Co-production, Civic Culture and Quality of Governance: Theory and Evidence from Russia

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1. Introduction

Social capital is generally defined as the capacity for collective action (Putnam 1993). Cooperation enabled by social capital prevents market failures, which is also expected from governments, and therefore social capital and governments could be *substitutes* (Knack and Keefer 1997). However, they could also be *complements* – quality of governance depends on the society's collective ability, rooted in social capital, to hold politicians and bureaucrats accountable (Putnam 1993; Nannicini et al. 2013).

Two alternative applications of social capital – to tackle public problems directly or to ensure that government agencies properly handle such problems – need specific, even if not disjoint, kinds of social capital (Welzel et al. 2005). In the former case public problems are solved by "horizontal" (for want of a better word) social capital which operates at the grassroots and does not involve official agencies and institutions. Social capital required in the latter case is known as civic culture, i.e. awareness of public affairs, collective "ownership" of the public sphere, political competence (Almond and Verba 1963), concerns about wider social welfare, and the ability to challenge the elites (Welzel et al. 2005).

Economic outcomes of social capital are ambiguous, which is well-documented in the literature. A vast body of research (reviewed in e.g. Halpern 2005; Guiso et al. 2011) indicates that social capital could be a valuable resource advancing economic growth and social welfare. However economic payoff to social capital is often elusive (Durlauf and Fafchamps 2005); in-depth studies (see e.g. Bjørnskov 2006) reveal "multiple facets" of social capital and produce more nuanced and controversial picture than the initial perception of social capital as a unitary and unconditionally valuable generic "commodity".

While civic culture is expected to increase social welfare through better institutions and public policies, economic benefits of horizontal social capital could be questionable, if the latter has a "dark side" (Putnam 2000). Dark side is usually suspected in the case of "bonding" social capital confined to narrow close-knit groups pursuing club goods for group members. Such activities could deepen social divides and often involve rent-seeking and deadweight losses, in which case economic payoff to social capital, measured by its contribution to the aggregate social welfare, could be negative. Literature presents other incidences of social capital's dark side, when communities are captured by ruling elites (Acemoglu et al. 2014), or when associations provide fertile grounds for extremist movements (Berman 1997; Satyanath et al. 2013).

In this paper we point out to another version of dark side of horizontal social capital, when the latter substitutes for services expected, but not received, from the government, or deployed in passive defense from government predation (e.g. by moving commercial activities to the informal sector). In Hirschman's (1970) dichotomy, civic culture enables voice, whereas horizontal social capital could enable collective exit into informal apolitical remedies. These two stripes of social capital power up two distinct kinds of societal responses to governance failures.

The ability to provide grassroots "quick fixes" for problems not properly handled or even caused by government is certainly helpful, inasmuch as such problems are tackled one way or another. This is a positive direct effect of horizontal social capital. However, the very same ability could alleviate the political costs of government's negligence and abuse of power, and hence further weaken performance incentives of public servants. The coexistence of these two effects makes the overall economic impact of government-substituting horizontal social capital uncertain and possibly negative, whenever the indirect political effect dominates over the direct one.

Our analysis builds on the insight by Elinor Ostrom (1996) who argued that co-production of public services by government and society is economically meaningful only if the inputs of government and society complement each other. We argue that such complementarity is also important politically, as it ensures that societal involvement in co-production strengthens government's performance incentives and increases the political cost of misappropriation of public resources. However, in many instances grassroots communities step in to fill void left by government in health care, safety and security, disaster relief, social safety nets, local infrastructure etc., in which case societal inputs make up for the insufficiency of government's ones. Such substitution weakens government's performance incentives, and in a political equilibrium, co-production could leave the society worse-off.

We propose a theory of social capital's economic outcomes, which predicts that the payoff to one kind of social capital depends on the stock of the other. More precisely, the direct effect of horizontal social capital could be stronger than the direct one for low levels of civic culture, when the society is politically defenseless against government abuse; in such case, the overall economic payoff to horizontal social capital is positive. However, for higher levels of civic culture, the indirect effect gets the upper hand – horizontal social capital "crowds out" civic culture – and the overall payoff turns negative.[1]

To test our theory empirically, we turn to Russia where grassroots collective action to supplant non-performing government by way of co-production, instead of disciplining it has become a common pattern.[2]

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[1] According to Schuller (2007), "[different] forms of social capital could be complementary or conflictual, or both" (p. 16). See also Bowles and Gintis (2002).

