital questionnaire[21]*

In terms of the trust, the picture is as follows (Figure 2). According to experts, the highest average score of trust is in the case of interpersonal trust. Trust in the Armenian Apostolic Church was rated high with the largest variation in responses, while trust in other religious organizations was rated significantly lower. The lowest average rating of trust was given in the case of trust in the mass media. For comparison, according to the results of the Caucasus Barometer (reference period February-March 2020[22]), the highest trust is in the army and the church, and the lowest is in the judiciary. According to the World Values Survey (reference period 2021[23]), the highest level of trust is again in the military system and the church. However, the level of trust in the media exceeds

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[21] Source: The expert survey results conducted in the scope of this analysis as well as in Mayilyan F., Isayan L. (2022), ASSESSMENT of business social capital through expert survey (by the example of the republic of Armenia) [in Armenian*], Messenger of ASUE 2021(6),* pp. 46-57, https://asue.am/upload/files/science/banber/2021-year-6/4.pdf.

[22] Source: https://caucasusbarometer.org/.

[23] Source: https://www.worldvaluessurvey.org/.

the level of trust in the National Assembly. The latter, in contrast to the results of the Caucasus Barometer, exceeds the assessment of confidence in the judiciary as well.

Interestingly, compared to the opinions of the participants in the expert survey on business social capital assessment (Figure 2b), in this case, the average score is high only in terms of trust in local self-government bodies, while the trust in the government, the National Assembly and the judiciary was lower. Moreover, in this case, the assessments are more consensual (similar), with a small variation.
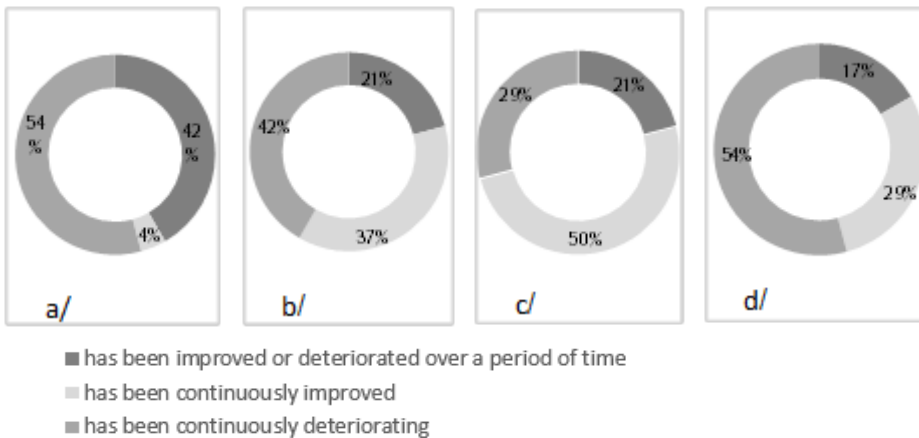

■ has been improved or deteriorated over a period of time
■ has been continuously improved
■ has been continuously deteriorating

Figure 3 *Answers to the question "How do you think the atmosphere of trust and cooperation in the country has changed during the last 30 years according to the mentioned directions?" (a/ between the state and society, b/ the state and NGOs, c/ NGOs and society, d/ in terms of interpersonal relations).[24]*

According to 54% of the surveyed experts, the cooperation between the state and the society has continuously deteriorated, while 42% think that it has improved or deteriorated over a certain period. Particularly, there is an opinion according to which the situation has worsened in recent years. Yet, according to another point of view, in the period before the independence of the Republic of Armenia (1991), the cooperation improved, then continuously deteriorated, and since 2018, it again has started to improve. And according to some other experts, the cases were situational: it faded by inertia for several years after 1991, occasionally spiking at the start of the war and after victories, and fading after internal political upheavals (October 27, 1999; March 1, 2008; November 9, 2020). The picture of the cooperation between the state and NGOs, as well as between NGOs and society is relatively favorable. According to the experts, there were situational episodes, depending on the NGO or the topic, its type and structure, experience, and reputation. There are opinions according to which the cooperation between the NGOs and the community remains weak and remains at the same low level. From the point of view of interpersonal relations, according to the majority of experts (54%) the situation has continuously deteriorated. In

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[24] Source: The expert survey results conducted in the scope of this analysis.

this case, however, 30% think that they have continuously improved, and 17% think that the cases were situational (directly depending on the economic and political situation). There is an opinion that these relations are relatively stable. Note that the average rating of experts for participation in the elections is 5.54, the participation in public events (e.g. cultural events, festivals) is 5.96, voluntary work - 5.33, and mutual support in the community 5.88.

