Bridging or Bonding: Economic Payoff to Social Capital, with an Application to Russia

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Abstract

Pro-social norms and other ingredients of social capital are shown to be conducive for economic development,institutional performance, and quality of governance. No such analyses were available for Russia so far, and the present paper fills this gap. We propose a model which differentiates the economic impact of bridging and bonding social capital – while the former increases government accountability, the latter is mobilized to seek protection from government predation and make up for insufficient public provision of social services. We show that in equilibrium such grassroots private alternatives to publicly supplied institutions and programs could have overall detrimental impact on development by reducing political costs of abuse of power. These conclusions are confirmed empirically by using data of a major Russia-wide survey held in 2007. We establish a significant positive relationship between bridging social capital and urban development in Russia; bonding social capital has a strong negative impact on development

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1 Introduction

In the course of the last few decades there have been several major updates of economists' views of what factors contribute to economic growth and welfare. The conventional growth theories dominant in 1950s-1970s emphasized the importance of investments in physical and human capital. From 1980s onwards the emphasis has shifted on institutions, such as markets, contracts, property rights, rule of law, good governance etc. A

large body of evidence was presented in support of the claim that good institutions are indispensable for economic efficiency and factor accumulation. The "Institutions Rule" view (Rodrik, Subramanian, Trebbi, 2004) had straightforward policy implications – key to economic development is in institutional and policy reform.

Nonetheless in many instances institutional reforms in transition and developing countries failed to deliver expected outcomes – the allocation of economic roles, power and resources remained unaffected by institutional change (the resilience known as 'the invariance principle' (Acemoglu, Robisnon, 2008)). Moreover, on some occasions institutions and policies that were expected to improve welfare and facilitate growth had the opposite effect, making matters worse (Putnam, 1993).

Such 'surprises' of institutional reform (Roland, 2000; Polterovich, 2007) highlighted a yet another important development resource – a 'missing link' (Guiso, Sapienza, Zingales, 2010) commonly known as *social capital*. Numerous definitions of social capital offered in the literature vary from broad views treating as social capital *any* shared norms and values (Ostrom, 2000) and social structures (Dasgupta, 2003) to much more restrictive interpretation which considers as social capital only virtuous characteristics of the society that facilitate development and improve welfare (Fukuyama, 1997). The middle ground interpretation that does not render circular the relation between social capital and development outcome is the view of social capital as the capacity for self-organization and collective action in pursuit of some common good (Putnam, 1993; Woolcock, 1998). The main ingredient of such capacity is cohesion based on trust, social norms, values, and networks.

Social capital could be instrumental for economic development in two important ways reflecting two distinct patterns of collective action. First, it cuts transaction costs in the private sector: trust and social connections facilitate investments and trade (Arrow, 1972), and self-organization offers private solutions of public problems. Second, social capital is indispensable in resolving the agency problem between government and society. Government accountability can only be ensured if there is sufficient civic culture (Almond, Verba, 1963) at the grassroots, i.e. the appreciation of political rights and freedoms, awareness of public affairs, and the sense of civic duties and personal responsibility for social well-being. These two mechanisms represent resp. horizontal and vertical 'transmission channels' between social capital and economic outcomes.

Social capital and formal institutions can be substitutes and/or complements. To the extent that social capital and institutions substitute for each other, they offer resp. formal and informal solutions of the same coordination problem, and hence one can expect that returns to social capital should be particularly high when formal institutions (and government-provided public goods and services) are in short supply or of poor quality (Durlauf, Fafchamps, 2005; Easterly, Ritzen, Woolcock, 2006). The flip side of this logic is that institutional reform remedies a lack of social capital (Knack, Keefer, 1997); indeed it is argued that extensive social programs of welfare state could could "crowd out" social capital (Wolfe, 1989). On the other hand without sufficient

social capital formal institutions and public policies could be either idled or captured and subverted by narrow interests (Polishchuk, 2010), in which case institutional and governance reforms do not bring about desired results. In both cases, whether through substitution or complementarity, social capital could be highly relevant for economic development and social welfare.

Such relevance has been empirically established in numerous publications at the macro-, meso-, and micro levels – for nations, regions, cities, local communities, as well as for various public services and fields of social and economic activities. These studies, while in general corroborating the view of social capital as a development resource, produce a more nuanced and complex picture – the impact of particular ingredients, forms and types of social capital is highly context-specific. Thus, what is known as 'bonding' social capital upholds collective action within narrow confines of smaller isolated groups providing 'club goods' for group members. The impact of such activities for broader social welfare could be detrimental, if smaller 'Olson groups' are engaged in socially wasteful rent-seeking, or if they divert their resources and energy from eliminating root causes of social and economic problems. On the other hand, 'bridging' social capital facilitates the creation of broad society-wide coalitions ('Putnam groups') which advance social welfare by producing public goods, such as efficient public sector governance.

Economic payoff to social capital is measured in the literature by using national or regional data. In such studies various indicators of economic development, welfare, quality of institutions and governance are related to panoply of social capital measures. Cross-country studies reveal tangible relations between economic outcomes and social capital; however, profound differences between countries, which are only partly captured by control variables, make such estimations less reliable. More appropriate framework for establishing an association between social capital and economic performance is provided by regional data within a given country. Such analyses have been performed for US states, as well as for regions of Germany, the UK, Poland, the European Union, China, etc. In most of these studies (regional) government efficiency, public service delivery and other outcomes are shown to be in statistically significant relations to relevant measures of social capital.

No estimations of this sort have been obtained yet for Russia. While for most other countries social capital is shown to have significant economic returns, there are conflicting arguments as to whether such payoff of comparable magnitude could be observed in Russia as well.

First, there are doubts about the quantity and quality of social capital in Russia. One of the most commonly used measures of social capital – the index of trust calculated by using data of the World Values Survey – puts Russia and most other countries of the former Soviet Union below the median among the nations covered by the survey. Lack of trust and other ingredients of social capital in Russia is consistent with the conjecture, posited by Putnam (1993) and later supported by an in-depth

econometric analysis for European countries and regions (Tabellini, 2008), that social capital accumulation is fostered by non-authoritarian political regimes. Furthermore, economic transition in the former Soviet Union and Central and Eastern Europe is shown to have significantly eroded social capital (Aghion et al., 2010), and such losses in Russia were most profound across the post-communist region. According to Kumlin, Rothstein (2005), this could at least in part be due to an abrupt collapse of heretofore universally available welfare-state programs, and of widely perceived injustice of state's dealing with people. Quality-wise, Rose (1998) maintains that the existing stock of social capital in Russia, low as it may be, is also obsolete and unsuitable to maintain modern institutions of market democracy. This concern finds support in the international distribution of the aggregate index of 'civic capital' which puts Russia in the bottom quartile among 70 plus countries (Guiso, Sapienza, Zingales, 2010). Last but not least, high degree of centralization of economic and political life in contemporary Russia (known as the 'vertical power') leaves little space for grassroots initiative and self-organization.

All of the above makes one to expect that evidences of economic payoff to social capital in Russia would be hard to find, as social capital in the country is likely insufficient and/or 'idled' by the political system and excessive government control. And yet according to the contrarian view, weakness of official institutions and lack of public goods supplied by the government in fact raises the returns to social capital which provides informal grassroots fixes of institutional and governance failures.

An empirical confirmation of the skepticism about economic significance of social capital in Russia would validate the commonly expressed opinion that the society cannot be a driving force in the country's development and modernization. If however those views are refuted, Russia can be considered 'a normal country' (Shleifer, Treisman, 2005) where social capital can improve institutions and governance; in that case a development scenario in which the society plays an active role becomes possible. Measurement of economic payoff to social capital in Russia is therefore a matter of not just academic, but also practical significance. It is also important to find out what kinds of social capital, if any, could affect social and economic outcomes in Russia.

In this paper we propose a simple economic model that describes outcomes of bridging and bonding forms of social capital for social welfare and public sector governance. Predictions of the model lead to hypotheses which are tested by using data from a major survey conducted in Russia in 2007 as part of the "Geo-Rating" project. Links between social capital and development are explored at the city level. Factor analysis reveals three forms of social capital – bridging, bonding, and civic culture, which are latently present in the data. Stocks of social capital exhibit significant variations from one city or town to the other; it can therefore be concluded that there are more and less "civic" cities in Russia. The observed variations are found to be associated with socio-economic conditions in the city (town, village); moreover, bridging social capital and civic culture advance local development, whereas bonding social capital retards it.