[2] The pattern could be illustrated by massive volunteers' participation in fighting 2010 catastrophic forest fires in central Russia, when government's response to the natural disaster was delayed and poorly organized (see e.g. Lazarev et al 2014). Volunteers filled the void by buying and shipping equipment and supplies, coordinating relief efforts through social media, and substituting for professional firefighters. The combination of government negligence, ineffectiveness,

We use survey data to obtain proxies for civic culture and horizontal social capital for nearly 2,000 Russian cities, towns, and townships, and relate those to the quality of municipal governance and economic outcomes. Civic culture is shown to be positively associated with the quality of governance and quality of life: more "civic" among Russian cities are ceteris paribus better governed and better-off. Horizontal social capital, on the other hand, affects the quality of governance negatively, whereas its overall impact on welfare depends on the stock of civic culture and is negative most of the time.

In the next section we discuss the interplay between social capital and governance. Our theoretical model is presented and analyzed in Section 3. Section 4 describes the data and empirical strategy. Results of empirical analysis are presented and discussed in section 5. Section 6 deals with validation and causality. Section 7 concludes.

2. **Social capital and governance**

Most empirical studies relating social capital to economic outcomes do not specify causality mechanisms of such links (a few exceptions include Knack and Keefer 1997, Bjørnskov 2009, and Aghion et al. 2010). There are two types of such mechanisms, one bypassing governments and official institutions, and the other involving those. The workings of social capital through the above channels reduce social losses from resp. "disorder" and "dictatorship" (Djankov et al. 2003) – the former are caused by a lack of coordination in the economy and society, and the latter reflect the collateral damage caused by governments enforcing such coordination. Multiplicity of social capital's types and transmissions to economic outcomes explains the "paradox of social capital" – when a society cannot privately organize its life due to a lack of trust and reciprocity, it yearns for stronger government control, but often the very same society is unable to ensure proper performance of the much desired government, and holds it to a low esteem (Putnam 1993; Aghion et al. 2010; Denisova et al. 2011).

A large body of empirical research reveals strong positive association between certain types of social capital and the quality of governance. La Porta et al. (1997) show that trust is a contributing factor to the performance of national governments; see also Bjørnskov 2006. This conclusion was independently verified by Tabellini (2010), who presented evidence indicating that causality runs from social capital to governance and not vice versa. Similar links have been found for subnational units of a country, where an omitted variable bias is less likely. Putnam (1993) pioneered such research by describing a strong connection between social capital and governance in Italian provinces (see also Giordano and Tommasino 2013). Knack (2002) showed that social capital in US states positively affects the performance of state governments. Similar findings were reported for US metropolitan areas (Pierce et al. 2002; Goldfinger and Ferguson 2009), for Chinese (Zhang

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and low accountability with robust relief response at the grassroots has become a stable pattern thereafter in the numerous natural and man-made disasters and accidents. (For more on the role of social capital in disaster reliefs see Chamlee-Wright and Storr 2011.) Another illustration is the proliferation of gated communities in Russian cities in response to a lack of safety and security due to poor performance of law-enforcing agencies (Polishchuk and Sharygina 2016).

and Ke 2003), German (Blume and Sack 2008), European (Tabellini 2010), Flemish (Jottier and Heyndels 2012), etc. regions.

The impact of social capital on the quality of governance could involve several mechanisms (Knack 2002; Easterly et al. 2006; Rothstein and Uslaner 2006; Aghion et al. 2010), such as greater ability to reach consensus over public policies thanks to social cohesion; higher moral standards of public servants; greater trust in government which enables the latter to afford bolder policies and advance reform; and higher compliance with laws and regulations which increases the efficiency of tax collection and public expenditures. Prevailing among these mechanisms is the enhanced accountability of government to a society properly endowed with civic culture (Bjørnskov 2009).

Almond and Verba (1964) described civic culture as the belief in public participation and civic duties, and confidence in one's ability to influence public affairs through democratic processes. Civic culture makes citizens "sophisticated consumers of politics" (Boix and Posner 1998, p. 690) and is rooted in norms and values which are accumulated through democratic experience (Putnam 1993; Persson and Tabellini 2009; Fuchs-Schündeln and Schündeln 2015) and economic development (Inglehart and Velzel 2005).

