Does social capital determine health? Evidence from eight transition countries

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2006

Does social capital determine health? Evidence from eight transition countries[ξ]

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15 November, 2006

Abstract

This paper starts from an empirical assessment of different dimensions of social capital in the transition countries of Central and Eastern Europe (CEE) and the Commonwealth of Independent States (CIS). The level of social capital is lower in CEE-CIS countries compared to other countries in Europe and beyond. We then use a unique data source to carefully investigate the impact of social capital on individual self-reported health for eight countries from the Commonwealth of Independent States (Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Ukraine). We rely on three indicators for social capital – individual degree of trust, participation in local organisations, social isolation – and employ alternative procedures to consistently estimate the impact of social capital on health. We attempt to circumvent the endogeneity problems by using instrumental variable estimates. Our results show that, in the overall sample comprising all eight countries, the individual degree of trust is positively and significantly correlated with health, either in pooling estimation or when we rely on IV estimators with community fixed effects. Similarly, social isolation is negatively and significantly associated with health, irrespective of the procedure of estimation. On the other hand, the effect of being member of a Putnamesque organisation is more ambiguous and usually not significantly related to health. Finally, country-estimates suggest that the impact of social capital on health varies across the eight countries. We argue that the positive effect of membership on health is conditional on the quality of the political institutions and civil liberties, while trust and social isolation seem to influence health independently of those institutional factors.

[ξ] Views expressed in this paper are exclusively those of the authors and do not necessarily reflect the official views of the organisations they are affiliated with. Funding for the contributions of Béatrice d'Hombres (while she was still with the University of Padua) and Lorenzo Rocco from the WHO European Office for Investment for Health and Development, Venice, is gratefully acknowledged. We are very grateful to Richard Scheffler, Tim Brown and Franco Sassi as well as participants at the European Conference on Health Economics in Budapest, UNU-WIDER Conference on Advancing Health Equity in Helsinki, Annual Conference of the Italian Health Economics Association in Venice and to the Social Capital Global Network Workshop, at University of California at Berkeley for helpful comments and discussions.

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1. Introduction

Recent evidence suggests that social approaches to the organisation and delivery of public health may have considerable potential for health improvement, particularly for the most disadvantaged groups in society. This paper contributes to this young but fast growing field[1] by looking at the role of social capital in health in Central and Eastern Europe (CEE) and the Commonwealth of Independent States (CIS). On the basis of the evidence presented here, there appears to be a) significant scope for improving social capital in this part of the world, and b) there is much to suggest that social capital does matter for health in a causal sense.

Social capital, defined as "the institutions, relationships, attitudes, and values that govern interactions among people and contribute to economic and social development" (Grootaert and van Bastelaer 2001) is increasingly recognised as having a positive effect on individual health (Coleman, 1990, Putnam, Leonardi et al. 1993; Wilkinson 1996). A variety of mechanisms has been proposed to explain the observed relationship between social capital and health. They include formal networks, in which membership is a means to access social and health care, as well as informal networks, in which an individual can draw upon a collective body of knowledge that will facilitate access to scarce resources, including information that will enhance the ability to make healthy choices.

What is known about the level and pattern of social capital in transition countries?

The transition from a centrally planned system to a market economy, accompanied by a transition from an authoritarian to a democratic regime in CEE-CIS, has been a process of large-scale institutional change. Both formal and informal institutions needed to adapt to the requirements of democracy and of market transactions. The resulting uncertainty placed a heavy load on social arrangements and, hence, on social capital at all the levels described earlier. In order to stabilise expectations and to make behaviour of actual or potential counterparts more predictable, other than formal mechanisms had to be developed (Raiser et al 2001, Wallace 1998).[2]

In many countries of the region, especially in the former Soviet countries (bar the Baltic states) structural social capital at the macro level, i.e., the quality of governance, has not evolved fast enough, as many of the former Soviet countries appear to be lagging behind what other countries at similar levels of economic development have achieved in terms of a number of governance indicators

[1] For a collection of papers on the importance of social capital for a large set of development outcomes, see the World Bank's Social Capital website at http://www1.worldbank.org/prem/poverty/scapital/ (accessed 19/09/2006)

[2] For a collection of studies on the role of social capital in transition: http://www.socialcapitalgateway.org/NV-eng-transitionmarket.htm (accessed 20/09/2006).

(Gros/Suhrcke 2000).

A similarly pessimistic evaluation might apply to the degree of civic engagement among individuals and groups within societies. The absence of a fully developed, vibrant civil society in communist and post-communist countries has been widely lamented by leading Eastern European dissidents (e.g. Vaclav Havel) and Western European social scientists. It has been argued that this deficit would pose a major obstacle on the path of political and economic transition (Smolar 1996, Rose 1993).

This paper contributes to the debate from an empirical perspective, first, by briefly assessing the level and recent trend in selected social capital indicators and, second, by examining whether social capital has impacted upon health in eight CIS countries for which data has been available. For the former purpose we use data from the World Value Survey (WVS). Subsequently, in the main part of this paper we investigate the impact of social capital on individual self-reported health for a sample of eight countries from the Commonwealth of Independent States, using the Living conditions, Lifestyles and Health (LLH) survey. This survey offers large possibilities to tackle some of the econometric challenges involved. For the LLH analysis we rely on three indicators for social capital – individual degree of trust, participation in local organisations, social isolation – and employ alternative procedures to consistently estimate the impact of social capital on health. Memberships in organisations, social isolation or trustful behaviour are choice variables implying that social capital indicators are by definition endogenously determined and depend on individual specificities. We tackle this endogeneity problem using instrumental variable estimates. The wealth of the data set allows us to distinguish the social capital impact from other community effects (such as health care supply) that are simultaneously correlated with health and measures of social capital. Our results show that, in the comprehensive sample of all eight countries, the individual degree of trust is positively and significantly correlated with health, both in pooling estimations or in IV estimators with community fixed effects. Similarly, social isolation is negatively and significantly associated with health, irrespective of the procedure of estimation. On the other hand, the effect of being member of a Putnamesque organization[3] on self-reported health is more puzzling and usually not significantly related to health. Finally, country-estimates suggest that the impact of social capital on health is comparable across the eight countries, excepting for membership. We argue that the positive effect of membership on health is conditional on the quality of the political institutions and civil liberties, while trust and social isolation seem to influence health independently of

[3] In line with some of the social capital literature (e.g. Knack and Keefer 1997) we distinguish between Putnamesque and Olsonian organisations. The former, such as educational, sport and art clubs, religious and charitable organizations, and youth groups, allow their members to pursue common goals without imposing negative externalities on the rest of the society. The latter, including political parties and movements, trade unions, professional associations, and various interest groups, tend to engage in collective action that may reconfigure redistribution systems in their favour at the expense of the rest of the society. Therefore, in contrast to Putnamesque groups, which are thought to play a positive role in the society, the impact of Olsonian groups may be distinctly negative (Fidrmuc and Gërxhani, 2005).

those institutional factors.