Russia therefore is a 'normal country', at least when it comes to the impact of social capital on economic outcomes: more civic cities are better-off than less civic ones.

It is further demonstrated that the main 'transmission mechanism' between social capital and economic outcomes is the performance of municipal governments, which is significantly improved by bridging social capital and civic culture, and adversely affected by bonding social capital. It is noteworthy that such links cannot be established at the *regional* level; one possible explanation is the political difference between Russian cities and regions (oblasts, krajs, and republics) – city mayors are more often than not electable, while regional governors since 2004 are federal appointees.

Causality between social capital and economic outcome is confirmed by using two-stage least squares regression analysis, where the size of the middle class is shown to be a valid instrument for bridging social capital, thus confirming the role of the latter as an (urban) development factor and resource.

2 Social capital impact measurement

Earlier social capital studies were mostly qualitative by their nature and did not attempt to establish an empirically grounded relationship between social capital and development. Putnam's famous book (1993) was the first scholarly work where payoff to social capital was supported by data: it was argued that higher stocks of social capital in the northern part of Italy allowed northern provinces to make full use of a devolution of power and resources from the central government to the regions, whereas insufficiency of social capital in the South of Italy precipitated failure of the same reform.

Since Putnam (1993) measuring payoff to social capital has become a rapidly growing 'cottage industry' in social science; the vast literature on the subject is reviewed by Halpern (2005); Durlauf, Fafchamps (2005); Guiso, Sapienza, Zingales (2010). In the first attempts to prove (and measure) the economic impact of social capital by means of econometric analysis, Knack and Keefer (1997) and La Porta et al. (1997) used cross-country data. In these papers rates of economic growth and measures of social welfare and government performance were dependent variables in regression models, while various social capital indexes served as independent variables. It was shown that trust had positive statistically significant relations to economic outcomes (with causality confirmed by appropriately chosen instrumental variables), whereas no such relation was found for associational activities. This was an indication, repeatedly confirmed by subsequent studies, that contrary to Putnam's earlier expectations, social capital is not a generic "commodity" with all of its components invariably relevant in any development, organizational etc. context, and that the identification of types of social capital that are economically valuable under particular circumstances is a non-trivial problem and should be dealt with on a case-by-case basis.

Putnam's pioneering work opened a strand of empirical research where social capital's impact was measured by using regional data. Knack (2002) established a significant impact of social capital on state governments' performance in the US. It was shown that trust in the society, volunteering, and indexes of civic maturity are good predictors of the quality of state government services and regulations. Associational membership was not found to be of economic significance, and an attempt to find such relations by differentiating between 'Olson-like' and 'Putnam-like' groups was unsuccessful. However, in a different study using US data association membership was shown to have tangible economic impact at the county level (Rupasingha, Goetz, Freshwater, 2002).

Similar links have been confirmed for a number of other countries. Thus, in Chinese regions trust is highly correlated with population income, economic growth, investments and the number of firms (Zhang, Ke, 2003). Casey (2004) established statistically significant correlation between trust among individuals and in political institutions, on the one hand, and bureaucratic efficiency, on the other, for British regions. At the same time some other studies present less clear-cut pictures. Thus, for German regions the contribution of social capital in its traditional interpretation is 'fading' in the shadow of more significant cultural factors, such as 'market' or 'hierarchical' values (Blume, Sack, 2008). In Poland social capital, measured by associational membership, is not found to be making statistically significant contribution to economic growth and tax collection in various administrative units of the country (Dzialek, 2009).

Measurement of economic payoff to social capital is closely related to the identification of social capital's roots and origins – the latter could serve as causality-establishing instruments for social capital. On a number of occasions religion and social homogeneity were used as such instruments, but lately more popular choice was political history, based on Putnam's conjecture that historic experience of democratic self-rule creates social capital. This view is confirmed by Guiso, Sapienza, and Zingales (2008), who show that Italian cities and regions that were self-governed in the past have higher social capital endowments than those that were under colonial rule, and that such differences are indeed valid instruments for social capital. Tabellini (2008) reaches the same conclusion by using data for 69 European regions.

Studies of social capital's outcomes in Russia so far have been more qualitative than quantitative and not sufficiently comprehensive. Petro (2001) argues that greater success of economic reforms in Novgorod region was due to higher social capital stock measured by association membership and civic initiative participation. Marsh (2000) calculates a 'civic society index' for Russian regions, which is shown to be positively correlated with political engagement of population; however no attempt was made to estimate *economic* payoff to the so measured social capital. Kennedy and Kawachi (1998) found a link between the insufficiency of social capital and steep increase in mortality observed in Russia in the first decade of marker reforms; this is consistent with the robust relationship, observed in other countries, between social capital and physical

and mental health (Halpern, 2005). A more recent study (Eberstadt, 2010) concludes that social capital deficiency could be one of main causes of the present demographic crisis in Russia, which is a 'negative' confirmation of social capital's significance for the country's social and economic outcomes.

The reviewed literature demonstrates that measurement of economic payoff to social capital and cohesion is a complex but realistic task. Its complexity is in part due to multiplicity of social capital's interpretations and meanings (Woolcock, Narayan, 2002, Durlauf, 2002, Guiso, Sapienza, Zingales, 2010) and well-known difficulties of accurate measurement of trust (see e.g. Glaeser et al., 2000), values, associational activities etc. Nonetheless more often than not the impact of cohesion and capacity for self-organization for economic outcomes can be empirically confirmed, and Russia, as we show below, is no exception to this pattern.

3 The model

Modeling social capital's impact on economic outcomes is still in its infancy, and no sufficiently universal and encompassing approaches have been developed so far. Zak and Knack (2002) offer a model that captures trust's beneficial impact for investments; this model therefore deals with the 'horizontal' transmission channel for social capital. Weingast (1997) uses game theory to demonstrate importance of social capital for sustaining democracy, rule of law, and limited government. Glaeser et al. (2002) model individual investments in social capital in conjunction with externalities and network effects. Tabellini (2008) explores bilateral links between institutions and culture; his analysis demonstrates how trust creates grassroots demand for good institutions and governance, which in their turn facilitate productive economic activities and suppress rent-seeking. Polishchuk (2008) uses an economic model to investigate the role of social capital in the working of corporate social responsibility. Aghion et al. (2010) present a model where trust and values in the society are related to the scale and scope of government's presence in the economy and the quality of government regulations.

The stylized model that follows is concerned with the vertical 'transmission channel' of social capital, whereby the latter's role is to improve government accountability. The model is custom-built to capture the impact of different kinds of social capital. It incorporates Weingast's (1997) idea that good governance ensues when sufficiently large social coalitions defend their economic and political rights against possible expropriation by the government when it 'transgresses' its constitutional boundaries and otherwise abuses power (see also Kuran, 1991). Effectiveness of such actions requires *bridging social capital* and *civic culture*. Cohesion-based bridging social capital is needed so that coalitions of sufficient size acting in public interest could be formed and sustained. The role of civic culture is to put government accountability on such coalitions' agenda; to this end, good governance should be perceived by coalition members

as a matter of high importance and personal responsibility.

In the model the *bonding* form of social capital is mobilized to mitigate the damage caused by government's malfeasance, rather than stopping such malfeasance in the first instance. The relief is achieved locally and based on cohesion limited to smaller groups, and materializes in the form of club goods that substitute for insufficient pubic goods supplied by the government, or in the form of shielding group members from government abuse. Government accountability that precludes transgression cannot be an objective of such groups which are too small, isolated and dispersed for the task and do not have such matters on their agendas.

One should expect positive economic payoff to bridging social capital and civic culture through improved public sector governance. The impact of bonding social capital on socio-economic outcomes is a priory ambiguous: on the one hand it has a positive *direct* effect by improving the lot of small groups' members who obtain relief from government abuse, but on the other hand it *indirectly* encourages greater abuse by lowering its economic and hence political costs.

