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Methodology of Social Capital Research and Its Empirical Testing¹

Introduction: the research problem

Social capital is a set of informal institutions such as moral and ethical standards and values, trust, social engagement networks, loyalty, relationships and the ability to collaborate. The literature offers a documented functional link between social capital and a country's (a region's) economic growth and development [Knack, Keefer 1997; Sztudyinger 2005]. As early as the mid-20th century many institutionalists have pointed out social limitations on economic growth in less developed countries which are due to mentality, culture, behaviors and other restrictions [Myrdal 1982, de Soto 2002]. The new approach fits into the current of New Institutional Economics (NIE). Its advocates have shown that by being transformed into other forms of capital, strong social capital contributes to innovation and affluence in society [North 1990, Coase 2011, Williamson 1998, 2000].

In economic terms, social capital is seen as prerequisite to achieve labor market equilibria by virtue of the functions it performs [Field 2003, Strauss 2007, La Jeunesse 2009, Supiot 2001] and the effectiveness of social strategies as pursued in a given area. Social capital is critical for the competitive advantage of corporations

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¹ This paper is the result of the study of social capital as a factor determining the effectiveness of social policy strategy in the Wielkopolska Region (Poznań School of Banking, 2011), in the research project co-financed by the ESF and the EU. The full presentation of the study is given in the research report: *Badanie kapitału społecznego w Wielkopolsce: diagnoza stanu i perspektywy wzrostu*, ed. E. Skawińska, Wyższa Szkoła Bankowości, Poznań 2011.

and regions faced with global hypercompetition and economic imbalances (global economic crises).

In view of the current state of knowledge on social capital, the research problem is objectively relevant and topical [Grootaert, Bastelaer 2002]. Due to its interdisciplinary nature, no uniform definition of social capital is available [Skawińska 2008]. Generally, social capital in Poland is considered poor, having depreciated and atrophied historically, affected by socialism and insufficiently restored during the contemporary systemic transition [Wilczyński 2009; Krzymińska 2005; Sztudynger 2005; Fazlagić 2005; Hausner 2009]. Yet, no comprehensive diagnosis of social capital in Poland exists to support this view. Such capital has not been identified in various aspects or at various levels (temporal or geographical, pertaining to social strata and occupational groups, etc.). As a consequence, no database brings together the attributes of the related resources for the purposes of social capital management in a spatial system. Equally deficient is the availability of ways and means necessary to unambivalently measure the capital and to identify mechanisms and instruments for its development. All this demonstrates that the research problem remains open and unsolved.

The above research problem ties closely to the innovation of various players. Innovation is paramount to securing broader and more profound insights into spatially differentiated economic growth and social incongruity. As has been demonstrated, in order to generate and deploy innovation, one needs not only technical and economic knowledge but also substantial social capital rooted in culture, history and mentality. Such capital may drive innovation and help make more effective use of tangible assets while its lack or constitutes a barrier. Strong social capital fosters regional development making it more sustainable while promoting enhanced social cohesion. As rightfully observed by W. Czajkowski regarding an IT-based civilization, “as the economy becomes a new economy, it grows more dependent than ever on culture (standards, values, ...) and awareness (individual attitudes and needs)” [Czajkowski 2006]. G. Kołodko has also stressed that “it is culture after all that determines in the long term who wins and who loses, who gets rich and who becomes poor, which economy flourishes and which declines, which nations prosper and which are reduced to mere vegetating” [Kołodko 2009]. The relationship between social capital and cultural change needs to be better understood [Fukuyama 2002]. It is essential to notice that “social capital promotes innovation, education, self-education and efficient labor; it is as important as the physical and human capital” [Putnam 2000].

In a knowledge-based economy, which Poland aspires to build, business entities and players in the economy increasingly need information on social capital in order to better understand social and economic developments. It is therefore crucial to expand the databases on social capital resources and monitor such capital. Poland's Strategy for the Development of Social Capital, adopted in 2010 by the Coordination Committee for Development Policies at the Council of Ministers, rightfully recognizes that “the strengthening of social capital is a key challenge faced by Poland in the near future”² as it is currently very poor throughout the country. No comprehensive studies, however, are available to support social capital management. Sporadic attempts to measure social

² <http://bip.mkidn.gov.pl>

capital are local in scope and based on opinion polls. Their focus is limited to households (the micro-scale), neighborly relations and cooperation, regional authority appraisals (the mezzo-scale), and selected resources such as trust, engagement and involvement in elections and associations (the macro-scale). Notably, the big challenge is to account for social capital in empirical research on social and economic phenomena [Golinowska 2010]. As the matter of fact, one needs to overcome methodological problems rooted in the deficiencies of statistics, objectivization and specification of notions as well as the subjectivity of respondent evaluations. Social capital resources and attributes seen as variables are soft features which evade statistical presentation.

The above introduction shows that the theory of social capital is only in its developmental stage and all prior efforts have been attempts to make some contribution towards its growth.

1. The notion, research objectives and hypotheses

The existing various approaches to defining social capital are summarized in Table 1. The definitions most common in the literature and used by international organizations have been classified by several basic criteria.

Proponents of the resource-based approach to social capital base their analyses on smaller (3) or greater (7) sets of components (resources). Each such set, in its turn, comprises multiple attributes (dimensions) such as the trust resource defined by such attributes as predictability, competence, responsibility, honesty and fairness [Grudzewski *et al.* 2009].

Governmental documents describe Poland's social capital as:

- 1) "the potential contained in Polish society in the form of binding rules of conduct, trust and dedication, which support cooperation and the exchange of knowledge, thereby contributing to a rise in Poland's welfare" (*Raport Polska* 2030);
- 2) "social infrastructure in the form of institutions, networks, standards and values, which constitute a foundation for building trust-based social relationships which foster cooperation, creativity, communication and which contribute to Poland's growth³.

The authors assume that:

- social capital is defined as described by J.S. Coleman and includes the competencies (education, knowledge and skills) of human capital [Coleman 1988];
- it is advisable to distinguish between individual and collective social capital and to study both categories jointly;
- social capital may be measured and collective social capital indices constructed by adding up individual resources identified theoretically as knowledge-based and rooted in culture, mentality and cognition (regulatory),
- a process approach to shaping social capital may be seen as a sum total of its resources [Matysiak 2008].

³ <http://big.mkidn.gov.pl/media/docs/polityka/strategia/20100701>

Table 1
Classification of definitions of social capital

No.	Classification criterion	Definition type / scope of criterion
1	Capacity (scope)	wider, narrower
2	Origin	– primary (genetic, mentality-related and cultural) – hereditary – secondary (education, upbringing and culture, historical experience) – acquired externally
3	Valuation	good, bad, positive, negative
4	Type of resources and attributes	structural, behavioral, cognitive
5	Dimensions (attributes)	individual, collective
6	Level	positive, negative
7	Maturity	high, medium, low
8	Function	social, economic
9	Growth instruments	measurable (quantitative), intangible and immeasurable (qualitative)
10	Time period	actual, potential (hypothetical)
11	Main social capital resources	– trust; – trust, standards and values, cooperation networks, – trust, credibility, standards and values, loyalty, cooperation networks, solidarity, engagement
12	Dynamism	statistical, growing, diminishing
13	Stage of development	onset (embryonic), growth (improvement), maturity
14	Geographic scope	micro-, mezzo- and macro-scale
15	Barrier to use	infrastructural, institutional, educational

Source: Own analysis.

In the context of such considerations, one should note the World Bank's observation underscoring that social capital is not just the sum total of the institutions (resources) which underpin a society but rather the glue that holds them together⁴.

The primary objective of this paper is to propose a methodology for measuring and stimulating social capital increases and to test it empirically in the Region of Wielkopolska. The objective was translated into such specific aims as to:

- 1) formulate research methodology;
- 2) conduct empirical studies and evaluate the amount of social capital in selected communities;
- 3) diagnose gaps in social capital resources;

⁴ <http://web.worldbank.org/wbsite/external/topics/extsocialdevelopment/extsocialcapital/0,,contentmdk:20185164~menuupk:418217~pagepk:148956~pipk:216618~thesitepk:401015,00.html>

- 4) construct a theoretical model for stimulating social capital increases suited for the development of a knowledge-based society;
- 5) define ways and methods to influence social capital growth and close social capital gaps.

In the course of the study, the authors tested the following working hypotheses:

H1. A region's high rate of unemployment reflects its poor social capital.

H2. Differences in the significance of individual resource types for social capital assessment are greater across respondent communities than within them.