The paper is structured as follows. Section 2 reports empirical evidence on the level and trends in social capital in the transition countries of CEE-CIS, using the World Value Survey data. The core part of this paper – section 3 – presents the in-depth analysis of the causal impact of social capital on health in eight CIS countries, based on data from the LLH survey. Section 4 concludes by summarising the main results.

2. Social Capital in Countries in Transition

Before examining the impact of social capital on health using region-specific data, this section presents available quantitative information to develop some idea of where the CEE-CIS countries are in terms of social capital, defined in different ways. Using the fourth round of the World Value Survey (WVS) (1999-2000) allow us to develop an idea about the level and evolution of social capital in the broader global and European picture.[4] Table 1 reports country and regional means for several social capital indicators related to the degree of (i) trust, (ii) participation in local organization, (iii) confidence in the press, labour unions, police and parliament.

[4] While very useful for the assessment of social capital per se, the WVS/EVS is of limited use for any more substantive analysis of the relationship between social capital and health. This is why in the analysis further below we have used a different survey, at the cost of a limited cross-country coverage.

Table 1: Summary statistics: social capital indicators, 2000

				Confidence in		
	Trust	Membership	Press	Labour Union	Police	Parliament
Albania	24	56	35	33	65	45
Bulgaria	27	12	26	15	46	28
Bosnia and Herzegovina	16	26	25	23	64	20
Belarus	42	8	41	28	40	37
Czech Republic	25	48	37	22	33	13
Estonia	23	25	42	33	34	27
Croatia	21	32	16	26	46	21
Hungary	22	21	30	23	43	33
Lithuania	26	14	75	38	24	11
Latvia	17	20	45	32	40	27
Moldova	15	30	43	33	34	35
Macedonia	14	37	20	13	51	7
Poland	18	13	48	34	56	34
Romania	10	11	38	27	45	19
Russia	24	9	30	31	30	20
Slovak Republic	16	49	49	43	44	43
Slovenia	22	36	61	31	50	25
Ukraine	27	12	47	38	32	27
CEE-CIS	22	25	39	29	43	26
Western Europe	37	48	39	40	70	43
America	24	55	40	34	50	30
Africa	18	59	59	51	60	53
Asia	33	34	62	50	57	57
	Is social capital lower in CEE-CIS than in other countries with comparable per capita income level?					
Social capital differences* (%)	-24.09	-48.35	-24.24	-34.93	-27.10	-44.66

Note: The trust dummy takes the value 1 if the respondent considers that most people can be trusted and 0 if the respondent says that he needs to be very careful in dealing with people. The membership dummy takes the value 1 if the respondent belongs to one organization related to church, cultural activities, human rights, conservation, environment, animal rights, youth work, sports, women's group, peace movement, 0 otherwise. We also use other social capital indicators related to the degree of confidence in the national (i) press, (ii) labour unions, (iii) police and (iv) parliament. These indicators takes the value 1 if the respondent has "a great deal " or "a lot" of confidence, 0 otherwise ("not very much" or "not at all" confidence) in the organization. African countries are Algeria, South Africa, Zimbabwe, Uganda, Tanzania, Egypt, Arab Rep., Morocco, Nigeria. Occidental Europe countries are Luxembourg, Austria, Belgium, Germany, Denmark, Finland, France, Spain, United Kingdom, Greece, Ireland, Italy, Malta, Netherlands, Portugal, Sweden, Iceland, American countries are Canada, Chile, United States, Venezuela, Puerto Rico, Peru, Mexico Asian countries are Bangladesh, China, Indonesia, Indian, Iran, Islamic Rep., Israel, Jordan, Japan, Korea, Rep., Pakistan, Philippines, Singapore, Turkey

*The number corresponds to the size of the coefficient of a dummy variable in OLS regressions of each of the social capital indicators on the 2000 GNI per capita in PPP (from World Bank WDI) a constant and a dummy equal to one if the country belongs to the countries in transition, and zero otherwise. ** These countries are also in the LLH dataset used in the following analysis.

Source: European and World Values Surveys, 1999-2000

On average, the selected social capital indicators are considerably lower in countries in transition than for the rest of the sample. The mean degree of participation in local organisations is equal to 25% in countries in transition while it reaches 48% in Western Europe, 55% in America, 59% in Africa and 34% in Asia. The mean degree of trust is equal to 22% for the countries in transition, and respectively attains 37%, 24% and 33% in America, Africa and Asia. However, the lowest degree of trust is found in Africa with, on average, only 18% of individuals reporting that most people can be trusted. Similar patterns are observed for the other social capital indicators that were considered. The mean degree of confidence in the press, labour union, police and parliament is, on average, lower in the countries in transition than in the rest of the world.

The regional averages hide substantial differences within each region. In the CEE-CIS region, for instance, the degree of trust varies between 10% in Romania and 42% in Belarus. Similarly, the national average in participation in local organizations ranges from 8% in Belarus to 49% in the Slovak Republic (48.8%). Note that country heterogeneity in the degree of confidence in labour union, police and parliament is likely to be strongly related to the quality of institution and political communication, the fairness and the policies adopted by the current government. Hence, the latter indicators embody a time-contingent fluctuating component, and they may therefore not adequately reflect the actual stock of social capital of the country in question.

Table 1 also reports the level of social capital differences between countries in transition and “other” countries with similar per capita incomes. Results confirm that conditional on per capita GNI, the level of social capital is comparatively low in the transition countries. The degree of trust and the participation in local organizations are, on average, 24% and 48.3% lower in countries in transition than in other countries with comparable per capita income level.

Taken together, the social capital indicators considered here are systematically lower in the CEE-CIS than in most other places. At least in part this will be a result of the deterioration in social capital that seemed to have occurred in the second half of the 1990s.

3. Social capital and health in 8 CIS countries

The relationship between social capital and health has been documented since 1901, when Emile Durkheim identified a relationship between suicide rates and the level of social integration. Since then research has continued to demonstrate that higher social capital and social cohesion are associated with improved health conditions. Recent research shows that the lower the trust among citizens, the higher the average mortality rate (Baum 1997, Kawachi et al. 2004).

It has been argued that social capital can impact health through various channels:[5]
From a macro level of analysis, social capital may facilitate health care delivery. The better the social network among and between each group of health care providers (i.e., the government, the market and the family/community), the more efficiently and effectively health care could be delivered. Community and volunteer organizations play a central role in providing services to patients in both developing and industrialized nations.