We follow the tradition in the political economy literature (see e.g. Grossman, Helpman, 2001) to model imperfect government accountability by assuming that the government maximizes a weighted sum W_G+aW_S of its own immediate economic welfare W_G and the aggregate welfare W_S of the rest of society (private sector); here the multiplier $a \in [0,1]$ represents the degree of government accountability. In what follows this multiplier is an aggregate of bridging social capital and civic culture, as both of these ingredients are required for accountable governance.[1]

Suppose that the government abuses power in order to extract and appropriate income $D \leq \bar{D}$ from the society (private sector); $\bar{D}$ represents physical, institutional etc. limits to such expropriation. The private sector comprises a unit continuum of agents, and government's action causes each agent a material loss $C_0(D)$; however if an agent is a member of an organized group that seeks collective grassroots protection from government abuse, these losses are reduced to $C_1(D)$. The width of this grassroots protection depends on the stock of bonding social capital which is measured by the share $w \in [0,1]$ of agents organized in such groups.[2] We assume that

$$D \leq C_1(D) \leq C_0(D), \forall D \geq 0. \tag{1}$$

(the first of these inequalities implies that grassroots protection can at best eliminate excess burden $C_0(D)-D$ of government abuse), and that the functions $C_0(D), C_1(D)$, and $C_0(D) - C_1(D)$ are all monotonically non-decreasing. If W_0 is the aggregate wel-

[1]In a more detailed version of the model bridging social capital and civic culture are present explicitly and separately from each other; results of such model's analysis remain qualitatively the same.

[2]One can think of group formation as random events in which case w is the expected share of agents organized in such groups; alternatively bonding social capital could be confined to certain parts of society, in which case w is the share of such parts.

fare of the private sector before government transgression, then after the transgression private sector welfare is reduced to

$$W_S = W_0 - wC_1(D) - (1-w)C_0(D); \tag{2}$$

and assuming $W_G = D$, the expropriated income can be found from the following problem:

$$\max_D [D - a(wC_1(D) - (1-w)C_0(D))]. \tag{3}$$

Comparative statics analysis of the above problem leads to the following conclusion.

Proposition 1 *The expropriated income $D = D(a, w)$ is (non-strictly) increasing in w and decreasing in a.*

Proof. According to the "supermodularity lemma", the solution of the problem

$$\max_x f(x) + ag(x)$$

is monotonically non-decreasing in a as long as the function $g(x)$ is monotonically increasing. To establish the required property of $D(w)$ as a function of w, the government's objective function should be rearranged as $D - aC_0(D) + aw(C_0(D) - C_1(D))$, and of a – as $\frac{1}{a}D - (wC_1(D) - (1-w)C_0(D))$. ■

The above analysis of the model shows that broad-based social cohesion and civic culture work through government accountability to restrict possible abuse of power and thus improve the quality of governance and formal institutions. On the contrary, narrowly-based social cohesion is detrimental for the quality of governance as it makes the society more resilient and hence tolerant to abuse of power and thus reduces the political costs of malfeasance.

An immediate corollary of the above proposition is that bridging social capital and civic culture also improve *private sector welfare* $W_S = W_0 - wC_1(D) - (1-w)C_0(D)$, which monotonically decreases in D and hence increases in a.

The dependence of private sector welfare on the bonding social capital measure w is not as straightforward due to the presences of the direct and indirect effects described earlier in this section. These effects work in opposite directions, and as a result such dependence could be "non-linear". The relative strength of the direct and indirect effects depend inter alia on the level of government accountability a, which integrates bridging social capital and civic culture. When such features of society are absent, the government is completely unaccountable ($a = 0$), sets its expropriation at the highest possible level $D = \bar{D}$, and the indirect effect thus disappears. In the meantime the direct effect of private protection from rampant government abuse could be substantial, and therefore the overall returns to bonding social capital in the absence (or near absence) of bridging social capital and civic culture should be expected to be

(perhaps, mildly) positive – in this case bonding social capital serves as an imperfect substitute for the bridging one. At the opposite extreme of full accountability ($a = 1$) which corresponds to very high stocks of bridging social capital and civic culture, the government refrains from expropriation ($D = 0$), and therefore there is no need for private protection, and bonding social capital is idled. The returns to bonding social capital in this case should be zero.

Various specifications of the above model presented in Appendix A show that for intermediate levels of the accountability the indirect effect could be stronger than the direct one. In this case the substitution between various kinds of social capital disappears and the returns to bonding social capital become negative not only for the quality of governance, but for the private sector welfare, too – bonding social capital is still helpful "ex post", for a given level of abuse by the government, but causes far greater damage "ex ante" by increasing the scale of such abuse.[3]

The presented analysis summarizes in the following hypotheses.

1. bridging social capital and civic culture have positive impact on government performance and social welfare.

2. bonding social capital adversely affects government performance; its impact on social welfare could be positive at very low levels of bridging social capital and civic culture, becomes (increasingly) negative as bridging social capital and civic culture grow bigger, and goes back to zero for very high levels of bridging social capital ensuring full government accountability.

We now turn to empirically testing these hypotheses and measuring economic payoff to various kinds of social capital and cohesion in Russian cities.

4 Data

Our main source of data was an all-Russia survey conducted in September 2007 by the Public Opinion Foundation (Fond Obshchestvennoe Mnenie) as part of the ongoing GeoRating polling program which covers a broad range of economic, social, political and cultural issues. The survey sample comprised 34,038 adult respondents from 1924 cities, towns and villages located in 68 Russian regions; in each covered region the sample was representative and included at least 500 respondents.

The survey questionnaire comprised three clusters of questions: (i) on respondents' views, norms and values – answers to such questions are commonly used in social capital measurement; (ii) on respondents' satisfaction with economic and social conditions in

[3]Such working of bonding social capital is somewhat similar to economic consequences of corruption which helps individuals and businesses to navigate through excessive administrative barriers, but motivates the bureaucracy to raise such barriers in the first instance (Rose-Ackerman, 1999).

their places of residence, and on their assessment of accountability and performance of local governments; and (iii) on individual characteristics of respondents. The first and second groups of questions were used to calculate resp. independent (explanatory) and dependent variables, whereas the third group supplied control variable; the latter also included size and administrative status (national capital, regional capital etc.) of the city.

The first group of questions resembles (and at times replicates) those used in the World Values Survey and similar international polls (Table 1); these questions reveal respondents' perception of the cohesion, self-help and propensity for collective action in the surrounding society. Other questions from the same group characterize respondents' own norms, views and practices, such as trust, help to others, willingness to join collective action, and the sense of responsibility for the situation in respondents' families, local communities, and cities (towns, villages).[4]

Respondents' satisfaction with their lives was used to proxy economic outcomes; no other reliable data that would serve this purpose were immediately available at the city level. Government effectiveness and accountability assessed by respondents (answers to the question "Do you think authorities understand and take into account interests of people like you?") plays a dual role in the study – on the one hand accountable governance is of independent value of its own and thus an important outcome of social capital (Putnam, 1993; Knack, 2002); on the other hand government performance is a plausible link between social capital and economic outcomes through a vertical transmission channel.

Individual characteristics of respondents included age, gender and ethnic origin (the latter were found insignificant in our regression analyses), education, income and self-assessed material welfare. Control variables also included size and administrative status of the city (settlement) – predictably, those were strongly correlated with income and welfare of residents (Table 2).

An important decision in choosing our empirical identification strategy was to select an appropriate territorial entity to establish links between social capital and economic outcomes. Social capital by definition is a community resource[5], and communities are often proxied, for a lack of better practical options, by some territorial boundaries. In studies of economic payoff to social capital for other countries the territorial units considered as social capital reservoirs were usually regions (US states (Knack, 2002), German Länder (Blume, Sack, 2005), provinces etc. elsewhere in the world (Tabellini,

[4]We did not use data on philanthropy and associational membership as possible sources of social capital indexes – philanthropy in rudimentary in contemporary Russia, whereas reported association membership is often fictitious or purely nominal. It is noteworthy that in a number of studies seeking to measure economic payoff to social capital associational membership did not have a significant impact on economic performance and government efficiency (see e.g. Knack, Keefer, 1997).

[5]Perhaps at the cost of slight abuse of terminology, one could still talk about *individual* social capital that characterizes trust and trustworthiness of a person, her internalization of pro-social values, as well as participation in various social networks (Glaeser, Laibson, Sacerdote, 2002; Halpern, 2005).

