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2009

Online at <http://mpra.ub.uni-muenchen.de/18287/>

MPRA Paper No. 18287, posted 01. November 2009 / 20:53

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Working paper presented at the conference „Civil society, social capital and economic development”, Stockholm, 3-4 September 2009

Abstract: There is an ongoing debate on social capital resources in Poland, where the density of associational activities and the level of social trust is low when compared to West European countries. Moreover, some researchers claim that Polish economy is developing despite low resources of social capital. This paper examines spatial patterns of various forms of social capital (networks and trust; bonding and bridging social capital; family, friendship, neighbourhood and associational ties) in Poland and determinants of their distribution. It analyses relations between resources of social capital and regional growth.

JEL Classification: O43, Z13

Introduction

In the last two decades, the notion of social capital has been introduced in sociology and economics to overcome the shortcomings of earlier classical theories. One of the areas where the concept of social capital is to play a significant role is the theory of economic growth (Trigilia, 2001). There is a large collection of both theoretical (Bourdieu, 1986; Coleman, 1990; Portes, 1998; Portes, 2000; Woolcock, 1998) and empirical works (Bengtsson *et al.*, 2005; Beugelsdijk, Smulders, 2003; Beugelsdijk, van Schaik, 2005; Bjørnskov, 2006; Blume, Sack, 2008; Casey, 2004; Knack, 2003; Knack, Keefer, 1997; Rupasingha *et al.*, 2002; Sabatini, 2008; Whiteley, 2000; Zak, Knack, 2001; van Oorschot *et al.*, 2006), that deal with this subject. They use various methods to conceptualise and, later, to deploy this complex idea of social capital. These different approaches are also often subject to many controversies (Portes, 1998; Portes, 2000; Woolcock, 1998; van Deth, 2003). However, as it is not the main focus of this paper to discuss the pitfalls of this concept, they will not be mentioned, unless they are an important part of the approach adopted here.

In this paper, social capital is looked at from a particular geographical standpoint (Mohan, Mohan, 2002) in order to discover spatial patterns and to interpret variations in the resources of social capital in different parts of Poland. Therefore, social capital is understood here in its collective dimension, as a characteristic of large territorial groups. Thus, from all the proposed

definitions, the definition of Carlo Trigilia, an Italian researcher in economic sociology, seems particularly appealing, as it considers social capital as “a set of social relations of which a single subject (...) or a collective subject (...) can make use at any given moment. Through the availability of this capital of relations, cognitive resources, such as information, or normative resources, such as trust, allow actors to realize objectives which would not otherwise be realized or which could be obtained at a much higher cost. Moving from the individual to the aggregate level, it may also be said, that a particular territorial context is more or less rich with social capital depending on the extent to which the individual or collective subjects of the same area are involved in more or less widespread networks of relations.” (Trigilia, 2001: 430)

This understanding of social capital is quite unique, avoiding defining it by its functions. The functionalist conceptualizations (van Deth, 2003), influenced by Putnam’s seminal work on democracy in Italy (Putnam, 1993), were followed by number of empirical approaches that chose indicators that describe the possible effects of social capital rather than social capital itself (Casey, 2004; Serra, 1999). The first step of this analysis is thus to examine the resources of “pure” social capital (density of social networks, level of trust) in Polish regions. Only later will it be examined whether it has a positive or negative impact and test the theoretical assumptions linking this notion and economic growth. The objectives of this paper is then to uncover the spatial patterns of social capital in Poland and explain why some regions are endowed with more networks of different types. Consequently, a relationship between resources of social capital and economic growth in Polish regions will be analysed.

Before starting the analysis, it is important to discuss various types of social capital. The aforementioned definition distinguishes the structural aspect of social capital, that is networks of relations, from its cultural or normative aspect, that is trust. The structural component includes various relations, beginning with family ties, friends and acquaintances, through workplace and neighbourhood contacts and finally membership of voluntary associations. Norms of trust are usually understood as personal trust (confidence in and reciprocity with people one knows personally) and social or generalized trust (to all people, even strangers) (van Deth, 2003).

This distinction also helps in understanding the way social capital can be linked to economic growth. Social connections play a primary role, enabling access to financial resources or knowledge that is in the possession of other people in the same network (Bourdieu, 1986; Coleman, 1990). It has to be stressed that it is not only the density of networks themselves that

matters, but whether they give access to more or higher quality resources of financial or human capital (Portes, 1998). Only those regions which already have a higher than average level of economic and intellectual capacities may benefit from a higher density of social capital. A dense network of relations may prove useless when its participants have nothing to offer themselves. Equally, high resources of financial and human capital would be less productive if not linked with each other (Działek, 2007). Trust occupies a secondary, but still very important position, as it reduces the uncertainty of transactions, decreasing in that way their costs (Beugelsdijk, van Schaik, 2005; Zak, Knack, 2001).

Other studies argue also that social capital facilitates collective action, leading to the development of communities where people are able to cooperate with each other (Leonardi, 1995; Putnam, 1993). Putnam underlines the role of associations, in which not only their objectives are important, but also the opportunities created by them allowing people from different groups to meet with each other. The structures of different social groups can be more or less open, and their social capital can thus have different influences on general society and the economy (Portes, 1998; Portes, 2000; Woolcock, 1998). Strong, homogenous groups (eg. trade unions, political parties or strong family, friendship and neighbourhood networks) can use their links to appropriate financial resources, and hinder creativity and entrepreneurship of their members (Olson, 1982) whereas more open and heterogeneous groups, where contacts with people from the outside are less controlled, could have a more positive impact as they could give access to new resources not available inside the network (Burt, 1995; Granovetter, 1974). Bonding (or exclusive) and bridging (or inclusive) social capital (Putnam, 2000) are another two types of social relations that are used in this paper.

