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Social Capital as a Key Driver of Productivity Growth of the Economy: Across-countries Comparison

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Abstract: *The aim of this work was to show the possible impact of social capital on productivity of the economy. That impact can be measured by such indicators of productivity of the economy as used in our study: the GDP, the total value added of the economy (TVE), and the GNI per total labour force. Thus, this paper was organized as follows: its first part presents the relationship between the development of social capital and productivity growth of the country in the light of the economic development theory. In this context, it is pointed out that the significance of social capital as a component of the productivity potential of a given country increases when such country moves to the next stages of economic development. Therefore, social capital becomes a very important driver of the upgrading of national incomes in those countries, in which competitive advantages are based primarily on intellectual capital assets. The another part of the paper describes the methodology and the results of a research conducted on a group of 100 countries in the years 2012-2013 with an aim to illustrate the link between social capital and productivity of the economy as a whole referred to, or indicated, in the first part of the study. The results of the research allowed us to formulate a conclusion that without an appropriate ethical behaviour, not only in business, the productivity growth is*

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hampered because it translates into a lower level of trust and unwillingness to cooperate. In other words, as, among others, W. Bartoszewski stressed, "it is worth to be decent".

Introduction

Social capital as an element of intellectual capital includes, according to specialists working for the World Bank, various institutions, linkages and relationships, norms and customs that determine the quality and quantity of a society's social interactions (http:web.worldbank.org/wbsite/external/topics/exttsocialcapital (1.03.2015)). Social capital understood in this way is an important component of a country's soft environment, which determines the further increase in the welfare level through facilitating cooperation and collective action. Cooperation requires the creation of various types of networks and the development of trust. P. Streeten (2002, p. 10) stresses that the ability to associate depends on the degree to which communities share norms, and out of such shared norms grows trust. For F. Fukuyama, trust is the existing belief in a given community that other members of that group are characterized by honesty and cooperative behavior based on shared values and principles (Fukuyama, 1997, p. 38).

In this work social capital is regarded as one of key drivers of the country's productivity growth through its impact on the welfare level of the economy. The Organization for Economic Cooperation and Development (OECD) stresses that a good understanding of the role and drivers of productivity growth is crucial to strengthening the recovery and improving growth and living standards in the longer term (OECD, 2013, p. 7). Therefore, the article discusses social capital in the light of its influences on the formation of the productive potential of the economy. It should be pointed out that the significance of social capital as a component of the productivity potential of a given country increases with moving by this country to the next stages of economic development. In other words, social capital becomes a very important driver of the upgrading of the national income in the countries in which competitive advantages are based primarily on intellectual capital assets.

The aim of this work is to show the possible impact of social capital on productivity of the economy. This paper is organized as follows. Its first part presents the notion of social capital and the link between development of social capital and productivity growth of the country in the light of the economic development theory.

The second part describes the methodological assumptions, the materials and the results of own research conducted on a group of 100 countries in the years 2012–2013. The aim of this research was to illustrate the mentioned links between social capital and productivity in the first part of the study. Based on the data sets of international institutions such as the World Economic Forum (WEF), the Legatum Institute (LI), and the United Nations Conference on Trade and Development (UNCTAD), the relationship among indexes of social capital and its selected dimensions as well as indicators of productivity of the economy as a whole, including the Gross Domestic Product (GDP), the total value added of the economy (TVE), and the Gross National Income (GNI) per total labour force, are analyzed. All those are based on statistical methods.

Social Capital and Productivity Growth

The concept of social capital has been developed by many researchers; hence there are many definitions and explanations of this category. It should be emphasized in this place that the introduction of a category of social capital into economic science has enriched the latter with a sociocultural context. The main areas of research into social capital have been set out, *inter alia*, by such great sociologists and economists as P. Bourdieu, J. Coleman, R. Putnam, D. North, M. Olson, S. Knack and F. Fukuyama.

Interesting and useful for further analysis seems to be the approach adopted by J. Coleman, who describes social capital primarily as a social structure (network) made up of a variety of communities**.** He treats social capital as every aspect of an informal social organization that creates productive resources for one or more entities. Thus, social capital consists of institutions that enhance the benefits of an individual with cooperation and exchange (Coleman, 1988, p. 95; Wildowicz-Gigiel, 2008, pp. 7-8, Libertowska, 2014, p. 96).

P. Bourdieu, in turn, defines social capital as the bonds and obligations based on reciprocity relations of human beings, which may be institutionalized in the form of social trust.

R. Putman, the biggest promoter of social capital, understands it as "the totality of norms, networks, mutual trust and loyalty that occur in a particular social group". He defines social capital as connections between individuals, norms and trust that arises from these relationships and can increase the productivity of a society by facilitating the coordination of activities

(Przygodzki, 2004, pp. 94-95; Gajowiak, 2011, p. 57; Majewska, 2012, pp. 205-206; Majewska, 2013 a, p. 254).

F. Fukuyama was investigating social capital from a cultural perspective. The key category for him was trust. He stressed the economic dimension of trust and social capital. This approach to social capital has influenced our understanding of social capital presented in this article, because it takes into account the differences in the level of economic development of regions and countries.

In yet another explanation of social capital, the ability of people to cooperate and this cooperation being based on ethical norms and values shared by all members of a community (group) is emphasized. Social capital is therefore an immaterial effect of a collective action, the common good – both public and private.

Finally, we can say that social capital consists of norms and networks that support cooperation. Also the OECD's definition of social capital states that it "networks together with shared norms, values and understandings that facilitate co-operation within or among groups" (Gellauff, 2003, pp. 1-2). The synergy effect, which occurs as a result of these links, and continued innovations lead to a more efficient use of production factors. In modern economies, social capital is one of the most important determinants of socio-economic development of countries.

Sociological theory distinguishes between two types of networks: bonding and bridging. Bonding, or strong-ties networks, consist of a closely knit set of connections within a specific group of people who are well aware of one another's behaviour and reputation. These connections generally exist for a long period of time.