The interaction between social capital and economic outcomes

The answers to the questions assessing the correlation between social capital and economic indicators are interesting. According to the majority of experts (58.3%), the social capital in the country is definitely positive, and 33.3% think that it has a mainly positive impact on economic outcomes (economic growth, gross domestic product (GDP) per capita, etc.). The (average) expert rating of the coefficient describing the impact of social capital on economic growth is 0.78. It should be noted that according to the majority of the experts in this survey, the positive impact of the social capital on the economic results is expressed with a higher coefficient versus the experts' opinion evaluating the business social capital in the RA[25]. In turn, the impact of economic outcomes on social capital was considered unequivocally positive by 45.8% of experts, 37.5% - mainly positive, and 16.7% - no impact. The impact of economic growth on social capital was estimated at an average of 0.62, which is lower than the assessment given by experts assessing business social capital. For comparison, note that our analysis [26] of the interaction between social capital indices and economic outcomes showed a significant correlation only in terms of GDP per capita (0.66).

The interaction between the income distribution and the social capital of the Republic of Armenia

According to 54% of experts, the unequal distribution of income is mainly negative, and 29% - definitely has a negative impact on the level of social capital in the country. The average coefficient of the impact of social capital on income inequality is -0.41. According to 38% of experts, income inequality does not affect social capital, and the other answers are shared almost equally in different directions. As a result, the average coefficient obtained is zero.

It should be noted that when looking at the available secondary data on social capital and income inequality, this obvious negative correlation can be observed (Figure 4).

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[25] Mayilyan F., Isayan L. (2022), assessment of business social capital through expert survey (by the example of the republic of Armenia) [in Armenian*], Messenger of ASUE 2021(6),* pp. 46-57, https://asue.am/upload/files/science/banber/2021-year-6/4.pdf.

[26] Isayan L. (2021 b). Interaction between social capital and economic outcomes: Which elements of social capital lead to better economic results? [Rus] Научные исследования современных проблем развития России: цифровая трансформация экономики. Conference Proceeding.
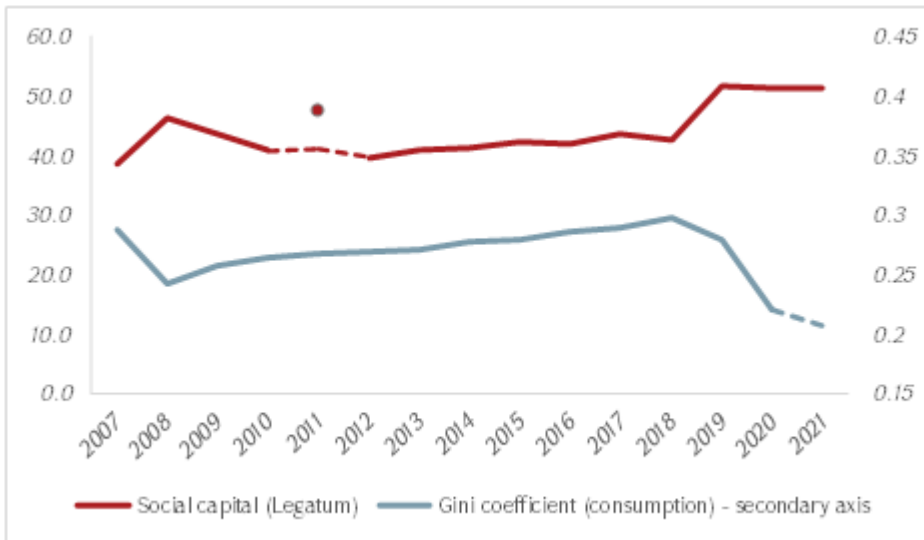
Moreover, in the case of consumption inequality, the negative correlation is higher between the Gini coefficient and interpersonal trust element of social capital (-0,78), while in the case of income inequality, the negative correlation is more significant between the Gini coefficient and civic participation (-0.66). It should be noted that this correlation between income inequality and social capital in the literature is usually explained by the fact that poor economic conditions and inequality lead to social disorganization and disruption of social cohesion.[28] The Gini coefficient of income inequality is even more closely correlated with the volume of exports (-0.89). The latter, in turn, significantly (0.9) correlates with the networks element of social capital.[29]