There is an ongoing debate on the lack of resources of social capital in Central and East European countries that could hinder the development of democracy and the market economy (Mihaylova, 2004; Raiser *et al.*, 2001; Svendsen, 2003). Poland is a case in point as the density of social networks and the level of social trust is relatively low when compared to West European countries. It is usually explained as being a consequence of communism when people had to choose between family or close friend oriented networks, and state-controlled mass organizations. The lack of independent civic associations is known in Polish sociology literature as the “middle range social vacuum” (Nowak, 1979), and is claimed to be still relevant in explaining the low resources of bridging social capital in Poland (Kubiak, Miszalska, 2004).

Shortages of goods in the centrally planned economy led also to the development of many informal connections, which, for some, are a proof of anti-modern forms of social capital in post-communist countries (Buttrick, Moran, 2005; Kolankiewicz, 1996; Rose, 1998; Rose, 1999). Yet, there is no clear answer to the question whether these relations have still an impact on the development of the market economy. Finally, some academics claim that the Polish economy is developing despite low resources of social capital (Czapiński, Panek, 2007; Zagała, 2008).

On the other hand, one can observe the constant development of civil society in Poland with the number of new NGO initiatives appearing each year (Gumkowska, Herbst, 2006). However, the level of trust, which is a long duration cultural phenomenon, does not seem to be the subject of any major changes (Czapiński, Panek, 2007).

Although the general resources of social capital are relatively low, there are some important regional variations, which could be a factor differentiating regional economic growth. It is assumed that the great historic regions of Poland, which date back to the 19th century when Poland was partitioned between three neighbouring countries, should influence the spatial patterns of networks and trust. Equally, more recent events, that is changes in Poland's boundaries after World War II and the mass transfer of population, may explain why various forms of social capital (eg. bridging or bonding) prevail in some regions. Still, there is no common agreement on how these historic structures influence contemporary patterns of the concept being analyzed (Jałowiecki, Szczepański, 2007; Kamiński, 2008; Zarycki, 2000; Żukowski, 2003). This research is expected to fill that gap.

Changes in Polish territory during the last two centuries have left a strong imprint on these lands influencing variations of various social, economic and political phenomena (Bartkowski, 2003; Jałowiecki, Szczepański, 2007; Zarycki, 2002). At the end of the 18th century the Polish-Lithuanian Commonwealth was divided among three neighbouring powers, that is Austria, Prussia and Russia. Although Poland regained its independence in 1918, more than 90 years ago, some of the regional differences may still be explained by different economic and social organizations (legal systems, urbanization processes, development of the economy and infrastructure, culture and mentality) of the three states that partitioned Poland. This division was overlaid by territorial changes following the Second World War, when Poland's eastern territories were permanently annexed by the Soviet Union. Most of their Polish inhabitants were then expelled to the German territories east of the Oder-Neisse line, that Poland received in exchange.

The German population was expelled from that area and replaced by the Polish population from Eastern and Central Poland. These territories incorporated into Poland were referred by communist propaganda as the "recovered territories" (*Ziemie Odzyskane*), but nowadays the name of Western and Northern Territories (*Ziemie Zachodnie i Północne*) is mostly in use.

There are various assumptions, sometimes stereotypical, on how these long duration structures could influence resources of social capital in Poland. Basically, the Prussian partition is associated with order and thrift, the Austrian – with cultural autonomy, and the Russian – with backwardness and poverty (Jałowiecki, Szczepański, 2007). The territories that once were part of the Russian Empire are thus assumed to have a lower level of social capital, both in networks of associations and generalized trust. These lands are contrasted with the Austrian and Prussian partitions, that are to be examples of areas with dense networks of cooperation (Zarycki, 2002).



Figure 1 Historical regions of contemporary Poland: orange – former Austrian partition, green – former Russian partition, blue – former Prussian partition, purple – Western and Northern Territories

Southern Poland is the most fervently Catholic region in the country, and church organizations are an important part of the social capital landscape. This led some authors (Żukowski, 2003) to point it out as a model region with the highest resources of social capital. For the same researcher, the Western and Northern Territories are a counterexample, as they are characterized by low social activity on the one hand, and high population outflow, unemployment and criminality on the other. However, other academics (Jałowiecki, Szczepański, 2007; Zarycki, 2002) claim the opposite, proving that after the war these regions were mostly repopulated by younger and more entrepreneurial individuals that wanted to start a new life without strong social control, that is bonding social capital (Jałowiecki, Szczepański, 2007). The main outcome of this great social experiment was a new society, where bridging rather than bonding social capital should play the primary role. As their family or neighbour ties were weak, they had to replace them with other types of interaction.

Social capital in the Polish regions

All data in this paper are analysed on a subregional level, that is the NUTS 3 level (Figure 3, see also table in the Appendix). Since 2008, Poland has been divided into 66 subregions (earlier there were 45 subregions). Polish subregions are groups of *powiats* (NUTS 4 units), and are territorial units existing only for statistical purposes with no self-government bodies. There are several reasons to use these units in this research. First, other types of administrative division of Poland are either too large (16 Polish *województwa*, or regions) to analyse spatial patterns, or too small (379 *powiats*, or counties) to get sufficient reliable data. Whereas, subregions were designed to include areas of similar historical, geographical, social and economic background. This level of statistical division also allows one to gather reliable indicators for various types of social capital, and their number is sufficient to obtain an adequate image of its spatial distribution.



Figure 2 66 statistical subregions (NUTS 3) of Poland

Research on social capital is very often limited by the accessibility of reliable data (Blume, Sack, 2008; van Deth, 2003) as official statistics rarely collect information that can be used as measures of social capital. Following the definition mentioned at the beginning of the paper, a set of indicators was chosen that could be a proxy for social networks and generalized trust. No measures such as voting turnover or criminality rate are used, as they describe possible positive or negative outcomes of social capital, but not social capital itself. Instead, 11 measures of various types of social networks are analysed here (including associational activity, friendship ties, hobby, interest and sport groups, local community ties, church and religious organizations) and one measure of trust. Similar to Blume and Sack (2008), it was decided to combine different indicators from various sources in attempt to better describe this multifaceted phenomenon. The reason to not only use data from official statistics, but to also use other data not collected by government institutions, is that each of them focuses on different aspects of social capital.