Bridging, or weak-ties networks, are much "thinner". Contacts last shorter, but extend to a larger group of people. People in bridging networks more easily connect with outsiders. Because of two types of networks, there are also two kinds of social capital. The main differences between the bonding and bridging social capital are the following (see: Gelauft, 2003, pp. 4-5):

- The bonding social capital is characterized by relatively low transaction costs required to make relationship-specific investments within groups, and it is relatively easy to guarantee confidentiality. This situation creates economies of scale: information asymmetry is low, and it takes less effort for people to get acquainted with one another. Members of a group feel solidarity and are willing to help one another in difficult situations. On the other hand, however, antagonisms between group members and outsiders may appear, which may, consequently undermine standards that are appropriate for this particular group.

– Within the bridging social capital, members have more trust in people (which also more rapidly extends on people) from other places or other cultures or to people with other ideas. This characteristic increases the flexibility in building relationship-specific investments, generates diversity and reinforces motivation for innovation and entrepreneurship.

The long term trends show a shift from a bonding to a bridging social capital.

Various authors indicate three possible levels of analysis of this category of capital: micro, meso and macro levels (Kostro, 2005, p. 8; Łopaciuk-Gonczarek, 2012, pp. 8-9).

At the micro level (the level of a unit) the analysis focuses on the study of attitudes, relationships, norms and behaviours among individuals or groups who are in close relationships with one another (neighbourhood). The most important category which is analyzed at this level is cooperation. The unit is then examined in terms of its individual benefits from participating in networks of social relations.

At the meso level (the level of organization or community) the subject of the analysis is a group (social institution), which helps to build a greater community network and can benefit from its social capital. In this approach, social capital is a resource, which is conditioned by the existing social bonds.

And finally, at the macro level, social capital is treated as a public good and analyzed in relation to the whole of the society. Consequently, the political, social and cultural elements of the environment are taken into account, and the impact of formal institutional structures on the economic situation of society, welfare and the level of satisfaction is examined. Other important areas of study include an analysis of the credibility of a State, the scope of civil liberties available to citizens, the existence or lack of corruption and the efficiency of the administrative system of a given State.

To summarize, social capital can be viewed as the ability of a country to cooperate and work together in order to realize the common purpose of a given community or network. Social capital consists of such dimensions as (see: http:web.worldbank.org/wbsite/external/topics/exttsocialcapital)):

– different kinds of networks and collective actions,
– values and attitudes such as trust, solidarity, honesty, fairness, egalitarianism, sense of unity, equality of treatment,
– information and communication technology facilitating collaboration and increasing the transparency of government decisions,
– organizational structures, arrangements and solutions for cooperation between the private and public sectors.

The development of social capital may give many benefits. For example, social capital reduces transaction costs, corruption and the scope of social exclusion. Social capital also increases the degree of transparency and accountability of economic policy through the wider access of enterprises and citizens to information. It also strengthens cooperation between the public and private sector, which reduces the waste of public funds and increases the efficiency of jointly-implemented projects. Additionally, social capital facilitates knowledge diffusion and sharing. Those benefits of formatting social capital lead to the productivity growth of the economy (see: Czapiński, 2014, p. 320; Majewska, 2013a, 255-256; Josten, 2013, pp. 5-8; http:web.worldbank.org/topics/social development (1.03.2015)).

However, obtainment of the above mentioned benefits of social capital depends on the level of economic development. For example, the level of trust is correlated with GDP *pc*, which is an indicator often used as a proxy of prosperity. At the early stages of development, in countries that are only beginning to implement an industrialization strategy, industry located in rural areas (textile and food) is usually first to develop, and investments in more manufactured goods industries are being made much more later, first, simply to fulfil the needs of the internal market. That is why investments in human capital are so important. Governments of developing countries should also support domestic producers by making it possible to invest into different types of hard infrastructure and develop capital goods industries.

Only then will those economies start to open to foreign markets on a greater scale. In order to cope with international competition, domestic producers must implement technological improvements and learn from the rest of the world, absorb new knowledge, and, as a result, increase productivity, building together with the government a public and business environment in order to upgrade the prosperity of their own country. Thus, in such cases, human capital begins to become the main driving force of productivity growth.

When it comes to medium-income countries, the economic policy of their respective governments should, among other things, focus on the strengthening of the industrial base and support domestic businesses in their innovation activities that require a good quality human capital. In these activities, what becomes an increasingly important task is the shaping of the socioeconomic structure of the economy, as its competitive advantages should change its character, in order to the help a given country could to maintain its productivity growth, and hence prosperity.

Due to the implementation of appropriate development strategies, comparative advantages can transform those based on raw materials and cheap labour in the direction of those based on capital and technology. Passing on to the next stages of economic development, frequently referred to the knowledge economy, is closely related to the higher level of intellectual capital, an important part of which is social capital. Summing up, there is a systematic relationship between the socioeconomic structure of the country, the nature of the sources of productivity growth, and the kind of political economy, which in turn reflects its level of economic development. For example, in the opinion of J. Czapiński, the important role of a human capital as a factor of wealth growth in poorer countries explains why Poland has been so far developing at a good pace, irrespective of its low level of social capital. As Czapiński sees it, the continuation of investments in human capital may turn out insufficient to sustained development (see: Czapiński, 2014, pp. 323-333; Jantoń-Drozdowska & Majewska, 2013, pp.45-48; Rizwan *et al*., 2011, pp. 270-277).

Failure to take into account the above-mentioned interactions (widely presented in literature on the achievements of the later stages of economic development) in research methodology could lead to a controversial conclusion that social capital does not increase productivity. This does not mean, however, that in an economy where the level of social capital is too low, or if there is so-called negative social capital, as is in the case of corruption and nepotism, its impact on productivity does not appear, or will not be an impediment to economic development (see for example: Streeten, 2002, p. 11-13).

Method and Materials of the Research

The study covered a group of 100 countries included in the rankings of the World Economic Forum, the Legatum Institute and the UNCTAD statistics. The research period covered the years 2012–2013 as it was possible to obtain for that period the latest dataset which allowed us to estimate all selected indicators for the analysis of social capital and productivity for the economy as a whole.