Social capital may also support prevention efforts. Prevention can only be effective, if it is supported by formal and informal networks through which people receive information and medicine.
From a meso and micro level of analysis, social capital can improve health through enforcing or changing social norms. A more cohesive society, with a strong feeling of group identity tends to be attentive to common wellbeing[6]: this implies that environment-damaging behaviours (pollution, unhealthy waste disposal) are avoided and entrepreneurs are more likely to take care of a healthy workplace and work environment in their firms. Moreover, smoking, sanitation, and risky sexual practices are behaviours, which often negatively impact public health: all such behaviours are less likely within a socially cohesive society. Finally, shared values and norms can also have an impact on the level of community violence and, therefore, on the frequency of injuries and violent deaths.

From a very micro/individual perspective, intensive social interactions offer a privileged channel for information transmission and sharing of past experiences on health facilities, doctors, drugs and diseases, thus reducing the cost of health information. Moreover, trust by facilitating cooperation, gives access to support, aid and care services provided by informal institutions based on reciprocity, which provide insurance in case of health shocks.

[5] For an extensive study on the definition, measurement and role of social capital in health, see Morgan/Swann (2004).
[6] Sometimes, higher social capital has been associated with a higher degree of altruism among individuals: this allows to take into account the welfare of other members of the social group of reference in individual choices (see Durlauf and Fafchamps (2004) for an extensive discussion).

A fast growing number of studies have empirically explored the relationship between different dimensions of social capital and health. Few quantitative studies have explored the issue of social capital in a transition country context[7] and even fewer have looked at the specific relationship between social capital and health in CEE-CIS.

3.1 Data and methodology

Using the Living conditions, Lifestyles and Health (LLH) survey, this section investigates the impact of social capital on individual self-reported health for a sample of eight former Soviet countries - Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Ukraine.[8]

As discussed above, social capital can be defined from many perspectives and there is no consensus in the literature on how social capital ought to be measured. Social capital can be a community-, a social group- or an individual asset; it can be informal or mediated by formal institutions; it can be inclusive or exclusive. Each dimension of social capital might have a specific impact of health. For the present purpose – somewhat constraint by the available data – we rely on the three following indicators commonly used in the literature:

1. First, we use an indicator for the individual degree of trust in other people. Formally, *trust* is a dichotomous variable taking on the value 1, if individuals agree or quite agree with the opinion that a majority of people can be trusted. The sense of fairness and respect, the conditions favouring cooperative and trusting relationships partly depend on the legal system as well as on some specific economic and social characteristics of the community such as the degree of income inequality or the social cohesion (shared language, shared norms and interests, etc).
2. Next, we use an indicator of individual participation in local organisations denoted by *membership*. We focus on *"Putnamesque"* networks involving "horizontal egalitarian relationship" rather than on networks based on "vertical hierarchical relationships". The variable *membership* takes on the value 1, if individuals are members of one of the following organisations: church, sport, art, music, neighbourhood,

[7] See World Bank (2002) for selected qualitative assessments of social capital in former Soviet countries. See Kuchnast/Dudwick (2004) for a qualitative analysis of social capital in Kyrgyzstan.

[8] The national sample size in the LLH was usually around 2000, but ca. 4000 in the Russian Federation and 2500 in Ukraine. Samples were selected using multi-stage random sampling with stratification by region and rural/urban settlement type. Within each primary sampling unit (about 50-200 per country), households were selected by random sampling from a household list (Armenia) or by standardised random route procedures (other countries). One person was chosen from each selected household (nearest coming or last birthday). The questionnaire collects 125 questions covering demographic and socio-economic characteristics, living conditions, lifestyle (including smoking), use of health services, health status, and health beliefs. Interviews were carried our in all countries throughout fall 2001. Quality control procedures included re-interviews to assess the work of both the interviewers and the interviewers' supervisors. Response rates varied between 71% and 88% among countries.

youth, women, charitable organisations or any other voluntary organisation, while it takes on the value 0 otherwise.[9] As pointed out, among others, by Szreter and Woolcock (2004), social relationships between individuals sharing the same social identity are more likely to be associated with well-being while relationships between individuals situated at different levels of the social scale are more correlated with reciprocal respect but less likely to involve reciprocal trust[10]. Further, *membership* captures the collective dimension of social capital. Formal networks are likely to facilitate transfer of health information or to limit deviant health behaviours.

3. Finally, we use an indicator for social isolation. This variable takes on the value one if the individual feels alone, and zero otherwise[11]. Numerous authors (Burner and Marmot (1999), cited by Pevalin and Rose, 2003) have shown that social isolation is associated with psychological stress with negative consequences on psychological and physical health (depression, heart disease, etc). We also refer to the idea that informal networks such as friendship, neighbour and work related ties may provide support and be a way to insure "health consumption" against major negative income shocks.

In what follows we describe and discuss the empirical methodology applied in some more detail.

Our empirical model of health can be represented by the following estimation equation:

$$H_{ij} = \beta_0 + C_j\beta_1 + X_{ij}\beta_2 + SC_{ij}\gamma + \varepsilon_{ij}$$

where the subscript i is for the individual and the subscript *j* for the community where the individual lives, C_j is a vector of explanatory variables at community level, X_{ij} is vector of explanatory variables at individual level, SC_{ij} are the social capital indicators (at individual level), ε_{ij} is the disturbance term and H_{ij} is an health indicator taking the value one if individuals self-report in good health, zero otherwise.

For any individual *i*, community is defined as the set of individuals living in the same the town or village of *i*. Only for Armenia we consider the region, as our data do not provide information about the precise place of residence.

Standard OLS estimates of the coefficients associated with SC_{ij} yield unbiased results if

[9] In other words, the variable *membership* takes on the value 0 if individuals are not involved in any organisations or if they are members of political or professional associations.

[10] See Szreter and Woolcock (2004) for more information about the distinction between "bonding" versus "bridging" social capital.

[11] Given how the indicator is constructed, we expect that the coefficient associated with the social support dummy be negative.

$E(SC_{ij}\varepsilon_{ij})=0$ holds. Unfortunately, as extensively reviewed by Durlauf and Fafchamp (2004), there are mainly three reasons why the orthogonality condition could fail:

First, it is usually difficult to distinguish the social capital effect from other local effects possibly influencing health. Social capital may vary between locations and depend on social and economic characteristics of the community. The "local opportunity structures", ranging from health infrastructures to the level of social organisation, are likely to be each other positively correlated.