Civic culture is a stripe of social capital inasmuch as it enables coordinated political participation to deliver accountable governance, which is a valuable public good for the society. Welzel et al. (2005) argue that civic culture, rooted in self-expression values and prompting elite-challenging actions, "represent[s] a specific form of social capital: a form that has a strong emancipative thrust" (p. 141). Furthermore civic culture (also known as "civicness" – see Nannicini et al. 2013) belongs to the bridging social capital category – its core values involve concerns about the society at large, and political participation is motivated by social, rather than individual or group, welfare. If these attitudes are widely held, efficient governance ensues (Easterly et al. 2006; Nannicini et al. 2013; Besley and Persson 2012). Pro-social values that underpin civic culture motivate to bear the cost of public involvement and political participation (Jottier and Hetyndels 2012). Welzel et al. (2005) demonstrate that civic culture, proxied by elite-challenging varieties of social capital, has a greater payoff in terms of institutional quality and government effectiveness, than other types of social capital. A lack of civic culture paves way to "divide and rule" politics, detrimental to the quality of governance (Weingast 1997; Nannicini et al., 2013).

Civic culture could be only loosely, if at all, related to the conventional ingredients of social capital, such as generalized morality and social networking (Paxton 1999; Giordano and Tommasino 2013) and interpersonal trust (Newton 1999). Based on shared values, civic culture does not necessarily require direct social connectedness and communication between individuals, and illustrates the "strength of weak ties" (Granovetter 1973). Direct interpersonal ties are usually stronger within close-knit networks which are reservoirs of bonding social capital. Such networks are less suitable for sustaining civic culture, and hence broad associations are more significant for democratic quality than narrow ones (Paxton 1999).[3]

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[3] Acemoglu et al. (2014) (see also Satyanath et al. 2013) argue that bridging social capital can also acquire a dark side under captured public institutions, in which case "a bridge can be crossed in either direction, meaning that bridging social capital can be used as a vehicle to assert … control [over society]" (p. 359).

Although bonding social capital cannot sustain civic culture, it is readily available for "horizontal" solutions whereby network members jointly substitute for inadequate public institutions and services.[4] A lack of confidence in the society's ability to fix governance problems makes such "exit" into informal arrangements an attractive and practical option.

An illustration of such response is the shadow economy, which is brought about by red tape, excessive tax burden, and government predation. These pathologies are symptoms of a lack of democratic accountability (Djankov et al. 2002), and they trigger exit into the informal sector (De Soto 2000), sustained by direct interpersonal links and other kinds of bonding social capital.[5] However, the informal economy is a highly imperfect palliative to functional public institutions (La Porta and Shleifer 2008), and furthermore it siphons off public revenues from the formal sector (Johnson et al. 1997), making the latter even more dysfunctional.

This shows that government performance can deteriorate further due to grassroots apolitical adjustments to government failures. The same pattern in a more general form is observed in the distinction between the "clan" and the "city", which are metaphors for formal and informal institutions coexisting alongside each other (Greif and Tabellini 2010). People turn to clans for protection and other services unavailable from non-performing cities and further deprive the latter of vital resources. Such outcomes should be expected when there is abundance of bonding and lack of bridging social capital, including insufficient civic culture. Social capital mixes of this kind, common in developing and transition countries (see e.g. Rose 2000; Mendoza-Botelho 2013), "… may be functional and comfortable for a … time, but at a low energy level" (Schuller 2007, p. 16).

We offer a novel explanation of such "lack of energy", which involves a political disincentive effect caused by horizontal social capital. This effect is observed when horizontal social capital is mobilized as an ad hoc remedy for governance failures made possible by a lack of civic culture. Such response diverts attention and energy of the society from root causes of the encountered problems; this is a crowding out effect, whereby horizontal social capital supplants civic culture. The "self-healing" capacity of the society takes the heat off the non-performing or self-serving politicians and bureaucrats and invites further misconduct. A model presented in the next section provides a formal description of such effect.

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[4] Private donors, communities, and NGOs can contribute to public goods and services on the top of what is available from governments; for the interplay between public and private provision of public goods see Andreoni (2006). Since (Ostrom, 1996), joint involvement of governments and communities in the provision of public goods and services is known as "coproduction" (Ostrom, 1996). Communities' inputs and comparative advantages include better information (Bowles and Gintis 2002), stronger incentives, etc. We do not consider here such situations, since our primary interest is in "horizontal" remedies to *preventable* government failures.

[5] Interestingly, interpersonal trust is *negatively* correlated with the size of shadow economy (D'Hernoncourt and Méon 2012). Although trust is required to carry out transactions in the absence of public contract enforcement, it also improves the quality of governance and formal institutions and thus reduces the need in informal economy in the first instance. The latter indirect effect appears to be stronger than the direct one.