The productivity measures for the total economy in our study are the GDP per total labour force (GDP *pe*), the present Total Value Added of the economy per total labour force (TVE *pe*) and the nominal GNI per total labour force (GNI *pe*). Gross National Income is defined as GDP plus net receipts from abroad of wages and salaries and of property income plus net taxes and subsidies receivable from abroad (see: OECD, 2013, pp. 14-32).

The three indicators of economic performance and income levels of a given country: GDP, TVE, and GNI are expressed in current prices converted to U.S. dollars at official exchange rates. They are sourced from the UNCTAD statistics reports, such as total labour force data. The UNCTAD defines total labour force as persons aged 15 and older who are engaged or seeking work. Thus, the estimates of total labour force can be treated as potential employment of the economy.

This variable of potential employment of the economy has been decided upon since it was impossible to obtain data free on real employment and hours of work for such a large set of countries from other sources, such as for example the OECD or the International Labour Organization. The indicators of productivity level of the economy are calculated by dividing the GDP, TVE and GNI of a given country by its total labour force (http://unctadstat.unctad.org/wds/reportFolders/reportFolders.aspx). This dataset is presented in Table 1.

Table 1. GDP *pe*, TVE *pe*, GNI *pe* in USD in the surveyed group of countries in 2012

	Country	**GDP *pe***	**TVE *pe***	**GNI *pe***		**Country**	**GDP *pe***	**TVE *pe***	**GNI *pe***
1	Norway	187596	167665	191367	51	Kazakhstan	23054	21651	19731
2	Switzerland	143761	136169	148376	52	Panama	21077	19996	19353
3	Kuwait	127312	131659	133699	53	Costa Rica	19614	18794	19074
4	Australia	128868	120170	125417	54	Jordan	17905	16609	17793
5	Denmark	106646	91828	109821	55	Algieria	17653	17326	16950
6	Sweden	103866	91181	106190	56	Romania	16441	14379	16301
7	United States	100966	100965	102419	57	Colombia	15985	14617	15346
8	Belgium	99998	89038	100956	58	Bulgaria	14741	12663	14400
9	Singapore	94810	89040	93735	59	Botswana	13435	12257	13066
10	Japa	90749	90136	93628	60	Namibia	13052	12146	13023
11	Kanada	94326	88954	92636	61	Dominican Republic	12817	12375	12327
12	Finland	91873	78993	91760	62	Peru	12726	11694	11614
13	Austria	90386	81725	89828	63	Jamaica	11703	10438	11360
14	France	87401	78331	88898	64	Tunisia	11455	10918	10882
15	Netherlands	86351	77519	87166	65	China	10289	10120	10099
16	Germany	81024	68126	82959	66	Macedonia	9969	8593	9822
17	Ireland	96653	86929	79376	67	Thailand	9611	9626	9237
18	Italy	79297	70977	78720	68	Egypt	8968	8579	8921
19	United Kingom	76832	68027	76600	69	El Salvador	8881	8452	8534
20	United Arab Emiratem	72016	75073	74633	70	Guatemala	8290	8028	8046
21	Izrael	75314	68577	72954	71	Morocco	8166	7954	7887
22	Saudi Arabia	70550	70528	71640	72	Paraguay	7983	7250	7820
23	Hong Kong	69750	68946	71235	73	Mongolia	8298	7191	7750

Table 1 continued

Country		GDP *pe*	TVE *pe*	GNI *pe*	Country		GDP *pe*	TVE *pe*	GNI *pe*
24	New Zealand	71260	65865	67606	74	Ukraine	7698	6841	7617
25	Iceland	69764	61124	62052	75	Philippines	6148	6148	7338
26	Spain	56230	51597	55575	76	Indonesia	7214	7214	7005
27	Grece	46553	40972	46782	77	Sri Lanka	6765	6765	6633
28	Slovenia	43987	38244	43504	78	Moldova	5880	5024	6364
29	Tajwan	41808	40794	43152	79	Honduras	5833	5741	5429
30	Portugal	37520	32810	36605	80	Bolivia	5610	4477	5181
31	Czech Republic	36862	33084	34131	81	Nigeria	4945	4870	4534
32	Trinidad and Tobago	32601	32482	33919	82	Nicaragua	4186	3812	4070
33	Slovak Republic	32937	30120	32246	83	India	3828	3614	3790
34	Chile	32371	29637	30843	84	Pakistan	3402	3286	3578
35	Estonia	31914	27781	30391	85	Ghana	3711	3448	3533
36	Turkey	28756	25632	28748	86	Zambia	3663	3701	3365
37	Uruguay	28752	25898	27909	87	Cameroon	3012	2799	2841
38	Croatia	28753	24414	27749	88	Vietnam	2914	2914	2786
39	Hangary	28952	24248	27397	89	Kenya	2474	2207	2464
40	Wenezuela	27065	24821	26465	90	Senegal	2441	2138	2406
41	Russian Federation	26665	22697	25787	91	Mali	2235	2027	2127
42	Poland	26863	23793	25735	92	Bangladesh	1682	1590	1826
43	Lithuania	25585	23098	24765	93	Cambodia	1689	1592	1607
44	Argentyna	25234	22996	24697	94	Uganda	1519	1426	1484
45	Latria	24178	21619	24147	95	Zimbabwe	1397	1233	1365
46	Malaysia	24418	24153	23483	96	Rwanda	1285	1207	1271
47	Mexico	22887	22178	22553	97	Tanzania	1243	1143	1234
48	Brazil	21526	18290	21189	98	Mozambique	1257	1171	1209
49	Iran	20837	20665	20660	99	Nepal	1062	1000	1072
50	South Africa	20494	18415	20039	100	Ethiopia	956	889	954

Source: own calculation based on http://unctadstat.unctad.org/ReportFolders/report Folders.aspx. (1.03.2015).