It should be noted that in the expert survey questionnaire we also included questions about social capital and the establishment of institutions in the country. According to the results, the success of institutions has a mainly positive effect on income equality (definitely positive - 33.3% of respondents, mostly positive - 50%). Estimates of impact in the opposite direction are very different: there are opinions about both positive and negative impact, as well as the absence of any impact.

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[27] Sources: Legatum Prosperity Index and Armstat. The Gini coefficient for 2021 is our forecast obtained with the help of the Hodrick_Prescott filter. The value of social capital in 2011 is considered an outlier and it was replaced by the previous publication figure for the same year.

[28] Kennedy B., Kawachi I., Prothrow-Stith D., Lochner K., Gupta V. (1998), Social capital, income inequality, and firearm violent crime, *Social Science & Medicine, Volume 47*, Issue 1, Pages 7-17, ISSN 0277-9536, https://doi.org/10.1016/S0277-9536(98)00097-5.

[29] Isayan L. (2021 a), How do internal and external network connections of the republic of Armenia look? FACEBOOK Social Connectedness Index [Arm], *Amberd Bulletin, N2(9),* pp 71-77, https://asue.am/upload/files/amberd/%D5%8F%D5%A5%D5%B2%D5%A5%D5%AF%D5%A1%D5%A3%D5%AB%D6%80%2021.2%20(1).pdf.

Correlation matrix on social capital and its elements, institutions, and income inequality indicators[30]

	Social Capital	Interp. and family relations	Net works	Interp. trust	Instit. trust	Civic partic.	Instit. pillar	Gini (consp)	Gini (inc.)
Social Capital	1								
Interpersonal and family relations	0.891**	1							
Networks	0.740**	0.741**	1						
Interpersonal trust	0.547*	0.281	-0.108	1					
Institutional Trust	0.956***	0.778**	0.621*	0.653*	1				
Civic participation	-0.344	-0.356	-0.682*	0.146	-0.343	1			
Institutional pillar	0.302	0.328	0.797**	-0.434	0.168	-0.779**	1		
Gini coef (consumption)	-0.145	0.085	0.439	-0.782**	-0.295	-0.309	0.467	1	
Gini coef (income)	-0.071	0.061	0.267	-0.311	-0.060	-0.662*	0.472	-0.031	1

*** .90-1 very high **.70-.90 high * .50-.70 moderate

Estimation of the interaction between social capital and income inequality through available panel data of all countries

In this section of the paper, we have attempted to test the hypothesis of the inverse relationship between social capital and unequal distribution of income through panel regression analysis of available country data.

According to the results of the analysis, the correlation is significant between the Gini coefficient of income distribution and the complete index of social capital, as well as institutional trust, network connections, and interpersonal relations with family and friend elements of social capital. Moreover, in the case of the first two elements, the connection is inverse, and in the case of the third, it is direct. The latter may theoretically be explained by a decrease in the element of interpersonal trust as a result of unequal distribution of income, which, in turn, strengthens family and personal relationships, but the analysis of available data does not provide statistically significant results for it.

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[30] Sources: Armstat, World Bank and World Economic Forum.