It implies that we have to carefully elicit the specific impact of social capital, after having taken into account local features, individual and household characteristics related to individual health. To that end, we include in the health equation a set of individual, household and community control variables. Individual variables are age, dummy variables for the level of education, the employment status and gender. Household variables are the size of the household, the number of individuals working within a common household, the number of children younger than 16, a self-evaluation of the material and economic conditions of the household, and of the water quality to which the household has access. In addition, we include two variables, defined at the household level, to control for health supply: the distance from the nearest hospital and the distance from the nearest doctor. Finally, we also include, as community variables, the size of the place where the individual lives, the surfacing of the road leading to this place (asphalt or not) and dummy variables for the administrative classification of the place (capital of the state, regional capital, other city, small town, and village).

Moreover, in order to be assured that our results (based on probit or linear probability models) are not driven by unobservable community effects, we compare the results when we use community fixed effects and community random effects. If the random model is not rejected, we conclude that the social capital variables are not capturing the impact of other local effects.

Second, trust, membership in organisations, and social support are individual choices, which depend on individual specific and unobservable preferences. Hence, they are by definition endogenously determined. Unobservable individual effects such as time preferences, personal interests, and individuals' exogenous shocks are correlated both with self-reported health and with social capital indicators i.e. $E(SC_{ij}\ \varepsilon_{ij})=0$.

Third, there is a reverse causality concern since health could have an impact on social participation and individual behaviours. Individuals in poor health might be more socially isolated or forced to decline on membership if they are hampered in daily activities. The perception of others, the degree of trust may also be a function of health.

To address the last two problems, we turn to IV estimates. The validity of the IV results will depend on the admissibility the exclusion restrictions. In other words, we need to identify variables that satisfy the two necessary conditions – i.e. simultaneously strongly correlated with social capital ("relevance" condition) and orthogonal to the disturbance term of the health equation (orthogonality condition) – for instrument validity. As described below, we mainly rely on community based instruments.

Alesina and la Ferrara (2000, 2002) point out that more egalitarian societies tend to have a higher level of social capital. Their results indicate, for instance, that in the US income inequalities and racial heterogeneity have a negative impact on membership and trust – two of the social capital indicators we also employ in our analysis. One interpretation of this finding is that individuals distrust those that are different from themselves, and contacts with 'different' individuals (in terms of the level of income, education or religious beliefs) are more likely in heterogeneous society. Based on Alesina and la Ferrara's results, we define the heterogeneity of the communities in terms of the religious beliefs, the level of education and the economic situation and use these three indicators as instruments for social capital. More specifically, we rely on Herfindhal indexes to measure the degree of heterogeneity of each community. Intuitively, a Herfindahl index represents the probability that two randomly selected persons in a community are part of the same group. Hence, the variable used to measure the diversity within each community is simply equal to one minus the Herfindahl index. In addition, we also use the average level of social capital within the community as instrumental variable. In order to avoid spurious correlations between the dependant variable and the instruments, these instrumental variables are calculated for each individual as the mean over all other individuals in the community. The idea is that the more people trust others and the more they feel that others also trust them, the more likely cooperative and reciprocal behaviours arise, reinforcing the trust in others. In the same way, the possibility to be member of some organization depends on the demand for such organization. In other words, the presence of networks and the mean degree of trust at the community level will determine in part the degree of individual social capital.

Given this last argument and Alesina and la Ferrara's findings, we are confident about the "relevance" of these instruments. Satisfying the "orthogonality" condition is more challenging as we cannot be sure that the instruments defined at the community level will not capture the impact of unobservable community effects. However, given that we control for many variables that could possibly be correlated with both social capital and health – in particular health infrastructures – we believe that the presumption of orthogonality is reasonable. Actually two clues support the view that our model controls for much of the community effects: on the one hand, as the reader

shall note below, community fixed effects and random effects estimates do not differ much, as we mentioned earlier. On the other hand, IV estimates with and without community fixed effects have clearly comparable magnitudes. Hence in both cases, the introduction of community fixed effects do not alter the size of the impact of social capital variables on individual health: this supports our claim that the model is correctly specified. Furthermore, we are assured that our set of community-based instruments is orthogonal to individual unobservable effects (responsible for the endogeneity bias) and that the individual level of health will not impact on these variables (reverse causality bias) once we control for the availability of health infrastructures and the other community level variables mentioned above. Ultimately, we will use classical over identification tests as an additional check of the validity of our set of instruments.

In addition to the instruments inspired to the Alesina and La Ferrara (2002) paper, we also use as instrument a dummy variable taking the value of 1, if the individual has been always living in the same place, as well as a dummy taking the value on 1, if the individual belongs to a minority group and zero otherwise. On one hand, trustworthiness, social support and participation in organizations should be positively correlated with the time of residence in the same community. On the other hand, we see no reasons for these variables should affect directly individual health once we control for the set of explanatory variables presented above.

3.2 Summary statistics

Table 2 reports relevant summary statistics separately for each of the eight countries. The first variable measures the percentage of individuals that report to be in good, or quite good health. There are substantial cross-country differences in self-reported health. The prevalence of good (or quite good) self-rated health is the highest in Kazakhstan and Kyrgyzstan (respectively 72.54% and 82.54), and the lowest in Ukraine (46.10). There is some correlation of these figures to a more 'objective' health indicator also reported in the bottom line of Table 2, i.e., life expectancy at birth. Georgia, for instance, shows a higher percentage of people self-assessing their health as good and quite good, compared to Ukraine, and the Georgian population also has a much higher life expectancy. However, not surprisingly, the correlation between the two health proxies is far from perfect: Kyrgyzstan has a higher percentage of self-assessed healthy people than Georgia, but a lower life expectancy. Rather than a contradiction to the survey based health estimates, it is a reflection of morbidity never being perfectly correlated with mortality – life expectancy being a mortality-based indicator. Furthermore, there are serious doubts about the validity of official mortality indicators, in particular in some of the Caucasus and Central Asian countries (Aleshina and Redmond, 2005). Our self-reported health indicators may therefore be a more reliable health proxy than officially reported mortality rates. It is, however, beyond the scope of this paper to explore these discrepancies in greater detail.

Variations in health facilities should be a main determinant of cross-variations in health. Indeed, for instance in Kyrgyzstan, 92% of individuals report to have access to water of good or quite good quality while this figure only reaches 39% in Ukraine. However, there are no obvious patterns between the prevalence of good (or quite good) self-rated health and the distance to the nearest hospital (or to the nearest doctor) or the surfacing of the road leading to the place. It is important to note, however, that the country averages might hide huge within country variations.
Cross-country variations in the individual and household characteristics could in part explain the health heterogeneity across countries. On one hand, respondents in Kazakhstan and Kyrgyzstan are younger, consume less alcohol, have a lower Body Mass Index (weight divided by height squared) than those in Ukraine. The self-reported financial situation is also better in Kazakhstan, Kyrgyzstan (and also in Belarus) than in the other countries. On the other hand, the proportion of individuals graduated from third education in Kazakhstan and Kyrgyzstan is low compared to what is observed, for instance, in Georgia.