The surveyed countries are presented according to the level of GNI *pe* from the highest to the lowest position in this indicator of productivity in 2012. The comparison of three productivity indicators shows big differences in their highs across the surveyed countries. While only 26 countries displayed the productivity level measured by three indicators higher than USD 50 000 per employee in 2012, 51 countries achieved the productivity level lower than USD 20 000 per employee. One of the many possible factors causing the observed divergence in productivity levels, can be social capital. It role in driving the economic growth and changes in living standards, hence prosperity, is still growing in the present world economy.

Specialists working for the independent British research center the Legatum Institute argue that social networks and the cohesion that a society experiences when people trust one another have a direct effect on the prosperity of a country. Firstly, as a synthetic index of social capital in a given country, has been selected the index of the Legatum Institute. It is a part of the aggregate indicator of economic prosperity and quality of life. The Legatum Social Capital Index measures countries' performances in two areas: social cohesion and engagement, as well as community and family networks. In order to estimate this social capital index, the Legatum Institute assesses how factors such as volunteering, helping strangers, or donations to charitable organizations influence the economic and life satisfaction of the populace as a whole. The index also includes such dimensions of social capital as the levels of trust in a society, the manner in which citizens believe they can rely on others, and how marriage and religiosity provide support networks that improve wellbeing (http://www. prosperity.com/social.aspx (1.03.2015).

The authors have added their own social capital index based on the indicators published in The Global Competitiveness Report 2013–2014. This year's Report features a number of 148 economies, and contains a detailed profile for each of the economies included in the study, as well as an extensive section of data tables with global rankings covering over 100 indicators. The indicators sourced from The Global Competitiveness Report included in our proposition of a social capital index, come from the executive opinion survey the participants of which are business executives. Respondents estimate the presence of a given factor in their country on the seven-point scale, where 1 refers to the lowest level of this factor, and 7 the highest (the best situation). Therefore, this aggregate social capital index puts more emphasis on the level of social capital from the business sector point of view than the Legatum Social Capital Index, and is called by authors the Business Social Capital Index. In constructing our aggregate index, and thus in the selection of variables, we remembered of the recommendation that individual indicators should describe different aspects of the analyzed phenomenon. Therefore, the two analyzed indexes of social capital, that is the Legatum Institute's one and ours, are mutually complementary, creating together a more comprehensive overview of the social capital level in a given country.

The Business Social Capital Index includes 6 dimensions of social capital:

– Public trust in politicians: In your country, how would you rate the ethical standards of politicians? (1 = extremely low; 7 = extremely high) (WEF, 2013, p. 413).

- Transparency of government policymaking that affects business activities: In your country, how easy is it for businesses to obtain information about changes in government policies and regulations affecting their activities? (1 = extremely difficult; 7 = extremely easy) (WEF, 2013, p. 421).
- Ethical behavior of firms: In your country, how would you rate the corporate ethics of companies (ethical behavior in interactions with public officials, politicians and other firms)? (1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world) (WEF, 2013, p. 426).
- Cooperation in labor-employer relations: In your country, how would you characterize labor-employer relations? (1 = generally confrontational; 7 = generally cooperative) (WEF, 2013, p. 488).
- State of cluster development: In your country, how widespread are well-developed and deep clusters (geographic concentrations of firms, suppliers, producers of related products and services, and specialized institutions in a particular field)? (1 = nonexistent; 7 = widespread in many fields) (WEF, 2013, p. 526).
- University-industry collaboration in R&D: In your country, to what extent do business and universities collaborate on research and development (R&D)? (1 = do not collaborate at all; 7 = collaborate extensively) (WEF, 2013, p. 537).

Each component of the Business Social Capital Index has been assigned a weighting 0.166 (16.66%), which means that it is a symmetrical weighted aggregate index. The Business Social Capital Index was calculated according to a typical procedure. For each country, the total value of this index was calculated by summing the results of multiplying the 2012-2013 average values of 6 indicators presented in the World Economic Forum's annual Global Competitiveness Reports by the weight assigned to them (see: Archibugi & Coco, 2004, p. 175-179; Majewska, 2013 a, pp. 258-259).

Next, Spearman's rank and Pearson's linear correlation analysis were carried out to examine the relationship between social capital and productivity for the surveyed economies and for each distinguished group. Due to the above-stressed fact that the role of social capital as a component of the productivity potential of a given country increases with achieving by this country the next stages of economic development, the 100 countries were divided into two groups, composed of 50 economies each, according to their social capital level. First, in the Spearman's rank correlation analysis, the social capital level was measured the average position of its aggregate indexes. Then, in the Pearson's linear correlation and a cluster analysis, the sum of values of social capital indexes was measured**.** In the case of

Spearman's rank correlation analysis, there was no need to normalize the data, because that analysis is carried out for the examined variables describing the 100 countries expressed in their positions according to these variables in the rankings considered in our study (see Table 2). Whereas all variables included in the Pearson's linear correlation and cluster analysis were transformed into natural logarithms, which is the recommended procedure in such studies (see.: Majewska, 2013 b, pp.177-178).

Then a cluster analysis was performed too, as it allowed examination of similarities and dissimilarities regarding the indicators of productivity and social capital's dimensions between the analysed groups of countries. The cluster analysis was carried out with the help of an agglomeration method based on Chebyshev and 1-r Pearsona distances for grouping the features of a selected group of countries. The Chebyshev measure is a generalized version of Euclidean distance between variables, and it normalizes the differences in distances to the extent necessary for the identification of similarities and dissimilarities between the characteristics of countries divided into different social capital-level groups. In the case of 1-r Pearson measure of distance, variables are grouped for a given set of countries by way of inclusion of the Pearson's multiply correlation coefficients among a number of variables that are analyzed simultaneously. The coefficient of multiple correlation is a measure of how well a given variable can be predicted using a linear function of a set of other variables. This kind of measure of distance allows to present the results of the multidimensional relationships between the variables of productivity and social capital. The results of the two kinds of cluster analysis have been presented graphically in a dendrogram, the branches of which represent the distances between the examined variables for selected groups of countries.