H3. The social capital of the working population is greater than that of the unemployed.

H4. The social capital is greater than individual capital thanks to the added value derived from a cooperation network and interpersonal relationships.

The study is relatively comprehensive in scope, covering the period from October 1, 2010 to September 31, 2011. Geographically, it covers selected counties of Wielkopolska, a region of Poland leading in terms of economic and social performance.

2. Research methodology

Research methods need to reflect the adopted project definition and objectives. As social capital includes soft resources and attributes which evade operationalization, the authors applied multi-dimensional analysis of social capital. In addition to the quantitative method (surveys, multiple variants), the authors made prominent use of the qualitative method which includes direct personal interviews. They also resorted to modeling and used visualizations to present their findings. They began their work by critically reviewing and comparing publications on given topics and by subjecting them to deduction. Their outcome at this stage was a matrix of seven social capital resources and attributes (dimensions). The matrix helped to define the study scope and to design survey questionnaires and interviews. The study covered 7 social capital resources (R) of trust, credibility, standards and values, loyalty, cooperation, solidarity and engagement. Social capital (KS) is a function of such resources, as expressed by the formula $KS = f(R)$. Each resource type comes with 6 attributes (dimensions). Trust was recognized as the central social capital resource which influences all others. A total of 42 social capital attributes were investigated (Table 2) – these were assignable to respondents regardless of gender. The attributes were generated by brainstorming in a team of researchers acting as internal experts⁵. Their choice can be deemed objective while the literature offers a number of subjective sets of social capital dimensions which vary from one author to another [Knudsen et al. 2004]⁶.

⁵ Involved in addition to the authors were E. Badzińska, A. Budzyńska, T. Brzęczek, M. Gajowiak, A Libertowska.

⁶ A significant contribution to measuring social capital was made by the World Bank which developed two questionnaires: the Social Capital Assessment Tool (SOCAT) and the Capital Integrated Questionnaire (SOCAP IQ).

Social capital was identified in four stages, each involving specific tasks. Such tasks involved:

- 1) selecting test communities;
- 2) preparing operational tools to measure social capital attributes;
- 3) ensuring the comparability of results;
- 4) ascertaining the amounts and structures of social capital in the selected local and weak (gap) communities which hamper the functionality of social capital.

Social capital was measured in individuals (individual social capital) and indirectly in institutions, organizations and resident communities (collective social capital) to define the joint social capital profiles of individuals, local communities and organizations.

Table 2
Architecture of social capital resources assigned to units regardless of gender

No.	Actual resources	Attributes (dimensions defining social capital resources)
1	Trust (Z)	<ul style="list-style-type: none"> - certainty (predictability) - competence (knowledge, skills, abilities) - reliability - responsibility - honesty and fairness - genuineness (openness)
2	Credibility (W_1)	<ul style="list-style-type: none"> - experience - self-help (within community) - authority, reputation - reliability - effectiveness, efficiency - professionalism
3	Standards and values (N)	<ul style="list-style-type: none"> - openness (information, ideas) - communication - truthfulness - tolerance - respect for standards and values - respect for ownership
4	Loyalty (L)	<ul style="list-style-type: none"> - kindness - reciprocity - cordiality - helpfulness - long decision horizon - respect for shared values
5	Cooperation (W_5)	<ul style="list-style-type: none"> - agreements with external parties - sharing results and knowledge - creativity - inventiveness - enterprise - flexibility

6	Solidarity (<i>S</i>)	<ul style="list-style-type: none"> - risk-taking - putting common good before personal interests - transparency of action - ethical conduct - commonality of convictions - mutual dependency
7	Engagement (<i>U</i>)	<ul style="list-style-type: none"> - living up to agreements - keeping one's word (remembering obligations) - relationships and bonds, association initiatives - education, self-education - understanding others - activeness, engagement and involvement

Questionnaire questions and statements were linked to attributes and arranged to avoid rote responses. Attribute assessment scores for each resource were averaged (with medians or dominants used as alternatives) to produce mean assessments for individual resources. The respondents weighted the resources separately assigning a total of 100 percentage points among them. The resulting weights were also averaged.

Having established the weights (*V*) which the respondents assigned to social capital resources, the authors calculated social capital by the formula: $KS = \sum_{i=1}^n R_n \cdot V_{rp}$ alternatively expressed as:

$$KS = \bar{Z} \cdot V_Z + \bar{W}_I \cdot V_{WI} + \bar{N} \cdot V_N + \bar{L} \cdot V_L + \bar{W}_S \cdot V_{WS} + \bar{S} \cdot V_S + \bar{U} \cdot V_U.$$

The procedure is legitimate as it has been tested in multiple surveys of consumer satisfaction and satisfaction with service quality by means of Servqual [Parasuraman, Zeithaml, Berry 1988], Teamqual [McDonald, Sutton, Milne 1995], and Customer Satisfaction Index [Fornell *et.al.* 2006]. At the stage of analyzing and interpreting the outcomes, the resources enumerated in Table 2 may be divided into three categories of:

- 1) cognitive/regulatory: trust;
- 2) cultural and mentality-based: standards and values, solidarity, loyalty;
- 3) knowledge-based: credibility, cooperation, engagement.

The surveys were completed over the span of one year (from October 1, 2010 to September 30, 2011).

2.1. Operational research and social capital assessment

The empirical studies played a clarifying role. The cognitive tools used to acquire primary data were developed separately for 4 communities in 6 rural and 2 urban counties. These were the communities of school managers, the unemployed, corporate managers and local government officials. The tools included survey questionnaires

for the unemployed and interview sheets for other populations, attribute code tables for questionnaires on social capital containing statements and questions. The questionnaires were inspired by the relevant literature [Subramaniam, Youndt 2005, pp. 450-463].

The respondents used a 5-point scale ranging from 1 for definitely not or low to 5 for definitely so or high. In the case of yes-no questions, affirmative replies on a given attribute were coded as 5, the negative ones as 1. The distribution of responses to each statement and question was described as a mean (m), dominant (d), median (me), first and third quartile (q_1 and q_3) or the interquartile range, i.e. the differences between the third and first response quartile ($q_3 - q_1$). The questions and responses were grouped by resource and the concerned community. For instance, school staff responses describe the social capital of school managers, teachers and students whereas the replies of corporate managers reflect the social capital of employees, as seen by the respondents themselves and by their organizations. The questionnaire for local government officials evaluated the social capital of county/municipality residents and authorities and included the respondent's self-assessment.

The assessment of the k^{th} social capital attribute in the l^{th} county y_{kl} was expressed as the k_1, k_2, \dots, k_{I_l} response median to the k^{th} question on a scale from 1 to 5:

$$y_{kl} = \text{median} (k_1, k_2, \dots, k_{I_l}),$$

where I_l denotes the number of respondents from the l^{th} county who replied to the k^{th} question. The median makes it possible to reduce the impact of outliers (extreme or unusual responses) in the assessment.

The assessment of the n^{th} resource in the l^{th} county (R_{nl}) was computed as the arithmetic mean of its component attributes y_{kl} . This is expressed by the equation:

$$R_{nl} = \left(\sum_{k=1}^{K_n} y_{kl} \right) / K_n,$$

where K_n denotes the number of attributes of the n^{th} resource. There are seven resources ($N = 7$), each coming with a specific number of attributes K_n .

The assessment of social capital in the l^{th} county (KS_l) was computed as a weighted average of assessments for its individual resources. It is expressed by the formula:

$$KS_l = \sum_{j=1}^7 R_{nl} \cdot V_{nl},$$

where $V_{nl} = V_{1l}, V_{2l} \dots V_{7l}$ are the weights of the seven social capital resources determined by l^{th} county respondents. They are averages of the individual weights assigned to such resources by respondents representing specified l^{th} county communities.

The above methodology for assessing social capital was employed to evaluate social capital among school communities, the unemployed and entrepreneurs. The numbers of responses and aggregates in such communities are summarized in Table 3.