Panel regression analysis results for income distribution and social capital and its elements.[31]

	Dependent variable: income inequality (Gini coefficient)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	39.8*** (1.195)	37.4*** (0.573)	38.3*** (0.612)	36.9*** (0.454)	40.2*** (0.763)	34.6*** (1.209)	37.7*** (1.361)
Social Capital	-0.058*** (0.223)						
Civic participation		-0.016 (0.013)					0.006 (0.014)
Institutional trust			-0.036*** (0.013)				-0.025* (0.014)
Interpersonal trust				-0.004 (0.011)			-0.001 (0.012)
Networks					-0.054*** (0.012)		-0.061*** (0.013)
Relations						0.028 (0.016)	0.052*** (0.017)
Panel Sub-model	PER=F	CX=F, PER=F	PER=F	PER=F	PER=F	CX=F, PER=F	PER=F
R^2	0.953	0.957	0.953	0.953	0.954	0.957	0.955
Avg. number of countries							70
Number of years							13

* Standard errors in parentheses. ***$p<0.01$ **$p<0.05$ *$p<0.1$

The equation characterizing the relationship between the elements of social capital and the Gini coefficient will look like this:

InEq = 37.7 + 0.006*Civ - 0.025*InstTr – 0.001*IntpTr – 0.61*Nets + 0.052*Rel + [PER=F] + e   (7),

where *InEq* is the Gini coefficient characterizing the unequal distribution of income, *Civ* is the civic participation element of social capital, *InstTr* is the trust in institution's element, *IntpTr* is the interpersonal trust element, *Nets* is the interpersonal networks element, *Rel* is the interpersonal relationship element,

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[31] Source: Authors' calculations. The panel sub-model was selected based on the results of Lagrange Multiplier tests for Random Effects, Redundant Fixed Effects tests and the Hausman test. Whenever there was no difference in subtypes we have taken the ones with higher R2 and lower standard errors.

PER = F is the information about fixed time effects, and *e* are random errors of the model and are not correlated with explanatory variables. It should be noted that considering the correlation between the indicators of unequal distribution of income and the social capital in the groups of comparable RA neighboring countries and developed countries with high social capital, no marked differences are observed in the two groups. However, it would be interesting to study the relationship through classification methods.

Finally, combining obtained findings with previously conducted analysis on the relationship between social capital, its elements, and countries' economic outcomes, the below causal graph can be obtained (Figure 5).
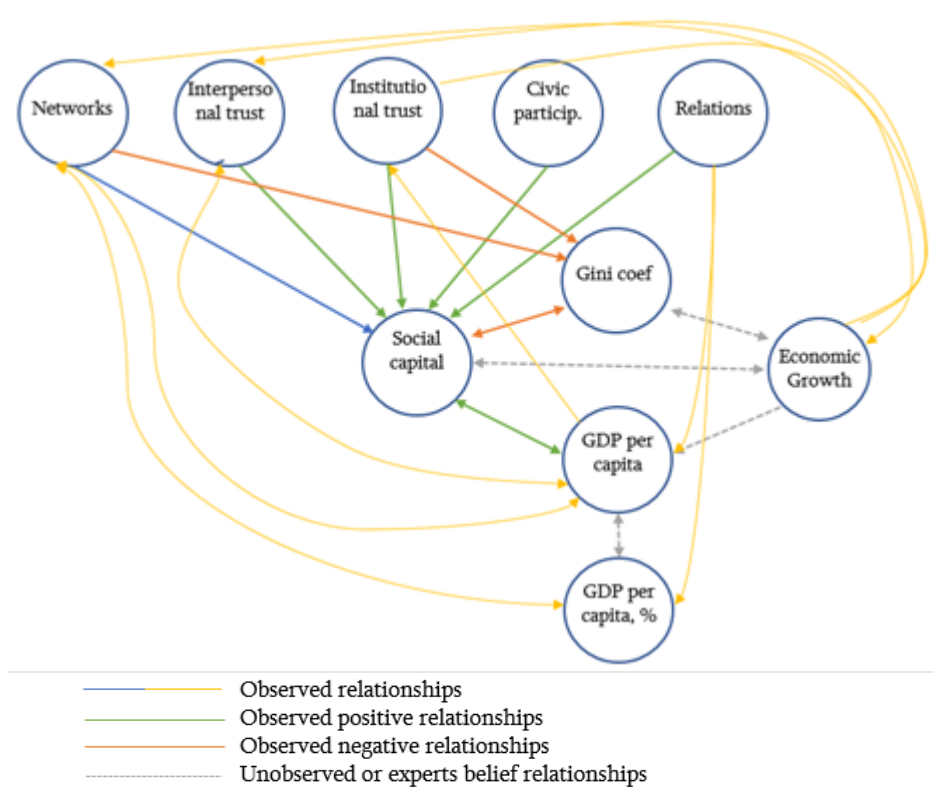