Altogether, 12 variables from four sources are analysed (Table 1). The first institution is the GUS, Polish statistical office, that every two years gathers periodic information on participation in sports clubs (2002, 2004 and 2006) and in various education, arts, music or other cultural groups (2003, 2005 and 2007). These data are provided by local community centres and are available at *powiat* (NUTS 4) level. GUS gives also access to REGON, that is the national official business register, that includes information on officially established foundations and associations. Its main drawback is that it only provides the number of organisations in each Polish *gmina* (NUTS 5), and nothing about their actual membership. The REGON register is often criticised for being inaccurate, which is why it is complemented with information from other institutions.

Another important source of data on voluntary activity is Stowarzyszenie Klon/Jawor, an association that supports and promotes civil society in Poland. One of its tools is a national database of NGOs available on the website www.ngo.pl. By January 2009 it had collected records on almost 143 thousand organizations and institutions. It provided data on the number of NGOs active in each *powiat* between 2000 and 2009. Additional information obtained from this database shows organisations that gained the legal status of so called public benefit organisations (*organizacja pożytku publicznego*, OPP), that are allowed to receive 1% of the income tax of individuals. Because of this OPPs are the most important part of Polish civil society, being the most active and visible organizations with their budget growing every year.

Participation in non-governmental organizations does not reflect the whole spectre of activity of voluntary organisations in Poland. Establishing an association in Poland might be a difficult task for a large part of the population as it necessitates fulfilling a bureaucratic procedure to register the association in a register court, located only in large cities. To uncover other forms of social networks we need to use another two of the aforementioned sources, especially the data from social surveys.

There are numerous groups related to the church, that, especially in smaller towns and the countryside, are a milieu of intensive social interaction. For measuring this part of the social capital the data from Statistical Office of the Roman Catholic Church (*Instytut Statystyki Kościoła Katolickiego*, ISKK) is used. It prepares a list of all Roman Catholic parishes in Poland, that enumerates also a wide number of organizations, e.g. prayer groups, choirs, charity groups,

etc. with the number of their members in each parish. These data were later recalculated into the administrative division units, *powiats* and subregions.

Table 1 Indicators of social capital

indicators	description	Years	source
assoc_gus	average number of foundations, associations and public organizations registered in REGON between 2002-07 per 10 thousand inhabitants	2002-07	GUS
arts_memb	average membership of arts, music and other cultural groups per 10 thousand inhabitants	2003, 2005, 2007	GUS
hobby_memb	average membership of interest and hobby groups per 10 thousand inhabitants	2003, 2005, 2007	GUS
sport_memb	average membership of sports and recreation groups per 10 thousand inhabitants	2002, 2004, 2006	GUS
assoc_ngo.pl	number of NGOs registered in ngo.pl database per 10 thousand inhabitants	2000-09	ngo.pl
opp_ngo.pl	number of public benefit organizations (OPP) per 10 thousand inhabitants	2008	ngo.pl
church_memb	membership in religious or church organizations	2006	ISKK
assoc_memb	members of organizations, associations, parties, committees, councils, religious groups, unions or other groups per 100 persons	2003, 2005, 2007	Diagnoza Społeczna
part_local	share of respondents of people that were involved in local community activities during last 2 years	2000, 2003, 2005, 2007	Diagnoza Społeczna
part_gath	share of respondents that took part in a local public gathering (other than in the workplace) during the last year	2003, 2005, 2007	Diagnoza Społeczna
friends	average number of friends	2000, 2003, 2005, 2007	Diagnoza Społeczna
trust	share of respondents that answered "most people can be trusted" when asked "Generally speaking, would you say that most people can be trusted or that you cannot be too careful in dealing with people?"	2003, 2005, 2007	Diagnoza Społeczna

Finally, the last five variables of social capital in Poland come from a large social survey called Social Diagnosis (*Diagnoza Społeczna*, www.diagnoza.com) (Czapiński, Panek, 2007). An independent organization, the Council for Social Monitoring, gathers information from

several thousand respondents every few years relating to various economic and social aspects of life. Aggregation of data from all the available years enables one to get reliable information at the subregional level, and gathers answers from about 460-540 respondents on average in each unit. It provides additional data completing information lacking in the GUS or ngo.pl databases. For example, official statistics or the NGOs database only provide information about the number of associations while these surveys ask respondents whether they are members of various organizations, associations, parties, committees, councils, religious groups, unions or other groups. It also shows the involvement of respondents in local community activities, public gatherings and friendship networks. Last, but not least, it is the only source that permits one to assess the level of social trust throughout the Polish regions. Table 1 shows a detailed description of each of the variables used in the research that represent different types of social capital and measure it at various levels.

Table 2 Principal component analysis for 66 Polish regions with 12 variables of social capital

Component	Original eigenvalues			Sum of squares loadings		
	Total	% of Var.	Cumulative	Total	% of Var.	Cumulative
1	3.359	27.994	27.994	3.359	27.994	27.994
2	2.653	22.110	50.104	2.653	22.110	50.104
3	1.763	14.689	64.794	1.763	14.689	64.794
4	.997	8.305	73.099			
5	.950	7.921	81.020			
6	.614	5.118	86.138			
7	.524	4.365	90.504			
8	.369	3.078	93.582			
9	.324	2.703	96.285			
10	.220	1.832	98.117			
11	.183	1.521	99.638			
12	.043	.362	100.000			

* Principal component analysis with no rotation. Factors with eigenvalues < 1 are neglected.