Results of a Research into the Link Between the Level of Social Capital and Productivity Growth

In order to ensure comparability of data from different sources it was decided to compile the positions occupied by a given country of concerned rankings of social capital and productivity. Table 2 shows the positions of 100 countries obtained in analyzed rankings for the years 2012–2013. The first place achieved by a country in all selected rankings means or the highest level of productivity indicator or the highest scale of social capital development (or its dimension like ethical behavior of firms) across surveyed economies. For example, in the Legatum Institute ranking of social capital (39 rank) and ethical behavior of firms (43), Poland achieved

the best position, while it was placed in the worst for the indices of transparency of government policymaking affecting business activities (86) and for the state of cluster development (81). Therefore, in the Business Social Capital Index Poland attained much lower position – 69.

In 2012 the top 5 countries in the LSCI ranking were Norway, Denmark, Australia, the New Zealand, Finland, whereas the five countries classified at the lowest positions were Bangladesh, Turkey, Rwanda, Pakistan, and India. According to the BSCI ranking, the leaders in 2012-2013 were Singapore, Switzerland, Finland, Sweden, Norway, while the last five places were occupied by Greece, Nepal, Argentina, Algeria, and Venezuela. As regards the level of social capital, the measured average position in two its aggregate indexes, in the researched period among the top 5 countries were Norway, Finland, the New Zealand, the Netherlands, and Sweden. In 2012, the bottom 5 countries according to this indicator were Mozambique, Algeria, Nepal, Romania, Bangladesh.

Table 2. Countries' positions in different social capital and productivity rankings in 2012–2013

Country	Social Capital								2012		
	2012	2012-2013									
	LSCI	BSCI	PTP	TGPB	EBF	CLER	SCD	UIC	GDP_{pe}	TVE_{pe}	GNI_{pe}
Algieria	86	97	69	95	95	94	90	100	55	54	55
Argentyna	57	96	100	99	99	97	89	50	44	44	44
Australia	3	23	26	38	17	70	31	14	3	4	4
Austria	14	18	35	16	15	9	16	21	14	13	13
Bangladesz	96	88	86	71	100	65	54	99	93	93	92
Belgium	16	22	21	42	19	55	19	6	8	10	8
Boliwia	81	66	41	91	73	78	67	57	80	81	80
Botswana	70	36	22	32	31	75	66	81	59	60	59
Brazil	53	55	89	80	63	59	23	41	49	53	48
Bulgaria	68	84	62	89	77	68	85	90	58	58	58
Cambodia	84	52	42	85	58	47	36	83	92	92	93
Cameron	89	82	79	41	83	87	71	88	87	88	87
Canada	8	14	11	14	11	22	17	17	11	11	11
Chile	56	24	24	13	23	28	42	35	34	34	34
China	25	26	19	34	39	41	22	30	65	65	65
Colombia	51	57	81	52	75	37	59	44	57	56	57
Costa Rica	54	28	50	37	32	13	39	31	53	51	53
Croatia	87	83	74	76	56	90	88	62	38	39	38

Table 2 continued

Country	Social Capital								2012		
	2012	2012-2013									
	LSCI	BSCI	PTP	TGPB	EBF	CLER	SCD	UIC	GDP_{pe}	TVE_{pe}	GNI_{pe}
Czech Republic	38	59	99	72	76	52	37	32	31	30	31
Denmark	2	15	12	40	7	3	29	20	5	6	5
Dominican Republic	61	73	96	49	78	32	65	74	61	59	61
Egipt	82	64	52	66	42	80	41	98	68	68	68
El Salvador	92	75	67	97	88	53	43	78	69	69	69
Estonia	26	25	30	17	29	21	62	33	35	35	35
Etiopia	75	80	44	90	94	83	93	61	100	100	100
Finland	5	3	6	2	2	17	11	2	12	14	12
France	35	29	28	43	20	92	27	29	15	15	14
Germany	15	10	15	19	13	15	4	8	17	22	16
Ghana	74	53	47	51	65	48	64	64	84	85	85
Grece	77	94	91	88	80	85	95	92	27	27	27
Gwatemala	73	41	84	30	55	18	38	46	71	70	70
Honduras	76	74	88	84	74	45	52	69	79	78	79
Hong Kong	22	9	13	3	14	7	10	19	25	20	23
Hangary	65	70	83	94	67	58	87	36	36	40	39
Iceland	13	22	34	21	16	11	46	23	24	25	25
India	100	40	75	44	62	42	15	39	83	84	83
Indonesia	23	30	39	46	47	31	25	27	75	73	76
Iran	93	69	33	93	59	88	76	73	51	49	49
Ireland	7	16	20	20	18	12	20	12	9	12	17
Izrael	19	27	45	53	27	39	32	7	20	21	21
Italy	33	68	93	98	72	93	2	48	18	18	18
Jamaica	41	62	73	73	69	63	47	54	63	64	63
Japan	18	12	23	12	9	8	7	16	13	8	10
Jordan	72	31	29	31	33	30	24	68	54	55	54
Kazachstan	32	37	25	22	41	26	94	65	47	47	51
Kenya	64	43	53	62	57	51	44	34	89	89	89
Kuwait	47	58	40	81	52	43	68	93	4	3	3
Latria	69	46	56	33	44	33	80	53	46	48	45
Lithuania	42	39	61	26	35	50	86	25	43	43	43
Macedonia	83	51	46	35	54	67	73	66	66	67	66
Malaysia	79	17	16	18	24	16	13	15	45	41	46
Mali	45	77	70	96	82	36	61	94	91	91	91
Mexico	52	42	68	48	64	29	30	38	48	46	47
Moldova	67	92	77	58	86	54	100	97	78	79	78
Mongolia	28	89	80	75	84	76	98	87	70	74	73
Morocco	20	49	43	47	46	62	49	89	72	71	71
Mozambique	91	85	66	60	89	89	78	77	97	97	98
Namibia	78	47	37	56	38	71	63	59	60	61	60
Nepal	88	95	95	78	93	98	84	96	99	99	99
Netherlands	6	6	8	11	8	5	9	11	16	16	15