2008)). In the present study we opted instead for the city (town, village) level of analysis. This choice was due to profound intra-regional variations of social values and norms, as revealed by our data (see also Petrov et al., 2010) which override the weaker sense of regional cultural identity. With such variations, potentially valuable information would be lost if regional averages were used. Besides, GeoRating data did not include performance assessment for regional administrations. The downside of studying the economic impact of social capital at the city level is a dearth of social and economic statistical data that would complement (and verify) respondents' subjective assessment of social and economic conditions in their cities – urban statistical data in Russia are much more scarce than those collected for regions.

Within cities and towns cultural attitudes are more homogeneous, but exhibit significant inter-city variations across the sample – standard deviations could be as high as 45% of the sample average. This means that there are, simply put, noticeably more and less civic cities, towns and localities in Russia. Among large cities (with population 100,000 and more) such variations are somewhat less pronounced, but still quite perceptible (Table 3). Furthermore, local governments' performance and residents' satisfaction with conditions in their cities fluctuate within broad margins, too. The observed variations present a "natural experiment" that bodes well for measuring the impact of social capital for social and economic outcomes at the city level.

Some of the respondents' values and attitudes are significantly correlated with each other (Table 4) – these correlations could be evidences of more general latent features that underlie reported norms and behavior. Making such features explicit is important from substantive and instrumental points of view. Substantively, this could reveal particular types and patterns of social capital relevant for socio-economic outcomes; instrumentally, it would prevent multicollinearity in regression analysis.

Factor analysis of our data indeed produces three dominant factors (Table 5). The first factor aggregates with high positive weights features of broad social cohesion, accord, mutual help and propensity for collective action. Trust also enters into this factor, although with somewhat smaller coefficient. Overall, the first factor characterizes the capacity for collective action within broad societal coalitions ('Putnam groups'), and can therefore be interpreted as a measure of bridging social capital.

The second factor integrates with highest loads the indexes of restricted and exclusive social connectedness and limited embeddedness of trust and pro-social norms (trust only in those who have much in common with a respondent, and preference to dealing with such people). Indexes measuring broad social cohesion and propensity for collective action enter the second factor with significant negative coefficients, reflecting cautious and possibly adverse attitude to 'aliens'. These are the reasons to interpret the second factor as an index of bonding social capital, which by definition facilitates the formation of exclusive 'Olson groups' providing club goods for their members, rather than working for common good at the society at large. Sensing threat to their well-being or shortage of essential resources and services, 'Olson groups' are mobilized

to alleviate such threats or provide necessary resources for their members internally, within the groups' confines.

Finally, the third factor is positively linked with the sense of responsibility for what is happening in the community and in the city. Such perception reflects awareness of citizen's rights and duties, and can be interpreted as an index of civic culture.

The proposed interpretation of these three factors is somewhat imprecise and subject to caveats (common in the social capital literature), but by and large it agrees with the prevailing understanding and perception of the above concepts. The obtained aggregation is robust: alternative factor analysis techniques produce similar results.[6]

The three types of social capital are significantly correlated with individual characteristics of respondents (Table 7); in particular bridging social capital is positively correlated with education, income, and material well-being. Positive contribution of education in accumulation of social capital is a well-established fact (see e.g. Gaeser et al, 2004), which has also been recently confirmed empirically for Russia (Natkhov, 2010). bonding social capital, on the contrary, is more prevalent among less educated and less economically successful groups. It is noteworthy that bridging social capital is positively, and bonding – negatively associated with respondents' age; this could be due to the damage caused to the social capital of older cohorts by the two decades of tumultuous economic transition (Aghion et al., 2010). Finally, civic culture decreases with income (perhaps this reflects greater satisfaction with the status quo and higher private costs of civic activism to wealthier individuals), as well as with the size and status of the city – in large megapolises there could be stronger sense of alienation from public affairs and feeling of impossibility to influence public decision-making.

The capital city of Moscow (where the survey sample is representative) is a case in point. The stock of bridging social capital in Moscow is close to the national average, whereas bonding social capital is above, and civic culture – well below their average levels. The average level of bridging social capital is sustained by education of Moscow residents, lack of civic culture is due to higher incomes, whereas higher stocks of bonding social capital can be explained by abnormal concentration of wealth and significant social and economic inequality which adversely affects trust and breeds rivalries and rent-seeking.

In what follows social capital indexes are normalized so that their minimal values are zero, and standard deviations equal unity.

[6]Our procedure is somewhat similar to Bjørnskov's (2006), where factor analysis also produced three orthogonal aggregate indexes of social capital reflecting resp. associational activities, social norms and trust. However in Bjørnskov (op. cit.) the set of original characteristics aggregated by factor analysis was pre-selected "around" the above triplet, and hence the obtained aggregation was less "endogenous" than in our case where no structure was assumed a priori and the interpretation of the obtained aggregates is based solely on the loads of primary characteristics.

5 Social capital and development: an empirical analysis

In most of the studies reviewed in Section 2 the payoff to social capital is measured in terms of quality of governance or various socio-economic outcomes. In our regressions we follow both of these traditions. In the first case the dependent variable (hereafter Outcome) is produced by averages of respondents' assessments of socio-economic conditions in their cities and other types of settlements. This variable is regressed on the three indexes of social capital – open, bonding, and civic culture (resp. BridgingSC, BondingSC, and CivicCulture), which are also averaged across the same localities. In the second case the dependent variable is the average of respondents' assessment of the performance of their local governments (Performance); however such variable can also serve as an explanatory one, to assess the contribution of governance to local development and investigate the role of governance as a transmission mechanism between social capital and economic outcomes. Control variables are cities' size, status, regional dummies, and the averages of various individual characteristics of respondents.

The first regression model estimates the contribution of social capital to local development and welfare:

$$Outcome_i = const + \beta_1 BridgingSC_i + \beta_2 BondingSC_i + \beta_3 CivicCulture + \\ + \gamma_i Control_{ki} + RegionDummy_i + \epsilon_i \quad (4)$$

Here i is a settlement index. OLS estimation of this model (Table 8 , column 1) provides strong support to the hypothesis that bridging social capital makes positive contribution to development: the corresponding coefficient is significant at the 1% level and quite substantial: a one standard deviation change in the bridging social capital index is associated with improvement of social and economic conditions in the city by quarter of a standard deviation. The contribution of bonding social capital is highly significant, too, but negative. Finally, the contribution of civic culture is, similarly to bridging social capital, positive (and significant at the 0.05 level), but of lesser magnitude. The obtained estimation is fully consistent with the predictions of the theory presented in Appendix A.

To check robustness, we include in the regression various controls; such modifications leave estimated coefficients and their significances practically intact (columns 2-4 of Table 8). In particular, size of the city and material well-being of residents have the expected positive impact on the dependent variable, but the inclusion of these controls does not affect the magnitude and significance of social capital contributions. Overall we can conclude that more civic among Russian cities and towns enjoy ceteris paribus greater prosperity and higher well-being.

In the second regression model the dependent variable is government performance:

$$Performance_i = const + \beta_1 BridgingSC_i + \beta_2 BondingSC_i + \beta_3 CivicCulture + \\ + \gamma_k Control_{ki} + RegionDummy_i + \epsilon_i \quad (5)$$

Estimations of the above model (Table 9) show that social capital's impact on the quality of local governance is essentially the same as for social and economic outcomes – government effectiveness is positively and highly significantly associated with bridging social capital and civic culture, and also highly significantly, but negatively – with bonding social capital. Here again the hypotheses generated by the theoretical model find full confirmation in the data. In the regression model (5) the association of the dependent variable with social capital is even stronger than in (4): the corresponding coefficients have larger absolute values. These conclusions are also robust to variations in the composition of control variables (columns 2 and 3 and the table). Moreover, they remain qualitatively unchanged if the full sample is reduced only to larger cities (100,000 residents and up; columns 4-7), and the impact of social capital on government performance for such sub-sample becomes even stronger: one standard deviation in the bridging social capital corresponds to one standard deviation of the quality of governance index. Figure 2 illustrates this close association between social capital and the quality of urban governance. These are evidences that more civic of the Russian cities and towns with broader social cohesion and stronger civic culture are by and large better governed.