The spatial distributions of values of each indicator used in this paper show some significant differences of social capital resources in Polish regions. Some of the variables are correlated with each other and are similarly spread across the country. To make this analysis more systematic a principal component analysis was conducted. It mathematically transforms an original set of 12 correlated variables into a smaller number of uncorrelated variables. It enables

one to identify other concepts lying behind this data. It could serve to validate theoretical considerations on one hand, and to explore the data and discover new relations among them on the other. The principal component analysis of the 12 social capital variables gives 3 independent components with eigenvalues higher than 1 (Table 2). Altogether they explain 64.8 percent of the variation of the original data. Factor loadings of each variable on three components are shown in table 3. They are later used to calculate factor values for each subregion, showing the importance of each component of social capital across the country.

The first principal component explains almost 28 percent of the variation in the original data. Five variables have high positive factor loadings on this component (Table 3). Four of them describe different aspects of the formal activities of voluntary associations, both in terms of number of such organisations, and of their membership. Therefore this component will later be referred to as “associational activity” or “formal bridging social capital”. The fifth indicator with high loading measures generalized (or social) trust. It is interesting to notice that this variable, in various pieces of research usually analyzed separately, is included here in the same category as indicators describing associational activity. It would be interesting to find out, where personal trust would fit in, but there are no reliable data that could be used. This component separates subregions with dense networks of associations with large number of members and with high social trust from those lacking civic networks and interpersonal trust.

Table 3 Matrix of components with factor loadings higher than 0.4

variables	comp. 1	comp. 2	comp. 3
assoc_gus	.897		
arts_memb		.544	.573
hobby_memb			.457
sport_memb		.455	.762
assoc_ngo.pl	.909		
opp_ngo.pl	.823		
church_memb		.821	
assoc_memb	.587		
part_local		.679	-.522
part_gath		.681	
friends		.598	
trust	.592		

Figure 3 shows regional variation of this component showing positive (red) and negative (blue) factor values for each subregion. The highest scores for this component are in large cities, where many national and regional organisations are usually registered. This map exposed the weakness of a few variables in this component, that denote mostly the number of associations according to their place of registration (*assoc_gus*, *assoc_ngo.pl*, *opp_ngo.pl*), rather than number of members according to the place where they are active (*assoc_memb*). Still, there are many other non-urban subregions that also have positive factor values. These are mostly large parts of the Northern and Western Territories and a few subregions in south eastern Poland.

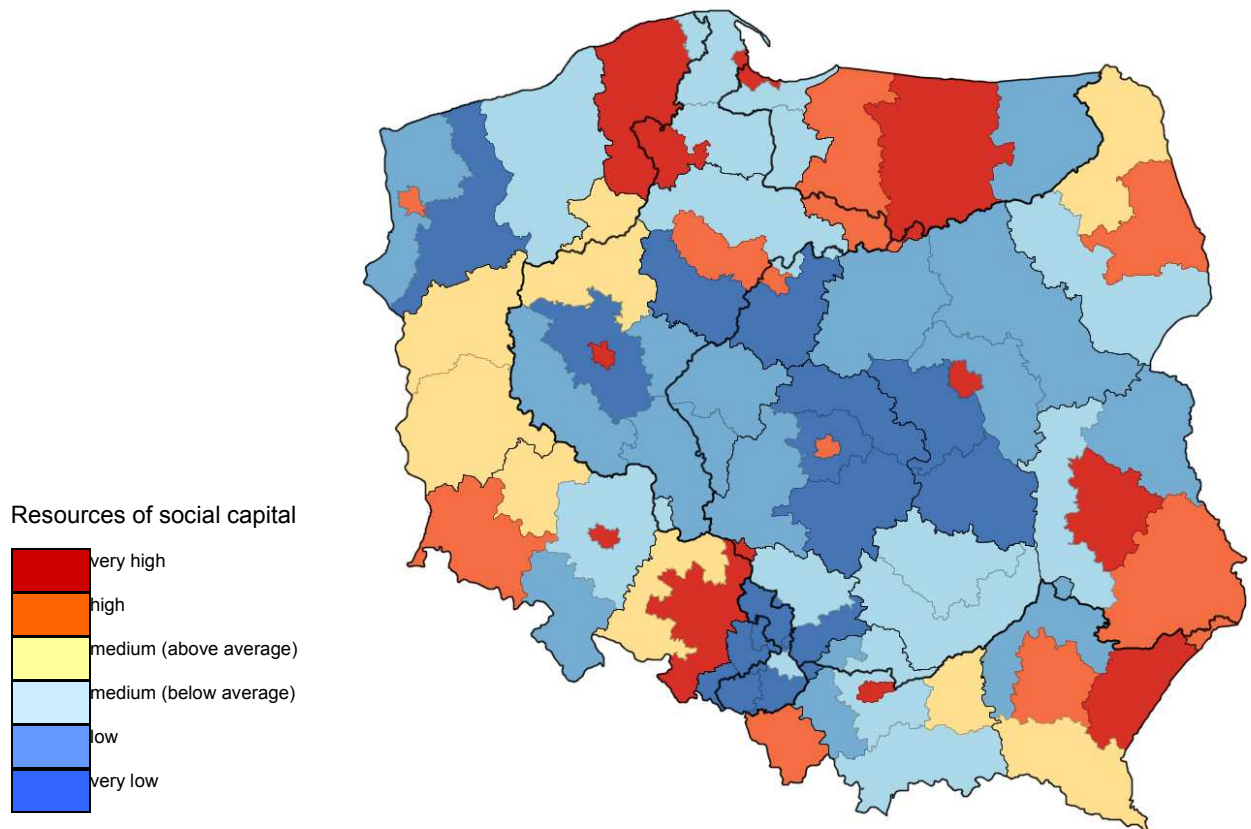


Figure 3 Factor values of the first component (associational activity) for 66 Polish subregions

In the areas that used to be part of the Russian and Prussian partitions, the densities of civic networks and social trust are usually lower than average and in particular the industrial area of Upper Silesia has the lowest scores of this component. It is probably related to the severe economic difficulties that this region has suffered since 1989 that could have had an influence on the regional society. These results proves that in the Western and Northern Territories, where

almost the whole population was exchanged after the Second World War, the importance of associational activities is relatively higher. The new society on these territories had to reconstruct their social links. Almost 65 years after the end of the war community ties are not as developed as in other parts of Poland where the population had not been moved. It seems they have been substituted by weaker links of associational activities. Social organisation in the Western and Northern Territories is in that way much more similar to that of large cities which are also areas of immigration. Nevertheless, it is worth noticing that not every subregion in that part of Poland has only positive scores. It is especially visible in the case of the Zachodniopomorskie Region that has very low values of this component.