Table 3
Number of responses and outcomes by aggregation stage

Groups of respondents	Response	Aggregation stage		
		Response to attribute questions	Resource assessment	Social capital assessment
	–	Number of questions times number of counties	Number of resources times number of counties	Number of counties + 1 (total)
Educators	$110 \times 180 = 19800$	$80 \times 8 = 640$	$7 \times 8 = 56$	9
Unemployed	$83 \times 1000 = 83000$	$75 \times 8 = 600$	56	9
Entrepreneurs	$100 \times 150 = 15000$	$75 \times 8 = 600$	56	9
Local government	$125 \times 30 = 3750$	$117 \times 8 = 936$	56	9

The methodology for assessing the social capital in local governments has been modified slightly as only 30 such organizations, which is the lowest number of all the communities, were included in the sample. For that reason, the assessment of the k^{th} social capital attribute in the l^{th} county relied not on the median but rather on the arithmetic mean whereas the value of the n^{th} resource in the l^{th} county was computed with the use of a median. The attribute was assessed by means of a mean as only four residents from each county were surveyed. With so few responses, the use of a median to rule out unusual observations would eliminate a significant proportion of information.

2.2. Assurance of outcome comparability

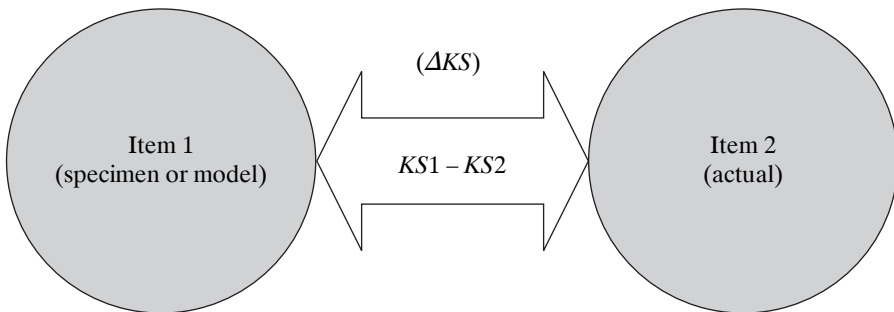
To ensure the comparability of the results, the authors selected the modeling method. Modeling is a specific cognitive method used in all fields of science. It essentially helps set up physical or theoretical constructs called models which reflect relevant aspects of reality. Out of a multitude of features of a given item, a well-designed model selects the ones which significantly affect its existence and operation while ignoring any features of secondary importance. A model, therefore, only approximates actual items and phenomena and, as such, simplifies

reality [Findeisen, Gutenbaum 1985]. On the other hand, models serve as a point of departure for designing abstract constructs (the ideal models) first and real-life items (empirical models) later [Kwiecień 1968].

The authors developed a theoretical model to fulfill two purposes. Their primary goal was to measure the social capital gap. The other aims had to do with social capital growth and providing instruments for its stimulation (support) in a given region.

As social capital attributes are intangible, the social capital gap can only be assessed in a rough approximation. Such gaps are poorly examined as concepts or in real life, which impedes the preparation, selection and implementation of adjustment projects designed to close them. They can be assessed indirectly by either fulfilling the economic functions which social capital is expected to perform or by studying its main resources and attributes (Figure 1), as has been done in this project.

Figure 1
Actual gap in social capital



It therefore follows that $\Delta KS = KS1 - KS2$. If ΔKS is the distance (difference) between comparable items, it can be defined by means of questionnaire surveys or a qualitative method such as direct interviews. In an interview questionnaire, individual attributes are measured with statements which the respondents assess on a scale of intensity such as the Likert scale. Social capital gaps are assessed by computing their size and preparing a long-term program to reduce or fully close them. A social capital gap may be reviewed individually or collectively for size, resource structure and dimensions (attributes). Note also that in addition to existing social capital gaps, the assessments may cover potential gaps (Figure 2).

The key to assess social capital gaps is to identify resources and attributes, strengths and weaknesses and dimensions which are critical (strategic) for accomplishing the prescribed objective. Such critical dimensions are characterized by a high value of the dominant (d_X) and a limited range of variability.

To identify social capital gaps, the research procedure is as shown in Figure 3.

Figure 2
Measurement of a social capital gap

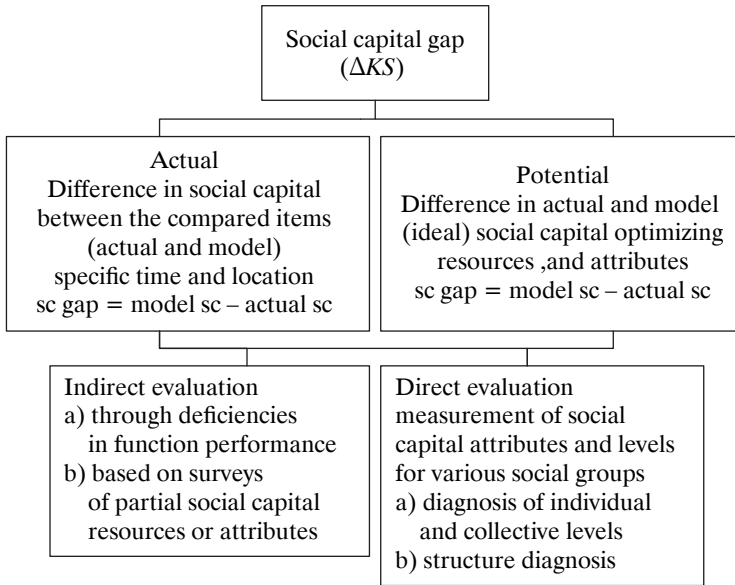
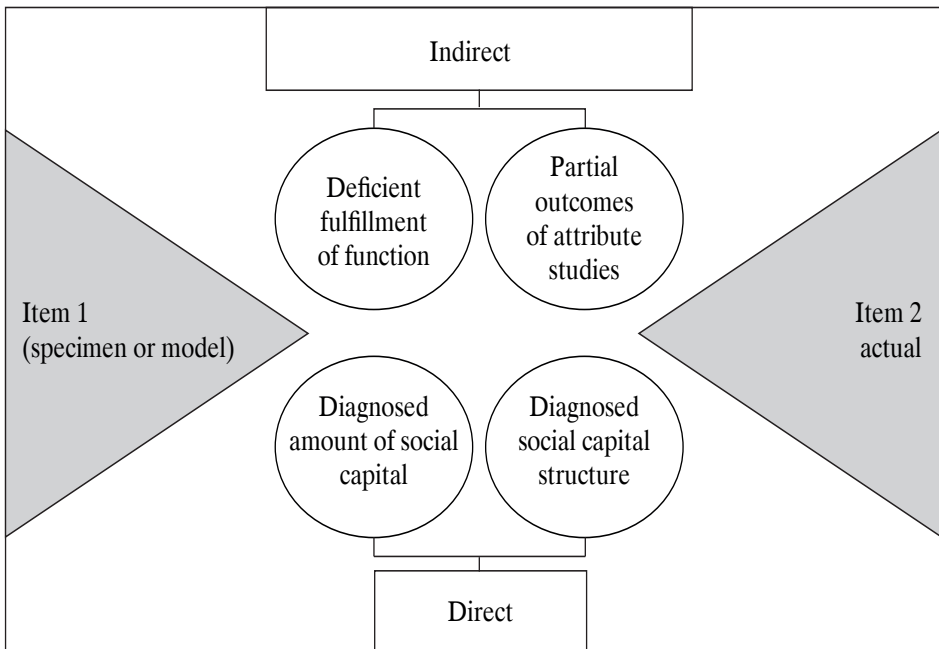


Figure 3
Assessment of social capital gap



3. Geographic scope of research and selection of target communities

3.1. Overall social and economic profile of Wielkopolska Region

Situated in mid-western Poland, the Wielkopolska Region is comprised of areas which differ widely in the characteristics and performance of their local economies. It is Poland's second largest region as regards area and third most populous region. Its economy relies heavily on industry which provides one third of the overall number of jobs. Table 4 summarizes the key socio-economic indicators for Wielkopolska against Poland's averages. The data demonstrate that the region exceeds the country's average in its use of human capital. This is demonstrated by indicators of economic activity and the unemployment rate.

Table 4
Selected social and economic indicators for Wielkopolska and Poland in 2000 and 2009

Demographic situation					Economy and innovation				
Specification	Poland		Wielkopolska Region		Specification	Poland		Wielkopolska Region	
	2000	2009	2000	2009		2000	2009	2000	2009
Economically active population aged 15+ (%)	56.6	54.9	58.2	56.2	GDP per capita (thousand PLN)	17.7	35.2	20.7	35.0
Registered unemployed population (%)	15.1	11.1	12.5	8.6	Innovation: employment in R&D	100	100	9.3	9.7
Urban population (%)	61.9	61.1	57.9	56.1	Patent ratio	100	100	•	15.0
Population served by wastewater treatment plants (%)	53.1	64.2	52.5	62.4	Number of R&D units	100	100	9.5	18.8
					Share of industry in GVA (current prices in %)	26.2	24.0	29.1	27.0
					Contribution to Poland's GDP (%)	100	100	9.1	9.3

Source: Central Statistical Office, 2001 and 2010 Almanacs (*Rocznik Statystyczny*, GUS, 2001 and 2010), Wielkopolska 2001 and 2010 Almanacs (*Rocznik Statystyczny Województwa Wielkopolskiego*, GUS, 2001 and 2010).