Finally, in the third model social and economic outcomes – the dependent variable – are regressed on government performance; the set of dependent variables in such model can also include indexes of social capital (Table 10, resp. column 1 and columns 2-4):

$$Outcome_i = const + \beta_0 Performance_i \\ + \beta_1 BridgingSC_i + \beta_2 BondingSC_i + \beta_3 CivicCulture \\ + \gamma_k Control_{ki} + RegionDummy_i + \epsilon_i \quad (6)$$

The first column of Table 10 shows that the quality of local governance is highly significant for social and economic outcomes. In combination with OLS estimations of the equation (5) which demonstrate the significance of social capital for the quality of governance, we can now conclude that the data point out to the working of a vertical transmission channel between social capital and development, and local governments are the linchpin of such channel. This channel carries up to 50% of the contribution of social capital to development: when social capital indexes are included in the regression alongside the government performance index, the coefficients with such indexes (reflecting the horizontal channel) decrease almost by half in comparison with the regression model (4). In large cities the vertical channel becomes predominant and the

horizontal one nearly disappears – for such sub-sample social capital coefficients in the model (6) become insignificant.

The above empirical models also shed light on the interplay between different types of social capital in affecting local development and governance. In particular the theory presented in Section 3 suggests that the adverse impact of the bonding social capital grows stronger as the stock of the bridging social capital increases in a low-to-medium range. We test this conjecture by dividing the sample in three parts with lower, interim, and higher stocks of the bridging social capital, and estimating the regression model (4) separately for each part. The results are reported in Table 11 which shows that the coefficient of the bonding social capital is insignificant (and small) for the lower portion, and then becomes negative, significant at the 1% level and growing in magnitude as the bridging social capital increases from the middle to the top third of the sample. These estimations concur with the theoretical model (and its specifications in the Appendix A): the first portion of the sample corresponds to the low range of bridging social capital where the returns to bonding social capital turns from initially positive to negative; such returns remain negative and increasing in magnitude thereafter (apparently the stock of open social capital in our sample does not reach the level when bonding social capital starts losing its significance.) We can therefore conclude that bonding social capital becomes increasingly a drag on local development when civic awareness and capacity for collective action grow stronger.

6 Validation and causality

Validity of the above findings and conclusions could be questioned due to possible omitted variable bias, measurement errors in data collection, and reverse causality. Control variables included in the regression models, and various robustness checks deal with the omitted variable bias. Concerns about the quality of measurement could be raised inter alia due to the fact that almost all of our data come from a single survey and are thus susceptible to sampling and polling errors. To address such concerns, we have performed external validation by using similar data from other sources.

The proxy for social and economic outcomes – respondents' satisfaction with situations in their cities – was validated by data from other Geo-Rating surveys conducted before (2005) and after (2008, 2009) the 2007 poll. In those surveys respondents were asked about satisfaction with social and economic conditions in their regions, rather than cities, and therefore such surveys' data are only partially compatible with the 2007 poll, but still allow for meaningful cross-checking (Table 12).

Replacing outcome measures by those similarly derived from other years' surveys do not qualitatively change the conclusions about the role of bridging and bonding social capital and civic culture in urban and municipal development.

Our search for external validation of the quality of governance and accountability

measures is still work in progress. Electoral statistics to which one would normally turn for measures of political competition and other proxies for government accountability has not been very useful so far, possibly due to massive irregularities in Russian local elections.

We have similarly performed validation of social capital indexes by using measures of social accord and cohesion derived from a recent 2009 GeoRating survey; the obtained results were close to those reported in the previous section. We were unable to rely on blood donation and referenda participation data which are often used in social capital measurement due to concerns about their accuracy and adequacy of such measures in Russia (e.g. much of blood donation in the country is motivated by material rewards).

Finally, we turn to the endogeneity problem in the association between social capital and economic outcomes. One can argue that social capital is not only a factor, but also a product, of development; one possible explanation of such reverse causality is that development expands and improves education which is known to be a powerful driver of social capital accumulation. Similarly good governance could instill greater trust in institutions and broader cooperation that would also be conducive for social capital buildup.

To be able to argue that social capital affects development, we need valid instruments for the social capital indexes. Features that were used as instruments for social capital elsewhere in the literature (see Section 2) in our case either failed the validity test, or no satisfactory data and/or measures for such potential instruments were found. We had more luck with using the size of the middle class as a potential instrument.

Middle class is known to be conducive for the cultivation of civic values and cohesion (see e.g. Moore, 1966; Hooghe, Stolle, 2003; Easterly, Ritzen, Woolcock, 2006), and as such could indeed serve as a potentially valid instrument for social capital. Among multiple sources of information on middle class which reflect various measures and interpretations of this broad concept, we have selected, based on availability and reliability of data, a survey conducted in 1980 by the Institute of Sociological Studies of the Soviet Academy of Science (Levyikin et. al., 1980) that was comparable in its scale, scope and methodology to the 2007 Geo-Rating survey. The survey did not specify cities, but available information on regions and city types enabled us to collect a sub-sample including 52 cities and towns. While such sample falls short of what is ideally required for instrumental variable analysis, it still produces a satisfactory instrument for the 2007 index of cohesion and accord. The middle class proxy that was used to obtain the instrument was respondents' description of their social status (sluzhashchie – professionals, white collars, etc., as opposed to workers and peasants). Two-stage least squares estimation shows that our proxy for the middle class in 1980 is indeed a valid instrument for social capital in today's Russia (see also Figure 3). The availability of such instrument lends some support to the causality that runs from social capital to development.

7 Conclusion

We have shown that social capital does have substantial economic payoff in Russia, despite serious reasons to expect otherwise. It means that Russia, being a 'normal country', can rely on its social capital as a development resource.

This conclusion however is subject to an important qualification: while some kinds of Russian social capital advance development, others obstruct it. Rose (1998, p. 18) pointed out to a path dependency in Russian social capital and cohesion which 'encouraged people to create informal networks as protection against the state'. Such bonding forms of social capital are considered 'anti-modern', as opposed to modern ones, which ensure accountable governance and uphold economic, legal and political institutions (Polishchuk 2010). Our analysis demonstrates that in today's Russia modern and anti-modern types of social capital co-exist in proportions that vary from one city and region to the other and likely evolve over time. It means that the agenda of Russian modernization, apart from its technological and institutional aspects, has an important social dimension, and that the evolution of the social capital mix could have far-reaching implications for the nation's economic and political development.

A sanguine development view holds that economic growth and accumulation of human capital foster civic culture and pro-social values (Glaeser, Ponzetto, Shleifer, 2007), which in their turn improve institutions and governance in the economy and society (Glaeser et al., 2004). On the other hand bonding social capital could disrupt this dynamic virtuous circle by perpetuating ineffective and unaccountable governance and debasing modern institutions. Corruption, lawlessness and government predation erode trust in institutions and among individuals, and suppress investments in bridging social capital and cultural transmission of pro-social norms and civic virtues (Tabellini, 2008), while entrenching anti-modern social practices of adjustment to bad institutions.[7]

The established link between municipal government performance and social capital mix could also involve a reverse causality, when the proportion between bridging and bonding social capital reflects efficiency, fairness and transparency (or lack thereof) in social services delivery (Kumlin, Rothstein, 2005). Corruption and injustice in government undermine social trust (and hence bridging social capital) and at the same time mobilize bonding social capital to seek "parochial" grassroots protection within smaller groups from government failures and abuse.

The outcome of such "race" between different kinds of social capital is uncertain, and multiple equilibria are possible. Further research, theoretical and empirical, is required to get a better insight into the processes of accumulation and amortization of different kinds of social capital. Such insight would be invaluable in designing policies

[7] "If you expect to live in a corrupt society, you would rather learn to pay and demand bribes" (Aghion et al., 2010,, p. 1027)

that would tip the race between modern and anti-modern social capital and cohesion towards a path where civil society, economic development, and good governance support and reinforce each other.

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A Model Specifications

We present two specifications of the general model described in Section 3. In both versions government resorts to distortionary tools of income extraction that impose excess burden on the private sector. Bonding social capital allows members of small groups to eliminate the excess burden by means of self-organization and reduce losses from $C_0(D)$ down to $C_1(D) = D$.