When looking at other parts of Poland, one can notice that the lands of former Russian partitions, with some exceptions, mostly have negative values. It corresponds to the general hypothesis, that these territories lack bridging social capital. In turn, regions of Galicja (Austrian partition) and Greater Poland (Prussian partition), usually associated with well developed civil society, score relatively low, with only some of the subregions having positive values. In some of the cases, eg. Opolskie Region or Bielski Subregion, a dense network of associations can be linked with the presence of national or religious minorities.

The second component explains another 22 percent of the variation in the data. The variable representing the membership in church and religious organizations has the highest factor loading. It is followed by a group of three indicators related to local community and friendship ties. There are also two variables related to membership in arts and sports groups, but they have a stronger relationship with the third component. Taking into account the first four variables with the highest loadings, one can notice that they denote strong religious, neighbourhood or friendship ties, which in the literature are called strong links or bonding social capital. This component will be referred as “community ties” or “informal bonding social capital”. Spatial patterns for this component are very different from the first component (Figure 4). The highest positive values are observed in Southern Poland (the whole of the Austrian partition) and most of Eastern Poland. In turn, most of the Western and Northern Territories have negative scores on this component, with the exception of the Opolskie and Dolnośląskie Regions. It is interesting that large areas of Central Poland (from both the Russian and Prussian partitions) also have very weak community ties, although their population is as strongly rooted in that land as the populations in Southern or Eastern Poland are in theirs.

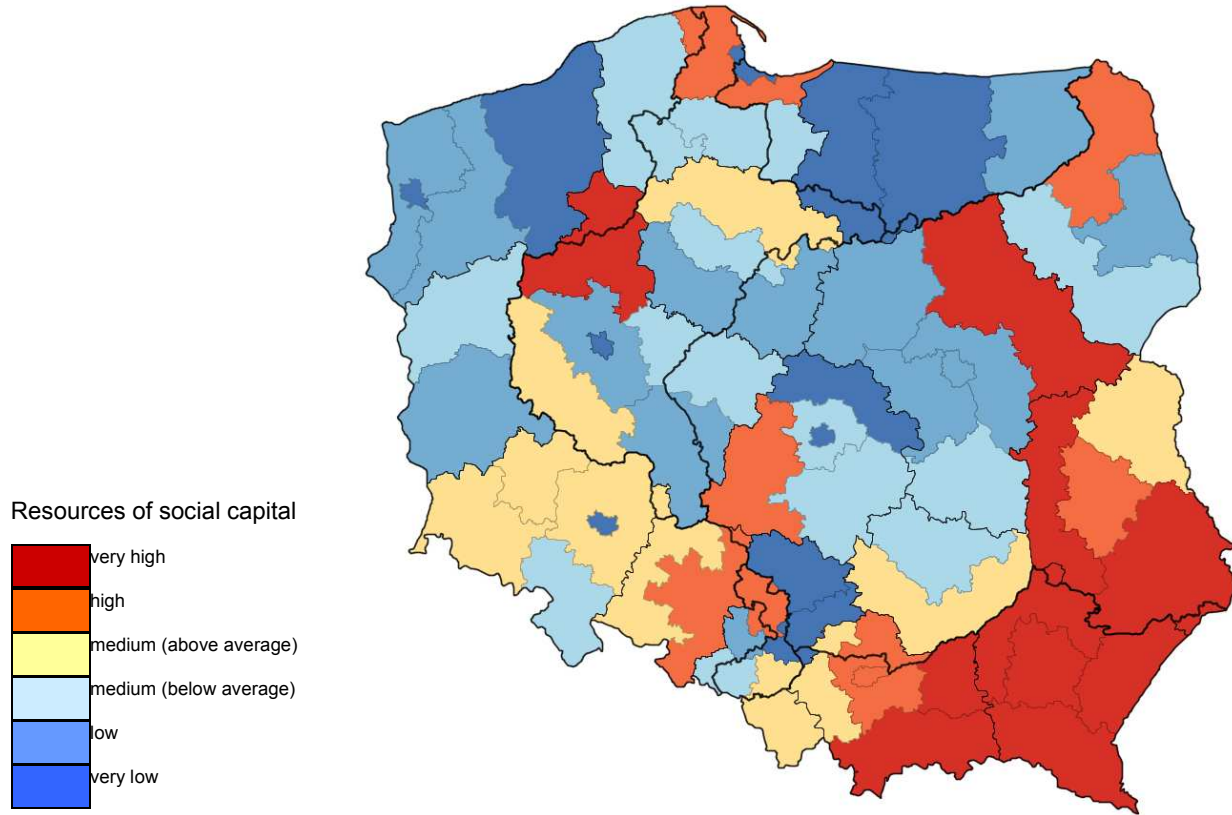


Figure 4 Factor values of the second component (community ties) for 66 Polish subregions

Finally, the third principal component explains almost 15 percent of the variation in the data. It is clearly related to various groups where people could develop their hobbies (sports, music, arts, etc.). They also represent bridging social capital but are different from the groups included in the first component. They are rather informal and do not have any public benefit goals. But Putnam (2000) claims that this type of social involvement could also be an important factor for social and economic growth as they enable people to create new networks. Following his research, one can state that this component identifies regions where people are not “bowling alone” (in Poland’s case – they are mostly playing soccer together) from regions where people prefer staying home and not being involved in any kind of activities. Again, the Northern and Western Territories are not homogenous – there are parts where this component has very negative scores, while other areas have positive values. In the case of this part of Poland one can

observe that it seems to be a negative image of the distribution of the second component. In the other parts of Poland it is hard to find any explanation to the pattern (Figure 5).