In terms of competitiveness defined as per capita GDP, Wielkopolska holds the relatively high fourth place out of the country's 16 regions. Wielkopolska has fallen from a higher position it held several years to be overtaken by Lower Silesia during the last decade. The contribution made by Wielkopolska's industry to generating the region's GDP remains above the national average even though the sector is still traditionally structured. This is evidenced by its innovation indicators (number of R&D units and employees and patent ratio).

It is therefore critical to search for ways to boost innovation and competitiveness in the region. The authors see relevant opportunities in social capital which is why their research focused on defining the amount and structure of such capital in Wielkopolska. They assume that improvements will follow once such capital has been revitalized and expanded.

3.2. Selection of target communities for research

The survey covered eight counties of the Wielkopolska Region. Their selection was deliberate as the authors chose counties running the highest risk of exclusion and incongruity as indirectly suggested by unemployment rates. Thus, the study covered one county from each of Wielkopolska's subregions hit hardest by joblessness which ranged from 12 to 17% between 2009 and 2010. The counties were Gostyń, Jarocin, Konin, Poznań, Środa and Wągrowiec. The benchmark was the Poznań County with an approximate rate of unemployment at 3%. The picture was completed by the urban counties of Konin and Poznań whose inclusion improved the structure of test communities and ensured comparability.

Social capital was assessed by the communities of:

- the unemployed,
- corporate managers,
- managers of local government units,
- and managers of institutions of education ranging from vocational schools through institutions of higher learning.

In the above counties, the survey included 180 heads of secondary schools and institutions of higher learning picked out of 520 schools for adolescents and adults. The schools were selected by stratified-random sampling. The strata are made of institutions of the same type coming from the same county. The number of strata per sample was fixed in proportion to the structure of the population at large.

The authors surveyed the managers and proprietors of 150 small, medium-sized and large enterprises carrying on business in selected counties which represented sections *A* through *L* of the European Classification of Activities in 2010. The businesses were chosen randomly from population strata. A given stratum comprises companies from the same counties employing the same number of workers. The sample ensures a fair representation of enterprises from individual counties. The number of companies was fixed at 19 for each of the six counties having a large number of enterprises and at 18 for both of the remaining counties of Jarocin and

Wągrowiec. The choice is thought to ensure that all segments of the economy are represented jointly by large, medium-sized and small companies coming from all counties as the representations were chosen randomly and were either numerous or made up of a high percentage of population classes.

The selected respondents representing regional authorities were holders of managerial posts in local governments, ranging from county heads to chairs of county boards and their deputies, urban county presidents, heads of city councils in urban counties or their deputies to mayors and municipality heads. As of January 2011, such posts in the selected counties and municipalities were held by 92 persons. Out of this group, the authors deliberately selected 30 regional government officials for their competencies and experience.

The survey of the unemployed covered 1000 persons registered in individual counties. Their community is diverse. The feature of significance for the study was their distribution by age and gender. That is why the number of the unemployed was fixed separately for the three age groups of up to 25, 25–49 and 50+. Also distinguished were the age groups used for assessing the impact and performance of EU programs.

Equally significant is the breakdown of the unemployed by gender. The average ratio of unemployed women in each of the counties stood at 55%. The most appropriate method for selecting the unemployed for the survey was stratified-random sampling which allowed for a random selection of the unemployed from the designated age groups adjusted for gender parity.

Due to difficulties with accessing names, addresses and age and gender data on the unemployed and contacting the selected individuals, the authors resorted to stratified random sampling. The unemployed community to be surveyed was divided into age groups in proportions which reflected their makeup in the population at large. Also in correspondence to the structure of strata in the selected communities and counties, the authors chose to adhere to the 55% parity of women. They began by surveying the unemployed who attended voluntary and compulsory meetings and courses organized at employment offices and who were therefore the easiest to reach. They contacted such individuals at the Wielkopolska Labor Office, its regional branches and county employment offices.

4. Assessments of social capital by modeling and comparative profiling

4.1. Comparison of assessments of social capital resource across four respondent groups

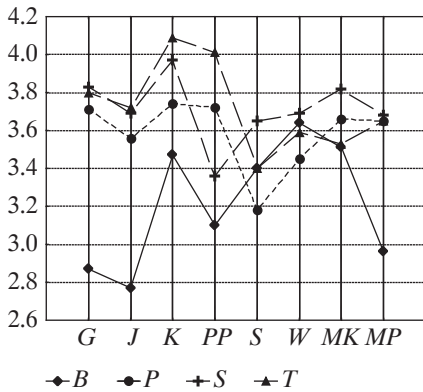
As mentioned earlier, an in-depth assessment of the social capital available in each respondent group, i.e. high-ranking local government officials (30 persons), heads of educational institutions (180 persons), corporate managers (150 persons) and the

unemployed (1000 persons), covered eight administrative units of the Wielkopolska Region.

The core findings derived from direct interviews and questionnaires were used to estimate the average and most common values given in responses evaluating social capital resources. Once summed up, the latter provided social capital assessments for individual communities. Figure 4 depicts assessment distribution profiles for the surveyed administrative units and the four investigated groups. The most outstanding of these was that of the unemployed. The social capital assessments by respondents representing that group were the lowest in the five administrative units of Jarocin County (*J*), Gostyń County (*G*), the city of Poznań (*MP*), Poznań County (*P*) and Konin County (*K*) ranging from 2.75 to 3.45. This supports hypothesis H3. In the city of Konin (*MK*), the unemployed assessed social capital exactly as local government officials. The remaining three communities assessed social capital in their respective areas quite differently with discrepancies between individual counties ranging from 0.05 in the city of Poznań to 0.65 in Poznań County. In the five counties of Gostyń, Środa (*S*), Wągrowiec (*W*) and the cities of Konin and Poznań, the highest social capital assessments came from the educational sector. The highest assessments in the three remaining administrative units were submitted by local government officials. This provides an indication of the weights of each of the communities stressing the importance of the role and mission of promoting social capital ideals.

Figure 4

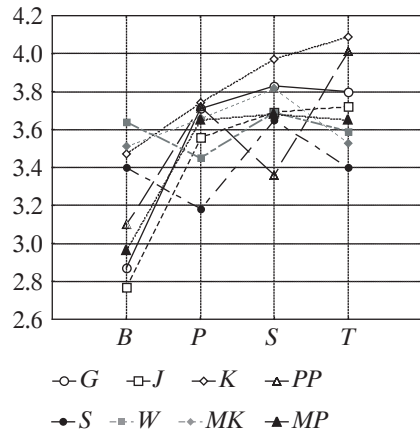
Social capital assessment profiles for four respondent groups



(*B* – jobless, *P* – entrepreneurs, *S* – school teachers, *T* – county officials; other letters describe counties) in administrative units (*G* – Gostyń, *J* – Jarocin, *K* – Konin, *P* – Poznan, *S* – Środa, *W* – Wągrowiec, *MK* – city Konin, *MP* – city Poznan)