Table 2 continued

Country	Social Capital								2012		
	2012	2012-2013									
	LSCI	BSCI	PTP	TGPB	EBF	CLER	SCD	UIC	GDP_{pe}	TVE_{pe}	GNI_{pe}
Netherlands	6	6	8	11	8	5	9	11	16	16	15
New Zealand	4	7	4	4	1	10	58	18	22	24	24
Nikaragua	85	65	48	67	68	61	77	72	82	82	82
Nigeria	71	78	78	79	92	69	53	75	81	80	81
Norway	1	5	3	15	5	4	14	13	1	1	1
Pakistan	99	76	71	83	79	72	51	79	86	86	84
Panama	50	38	60	25	51	40	48	37	50	50	52
Paraguay	44	91	98	61	98	49	91	95	73	72	72
Peru	80	81	85	65	81	56	79	84	62	62	62
Philippines	59	45	57	68	50	24	45	55	77	77	75
Poland	39	67	64	86	43	60	81	58	41	42	42
Portugal	55	35	49	55	34	66	33	24	30	31	30
Romania	90	93	94	82	96	96	74	71	56	57	56
Russian Federation	58	72	54	74	71	77	92	51	42	45	41
Rwanda	98	20	7	6	21	23	56	49	96	96	96
Saudi Arabia	37	19	9	28	22	34	21	28	23	19	22
Senegal	95	60	55	45	61	38	82	80	90	90	90
Singapore	34	1	1	1	3	2	8	4	10	9	9
Slovak Republic	40	79	92	57	90	73	57	76	32	33	33
Slovenia	31	61	87	39	45	82	72	45	28	29	28
South Africa	66	40	63	27	30	100	35	26	52	52	50
Spain	29	48	65	63	40	74	34	40	26	26	26
Sri Lanka	27	54	58	50	53	35	50	91	76	76	77
Sweden	9	4	5	7	6	6	18	9	6	7	6
Switzerland	11	2	10	5	4	1	5	1	2	2	2
Tajwan	21	13	18	8	25	19	1	10	29	28	29
Tanzania	49	71	51	77	87	79	70	60	98	98	97
Thailand	17	44	82	69	49	25	28	42	67	66	67
Trinidad & Tobago	63	86	72	70	85	91	69	82	33	32	32
Tunisia	94	56	38	59	48	81	60	86	64	63	64
Turkey	97	32	27	29	36	57	26	43	37	37	36
Uganda	43	63	59	54	70	64	83	47	94	94	94
Ukraine	48	90	76	92	91	86	97	63	74	75	74
United Arab Emiratem	36	8	2	10	12	14	3	22	21	17	20
United Kingom	12	11	17	9	10	20	12	5	19	23	19
United States	10	21	36	36	26	27	6	3	7	5	7

Table 2 continued

Country	Social Capital								2012		
	2012	2012-2013									
	LSCI	BSCI	PTP	TGPB	EBF	CLER	SCD	UIC	GDP_{pc}	TVE_{pc}	GNI_{pc}
Uruguay	46	33	14	23	28	95	75	52	39	36	37
Wenezuela	62	98	97	100	97	99	99	67	40	38	40
Wietnam	30	50	32	87	66	44	55	70	88	87	88
Zambia	24	34	31	24	37	46	40	56	85	83	86
Zimbabwe	60	87	90	64	60	84	96	85	95	95	95

Legend: LSCI - Legatum Social Capital Index, BSCI – Business Social Capital Index, PTP - public trust of politicians, TGPB – transparency of government policymaking affecting business activities, EBF - ethical behavior of firms, CLER – cooperation in labor-employer relations, SCD – state of cluster development, UIC – university-industry collaboration in R & D.

Source: own calculation based on WEF 2013, pp. 413, 421, 426, 488, 526, 537; http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx. (1.03.2015).

In 2012–2013 public trust in politicians was the highest in Singapore, the United Arab Emirates, Norway, New Zealand, Sweden, and the lowest in the Dominican Republic, Venezuela, Paraguay, the Czech Republic, Argentina. In transparency of government policymaking affecting business activities, the best results across the surveyed countries were achieved by Singapore, Finland, Hong Kong, New Zealand, and Switzerland. For businesses to obtain information about changes in government policies and regulations affecting their activities were the most difficult in Mali, El Salvador, Italy, Argentina and Venezuela.

In 2012, the five countries classified at the highest positions in the ranking of ethical behavior of firms were New Zealand, Finland, Singapore, Switzerland, and Norway. The lowest places in this dimension of social capital occupied Romania, Venezuela, Paraguay, Argentina, and Bangladesh. According to the cooperation in labor-employer relations, the ranking leaders in 2012 were Switzerland, Singapore, Denmark, Norway, and the Netherlands. The most confrontational labor-employer relations occurred in Romania, Argentina, Nepal, Venezuela, and South Africa.

In 2012, the top 5 surveyed countries, where the state of cluster development were the most widespread in many fields, were Taiwan, Italy, the United Arab Emirates, Germany, and Switzerland. In this dimension of social capital, the ranking bottom was reached by Zimbabwe, Ukraine, Mongolia, Venezuela, and Moldova. In 2012, the five countries classified at the highest positions in the extent of university-industry collaboration in

R&D were Switzerland, Finland, the United States, Singapore, and the United Kingdom. The lowest places in this dimension of social capital were attained by Nepal, Moldova, Egypt, Bangladesh, Algeria.

Table 3 presents the results of the research obtained from estimating Spearman's rank correlation between positions of surveyed countries in rankings of social capital indexes, its dimensions, and productivity indicators in the years 2012–2013. In the case of a whole set of countries and a group of countries with a higher level of social capital, all correlation coefficients are positive and statistically significant at the level 0.05. However, for a group of countries with the lower level of social capital all correlation coefficients are not statistically significant at the level 0.05. The same results obtained with the help of the method of Pearson's correlation analysis (Table 4), which was performed additionally to increase the reliability of the outcomes. In the case of Pearson's correlation analysis the values of social capital and productivity variables were correlated. It should be remembered that the values of variables have been previously standardized, and the countries were divided into two groups of higher or lower level of social capital according to the sum of the values of LISCI and BSCI.