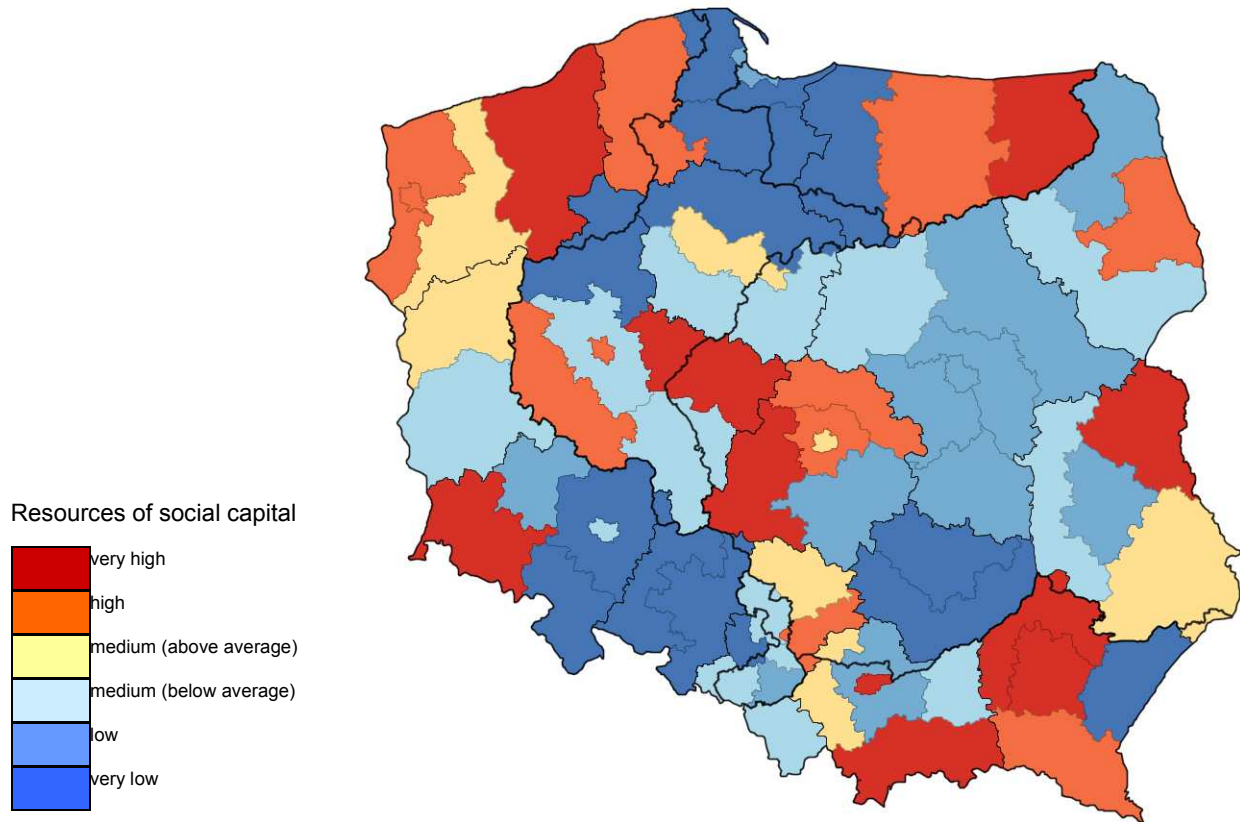


Figure 5 Factor values of the third component (hobby & interest groups) for 66 Polish subregions

To sum up this part of the research, one can notice that three components of social capital, that measure its resources in Poland, can be described on two dimensions: bonding vs. bridging social capital and formal vs. informal ties (Table 4). It shows also that this analysis lacks data on formal bonding social capital (eg. trade unions, membership of political parties, etc.) that would provide a whole spectrum to the concept which is the topic being researched.

Table 4 Two dimensions of the components of social capital

	bridging social capital	bonding social capital
formal	component 1	-
informal	component 3	component 2

Table 5 Bivariate correlations between the components of social capital and the social, economic, political and historical characteristics of Polish subregions (N = 66)

	comp. 1	comp. 2	comp. 3
higher education 2002 in %	0.719(**)	-.392(**)	.067
urban population 2007 in %	0.446(**)	-.581(**)	.013
population over the age of 60 (F) or 65 (M) 2007 in %	0.389(**)	-.132	.054
families with 3 children or more 2002 in %	-0.317(**)	.680(**)	.071
population inflow 2000-2007 per 1000 inh.	-0.130	-.107	-.170
population outflow 2000-2007 per 1000 inh.	-0.244(*)	-.032	-.115
employees in agriculture in %	-0.338(**)	.479(**)	.026
employees in industry in %	-0.321(**)	-.249(*)	-.111
employees in services in %	0.663(**)	-.443(**)	.045
economically active population in %	0.519(**)	.043	.106
unemployment 2004 in %	-0.443(**)	-.067	-.036
votes for PO 2007 in % (centre-right, Christian-democratic, liberal-conservative)	0.395(**)	-.536(**)	-.167
votes for PiS 2007 in % (right, Christian-democratic, national-conservative)	-0.191	.618(**)	.171
votes for LiD 2007 in % (centre-left, social-democratic)	-0.102	-.533(**)	.030
votes for PSL 2007 in % (agrarian)	-0.349(**)	.335(**)	.063
dummy for Western and Northern Territories	0.106	-.298(*)	-.054
dummy for Austrian partition	0.126	.544(**)	.285(*)
dummy for Russian partition	-0.123	-.060	-.004
dummy for Prussian partition	-0.081	-.080	-.179

Notes: (**) or (*) show that the estimated parameter is significantly different from zero on the 1% or 5% level, respectively.