Figure 5

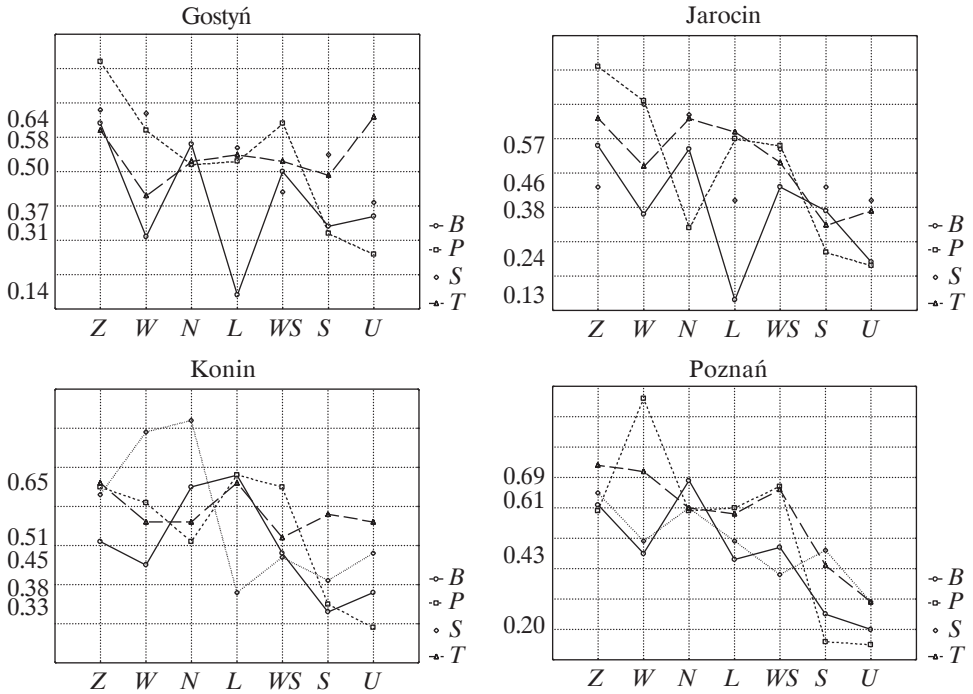
Range of social capital assessments by respondent category (letters as in figure 4)



The same figures reflecting social capital assessments are shown by geographic area in Figure 5. The Figure shows a range of assessments for four respondent

groups. The highest (0.9) are those based on the opinions of the unemployed. The other groups were in closer agreement with one another. Thus, the ranges were 0.65 for local government officials, 0.6 for heads of educational institutions and 0.5 for entrepreneurs. Note that social capital assessments in Konin County are among the highest with the exception of the unemployed.

Figure 6
Social capital assessments for four administrative units



Assessments of the seven social capital resources by the four respondent groups selected of the study are given in Table 5 for Gostyń County and are graphically presented in Figure 6 for four administrative units. The resources vary visibly across respondent groups as well as administrative units. The authors arrived at unambiguous conclusions by generalizing the outcomes and identifying relationships. They could therefore support hypothesis H2.

Table 5
Social capital resource assessments for four groups of Gostyń County respondents

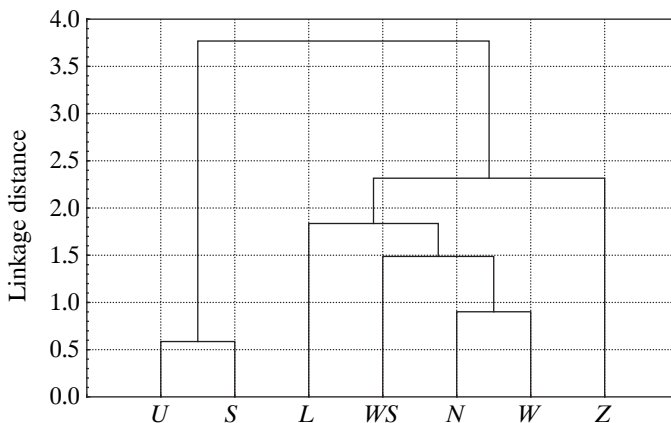
Resource	Abrev.	Unemployed	Entrepreneurs	Educators	Local government
Trust	Z	0.64	0.82	0.68	0.62
Credibility	W	0.31	0.62	0.67	0.43

Standards & values	<i>N</i>	0.58	0.52	0.52	0.53
Loyalty	<i>L</i>	0.14	0.53	0.57	0.55
Cooperation	<i>WS</i>	0.50	0.64	0.44	0.53
Solidarity	<i>S</i>	0.34	0.32	0.55	0.49
Engagement	<i>U</i>	0.37	0.26	0.41	0.66

Figures on the specific assessments of seven social capital resources for 8 administrative units and 4 respondent groups (comparable to those given in Table 5) were arranged in a matrix of 32 columns and 7 rows (resources). Such resource data were classified by the nearest neighbor method and measured by the Euclidean distance and complete linkage methods using the Statistica 10 package. The results of the classification are provided in Figure 7. The classification does not depart significantly from earlier outcomes for individual respondent groups. Engagement (*U*) and solidarity (*S*) are the nearest neighbors (linkage distance of 0.55), making up a distinctive resource category. Standards and values (*N*) as well as credibility (*W*) were found to be at the core of the other group with a linkage distance of 0.9. Further pairs included cooperation (denoted as *WS* with a linkage distance of 1.5) and loyalty (denoted as *L*, with a linkage distance of 1.8). Added to these four resources was trust (denoted as *Z*). It is only at the linkage distance of 3.8 that a class of social capital resources is produced.

Figure 7

Classification tree: social capital resource assessments for four respondent groups (abbreviation of resources as in Table 5)



The above matrix was then extended by the addition of one variable referred to as discriminaton. It contained information on allocations to respondent groups (*B* for unemployed, *P* for corporate managers, *S* for heads of educational institutions and *T* for local government officials). The matrix was used to analyze discrimination by way of bottom-up parsing to develop a discrimination model. The model failed to

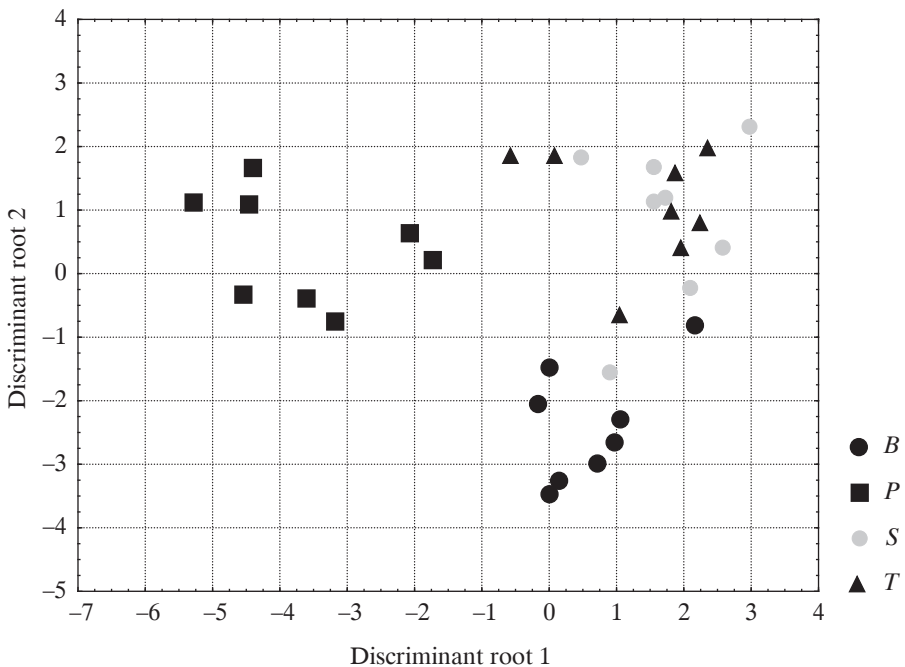
include the loyalty variable while the others were incorporated into the model in the order of *W, S, N, U, Z, WS*.

The resulting finding was that all administrative units in the *P* group of corporate managers were classified properly and that one administrative unit was misclassified in each of the other groups. An average of 92% of all units were classified correctly (Table 6 and Figure 8).

Table 6
Classification matrix

Respondent category	Classified correctly %	Unemployed	Entrepreneurs	Educators	Local gov. officials
Unemployed	87.5	7	0	0	1
Entrepreneurs	100.0	0	8	0	0
Educators	87.5	1	0	7	0
Local gov. officials	87.5	0	0	1	7
Total	–	8	8	8	8

Figure 8
Four respondent groups and administrative units visually distinguished by the discrimination model



The outcomes of the discrimination analysis are illustrated in Figure 8 showing the relationship between the computed roots of the discrimination function. What emerged was a highly distinctive and concise group of corporate managers with the negative root 1 values of the function. For the other three groups, the function assumed values above 1. The points corresponding to the unemployed, local government officials and educators in eight administrative units came with negative root 2 values in three distinctive clusters. However, one administrative unit in each such group ended up in another group's cluster, as shown in the Figure. This information is sufficient to prove hypothesis H2 as it reveals differentiation in the significance of individual social capital resources among respondent communities.