The values of Spearman's rank correlation coefficients show that the higher position of a given country according to the level of social capital, the better place in the rankings of productivity. The considered links between an increase in social capital and a higher level of productivity has been confirmed also by Pearson's linear correlation analysis. Moreover the research results have indicated that, according to the theory of economic development path of a country, the significant impact of social capital on the level of prosperity appears only after a country has accumulated a sufficient stock of it. This requires different kinds long-term transformations in soft and hard infrastructure of the national economy.

An important component of such soft infrastructure is just social capital, including its dimensions examined in this study. The values of correlation coefficients presented in Table 3 and 4 indicate that the strongest interactions occur between the level of productivity and such dimensions of social capital as ethical behavior of firms and university-industry collaboration in R&D. The values of correlation coefficients are the lowest for the cooperation in labor-employer relations and transparency of government policy-making affecting business activities.

Table 3. Spearman's rank correlation coefficients across various indexes of social capital and productivity for a given group of researched countries in 2012–2013

	All researched country								
	APSC	LSCI	BSCI	PTP	TGPB	EBF	CLER	SCD	UIC
GDP_{pe}	0.669*	0.641*	0.589*	0.448*	0.464*	0.658*	0.376*	0.504*	0.675*
TVE_{pe}	0.672*	0.639*	0.595*	0.455*	0.471*	0.661*	0.384*	0.514*	0.675*
GNI_{pe}	0.665*	0.633*	0.589*	0.448*	0.463*	0.658*	0.372*	0.510*	0.674*
	The first 50 researched countries according to the average rank of LSCI and BSCI								
	APSC	LSCI	BSCI	PTP	TGPB	EBF	CLER	SCD	UIC
GDP_{pe}	0.646*	0.590*	0.620*	0.497*	0.393*	0.702*	0.400*	0.517*	0.707*
TVE_{pe}	0.627*	0.556*	0.622*	0.501*	0.400*	0.694*	0.412*	0.541*	0.689*
GNI_{pe}	0.631*	0.564*	0.622*	0.498*	0.395*	0.703*	0.402*	0.534*	0.699*
	The next 50 researched countries according to the average rank of LSCI and BSCI								
	APSC	LSCI	BSCI	PTP	TGPB	EBF	CLER	SCD	UIC
GDP_{pe}	0.092	0.215	-0.072	-0.204	-0.134	0.121	-0.200	-0.103	0.189
TVE_{pe}	0.086	0.210	-0.073	-0.207	-0.127	0.117	-0.202	-0.095	0.187
GNI_{pe}	0.084	0.205	-0.073	-0.203	-0.127	0.119	-0.203	-0.096	0.189

Note: * coefficients statistically significant on the level 0.05.

Legend**:** APSC – The average position of a given country in two social capital indexes: Legatum Social Capital Index and Business Social Capital Index.

Source: own calculation based on data from Table 2.

Table 4. Pearson's correlation coefficients across various indexes of social capital and productivity for a given group of researched countries in 2012–2013

	All researched country						
	SSCI	PTP	TGPB	EBF	CLER	SCD	UIC
GDP_{pe}	0.611*	0.431*	0.434*	0.669*	0.393*	0.498*	0.660*
TVE_{pe}	0.613*	0.437*	0.439*	0.671*	0.400*	0.510*	0.660*
GNI_{pe}	0.606*	0.433*	0.435*	0.670*	0.393*	0.502*	0.660*
	The first 50 researched countries according to the sum of LSCI and BSCI						
	SSCI	PTP	TGPB	EBF	CLER	SCD	UIC
GDP_{pe}	0.616*	0.469*	0.425*	0.706*	0.386*	0.533*	0.666*
TVE_{pe}	0.616*	0.479*	0.429*	0.706*	0.394*	0.546*	0.664*
GNI_{pe}	0.614*	0.474*	0.423*	0.708*	0.385*	0.544*	0.667*
	The next 50 researched countries according to the sum of LSCI and BSCI						
	SSCI	PTP	TGPB	EBF	CLER	SCD	UIC
GDP_{pe}	0.255	-0.114	-0.082	0.152	-0.122	-0.012	0.209
TVE_{pe}	0.250	-0.110	-0.076	0.154	-0.115	0.005	0.204
GNI_{pe}	0.248	-0.114	-0.079	0.151	-0.120	-0.015	0.206

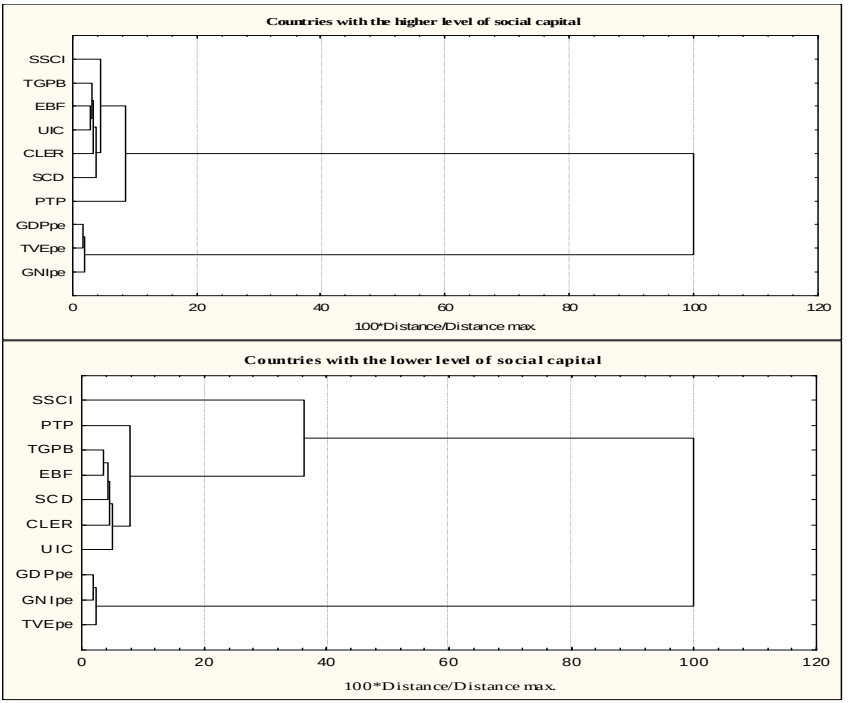
Note: * coefficients statistically significant on the level 0.05.
Legend: SSCI - Sum of Legatum Social Capital Index and Business Social Capital Index.