Table 2: Summary Statistics by country

	Armenia	Belarus	Georgia	Kazak.	Kyrgyz.	Moldova	Russia	Ukraine
Number of observations	1,892	1,812	1,684	1,825	1,787	1,782	3,614	2,052
Health								
Self reported good health (%)[1]	57.24	58.27	66.68	72.54	82.54	55.55	61.53	46.39
Individual and household characteristics								
Age : mean	45.95	46.15	47.04	41.51	39.98	46.75	45.80	49.08
Graduated from tertiary education (%)	20.90	16.99	33.84	20.82	18.63	15.09	21.00	20.02
Household size: mean	3.05	2.77	4.21	3.51	3.59	2.94	2.66	2.78
Financial situation (%)[2]	43.31	71.45	40.72	75.54	79.41	59.35	63.89	46.10
Health infrastructures and local characteristics								
Distance to the nearest hospital (in km)	1.90	4.33	4.51	9.75	3.19	8.86	5.37	2.44
Distance to the nearest doctor (in km)	2.55	1.57	1.94	1.91	1.61	1.36	1.55	1.91
Access to water of quality [3]	0.80	0.59	0.77	0.63	0.92	0.75	0.52	0.39
Road leading to the place in Asphalt (%)	87.43	98.03	86.4	100	87.5	94.4	95.9	99.9
Social capital (%)								
Trust	45.24	51.49	37.23	57.53	71.90	29.34	57.19	48.97
Membership	3.11	7.17	10.68	5.75	6.93	9.87	6.77	5.65
Social Isolation[4]	35.26	23.93	12.27	23.24	23.83	27.27	24.15	22.36
Community heterogeneity								
(1-Herfinhdhal index)								
Education	0.71	0.68	0.61	0.68	0.65	0.71	0.71	0.67
Economic situation	0.61	0.49	0.52	0.52	0.58	0.57	0.56	0.61
Religious beliefs	0.17	0.29	0.10	0.51	0.46	0.15	0.41	0.40

Source : Living Conditions, Lifestyle and Health dataset, 2001; Life expectancy at birth is from WHO Health for All Database, version January 2006.

[1] Percentage of individuals that reports to be in good, or quite good health

[2] Percentage of individuals that reports to be in very good, good or on average financial situation

[3] Percentage of individuals that reports that the quality of the water in their water pope is good or quite good.

[4] Percentage of individuals that reports to be able to rely on someone outside the household in case of financial difficulties.

3.3 Empirical results

Table 4 presents estimates of the health equation (1). Column 1 reports the probit estimate while the last 3 columns present the linear specifications. In columns 2 and 3, we respectively present the pooling and community-fixed effects estimates and the column 4 displays the community-random effects estimate. For the probit estimate, we report the marginal effects at the average values of the independent variables in the sample.

Before discussing the impact of social capital, we briefly discuss the effect of individual, household and community variables on self-reported health. With the results using probit and linear specifications being almost identical, we base this discussion on the results displayed in column 1 of Table 4. As regards the individual characteristics, age is negatively correlated with health, while being a female decreases the probability to report good/very good health by 16%. Education is positively correlated with self-reported health: the individuals having attained a tertiary education are 5.1% more likely to self-report to be in a good health relatively to the excluded category, i.e. the individuals graduated from secondary school.[12] Moreover, the wealth indicators, such as the two dummies related to self-reported economic and material conditions of the household, are strongly correlated with health. The working status of the individuals and the number of individuals working within the same household are also positively and significantly correlated with health. Working increases the probability of being in a good health of 2.7%.

The estimated effect of access to health facilities is more puzzling. On one hand – and as expected – access to good quality water is positively and strongly significantly associated with self-reported health. On the other hand, the coefficients on the distance from the household dwelling to the nearest doctor and hospital are not significantly different from zero. This could imply that, *once we control for water quality and wealth*, the *access* to health facilities does not "matter" for health. However, this result could also be a statistical artefact as these two variables exhibit low variation.

Finally note that the community characteristics - size of the place and the two dummies for the administrative classification of the place of residence are jointly significantly different from zero.

Our main interest lying in the impact of social capital on self-reported health, we turn to the analysis of the coefficient associated with trust, membership and social isolation. We now focus on the four estimates displayed in Table 4. In line with our hypothesis, the coefficients associated with trust and social isolation are both strongly different from zero, with the expected sign. Individuals trusting people are 7.8% (pooling

[12] Similarly, we observe that the individuals with less than a secondary school degree are 9 percent more likely to be in a bad self-reported health comparing to the excluded category.

estimator) to 6.7% (random effects estimator) more likely to report good health. The coefficient associated with trust is almost identical whatever the procedure of estimation. Trusting relationships is likely to facilitate the transfer of health-related information and to be related with safer community and less psychological stress. Similarly, socially isolated individuals are 10.5 percent less likely to consider themselves in good health, and this result holds whether we use the community-random effects estimator or the community-fixed estimator. This percentage reaches 11.5 percent in pooling. Socially isolated people may be less able to "insure" health against negative income shocks when insurance markets are imperfect and less able to access network information and moral support, missing in so doing the positive effect, in particular, on psychological health.

Finally, the coefficient associated with membership is positive but not significantly different from zero, whatever the procedure of estimation. However, several problems in the construction of the membership variable could explain the absence of a significant effect of membership on health. First, the membership variable takes the value one if individuals are member of one or several "Putnamesque" organizations, 0 otherwise. In other words, our indicator can not capture the potential differentiated effect of being member of one or several organizations. We have therefore tried to re-estimate the health equation using, as alternative measure for membership, a counting variable reporting number of "Putnamesque" organisations in which the individual is involved.

Second, our indicator for membership takes the value zero even if individuals are (i) part of "Olsonian" organizations (professional organisation, political parties, etc) or (ii) not involved in any type of organizations. We did this distinction as it is well-known that "Olsonian" organisations may generate negative externalities on individuals not involved in such organizations. At such, it is possible that the positive effect of being member of "Putnamesque" organizations is cancelled by the negative effects of being not involved in "Olsonian" organizations (if the individuals are not simultaneously involved in both types of organizations). We have therefore tested the sensitivity of our results using, as alternative measure of membership, a variable which is equal to one if an individual belongs to an organization, irrespective of its nature, zero otherwise.
Results are not reported (available upon request) but it turns out that the coefficient associated with membership is not significantly different from zero, whatever the membership indicator on which we rely.

In summary, our findings confirm the evidence of a positive effect of social capital on self-reported health: the coefficients associated with trust and social support are positive and significant and, even if membership is not significantly correlated with self-reported health, the joint tests of the significance of three indicator for social capital strongly rejects the null hypothesis with a *p-value*=0.000, irrespective of the procedure of estimation.
However, we have to be careful before giving a causal interpretation to these results given the three statistical problems, discussed in the previous section, which could bias the results. We therefore turn now to IV estimates.