4.2. Optimization of benchmark profiles of social capital resources in administrative units

Social capital assessments in the four respondent groups and eight administrative units differ widely as shown in Figures 4 and 5. Such discrepancies result from differences in evaluations of the significance of individual resources by respondents assigned to each group in each county. The authors demonstrated that the social capital of the units is medium at best and needs improvement. This gives rise to the question of which improvement model to adopt. Due to the multiplicity of factors influencing social capital in each county, it is not possible to assume a single common optimal or desired level. Neither is it possible to adopt a single optimal value for the seven social capital components which together make up the overall assessment.

Having recognized such limitations, the authors proposed a solution based on the premise that:

- 1) social capital assessments are the arithmetic sum total of the contributions coming from the seven resources;
- 2) the shares of such resources in individual administrative units may vary;
- 3) such shares are substantially affected by opinion-makers, mainly local governments, the education system and entrepreneurs;
- 4) an optimal social capital benchmark for a given area (valid in the long term) should be constructed with leaders of the social group ranking the highest on each individual resource.

Based on such premises, the authors examined the outcomes and selected the highest specific assessments for each resource and each administrative unit. Such assessments could come from the unemployed, entrepreneurs, educators and local government officials. Once collected, the data was placed in Table 7 and presented as profiles in Figure 9.

The differences between top and bottom assessment scores for individual resources range from 0.41 (engagement) to 0.25 (loyalty) with one exception. The overall assessment of the (potentially) optimal social capital in the eight administrative units has been provided in the rightmost column of Table 7. It may be seen as a perfect

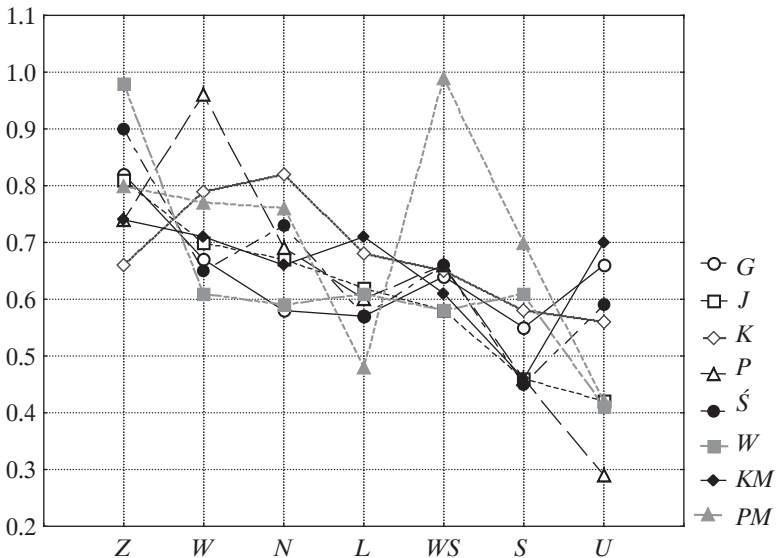
model of future social capital – the available instruments may then be used to seek to achieve it.

Table 7
The largest contributions of social capital resources
(selected from four respondent groups in administrative units
and top social capital assessment score)

Administrative unit*	Z	W	N	L	WS	S	U	Social capital assessment
G	0.82	0.67	0.58	0.57	0.64	0.55	0.66	4.49
J	0.81	0.70	0.67	0.62	0.58	0.46	0.42	4.26
K	0.66	0.79	0.82	0.68	0.65	0.58	0.56	4.74
P	0.74	0.96	0.69	0.60	0.66	0.46	0.29	4.40
Ś	0.90	0.65	0.73	0.57	0.66	0.45	0.59	4.55
W	0.98	0.61	0.59	0.61	0.58	0.61	0.41	4.39
MK	0.74	0.71	0.66	0.71	0.61	0.46	0.70	4.59
MP	0.80	0.77	0.76	0.48	0.99	0.70	0.42	4.92

* For names of administrative units see Figure 4; for abbreviations of social capital resources see Table 5.

Figure 9
Top social capital resource assessments
by administrative unit



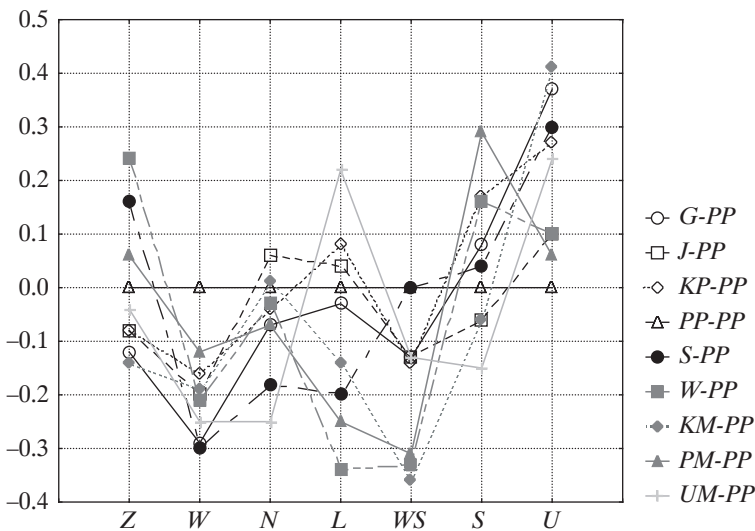
4.3. The social capital gap

Outcomes of the study of social capital gaps for four respondent groups in administrative units are shown in Figures 10–13. These depict differences in the numerical values of seven resources for individual counties relative to the corresponding values for the Poznań County adopted as the benchmark. The values make up differing profiles of discrepancies.

The above findings suggest that:

1. In the view of local government respondents, the majority of (but not all) social capital resources fall below the adopted benchmark profile. For all counties, the deficiency gap of the social capital relative to Poznań County is seen in the categories of credibility (*W*), standards and values (*N*), loyalty (*L*) and cooperation (*WS*).

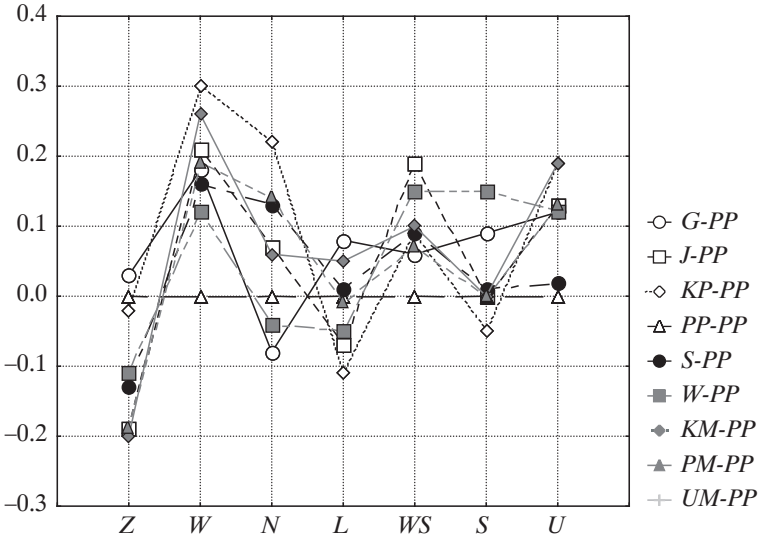
Figure 10
Profiles of seven types of social capital based on surveys
of local government officials
(benchmark: Poznań County PP, baseline = 0)



2. As shown in Figure 11, heads of educational institutions pointed to a social capital gap relative to Poznań County. This may suggest a migration from the benchmark county to the Poznań metropolitan area. On the other hand, a number of new residential areas have been developed in various municipalities of the benchmark county and populated by persons employed in Poznań. The new arrivals, including children and adolescents, have failed to integrate with the locals. The lowest scores in Poznań County relative to other administrative units have been found in such resource categories as engagement, cooperation and solidarity.

Figure 11

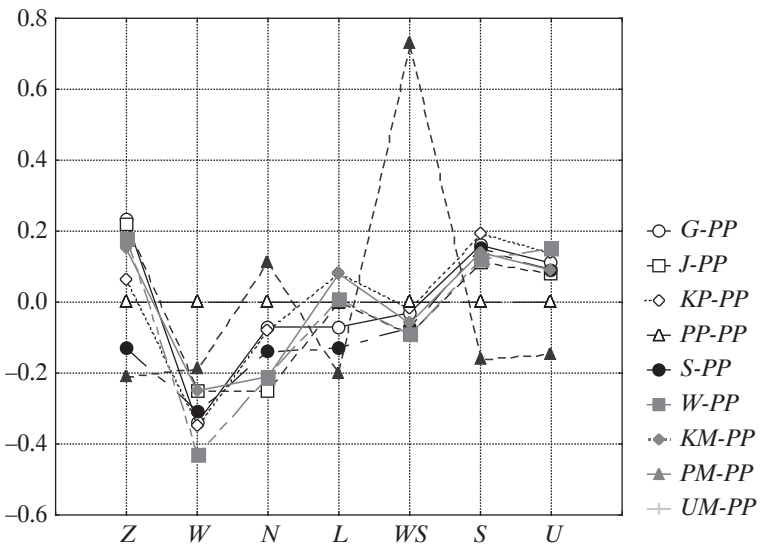
Profiles of seven types of social capital resources based on educator surveys (benchmark: Poznań County PP, baseline = 0)



3. Corporate managers have identified a negative gap in the resource categories of credibility, cooperation and standards and values and a positive one in all other resources.