Specification 1: Extortionary taxation Suppose that the government extracts income from the private sector through an extortionary tax with flat rate $t \in [0, 1]$. Assuming agents' quasilinear utilities $x - v(l)$, where x is income and l – labor, labor supply $l = l(t)$ can be found from the equation $v'(l) = 1 - t$ (market wage is normalized to unity), and government revenue is $D = R(t) \equiv tl(t)$. Residual welfare of a taxpayer after taxes is $V(t) \equiv (1 - t)l(t) - v(l(t))$, and when there is no grassroots protection from taxation, the cost of government predation to agents is as follows: $C(D) = V(0) - V(t) = R(t) + L(t)$, where L(t) is the deadweight loss of a distortionary tax.

Bonding social capital enables agents within small groups to accumulate the required tax payment per member trough direct contributions without sustaining the deadweight losses[8]; the saved deadweight losses comprise economic returns (which accrue to group members) to bonding social capital. In this case $C_1(D) = D$, and the tax rate $t = t(a, w)$ selected by the government from problem (3) satisfies the following first-order condition:

$$\frac{1 - a}{a} R'(t) = (1 - w)L'(t).$$

The social welfare as a function of a and w is as follows:

$$W_S(a, w) = W_0 - R(t(a, w)) - (1 - w)L(t(a, w)).$$

This function is increasing in a, and one can easily check that under the "neoclassical" assumptions about $v(\cdot)$, decreases in w for large enough a. This is illustrated by the profiles of $W_S(a, w)$ and $D(a, w)$ for $v(l) = l^2$ (Figure 1a below).

Specification 2: Diversion of public funds Assume agents' preferences of the form $x + f(G)$, where x is private consumption, and G – local public good, with a "neoclassical" function f. Local public goods are supposed to be provided by the government for N identical communities of equal size $1/N$ (consumers are still assumed to form a unit continuum). Optimal provision $G = G^*$ of the local public good for each community can be found from the equation

$$f'(G^*) = N$$

[8]Such outcome obtains e.g. as political equilibrium when agents' groups are lobbies making contributions to government in order to prevent taxation of group members (Grossman, Helpman, 2001)

Suppose that the government collects the required revenues NG^*, but can divert portion D of this amount for its own enrichment, leaving the public goods undersupplied. In this case (assuming equal (under)funding of each of the local public goods) the cost to the agents of such diversion is $C_0(D) = f(G^*) - f(G^* - D/N)$

Bonding social capital could help agents within a given community to resolve the collective action problem and make up for the shortfall of funding of the local public good by jointly supplying the missing amount D/N; in such case each member of the community will have to make a private contribution D, and the private cost of government malfeasance is reduced from $C_0(D)$ to $C_1(D) = D$. The stock of bonding social capital is measured by the share w of the communities where such local effort occurs; in this case problem (3) takes the following form:

$$\max_D \{D - a[wD + (1-w)(f(G^*) - f(G^* - D/N))]\}$$

and the optimal diversion of funds $D = D(a, w)$ satisfies the equation

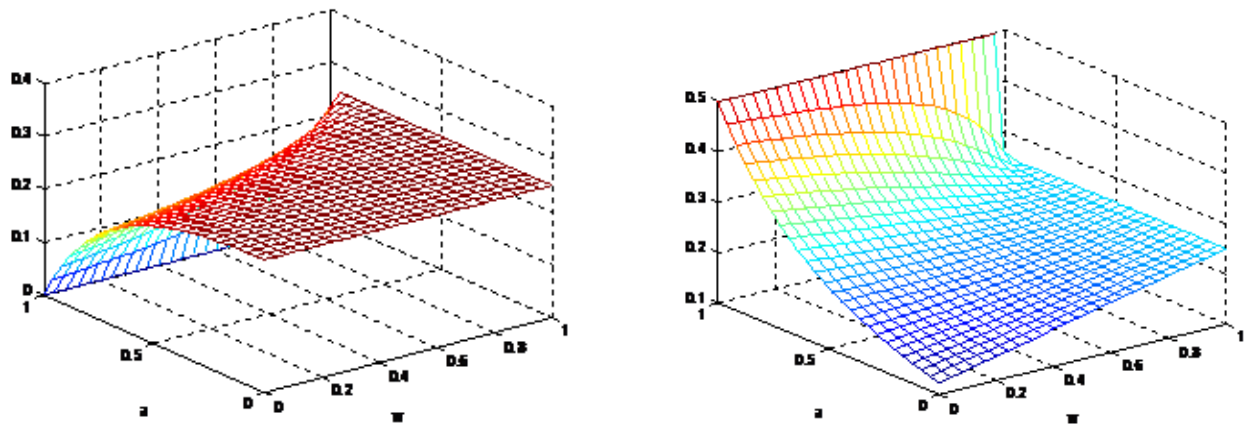
$$f'(G^* - D) = N\frac{1 - aw}{a(1-w)}$$

Here too $D(a, w)$ monotonically decreases in a and increases in w, and the social welfare is as follows:

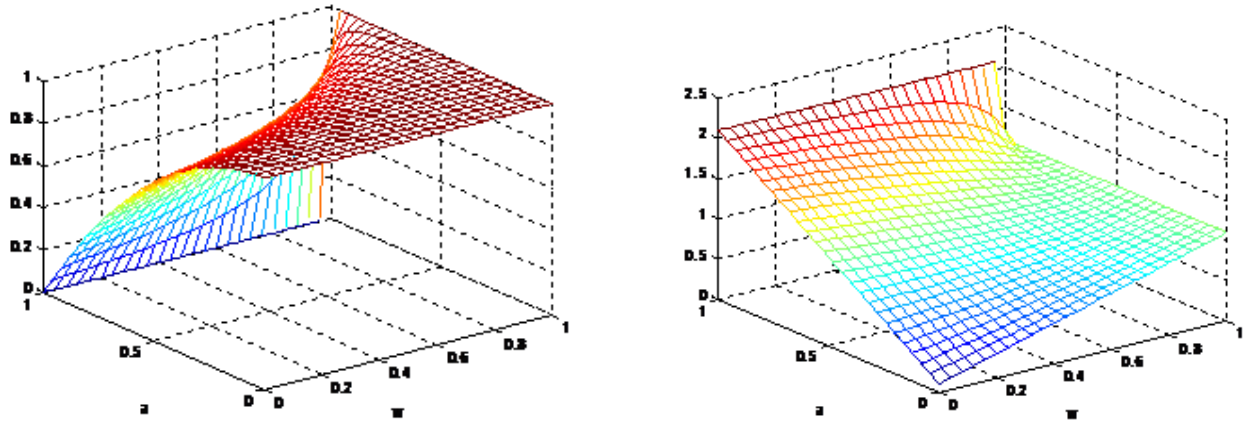
$$W_S(a, w) = W_0 - wD(a, w) + (1-w)(f(G^*) - f(G^* - D(a, w)/N)$$

As it was the case with the previous specification, with the "neoclassical" assumptions this function can also be shown to decrease in w at least when a is sufficiently large. We illustrate this by the profile of $W_S(a, w)$ and $D(a, w)$ for $f(G) = \sqrt{G}$ (Figure 1b below).

Figure 1: Profiles of $D(a, w)$ and $W_S(a, w)$ for considered specifications:



(a) for $v(l) = l^2$ (specification 1)



(b) for $f(G) = \sqrt{G}$ (specification 2)

B Empirical Analysis Results

Table 1: Social norms, attitudes, and outcomes

Variable	Question	**Max**[a]
unit	How often people around you are prepared for collective action to jointly solve their problems?	4
unit_self	How often people around you are prepared for collective action to jointly solve social problems, even if the latter have no immediate bearings for them?	4
agr_all	In your opinion, what is more common in our country today social accord and cohesion, or discord and alienation?	3
agr_close	In your opinion, what is more common among people around you social accord and cohesion, or discord and alienation?	3
trust	Do you think that people can be trusted, or you cannot be more careful in dealing with people?	1
com_val	Do you meet people that have much in common with you?	3
trust_com	Do you trust those who have much in common with you more, less, or the same as all others?	3
help	How often people around you are ready to help each other?	3
ind_unit	Some people are ready to join others for joint action only if they have the same interests and share the same ideas. Others are ready for joint action even if partners interests and ideas are different. To which of these two groups you are closer?	3
ind_help	Have you over the last year offered assistance and support to those who are not your immediate family members?	3
resp_fam	How strongly you feel responsibility for the situation in your family?	3
resp_outdrs	How strongly you feel responsibility for the situation in your apartment building or local residential area?	3
resp_city	How strongly you feel responsibility for the situation in your city (town, village)?	3
soc_pow	Do you think authorities understand and take into account interests of people like you ?	3
soc_outc	Overall, are you satisfied or dissatisfied by the situation in your city (town, village)?	3

[a] All answers are normalized so that their minimal values are zero; greater value corresponds to stronger agreement, higher frequency etc.