Table 4: Self-reported health and social capital, least-squares estimates

	Probit	Linear Model		
		Pooling	Fixed effects	Random effects
Social capital measures				
Trust	0.078	0.067	0.068	0.067
	(7.99)**	(7.96)**	(7.48)**	(7.70)**
Membership	0.002	0.002	-0.009	-0.003
	(0.12)	(0.11)	(0.46)	(0.16)
Social Support	-0.115	-0.106	-0.105	-0.106
	(9.87)**	(10.52)**	(10.32)**	(10.52)**
Joint signif. of SC variables, [*p-value*]	[0.00]	[0.00]	[0.00]	[0.00]
Individual variables				
Age	-0.009	-0.008	-0.008	-0.008
	(21.73)**	(22.95)**	(23.60)**	(23.38)**
Sex dummy (1=female)	-0.116	-0.101	-0.094	-0.098
	(11.90)**	(11.90)**	(10.99)**	(11.55)**
Primary education	-0.089	-0.090	-0.078	-0.084
	(5.42)**	(6.30)**	(5.33)**	(5.84)**
Tertiary education	0.051	0.044	0.045	0.045
	(4.64)**	(4.65)**	(4.59)**	(4.69)**
Work status (1=employed)	0.027	0.029	0.030	0.029
	(2.35)*	(2.89)**	(2.90)**	(2.88)**
Household variables				
1 – Households conditions				
Economic	0.142	0.133	0.129	0.131
	(13.37)**	(14.21)**	(13.27)**	(13.91)**
Material	0.091	0.068	0.071	0.069
	(6.38)**	(5.71)**	(5.72)**	(5.75)**
Household size	-0.000	0.001	-0.001	0.000
	(0.04)	(0.35)	(0.19)	(0.09)
Number of working members	0.017	0.015	0.017	0.016
	(2.68)**	(2.80)**	(2.98)**	(2.93)**
2 – Health care facilities				
Distance from the Doctor	0.004	0.004	0.002	0.003
	(1.81)	(1.88)	(0.53)	(1.50)
Distance from the Hospital	-0.001	-0.001	-0.002	-0.001
	(1.35)	(1.28)	(0.64)	(1.15)
Water quality	0.072	0.062	0.055	0.061
	(6.81)**	(6.78)**	(5.37)**	(6.36)**
Road (1= asphalt)	-0.051	-0.039	-0.064	-0.042
	(2.17)*	(1.94)	(1.78)	(1.78)
Community variables				
Population size	0.000	0.000		0.000
	(0.48)	(0.49)		(0.36)
Dummies for admin. classif of the Place				
Village dummy	0.000	-0.000		0.001
	(0.02)	(0.01)		(0.07)
Capital dummy	-0.040	-0.032		-0.039
	(2.23)*	(2.14)*		(1.23)
Country dummies	Yes	Yes	Yes	Yes
Observations	11283	11283	11283	11283
R-squared	0.15	0.19	0.17	0.18

Absolute value of the t-statistic below coefficients, *significant at 5% ; ** significant at 1%
Source : Living Conditions, Lifestyle and Health dataset, 2001.

Table 5 presents IV results. In the interest of conciseness, we only present in the upper part of table 5 the coefficients associated with trust, membership and social support. To ease comparisons, we report in column 1 the pooling estimate (it corresponds to the results presented in column 2, table 4), while the column 2 presents IV estimate and the column 3 reports the IV estimator with community fixed effects.

Recall that we use as instruments (i) three measures of the heterogeneity of the communities in terms of the religious beliefs, the level of education and the economic situation, (ii) the average level of social capital within the community (for the three social capital indicators) and (iii) two dummies indicating whether the individual belongs to a minority and whether the individual has always been living in the same community.
Note that it is still possible to identify the impact of social capital on health when we employ the IV estimator with community-fixed-effects. This is because we use two individual-based instruments and the three instruments corresponding to the community average level of social capital are calculated for each individual as the mean *over all other individuals* in the community. However, the IV with community-fixed estimate is statistically costly: the identification of the coefficients associated with social capital relies on much lower variation in the instruments. Yet, we are assured to capture any confounding community-invariant characteristics which might be masked by the social capital indicators.

The lower part of table 5 reports diagnostic tests of the validity of our IVs. The Hansen test of the overidentifying restrictions does not lead one to reject the orthogonality of our instrument set with respect to the disturbance term with *p*-values that are all greater than 0.33. We also report the Anderson test in order to check the second condition which must be satisfied by any set of admissible IVs, namely the "strength" of their correlation with the endogenous variables. The weakness of the set of instruments is rejected with a p-value lower than 0.001.[13] Note also that that the three F statistics testing the hypothesis that the coefficient on the instruments are all zero in the three first-stage estimates are well above the threshold of 10 indicated by Stock and Staiger (1997), as the rule of thumb criteria to establish instrument weakness. Taken together with the non-rejection of the tests of the overidentifying restrictions and the difference-Hansen tests, this suggests that our set of instruments is reasonable and that our results are not driven by invalid instruments.

When we account for the endogeneity of the three social capital indicators, the coefficients associated with trust and social isolation are, respectively, positive and negative while both statistically different from zero. The

[13] The "weak instruments" problem (Stock, Wright, and Yogo 2002) has known a growing interest in the last decade. Several studies have pointed out that weak instruments can lead to severe bias in IV estimation and that Hansen test of the overidentifying restrictions tends to over-reject.

quantitative impact of trust is almost equal, irrespective of the procedure of estimation: the coefficient associated with trust is equals to 0.067 in pooling, 0.077 in IV and 0.075 in IV with community-fixed effects. Individuals suffering from social isolation are 23.6% (IV) to 11.1% (IV with community-fixed effects) less likely to report good health.

In addition, the coefficient associated with membership is positive and statistically different from zero with the IV estimator while not statistically significant in IV with community-fixed effects. In this former case, being member of a "Putnamesque" organization increases the probability of being in good health by 23.8%. However, we prefer to be careful before giving an interpretation to this result because given the instability of the estimated coefficient according to the procedure of estimation.

Finally, once again, the joint tests of the significance of three indicator for social capital strongly rejects the null hypothesis with a *p-value*=0.000.

In summary, these IV results confirm those obtain in Table 4. Social capital is positively correlated with self-reported health. But, as we now control for the potential reverse causality and the endogeneity bias, we are confident that this positive association is due to *the causal effect* of social capital on health.