Table 5 shows bivariate correlations between the components of social capital and various demographic, economic, political and historical factors that can explain the results of the principal component analysis. The first component shows strong correlations with the level of education attained and the urbanisation of the subregions. Even when we exclude subregions consisting only of large cities (that is Warszawa, Kraków, Łódź, Wrocław, Poznań and the Upper Silesia conurbation) the relation between education and associational activity is positive and statistically significant. In contrast, strong bonding social capital can be associated with rural Poland, with lower education levels and a more conservative worldview. It is in accord with the

political views of that part of population that in the 2007 parliamentary election voted for right-wing and agrarian parties, while those more active in civil society supported rather the centre-right party.

Higher resources of formal bridging social capital are observed in the areas with a higher share of the economically active population and with employment predominantly in services while the agriculture-oriented subregions, by contrast, are endowed with higher resources of bonding social capital. Interestingly, industrial areas show negative correlations with both types of social capital.

Finally, it is interesting to notice that historical regions are less useful in interpreting differences in social capital in Poland. Only in the case of the second component are there significant correlations with the Western and Northern Territories and the former Austrian partition. It separates the area of Southern Poland, where the population is deeply rooted and strongly Catholic, and the more laicised Western and Northern Territories with weaker community ties.

Social capital and economic growth

Regression analysis is used to examine the relations between social capital and economic growth. Social capital components are here considered as additional factors that could explain the economic success of some regions that cannot be explained by classical factors, that is financial capital (average investment outlays in enterprises 2002-2007 per capita) and human capital (proportion of adult population with higher education according to 2002 census). Two indicators are used to assess the economic growth in regions: growth in personal income tax revenue per person of working age between 2000 and 2007 and growth of gross domestic product per capita between 2000 and 2006. Additional models are used to explain regional variations in the level of economic development – revenues from personal income tax in 2007 per person of working age, gross domestic product per capita in 2006 and the average level of entrepreneurship 2000-2007.

In most of the models analysed, the components of social capital show no significant direct influence on economic growth in the regions (Table 6). All regressions on economic growth demonstrate that it is much better explained by the differences in resources of financial and human capital. The more regions are endowed with these kinds of capital the richer they are and the faster they develop. It seems that in the case of Polish economy neither bridging, nor

bonding social capital play any role in its development. Money and knowledge still can do more in developing the country than networks. Is it because the resources of social capital in Poland are too low? Or maybe Poland, in a similar manner to other post-communist countries, still suffers from a negative usage of networks and the positive and negative impact of social capital level each other out. Social capital, strongly correlated with human capital, is only used for the good of some of the wealthier and better educated layers of society. Or, finally, the Polish economy is still modernising and only investments in infrastructure and people pay back. Only when it becomes more service-oriented and knowledge-based will differences in social capital play a crucial role.

Table 6 Regression analyses on economic growth

	PIT growth 2000-2007	PIT 2007	GDP growth 2000-2006	GDP 2006	entre- preneurship
constant	3.607(**)	3.454(**)	1.726(**)	6.349(**)	3.548(**)
PIT 2000	-0.450(*)				
GDP 2000			-0.794(*)		
investment outlays	0.626(**)	0.557(**)	0.864(**)	0.666(**)	0.244(*)
higher education	0.712(**)	0.584(**)	0.051	0.314(**)	0.415(**)
component 1 (associational activity)	-0.185	-0.193(*)	-0.077	0.034	0.120
component 2 (community ties)	-0.047	0.007	0.096	-0.037	-0.280(**)
component 3 (hobby & interest groups)	-0.112	-0.083	-0.094	-0.025	0.000
corrected R ²	0.554	0.865	0.084	0.890	0.694
SER	0.195	0.129	0.205	0.107	0.124

Notes: The table shows the β -coefficients of the regression with a significance lower than 1% (**), 5% (*) or 10% ()

Only when we look at the regression on entrepreneurship level are the results closer to theoretical considerations. Strong community and friendship ties, with the same level of financial investments and education, hinder the setting up of new companies as was claimed by Portes (1998). Associational activity on the other hand has a positive sign in the model, but it is not significant statistically.

One other analysis supporting this hypothesis is seen when the subregions analysed are divided in 3 subsets with various levels of employment in services (Table 7). We notice, that in

service-oriented subregions, higher associational activity has quite a strong positive impact on entrepreneurship (although with a significance level between 5 and 10%). In subregions, where agriculture and industry dominate, on the other hand, the influence of social capital is rather negative.

Table 7 Regression analyses on entrepreneurship levels in subregions with different levels of employment in services

	employment in services		
	low	medium	high
constant	4,658(**)	3,292(**)	3,361(**)
investment outlays		,303()	,460(*)
higher education		,288()	
component 1 (associational activity)	-,572(*)		,403()
component 2 (community ties)		-,428(*)	
component 3 (hobby & interest groups)	-,442(*)		,255()
corrected R ²	,313	,511	,671
SER	,093	,118	,133
N	20	26	20

Notes: The table shows the β -coefficients of the regression only with significance lower than 1% (**), 5% (*) or 10% ()

Conclusions

If we sum up the results of the above analyses, we find that there is no clear empirical evidence to support all of the original hypotheses. Three components of social capital are in accord with theoretical considerations, separating bridging and bonding social capital. The indicator of social trust is included in the same component as associational activity, showing that there is a link between the cultural and structural aspect of social capital.

Resources of social capital vary widely in Polish regions. In some cases, one might say that the historical regions are useful in describing these patterns. But further scrutiny shows that there are also strong differences inside these regions. For example, the Western and Northern Territories in most cases show higher than average levels of formal bridging social capital, proving that this post-migration society is active rather than anomic. However, some of the

subregions there have one of the lowest scores of that component. The stereotypical views of some regions disagrees with the empirical findings, eg. the Greater Poland (Poznań region), part of the Prussian partition, usually associated with high social activity, shows generally low resources of both bridging and bonding capital. It is similar in this respect to areas of Central Poland that were once part of the Russian Empire, which was a showcase for a passive society. Finally, the former Austrian partition is strong in bonding social capital, but scores rather average in associational activity and trust.