Table 2: Distribution of Individual characteristics of respondents

Size and status of settlement	**Sample**	**Average age**	**Average years of education**	**Average welfare**	**Average income**
Moscow	1	45	11.68	3.21	9.91
St. Petersburg	1	44.54	11.2	3.22	10.55
Regional capital with more than 1,000,000 residents	11	43.8	10.72	3	5.86
Regional capital with less than 1,000,000 residents	56	44.2	10.82	2.93	5.54
Towns, small urban settlements	909	44.46	10.24	2.74	4.75
Villages	844	46.9	9.44	2.49	3.59
Total	**1822**	**45.58**	**9.89**	**2.63**	**4.25**

[a] Respondents were asked to estimate their material welfare in a one ("not enough money even for food") to six ("experience no financial difficulties, could buy a house or apartment if need be") scale. Income was reported in thousands of rubles.

Table 3: Variations of city averages across the sample and among larger cities

Variable	**Full Sample (N_{obs} = 1822)**				**Large cities (N_{obs} = 149)**			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
unit	1.67	0.53	0.00	3.40	1.74	0.36	0.41	2.80
unit_self	1.23	0.56	0.00	3.30	1.23	0.43	0.08	2.41
agr_all	0.84	0.38	0.00	2.80	0.82	0.29	0.17	1.60
agr_close	1.64	0.45	0.10	3.00	1.76	0.31	1.00	2.82
trust	0.19	0.16	0.00	1.00	0.18	0.10	0.00	0.50
com_val	2.02	0.34	0.68	3.00	2.03	0.24	1.10	2.63
trust_com	1.92	0.42	0.17	3.00	1.96	0.31	1.20	2.80
help	1.86	0.46	0.30	3.30	1.94	0.31	0.56	2.88
ind_unit	1.84	0.51	0.00	3.00	1.82	0.39	0.44	2.76
ind_help	1.76	0.50	0.00	3.00	1.78	0.37	0.70	2.61
resp_fam	2.71	0.26	1.29	3.00	2.68	0.16	2.00	3.00
resp_outdrs	1.78	0.59	0.00	3.00	1.36	0.37	0.12	2.61
resp_city	1.08	0.52	0.00	3.00	0.91	0.35	0.08	2.35
soc_pow	0.89	0.38	0.00	2.38	0.89	0.30	0.20	1.84
soc_outc	1.11	0.47	0.00	2.63	1.31	0.38	0.20	2.25

Table 4: Pairwise correlations of social norms and attitudes

	unit	unit_self	agr_all	agr_close	trust	com_val	trust_com	help	ind_unit	ind_help	resp_fam	resp_outdrs
unit	1											
unit_self	0.68	1										
agr_all	0.40	0.41	1									
agr_close	0.28	0.16	0.34	1								
trust	0.19	0.18	0.35	0.18	1							
com_val	0.19	0.09	-0.01	0.26	0.16	1						
trust_com	0.04	-0.05	-0.13	0.24	0.06	0.46	1					
help	0.61	0.40	0.37	0.36	0.23	0.23	0.15	1				
ind_unit	0.29	0.22	0.11	0.27	0.11	0.35	0.28	0.22	1			
ind_help	0.14	0.09	-0.02	0.16	-0.01	0.30	0.24	0.28	0.31	1		
resp_fam	0.03	-0.01	-0.07	0.07	-0.05	0.11	0.15	0.05	0.16	0.22	1	
resp_outdrs	0.01	0.07	0.01	0.05	-0.03	0.04	0.04	0.00	0.16	0.11	0.34	1
resp_city	0.16	0.20	0.16	0.08	0.08	0.05	-0.02	0.10	0.20	0.09	0.23	0.57

Table 5: Factor analysis results. Proportion of factors in variation

Factor	**Eigenvalue**	**Proportion**	**Cumulative**
Factor1	2.68	0.61	0.61
Factor2	1.29	0.29	0.90
Factor3	0.99	0.23	1.13
Factor4	0.37	0.09	1.21
Factor5	0.14	0.03	1.24
Factor6	0.01	0.00	1.25
Factor7	-0.01	0.00	1.25
Factor8	-0.06	-0.01	1.23
Factor9	-0.12	-0.03	1.2
Factor10	-0.18	-0.04	1.16
Factor11	-0.23	-0.05	1.11
Factor12	-0.24	-0.05	1.06
Factor13	-0.24	-0.06	1.00

Table 6: Factor analysis results. Factor loadings for the whole sample and for the sub-sample of large cities

Variable	**Full Sample**				**Large cities**			
	Fact1	**Fact2**	**Fact3**	**Uniq.**	**Fact1**	**Fact2**	**Fact3**	**Uniq.**
unit	0.74	-0.30	0.02	0.36	0.67	-0.39	-0.31	0.30
unit_self	0.61	-0.32	0.17	0.50	0.44	-0.46	-0.24	0.54
agr_all	0.49	-0.39	0.13	0.60	0.51	-0.43	-0.05	0.56
agr_close	0.48	0.05	-0.16	0.74	0.57	0.30	0.02	0.58
trust	0.32	-0.15	-0.05	0.87	0.43	-0.16	-0.13	0.77
trust_com	0.25	0.43	-0.37	0.62	0.41	0.50	-0.09	0.58
com_val	0.40	0.35	-0.33	0.61	0.47	0.45	-0.17	0.55
help	0.67	-0.14	-0.13	0.51	0.61	-0.05	-0.03	0.63
ind_unit	0.48	0.29	-0.08	0.68	0.59	0.23	-0.01	0.59
ind_help	0.34	0.34	-0.15	0.75	0.39	0.43	0.08	0.66
resp_fam	0.16	0.40	0.18	0.78	0.13	0.26	0.39	0.77
resp_outdrs	0.20	0.42	0.54	0.50	0.28	-0.14	0.74	0.35
resp_city	0.32	0.25	0.55	0.53	0.34	-0.27	0.68	0.35

Table 7: Correlations of social capital and individual characteristics

	Factor 1	Factor 2	Factor 3	Age	Education	Well-being
Factor 1	1					
Factor 2	-0.03	1				
Factor 3	0.01	0.01	1			
Age	-0.16	0.14	0.05	1		
Education	0.17	-0.06	-0.09	-0.33	1	
Well-being	0.18	-0.08	-0.11	-0.26	0.37	1
Income	0.12	-0.08	-0.21	-0.20	0.36	0.47

Table 8: Regression of social and economic outcomes on social capital

VARIABLES	(1)	(2)	(3)	(4)
Bridging SC	0.122***	0.114***	0.122***	0.114***
	(0.010)	(0.012)	(0.010)	(0.014)
Bonding SC	-0.091***	-0.088***	-0.091***	-0.088***
	(0.003)	(0.002)	(0.003)	(0.015)
Civic culture	0.019**	0.025**	0.021***	0.025*
	(0.006)	(0.009)	(0.005)	(0.014)
Population	0.0013***	0.0010**		
	(0.0002)	(0.0003)		
Age		-0.003		-0.003
		(0.005)		(0.003)
Education		0.002		0.003
		(0.009)		(0.012)
Wellbeing		0.115***		0.116***
		(0.016)		(0.029)
City size dummy	NO	NO	YES	YES
Regional effects	YES	YES	YES	YES
Observations	1822	1822	1822	1822
R-squared	0.267	0.282	0.266	0.280

[a] Robust standard errors clustered at settlement type are in parenthesis. ***:1%, **: 5%, *: 10%. Age, education and wellbeing are an average age, years of education and wellbeing of respondents in the locality accordingly. Population proxy is a log of number of respondents.