Table 5. Self-reported health and social capital, IV estimation

	Pooling	IV	IV	IV
			Community fixed effects	Community fixed effects
Trust	0.067	0.077	0.075	0.079
	(7.96)***	(2.75)***	(6.80)***	(6.77)***
Membership	0.002	0.238	-0.009	-0.009
	(0.11)	(2.15)**	(0.39)	(0.38)
Social isolation	-0.106	-0.236	-0.111	-0.105
	(10.52)***	(2.18)**	(8.95)***	(7.99)***
Trust* community size	-	-	-	-0.019
				(2.06)**
Membership* community size	-	-	-	-0.001
				(0.06)
Social isolation* community size	-	-	-	-0.033
				(3.12)***
Joint signif. of SC variables, [*p-value*]	[0.00]	[0.00]	[0.00]	[0.00]
Observations	11,187	11,187	11,187	11,187
Instrumental variables diagnostics				
Test of overidentifying restrictions: [p-value]	-	0.33	0.92	0.28
Anderson test: [p-value]	-	0.00	0.00	0.00

Additional covariates include individual variables (age, educational dummies, work status), household variables (household size, number of working household members, dummies defining the material and economic conditions, and proxies for health care falicilities, i.e, distance to the nearest doctor and hospital, two dummies for the quality of the water and the type of road leading from the household dwelling to the community), community variables (population size, two dummies for the classification of the place of residence (village and capital)) and country dummies.
Absolute value of the t-statistic below coefficients, *** significant at 10% ** significant at 5% ; *** significant at 1%

Before exploring the country heterogeneities in the impact of social capital on self-reported health, we test the

hypothesis of La Porta et al. (1997) on our sample. According to these authors, the impact of social capital depends on the community population. More precisely, La Porta et al. (1997) suggest that trusting the others should be easier in small communities, with higher opportunities of repeated interactions and lower costs of monitoring and information acquisition, than in large communities and organizations where the chance of dealing more than once with the same partner is very little if not negligible. The impact of trust on health is expected to be stronger on individual health in smaller communities, as cooperation (triggered by initial trust) is more likely to be achieved and maintained over time, yielding therefore to considerable benefits. Cooperation (and trust) allows setting up informal institutions based on reciprocity, even among households or extended families rather than only among individuals, which can provide support in case of need (e.g. when falling sick).

In column (4) of Table 5 we report the interacted effect of social capital with the size of the community (i.e. its population) while relying on IV estimators with community-fixed effects. Results show, as suggested by La Porta et al. (1997) that in smaller communities trust has a larger impact although its size is small in absolute terms. On the other hand, the coefficient associated with the interaction between social isolation (the feeling of being alone) and the size of the community is negative and significant. This result can be interpreted in the context of the relative deprivation thesis: the detrimental effect of social isolation on health is inversely related to the social isolation status of the neighborhoods. In large cities, we would expect that social activities are more developed, implying that the expected average level of social isolation is lower, and the perception of social isolation and its negative effect on health is more accentuated.

3.4 Country heterogeneous responses

In this subsection we explore whether social capital affects health differently across countries, or, alternatively, whether the impact of social capital is common across countries. To answer this question we produce IV estimates with community fixed effects for each of the eight countries of the sample, by using the same model of column (3) in Table 5. We report such country-wise estimates in Table 6.

Table 6 Country specific estimates: IV estimation with community-fixed effects

	Armenia	Belarus	Georgia	Kazakhstan	Kyrgyzstan	Moldova	Russia	Ukraine
Trust	0.163	0.097	0.074	0.053	0.043	0.032	0.082	0.130
	(2.12)**	(2.77)***	(1.70)	(2.05)**	(0.73)	(0.94)	(3.48)***	(3.68)***
Membership	-0.198	-0.087	-0.308	-0.066	-0.074	0.101	0.049	-0.023
	(1.63)	(1.25)	(1.12)	(1.13)	(0.62)	(1.99)**	(1.06)	(0.29)
Social isolation	-0.176	-0.102	-0.166	-0.129	-0.034	-0.064	-0.122	-0.121
	(2.50)**	(2.64)***	(3.47)***	(4.25)***	(0.54)	(1.90)*	(4.53)***	(2.87)***
Observations	785	1469	1511	1741	673	1581	2192	1235

Additional covariates include individual variables (age, educational dummies, work status), household variables (household size, number of working household members, dummies defining the material and economic conditions, and proxies for health care falicilities, i.e, distance to the nearest doctor and hospital, two dummies for the quality of the water and the type of road leading from the household dwelling to the community), and community variables (population size, two dummies for the classification of the place of residence (village and capital)).
Absolute value of the t-statistic below coefficients, significant at 10%; ** significant at 5%; *** significant at 1%

Broadly, the results are consistent with the full-sample based in Table 5, at least qualitatively, as the signs as well as broad magnitudes are comparable. We observe, however, significant differences across countries. For instance, the coefficient associated with trust is 0.163 in Armenia and only 0.053 in Kazakhstan. Trust is always positively and significantly associated with health but in Kyrgyzstan and Moldova. Social isolation is always negative and significant, except in Kyrgyzstan and the detrimental impact is higher in Armenia and Georgia than in Moldova. Finally, being member of a "Putnamesque" organization has a positive and significant impact on self-reported health in Moldova, while the effect is negative (expecting from Russia) although non significantly different from zero in the other countries.

We believe that this is the most striking specificity which needs to be analyzed, as it makes Moldova a real outlier and because of its policy implications: actually, favouring participation in horizontal associations seems to be far more easy, from a government perspective, than enhancing individual trust or reducing the sense of isolation.

We argue that the positive effect of social capital on health might depend on the level of political and civil liberties. In order to test this assumption, we interact the social capital variables with country-specific indices measuring the quality of the political institutions and civil liberties. We use two different indicators valued at 2000: (i) the index "Voice and Accountability", from World Bank Governance and Anti-corruption data-base and (ii) the index, from the Freedom House dataset, measuring the freedom status of each country. We use these two indices capturing similar institutional features but coming from different sources in order to test the robustness and sensitivity of the main findings.

Voice and Accountability includes in it a number of indicators measuring various aspects of the political process, civil liberties, political and human rights, measuring the extent to which citizens of a country are able

to participate in the selection of governments (Kaufmann et al., 2004). It ranges from -2.5 to +2.5, the higher values indicating broader liberty and participation. In appendix, we report in Table A1, the value taken by the index. The index, from the Freedom House dataset, also measures the level of political rights (electoral process, political pluralism, participation, etc.) and civil liberties (freedom of expression and belief, rule of law, associational rights, individual rights, etc.). Countries are ranked on a 1 to 7 scale according to the political rights and civil liberties. A rating of 1 indicates the highest degree of freedom and 7 the least amount of freedom. These political rights and civil liberties ratings are combined and averaged to determine an overall "freedom status" for each country and territory. Countries with an average rating of 1.0 to 2.5 are considered “Free”; 3.0 to 5.0, “Partly Free”; and 5.5 to 7.0 “Not Free”.