With the regard to economic growth, regression analysis suggests that social capital had no influence on the development of Polish regions in the 2000s. It seems that so far only financial and human capital have played a crucial role which distinguishes Poland from better developed Western European countries. The growing importance of services and the knowledge-based economy would probably increase the role of networks in the Polish economy. Only then will we know if the regional differences in social capital resources have an impact on the economic success of some regions.

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Appendix 1

Table 8 Principal component analysis factor values for 66 Polish subregions

code	subregion (NUTS 3)	region (NUTS 2)	associational activity	community ties	hobby & sport groups
0201	jeleniogórski	dolnośląskie	0.59	0.32	1.12
0202	legnicko-głogowski	dolnośląskie	0.20	0.06	-0.62
0203	wałbrzyski	dolnośląskie	-0.37	-0.38	-0.96
0204	wrocławski	dolnośląskie	-0.36	0.07	-0.80
0205	Wrocław	dolnośląskie	2.40	-1.14	-0.25
0406	bydgosko-toruński	kujawsko-pomorskie	0.52	-0.11	0.16
0407	grudziądzki	kujawsko-pomorskie	-0.12	0.06	-0.99
0408	włocławski	kujawsko-pomorskie	-1.14	-0.78	-0.17
0609	białski	lubelskie	-0.58	0.18	3.24
0610	chełmsko-zamojski	lubelskie	0.38	2.20	0.14
0611	lubelski	lubelskie	0.90	0.38	-0.50
0612	puławski	lubelskie	-0.23	1.65	-0.22
0813	gorzowski	lubuskie	0.14	-0.20	0.15
0814	zielonogórski	lubuskie	0.06	-0.68	-0.07
1015	łódzki	łódzkie	-0.89	-0.31	0.80
1016	Łódź	łódzkie	0.71	-0.92	0.07
1017	piotrkowski	łódzkie	-0.78	-0.14	-0.45
1018	sieradzki	łódzkie	-0.51	0.71	1.18
1019	skierniewicki	łódzkie	-0.91	-1.03	0.79
1220	krakowski	małopolskie	-0.29	1.01	-0.39
1221	Kraków	małopolskie	2.46	0.57	2.15
1222	nowosądecki	małopolskie	-0.21	1.67	2.09
1223	oświęcimski	małopolskie	-0.64	0.07	0.09
1224	tarnowski	małopolskie	0.00	1.71	-0.09
1425	ciechanowsko-płocki	mazowieckie	-0.48	-0.59	-0.26
1426	ostrołęcko-siedlecki	mazowieckie	-0.39	1.44	-0.36
1427	radomski	mazowieckie	-0.74	-0.17	-0.72
1428	Warszawa	mazowieckie	3.77	-0.63	-0.59
1429	warszawski wschodni	mazowieckie	-0.70	-0.61	-0.71
1430	warszawski zachodni	mazowieckie	-0.78	-0.66	-0.60
1631	nyski	opolskie	0.03	0.22	-0.81
1632	opolski	opolskie	0.74	0.97	-1.79
1833	krośnieński	podkarpackie	0.27	2.35	0.29

1834	przemyski	podkarpackie	0.83	2.17	-1.13
1835	rzeszowski	podkarpackie	0.54	1.56	1.53
1836	tarnobrzegi	podkarpackie	-0.60	1.51	2.38
2037	białostocki	podlaskie	0.37	-0.47	0.51
2038	łomżyński	podlaskie	-0.24	-0.01	-0.16
2039	suwalski	podlaskie	0.13	0.72	-0.44
2240	gdański	pomorskie	-0.13	0.96	-2.83
2241	słupski	pomorskie	0.76	-0.10	0.94
2242	starogardzki	pomorskie	-0.31	-0.07	-0.91
2243	trójmiejski	pomorskie	1.77	-1.09	-0.30
2444	bielski	śląskie	0.61	0.15	-0.23
2445	bytomski	śląskie	-0.98	0.99	-0.06
2446	częstochowski	śląskie	-0.36	-0.90	0.24
2447	gliwicki	śląskie	-0.76	-0.57	-1.46
2448	katowicki	śląskie	-0.30	-0.90	-0.18
2449	rybnicki	śląskie	-0.98	-0.16	-0.21
2450	sosnowiecki	śląskie	-2.05	-2.40	0.34
2451	tyski	śląskie	-1.25	0.11	-0.32
2652	kielecki	świętokrzyskie	-0.34	-0.36	-0.93
2653	sandomiersko-jędrzejowski	świętokrzyskie	-0.08	0.10	-1.47
2854	elbląski	świętokrzyskie	0.43	-0.90	-0.78
2855	ełcki	świętokrzyskie	-0.52	-0.66	1.04
2856	olsztyński	świętokrzyskie	0.82	-1.29	0.30
3057	kaliski	wielkopolskie	-0.58	-0.58	0.00
3058	koniński	wielkopolskie	-0.68	-0.10	1.29
3059	leszczyński	wielkopolskie	-0.42	0.11	0.33
3060	piłski	wielkopolskie	0.36	1.39	-1.05
3061	poznański	wielkopolskie	-1.09	-0.49	-0.07
3062	Poznań	wielkopolskie	3.06	-1.59	0.30
3263	koszaliński	zachodniopomorskie	-0.03	-1.54	1.29
3264	stargardzki	zachodniopomorskie	-1.05	-0.51	0.16
3265	Szczecin	zachodniopomorskie	0.73	-1.57	0.55
3266	szczeciński	zachodniopomorskie	-0.69	-0.78	0.43