Figure 12

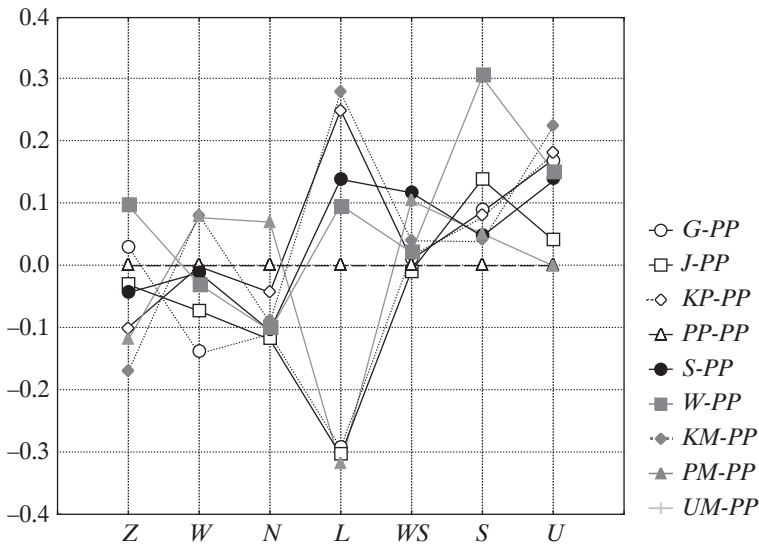
Profiles of seven types of social capital resources based on entrepreneur surveys (benchmark: Poznań County PP, baseline = 0)



4. Figure 13 shows that the majority of social capital resources of the unemployed in the administrative units at hand exceeded the benchmark. The categories of standards and values, trust and credibility were the only ones to form a negative gap in the majority of the counties. The outcomes fail to support hypothesis H1 which therefore could not be adopted.

Figure 13

Profiles of seven types of social capital resources based on surveys of the unemployed (benchmark: Poznań County PP, baseline = 0)



The analysis shows that factors other than social capital may have contributed to such high rates of unemployment. The significant culprits include the structure of the region's economy and the way it is managed by the local authorities.

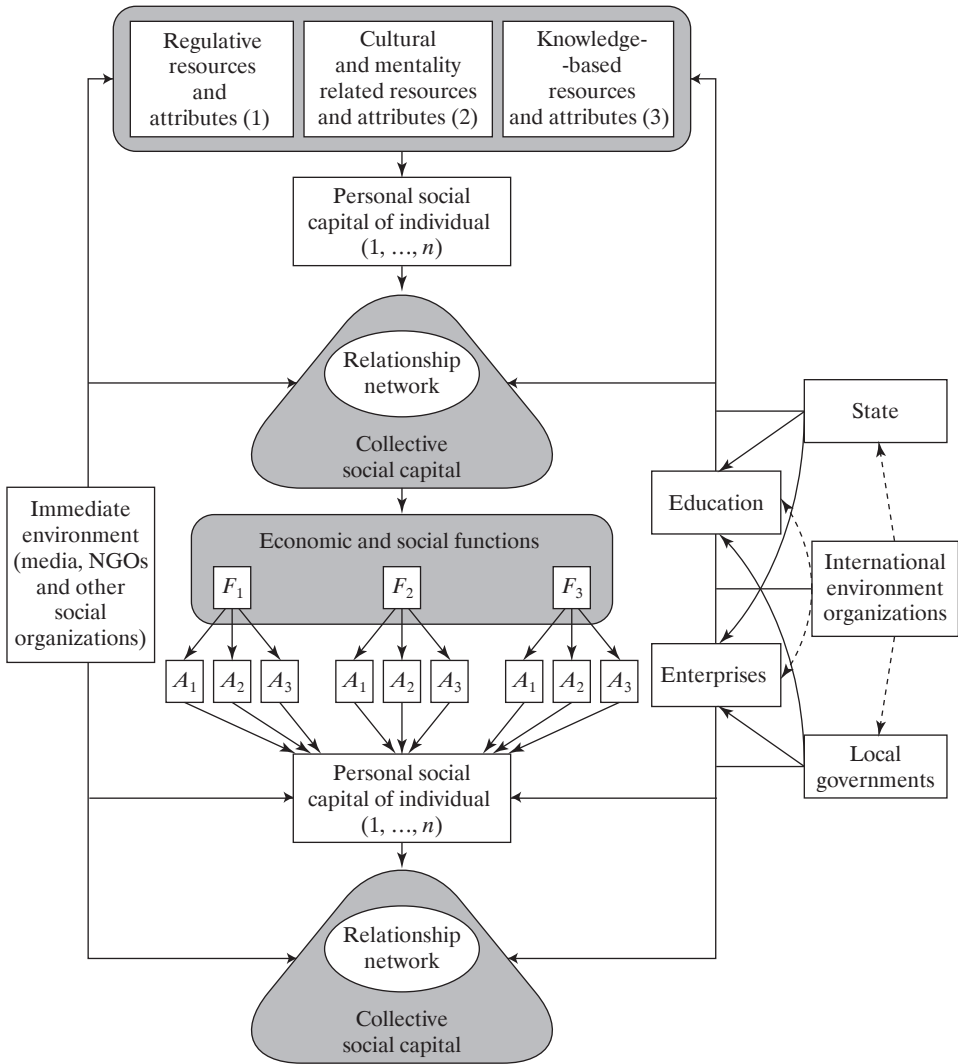
4.4. Theoretical model for stimulating social capital increases

The social capital development model (see Figure 14) was built on the following assumptions:

1. The growth of social capital may be stimulated with instruments which make up a web of mutual interactions and causal relationships (Table 8).
2. Social capital should be developed primarily by the state, schools and other institutions of education, enterprises and local governments.
3. The determinants or drivers of social capital enhancement (in terms of amount and structure) and barriers to its use in the collective interest can also be found in the non-market environment. The more immediate non-market environment or the so-called business environment is comprised mainly of the mass media, social organizations and local government units. The more remote environment

includes, for instance, government, international organizations of economic (WTO, OECD, EU), political (UN) and social (Amnesty International, Human Rights Watch, International Human Rights Committee) nature.

Figure 14
A theoretical model of social capital development



4. The applied external instruments for boosting social capital are designed to improve the use of such internal and inherent social capital attributes as genetic heritage, skills, talents and intuition as well as attributes developed so far through the operation of external factors. Such instruments can help to improve the quality of social capital (its amount and structure).

Table 8**Primary instruments for social capital improvement available to organizations**

Schools and other institutions of education	Enterprises
<ul style="list-style-type: none"> ● educational ● communication-related ● infrastructural ● informational ● consultative ● control ● participative ● stimulating 	<ul style="list-style-type: none"> ● financial ● cultural ● organizational ● communication-related ● safety-related ● investment-related ● preventive ● infrastructural ● stimulating
The state and local government organizations	The community (non-governmental organizations)
<ul style="list-style-type: none"> ● legal and institutional ● financial ● informational ● communication-related ● control-related ● social-policy-related ● consultative ● compensational ● infrastructural ● stimulating ● investment-related ● promotional ● intervention- and protection-related 	<ul style="list-style-type: none"> ● participative ● social-policy-related ● preventive ● compensational ● preventive and intervention-related ● organizational ● financial ● intervention- and protection-related

Source: Authors' work based on *Social Policy Strategy of the Wielkopolska Region through 2020*, Poznań 2010.

Social capital assessments in the four respondent groups and eight administrative units differ widely, as shown in Figures 4 and 5. Such discrepancies result from differences in evaluations of the significance of individual resources by respondents assigned to each group in each county. The authors demonstrated that the social capital of the units is medium at best and needs improvement. This gives rise to the question of which improvement model to adopt. Due to the multiplicity of factors influencing social capital in each county, it is not possible to assume a single common optimal or desired level. Neither is it possible to adopt a single optimal value for the seven social capital components which together make up the overall assessment.