Source: own calculation based on WEF 2013, pp. 413, 421, 426, 488, 526, 537; http://unctad stat.unctad.org/ReportFolders/report Folders.aspx. (1.03.2015).

Two separate cluster analyses were made to check whether the above introduced characteristics of interactions between the productivity and social capital levels took place for the two groups composed of 50 economies divided according to the social capital level. In this case the social capital level was measured by the following proxy – the sum of values of social capital indexes.The results of the cluster analysis here show which clusters of variables are more typical for these groups of countries.

The cluster analyses confirmed that for a group of countries with a higher level of social capital, stronger links occur between social capital and its dimensions and the value of productivity indicators than in the case of a group of countries with lower level of social capital. In two groups of analyzed countries, we deal with one main cluster of productivity variables joined, at different longer nodes, by the second main cluster containing the variables of social capital. In the examined countries with a higher level of social capital the variables of social capitals and the productivity indicators are closer in terms of distances between them. It is more visible in the case of 1-r Pearson measure of distance.

Figure 1. Dendrogram for Selected Variables of Surveyed Countries Clustered Using Chebyshev Distance in 2012–2013

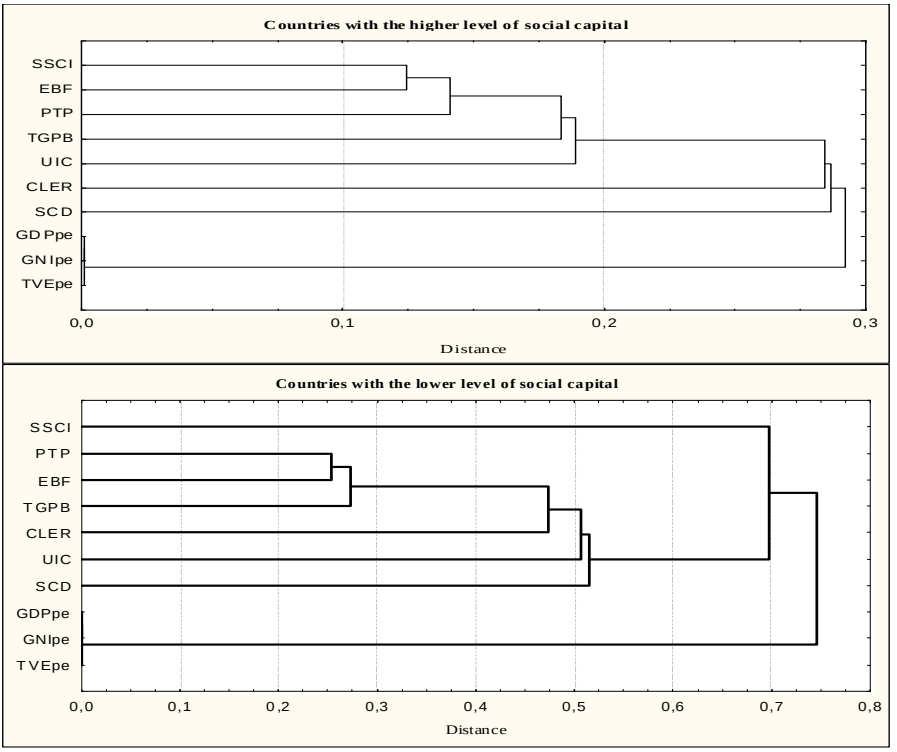


Source: own calculation based on WEF 2013, pp. 413, 421, 426, 488, 526, 537; http://unctadstat.unctad.org/ReportFolders/report Folders.aspx (1.03.2015).

Countries with higher level of social capital, therefore, explicitly demonstrate a larger similarity of analyzed features. Indicators of social capital and productivity change in a similar manner, and almost all at once, and their changes are correlated with one another. In other words, the variables that we have examined may influence one another more strongly in the group of countries with a higher level of social capital than in the group of countries with lower level of social capital.

The results of our study again suggest that social capital in the high-income countries is more important element increases the productivity, comparing to countries with its level being lower, where the drivers of productivity growth, and thus prosperity, are still different, which is explained by the economic development theory (see: Introduction).

Figure 2. Dendrogram for Selected Variables of Surveyed Countries Clustered Using 1-rPerason Distance in 2012–2013



Source: own calculation based on WEF 2013, pp. 413, 421, 426, 488, 526, 537; http://unctadstat.unctad.org/ReportFolders/report Folders.aspx. (1.03.2015).

Conclusions

The results of our study have shown that social capital is an important source of raising productivity of the national economy, provided that the country is already at a later stage of economic development. This is related to the fact that the previous growth drivers of wealth, associated mainly with the improvement of hard infrastructure and revenues from foreign trade based on labour-intensive and capital-intensive comparative advantages, have been diminishing.

To ensure further growth in productivity, certain actions will necessary, including actions aimed at the development of a soft business environment, strengthening of cooperation between the public and private sector, higher

professionalization and better transparency of state policies. All these help to rebuild trust in socio-economic relations, but require the promotion of ethics, fairness, and well understood social justice. This happens because without honesty and ethical behaviour, there is no trust, and without trust, there is no real cooperation and integration, or, consequently, resulting from them different types of synergies. Our research has led us to the conclusion that without appropriate ethical behavior productivity growth will be hampered, because it translates into a lower level of trust and unwillingness to cooperate. In other words, like for example W. Bartoszewski stresses, "it is worth to be decent".

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