In our sample, we do not have countries that are considered “Free”. We therefore use as interacted variable with social capital a dummy taking on the value one if the country is “Not Free” and 0 if the country is “Partly Free”.

In Table 7, column (1) and (2) we report the results. We used the same specification and the same estimator (IV with community fixed effects) as in column (3) of Table 5 and in Table (6) except that we interacted all the social capital variable with the index “Voice and Accountability” (column 1) and the index from freedom house (column 2).

In both cases, it appears that higher or lower degrees of civil liberties and political participation do not affect the impact of *trust* or *social isolation* on self-reported health. In other words, trust and social capital are respectively positively and negatively correlated with self-reported health irrespective of the level of political and civil freedoms.

Conversely, in countries with higher levels of voice and accountability (positive or higher than about -0.5) the impact of membership on individual health is substantially positive. Actually, as reported in table A1 in appendix, Moldova is, among the eight countries of the sample, the country with the highest level of voice and accountability in 2000 (See Table 8). This rationalizes one of the idiosyncrasies noticed in the country by country estimation. The intuition behind these results is that civil liberties change only little the impact on health of those social capital indicators which refer mainly to the sphere of the family or the friends (such as trust) where the institutional framework does not matter too much. Similarly they have little effect on the health of socially isolated individuals who are by definition excluded from accessing to social capital benefits, independently of the kind of institutions. Conversely, in countries with extensive civil liberties, where associations are allowed and favoured, being member of horizontal associations of the kind described in section 3, has a positive effect on health, thanks to a more intensive circulation of information, an extended network to rely on in case of need and so on. On the other hand, in undemocratic countries which repress and discourage people aggregation for the fear of rebellion sparks, being member of an association can be

associated with discrimination and other forms of persecution (from restraint access to medical facilities to physical and psychological violence) which finally negatively affect individual health.

Table 7: Interaction of social capital with country-specific indices of the quality of the political institutions and civil liberties (denoted PCL).

	Voice accountability	Freedom status
Trust	0.074	0.083
	(3.77)***	(6.08)***
Membership	0.061	0.026
	(1.69)*	(1.02)
Social isolation	-0.120	-0.124
	(5.78)***	(8.24)***
Trust*PCL	-0.002	-0.020
	(0.07)	(0.90)
Membership*PCL	0.126	0.095
	(2.21)**	(2.04)**
Social isolation*PCL	-0.016	0.035
	(0.50)	(1.44)
Observations	11,187	
Joint signif. of SC variables, [*p-value*]	[0.00]	[0.00]
Instrumental variables diagnostics		
Test of overidentifying restrictions: [p-value]	0.08	0.32
Anderson test: [p-value]	0.00	0.00

Additional covariates include individual variables (age, educational dummies, work status), household variables (household size, number of working household members, dummies defining the material and economic conditions, and proxies for health care falicilities, i.e, distance to the nearest doctor and hospital, two dummies for the quality of the water and the type of road leading from the household dwelling to the community), community variables (population size, two dummies for the classification of the place of residence (village and capital)) and country dummies.
Absolute value of the t-statistic below coefficients, significant at 5% ; ** significant at 1%

In summary, our last finding points out that (i) the impact of trust and social isolation on health is always respectively positive and negative while (ii) the positive effect of membership on health is conditional on the characteristics of the political institutions and the extent of civil liberties.

4. Conclusions

In this paper, we investigate the impact of social capital on individual self-reported health for a sample of eight countries from the Commonwealth of Independent States (Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Ukraine). We rely on three indicators for social capital – individual degree of trust, participation in local organisations, social isolation – and employ alternative procedures to consistently estimate the impact of social capital on health. To the best of our knowledge this paper is the first to assess the impact of social capital on health in transition countries in ways that explicitly try to overcome the main empirical concerns involved in assessing the relationship.

Our empirical results, on the full sample, suggest that trust is positively and significantly correlated with health, be it in pooling or when we rely on IV estimators with community specific effects. Similarly, social isolation is negatively and significantly associated with health, irrespective of the procedure of estimation. On the other hand, the effect of being member of a Putnamesque organization on self-reported health is more puzzling and usually not significantly related to health.

Since the impact of social capital on health is likely to be heterogeneous across countries, we then carry out IV country-specific estimates with community fixed effects. The previous results, obtained on the full sample, are confirmed. In most of the countries, the two indicators trust and membership are respectively positive and negatively related to health. However, we observe country differences in the magnitude of the health impact of social capital. In addition, the coefficient associated with membership is positive and significant in Moldova while insignificant (and negative) in the other countries.

Hence, we try, in the last part of the paper, to interpret these country differences. We claim that the positive effect of social capital on health might depend on the level of political and civil liberties. In order to test this assumption, we introduce in the health equation (on the full sample) an interaction of the three indicators of social capital with an index measuring for each country the quality of political institutions and the level of civil liberties. Our results suggest that the two indicators trust and social capital are respectively positively and negatively correlated with health irrespective of the level of political and civil freedoms. On the other hand, while membership has a positive effect on health in countries with high level of political and civil liberties, the impact becomes negative and significant in repressive countries.

Therefore, political institutions and environment are crucial to allow communities to accumulate social capital and to allow social capital to display its beneficial effects.

This analysis suggests that policymakers interested in improving health may be well-advised to consider promoting social capital as one relevant means by which to achieve this objective. Governments' and international organizations' efforts should not be limited to improve health infrastructures, although this is certainly crucial, too. Additional attention should be devoted to other aspects, apparently unrelated to health, such as the availability of opportunities of social interactions and cooperation and the definition of institutions able to promote social interaction, credibly enforce law and order, reduce criminality, and discourage opportunistic behaviours. The potential benefits of adopting a broader perspective appear particularly significant in the case of the transition countries in CEE-CIS, where there is obvious scope for improvement in social capital, compared to other countries in Europe and beyond.

Appendix

Table 8: Voice and accountability, freedom house indictors, 2000/2001

Country	Voice and accountability	Freedom house indicators		
		Political Rights	Civil liberties	Freedom Status
ARMENIA	-0.301	4	4	PF
BELARUS	-1.212	6	6	NF
GEORGIA	-0.206	4	4	PF
KAZAKHSTAN	-0.908	6	5	NF
KYRGYZ REPUBLIC	-0.675	6	5	NF
MOLDOVA	-0.007	2	4	PF
RUSSIA	-0.435	5	5	PF
UKRAINE	-0.392	4	4	PF

Note: PF is for partly free and NF is for non free
Source : World Bank Governance and Anti-corruption data-base, Freedom House

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