Figure 5. *Observed and believed relationships between social capital, economic outcomes, and income distribution inequality[32]*

With Figure 5 data, according to causal inference terminology, GDP per capita and the Gini coefficient can be considered as colliders (mutual child nodes) for social capital and economic growth indicators, and the Gini coefficient can even be considered as a fork (node which affects both indicators). What does this mean? It is believed in the theory that the existence of colliders blocks the causal path between the parents (in this case, economic growth and social capital), which can be unblocked once we fix the value of the

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collider. In this case, this means there is a causal relationship between economic growth and social capital, only if we fix the value of GDP per capita. In terms of the Gini coefficient, the situation is even more complicated, as it is also a fork, which means if we fix the income inequality in a country to be unchanged (like in some developed European countries), then the causal flow disappears between social capital and economic growth. Moreover, if we identify the causal effect of the Gini coefficient on economic growth, then using the 'frontdoor adjustment' technique (keeping all its assumptions first) the causal effect of social capital on economic growth is clearly identifiable.[33]

Obstacles to the increase in RA social capital, their reasons, and priorities for overcoming problems

Within the framework of the expert survey, the participants were also asked open-ended questions about the obstacles to the increase in RA social capital, their reasons, and solutions. As a result of the textual-content analysis of the answers to the questions on the problems, it becomes clear that the main obstacles to the high level of social capital of the Republic of Armenia are the low level of interpersonal trust and the trust in the state, lack of national ideology, educational problems, socio-economic and institutional issues. The obstacles mentioned in the answers are connected with the historically broken informal norms, the division of society, and the lack of formal institutions. In addition, the experts single out exogenous factors limiting the improvement of RA social capital, such as the spread of COVID-19, the Second Artsakh War, and geopolitical instability. According to some of the experts, the solutions to the mentioned problems are through making the public sector efficient, investments in education and educational reforms, united and consistent work, the inclusion of young people and different groups, as well as patriotism, value system, and confidence building.

Conclusions. Examining the hypothesis on the interaction between social capital and income distribution by an expert survey and secondary data analysis using the panel regression analysis method we showed that the unequal distribution of income has a negative impact on the level of social capital in the country, while there is almost no opposite effect. According to the results of the panel regression analysis, this relationship is significant between the Gini coefficient of unequal income distribution and the entire social capital index, as well as the institutional trust, networking, and family and interpersonal relationships with friends sub-pillars of social capital. Analyzing the time series of RA indicators of income distribution and social capital, it became clear that in the case of income inequality, the inverse relationship is more significant between the Gini coefficient and the element of civic and social participation.

Enriching the small list of analyses conducted on the public element of the social capital of the Republic of Armenia, remarkable facts about the problem were revealed as a result of this analysis. The results of the expert survey showed that we have the lowest average rating of the level of cooperation in the Republic of Armenia between the state and the NGOs operating in the diaspora and

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[33] Neal B. (2020), Introduction to causal inference from a machine learning perspective, Course lecture notes, 132 pages, https://www.bradyneal.com/Introduction_to_Causal_Inference-Dec17_2020-Neal.pdf.