Without a doubt, the state plays a central role in renewing (revitalizing) and increasing social capital. Its influence is both direct and indirect. The direct impact relates to formal institutions (their establishment, improvement and control). Such institutions should be transparent, convergent (consistent), stable and adequate to match informal institutions to ensure public confidence in the government. The impact of state institutions on capital development may also be negative. Such impact is seen

when state interventions destroy the existing relationship networks (as in the case of modernizing poor neighborhoods and moving its inhabitants), hamper the growth of new networks, impede engagement and thwart entrepreneurship (as in the case of high taxes being imposed on small businesses). In its indirect influence, the state affects the other players which develop social capital to reduce any infrastructural and competence barriers to the use of such capital in Poland. The key infrastructural limitations include the low growth potential of science and educational organizations and low reliance on IT. Such limitations form a bottleneck which thwarts the growth of social capital.

Building social capital requires a complete set of instruments and precludes the use of mutually exclusive tools. This lengthy process extends over two to three generations.

The process model for improving social capital presented by the authors highlights that:

- 1) personal (individual) social capital resources may be promoted by relationship networks and the accrual of added value in such networks prompting increases in the collective capital;
- 2) successful employment of social capital to perform economic and social functions fosters its further growth by helping to improve the resources and attributes of individual and collective capital;
- 3) the impact of the state, educational organizations, enterprises and local governments on social capital formation should be continuous;
- 4) social capital growth is influenced largely by the immediate environment (mass media, NGOs) as well as the remote environment (government policy, international organizations).

Conclusions

By comparing and generalizing the outcomes of social capital assessments from four respondent groups, the authors have been able to formulate the following conclusions:

- 1) the greatest discrepancies in social capital assessments were found among the unemployed (2.75 to 3.65) whose scores were the lowest in as many as five administrative units;
- 2) the social capital assessments provided by representatives of schools and local governments were the highest in as many as five administrative units;
- 3) the classification of social capital resources by the nearest neighbor method based on data from 8 administrative units and 4 respondent groups, has revealed two distinct categories. One comprises engagement and solidarity, the other: the remaining resources with trust placed in an autonomous position at the outer edge of the group;

- 4) the collection of social capital assessments for administrative units and respondent groups made by analyzing discrimination offers a correct classification in an average of 91% cases (with all indications being correct for entrepreneurs and with one false indication per group in all other groups);
- 5) due to differences in social capital resource assessments by professional groups and in administrative units, the authors chose to identify the optimal/desired level by the procedure described in subsection 4.2. The outcome is a lower assessment score for such capital and lesser dispersion in the relevant administrative units.

As shown by the study, social capital for the counties in question is poor. Therefore a theoretical model of stimulating social capital growth has been developed to supply instruments for intervention by the state, institutions of education, enterprises and local government units as well as the more and less immediate environment. It is thus critical that an environment conducive to the development of socially responsible behavior which favors social capital growth in counties and municipalities be established chiefly by local communities.

Since social capital is the result of social self-regulation, it escapes planned development by means of specific top-down measures. As suggested by Field, the government's policy should focus solely on establishing conditions conducive to the growth of social capital, providing incentives for its activation and avoiding interventions which excessively interfere with the existing relationships [Field 2003, p. 134]. The approach may be seen as an attempt to ensure a balance between public intervention and self regulation.

Summary

Research by the European Commission carried out in a Eurobarometer study shows that Poland is among the least developed countries in terms of social capital. Its conclusion has been confirmed by a poll of the European Social Survey. The deficit of such capital needs to be remedied. However, the building of social capital is a lengthy process which calls for changes in public awareness. Before social capital can be enhanced, it needs to be diagnosed based on a previously developed concept and measurement methodology.

Analyses reveal a low to medium level of social capital in the target counties and its highly diverse internal and external structure (differences between the target areas). The study suggests that no typical model common to all respondent groups and administrative units has emerged. The lowest assessment scores were those offered by the unemployed while the highest were submitted by educators in the counties of Gostyń, Środa and Wągrowiec, and the cities of Poznań and Konin. In the three counties of Jarocin, Konin and Poznań, the highest assessments were those of local government officials. Yet, the highest social capital in the target population, at large irrespective of administrative units, has been indicated by local government

officials followed by educators. Hence, such communities appear to contribute the most towards building social capital.

The findings of the study are highly interesting. It helped identify weak links in social capital which are: engagement, cooperation and solidarity. As all of them are based on knowledge, they can be reinforced by education. To that end, however, investment in social capital (the bottom-up and top-down approach) is needed. Although very few tools for such investment are offered in the literature [*Measuring* 2004], a pivotal role is assigned to institutions of education and local governments which should develop the related resources and set up relationship networks [Field, 2003]. Yet, as revealed by the study, no such networks appear to exist. For that reason, hypothesis H4, as formulated in the paper, which states that collective social capital exceeds individual capital, has not been supported and could not be adopted. Having the hypothesis refuted is essential for selecting methods of social capital development whose focus should be on building cooperation. The proposed research methodology was also instrumental in supporting hypotheses H2 and H3 and refuting hypothesis H1. The diagnosis confirmed the multidimensional nature of social capital.

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METODOLOGIA BADAŃ KAPITAŁU SPOŁECZNEGO I JEJ SPRAWDZIAN EMPIRYCZNY

Streszczenie

Artykuł podejmuje trudny problem pomiaru kapitału społecznego, jego wzrostu i struktury. Autorzy wychodzą od wskazania znaczenia tego problemu, przedstawiają definicję kapitału społecznego oraz formułują cele badania i przyjęte hipotezy. W części teoretycznej artykułu autorzy podejmują próbę operacjonalizacji pojęcia kapitału społecznego i proponują wielowymiarową metodę jego pomiaru. Część empiryczna przedstawia wyniki badania ankietowego przeprowadzonego w latach 2010–2011 w 8 powiatach i 4 grupach respondentów Polski zachodniej (region Wielkopolska). Autorzy zmierzli i porównali oceny kapitału społecznego w poszczególnych grupach respondentów, określili luki istniejące w tym względzie w poszczególnych zbiorowościach lokalnych i sformułowali teoretyczny model stymulowania wzrostu kapitału społecznego.

Słowa kluczowe: kapitał społeczny, kluczowe zasoby i atrybuty, modele, luka kapitału społecznego, profile kapitału społecznego

METHODOLOGY OF SOCIAL CAPITAL RESEARCH AND ITS EMPIRICAL TESTING

Summary

The paper tackles the challenging research problem of measuring social capital as well as its increase and structure. It sets out by demonstrating the significance of the research problem, the definition of social capital and formulating research objectives and hypotheses. The theoretical part proposes research methods and a unique approach to formulating and operationalizing the notion of social capital. The authors have developed a multidimensional method of measuring social capital and test it empirically together with the hypotheses. The empirical part presents the outcomes of a survey of 8 counties of the and 4 communities (Wielkopolska Region) carried out between 2010 and 2011. The authors have measured and compared the assessments of social capital across respondent

groups, defined gaps, optimized benchmarks for social capital profiles in counties and formulated a theoretical a model for stimulating its development.

Key words: social capital • resources and attributes • models • social capital gap • social capital profile

МЕТОДОЛОГИЯ ИССЛЕДОВАНИЙ ОБЩЕСТВЕННОГО КАПИТАЛА И ЕЕ ЭМПИРИЧЕСКАЯ ПРОВЕРКА

Резюме

Статья занимается трудным вопросом замера общественного капитала, его роста и структуры. Авторы начинают с указания значения этой проблемы, дают определение общественного капитала, а также формулируют цели исследования и принятые гипотезы. В теоретической части статьи авторы пытаются операционализировать понятие общественного капитала и предлагают многогранный метод его измерения. Эмпирическая часть представляет результаты анкетного исследования, проведенного в 2010–2011 гг. в 8 повятах и 4 группах респондентов западной Польши (регион Великопольша). Авторы сделали замеры и сопоставили оценки социального капитала в отдельных группах респондентов, определили пробелы, существующие в этом плане в отдельных местных обществах и сформулировали теоретическую модель стимулирования роста социального капитала.

Ключевые слова: общественный капитал • ключевые ресурсы и атрибуты • модели • пробелы социального капитала • профили общественного капитала