Table 9: Regression of government performance on social capital

	Total sample			**Large Cities**			
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Bridging SC	0.128***	0.124***	0.123***	0.205***	0.204***	0.183***	0.165***
	(0.002)	(0.004)	(0.004)	(0.016)	(0.012)	(0.017)	(0.028)
Bonding SC	-0.098***	-0.095***	-0.095***	-0.136***	-0.136***	-0.118***	-0.131***
	(0.004)	(0.005)	(0.005)	(0.027)	(0.027)	(0.022)	(0.022)
Civic culture	0.057**	0.060**	0.059**	0.101***	0.101***	0.116***	0.122***
	(0.018)	(0.020)	(0.020)	(0.008)	(0.006)	(0.009)	(0.003)
Population		-0.0001			-0.002	-0.015	-0.022*
		(0.000)			(0.012)	(0.011)	(0.009)
Age		-0.003*	-0.003*			0	-0.006
		(0.001)	(0.001)			(0.006)	(0.009)
Education		-0.007***	-0.004***			0.002	0.025**
		(0.001)	(0.001)			(0.026)	(0.006)
Wellbeing		0.064***	0.065***			0.167***	0.162***
		0.000	0.000			(0.011)	(0.008)
City size dummy	NO	NO	YES	NO	NO	NO	NO
Regional effects	YES	YES	YES	NO	NO	NO	NO
Observations	1822	1822	1822	86	86	86	65
R-squared	0.289	0.296	0.297	0.521	0.521	0.561	0.505

[a] Robust standard errors clustered at settlement type are in parenthesis. ***:1%, **: 5%, *: 10%. Age, education and wellbeing are an average age, years of education and wellbeing of respondents in the locality accordingly. Population proxy is a log of number of respondents.

Table 10: Impact of performance and social capital for social and economic outcomes

	Total sample				**Large Cities**			
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Performance	0.450***	0.352***	0.338***	0.338***	0.813***	0.813***	0.855***	0.972***
	(0.022)	(0.014)	(0.015)	(0.016)	(0.059)	(0.058)	(0.176)	(0.075)
Bridging SC		0.078***	0.072***	0.072***	-0.038	-0.036	-0.027	-0.054
		(0.008)	(0.009)	(0.009)	(0.034)	(0.045)	(0.041)	(0.052)
Bonding SC		-0.060***	-0.056***	-0.056***	0.058**	0.059*	0.048*	0.04
		(0.006)	(0.002)	(0.003)	(0.021)	(0.026)	(0.017)	(0.024)
Civic culture		-0.007	0.005	0.005	-0.096	-0.096	-0.116	-0.207***
		(0.005)	(0.004)	(0.002)	(0.082)	(0.084)	(0.089)	(0.020)
Population			0.0011***			0.003	0.027	0.024
			(0.000)			(0.036)	(0.036)	(0.071)
Age			-0.002	-0.001			-0.041***	-0.03
			(0.005)	(0.005)			(0.008)	(0.014)
Education			0.005	0.004			-0.123*	-0.159**
			(0.010)	(0.008)			(0.046)	(0.041)
Wellbeing			0.094***	0.093***			-0.079	-0.244**
			(0.014)	(0.014)			(0.192)	(0.065)
City size dummy	NO	NO	NO	YES	NO	NO	NO	NO
Regional effects	NO	YES	YES	YES	NO	NO	NO	NO
Observations	1822	1822	1822	1822	86	86	86	65
R-squared	0.137	0.319	0.336	0.335	0.197	0.197	0.267	0.292

[a] Robust standard errors clustered at settlement type are in parenthesis. ***:1%, **: 5%, *: 10%. Age, education and wellbeing are an average age, years of education and wellbeing of respondents in the locality accordingly. Population proxy is a log of number of respondents for total sample and log of number of citizens for large cities.

Table 11: Regression of outcomes on bonding social capital by quantiles of bridging social capital distribution

	the first third	the second third	the last third	the first third	the second third	the last third
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Bridging SC	0.118***	0.00993	0.0987***	0.122***	0.0125	0.0993***
	(0.0319)	(0.0720)	(0.0316)	(0.0320)	(0.0721)	(0.0318)
Bonding SC	-0.0207	-0.0553***	-0.133***	-0.0221	-0.0512***	-0.134***
	(0.0193)	(0.0181)	(0.0170)	(0.0194)	(0.0181)	(0.0171)
Education	0.0281	0.00626	0.0116	0.0181	0.00666	0.0160
	(0.0337)	(0.0330)	(0.0338)	(0.0349)	(0.0344)	(0.0351)
Wellbeing	0.160***	0.129***	0.0929**	0.156***	0.128***	0.0937**
	(0.0383)	(0.0357)	(0.0377)	(0.0385)	(0.0358)	(0.0380)
Age	-0.00006	0.00134	-0.000108	0.00112	-0.000218	-0.000570
	(0.00444)	(0.00449)	(0.00442)	(0.00456)	(0.00453)	(0.00447)
Population	0.0007	0.0009**	0.0005	-0.0004	0.0008	0.0008
	(0.0009)	(0.0004)	(0.0007)	(0.002)	(0.001)	(0.002)
City size dummy	NO	NO	NO	YES	YES	YES
Observations	610	614	608	610	614	608
R-squared	0.077	0.059	0.136	0.084	0.074	0.140

[a] Robust standard errors clustered at settlement type are in parenthesis. ***:1%, **: 5%, *: 10%. Age, education and wellbeing are an average age, years of education and wellbeing of respondents in the locality accordingly. Population proxy is a log of number of respondents for total sample and log of number of citizens for large cities.

Table 12: Correlations between respondents' assessments of socio-economic conditions in their cities in 2007 and similar regional assessments for other years

	Total sample (1816)	**Larger cities (85)**	**Regional capitals (66)**
2005 regional survey	0,22	0,60	0,65
2008 regional survey	0,34	0,73	0,79
2009 regional survey	0,21	0,62	0,70

Figure 2: Social capital and quality of governance in large cities. Partial regression plot between the performance and bridging social capital measures (controlling for average income, education and city type)

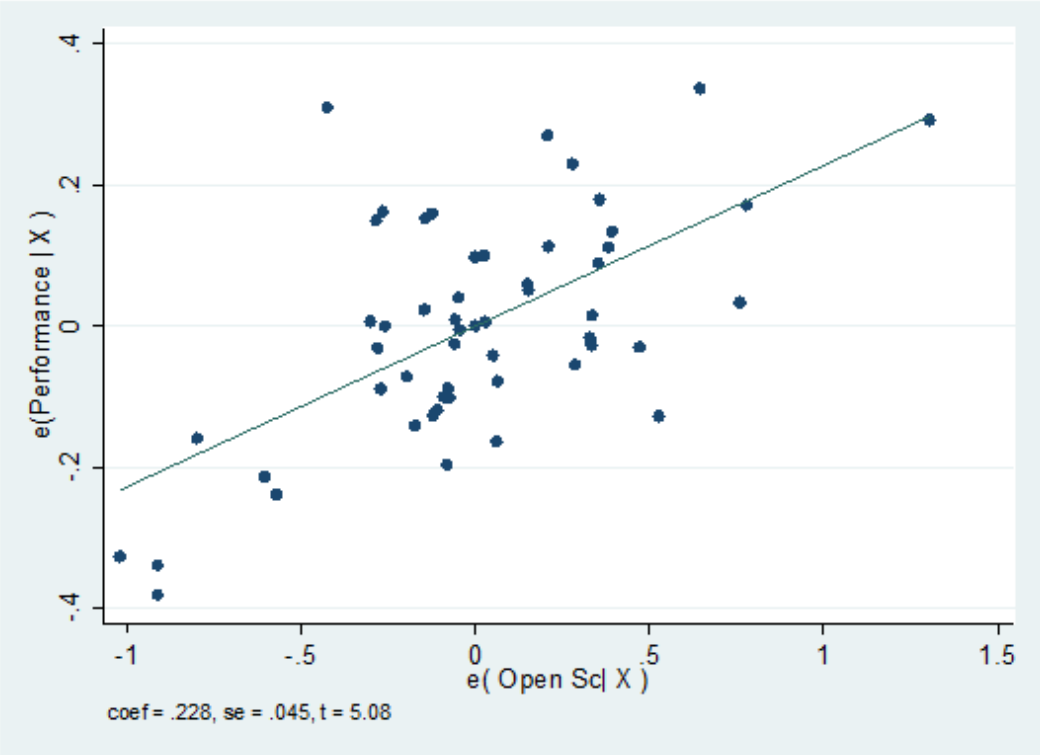


Figure 3: Partial regression plot between the size of middle class in 1980 and social cohesion in 2007 (controlling for average income, education in 1980 and 2007 and city type)