Armenia, while the greatest consensus is on the relatively low level of cooperation between the state and communities. The highest score of trust was given to the interpersonal trust, as well as the trust to the Armenian Apostolic Church, and the lowest average assessment was given to the trust in the media. The results obtained, with small exceptions, correspond to the results of the well-known Caucasus Barometer survey and World Values Survey conducted on the same topic. Compared to the opinions of the participants of our previous survey on the assessment of business social capital, in this case, the average score is higher only in the case of trust in local self-government bodies, while the trust in the government, the National Assembly and the judicial system was lower.

The main obstacles to the high level of social capital of the Republic of Armenia and factors of its deterioration are the low level of interpersonal trust and the trust in the state, the lack of national ideology, the problems in the field of education, several socio-economic and institutional problems. The obstacles mentioned in the answers are considered to be connected with the historically broken informal norms, the division of society, and the lack of formal institutions. Finally, solutions to the problems must be found through the efficiency of the public sector, investment in education, educational reform, united and consistent work, the inclusion of youth and different groups, as well as patriotism, value system, and confidence building.

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ՖԻՐՈՒԶԱ ՄԱՅԻԼՅԱՆ
ՀՊՏՀ վիճակագրության վեսության ամբիոնի վարիչ,
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ԼԻԱՆՆԱ ԻՍԱՅԱՆ
ՀՊՏՀ վիճակագրության վեսության ամբիոնի ասպիրենտ

Սոցիալական կապիտալի և եկամուտների անհավասարության փոխազդեցության գնահատում.– Հաշվի առնելով սոցիալական կապիտալի բնույթը, դրա ձևավորման հիմքերը և այն կարևոր դերը, որ խաղում է տնտեսական զարգացման գործում՝ կարելի է առաջ քաշել սոցիալական կապիտալի և եկամուտների բաշխման հնարավոր փոխկախվածության վերաբերյալ վարկած: Այս հետազոտությունը փորձ է՝ հաստատելու նշված վարկածի ստուգմանն առնչվող փոխռաթիվ վերլուծությունների շարքը՝ խնդիրը քննարկելով և՛ Հայաստանում, և՛ ընդհանրապես սոցիալական կապիտալի և եկամուտների բաշխման փոխազդեցության համատեքստում: Հետազոտության խնդրի լուծման նպատակով օգտագործվել են կոռելյացիոն և պանելային ռեգրեսիոն վերլուծության գործիքներ, արդյունքները համեմատվել են ՀՀ հանրային ստ-

ցիալական կապիտալի գնահատմանը նվիրված փորձագիտական հարցման արդյունքների հետ։ Ինչպես Հայաստանի Հանրապետության, այնպես էլ մի շարք երկրների պանելային տվյալների վերլուծության արդյունքում վիճակագրորեն նշանակալի կապ է արձանագրվել սոցիալական կապիտալի, դրա տարրերի և եկամտի բաշխման անհավասարության միջև, ինչը համահունչ է նաև մասնակից փորձագետների կարծիքներին։ Ստացված արդյունքներն ամփոփվել են պատճառահետևանքային կապերի տեսության տերմինաբանությամբ, առաջարկվել է առնչությունների պատճառահետևանքային գծապատկեր։

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***Оценка взаимодействия социального капитала и неравенства доходов**.–* Учитывая природу социального капитала, основы его формирования и важную роль, которую он играет в экономическом развитии, можно выдвинуть гипотезу о возможной связи социального капитала с распределением доходов. Это исследование является попыткой обогатить небольшое количество анализов, связанных с верификацией указанной гипотезы путем обсуждения вопроса в контексте взаимодействия между социальным капиталом и распределением доходов в целом, а также в Армении. Для решения исследовательской задачи используются инструменты корреляционного и панельного регрессионного анализа и проводится сравнение с результатами экспертного опроса, посвященного оценке публичного социального капитала в Республике Армения. В результате анализа панельных данных как Республики Армения, так и ряда стран выявляется статистически значимая связь между социальным капиталом, его элементами и распределением доходов, что также совпадает с мнением экспертов-участников. Полученные результаты обобщаются терминологией каузального анализа, предлагается каузальный граф взаимосвязей.

Ключевые слова: *доверие, сотрудничество, общество, социальный капитал, неравенство доходов*