3. The model

We follow a political economy tradition to model imperfect government accountability by assuming that the government (ruling class) maximizes a Bergson-Samuelson utility function which depends on the government's own welfare and the welfare of the rest of society, and gives higher priority to the former (see e.g. Persson and Tabellini 2000; Grossman and Helpman 2001). Suppose that government misconduct (in the form of corruption, theft or diversion of public funds, expropriation of income or property, negligence etc.) generates material gains to the government (hereafter – expropriation) $D \leq \overline{D} \leq \infty$, at the cost C to the society; $C \geq D$ due to possible deadweight losses of expropriation.

Society's losses $C = C(D, w)$ depend on the amount of expropriation $D \in [0, \overline{D}]$ and on the stock $w \in [0,1]$ of horizontal social capital, which reduces social costs of expropriation.[6] Horizontal social capital cannot prevent expropriation, and therefore its impact is limited to saving some (possibly all) of the deadweight losses. The function $C(D, w)$ is assumed twice continuously differentiable and such that $C_D(D, w) > 0$; $C_{DD}(D, w) \geq 0$, with strict inequality for $w < 1$, and $C(0, w) = 0$, for all $D \in [0, \overline{D}], w \in [0,1]$. Assume further that $C_{Dw}(D, w) \leq 0$ (horizontal social capital reduces marginal costs of expropriation), with strict inequality for $D > 0$. Notice that due to the above assumptions, one has $C_w(D, w) < 0$, for $D > 0$, and $C_w(0, w) = 0, C_D(0, w) \geq 1$.

Suppose that the government's utility function is as follows: $U = U(D, C; a)$, where the parameter $a \in [0,1]$ is an index of civic culture – another kind of social capital, which, unlike the horizontal one, holds the government accountable and as such is expected to limit expropriation "at source". The function U is assumed twice continuously differentiable, quasi-concave in D and C, and such that $U_D > 0, U_C < 0$. We make the following additional assumptions about the utility function:

$$\frac{\partial}{\partial a} \frac{U_C}{U_D} < 0; \ \frac{\partial}{\partial C} \frac{U_C}{U_D} \leq 0. \tag{1}$$

The first assumption is a single-crossing condition meaning that the marginal disutility to the government of social losses in relation to marginal gains from expropriation increases in a; this corresponds to the notion of civic culture's role of making government more accountable and hence more sensitive to the damage it could cause to the society. The second assumption is technical: proceeds from expropriation are a "normal good" for the government.

For given stocks of civic culture a and horizontal social capital w the government chooses the level of expropriation $D = D(a, w)$ that maximizes its utility:

$$D(a, w) = \arg \max_{D \in [0, \overline{D}]} U(D, C(D, w); a). \tag{2}$$

Finally assume that when civic culture is at its maximal level, there is no expropriation, whereas if there is no civic culture, an unprotected society is fully expropriated:

$$U(D, C(D, w); 1) \leq U(0, 0; 1); \ \ U(D, C(D, w); 0) \leq U(\overline{D}, C(\overline{D}, w); 0) \tag{3}$$

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[6] Such reduction requires a collective action (e.g. grassroots provision of public goods or services undersupplied by the government – see examples at the end of the section) which is enabled by horizontal social capital.

for all $D \in [0, \overline{D}], w \in [0,1]$.

First we demonstrate that civic culture improves the quality of governance (reduces expropriation), while horizontal social capital has the opposite effect.

Proposition 1. The level of government expropriation $D(a, w)$ monotonically decreases in civic culture a and monotonically increases in horizontal social capital w.

Proofs of the propositions are presented in Appendix A. Intuitively an increase in civic culture makes expropriation politically costlier to the government. Conversely, an increase in horizontal social capital reduces social losses caused by expropriation, making it less politically costly for the perpetrators.

Next we explore the impact of both types of social capital on social losses caused by the government, or, with the opposite sign – on social welfare. Civic culture affects social welfare only via lower government expropriation, and therefore reduces *both* the expropriation and the losses it entails. The impact of horizontal social capital involves two opposite effects. The first one is direct and reduces social losses, since $C_w(D, w) < 0$. The second effect is indirect and works through the equilibrium expropriation $D(a, w)$ obtained from (2) – according to Proposition 1, expropriation rises in horizontal social capital, which due to $C_D(D, w) > 0$ leads to greater social losses. The overall payoff to horizontal social capital depends on the relative strengths of these two effects. The following proposition shows that the second effect could prevail over the first one, at least for sufficiently high levels of civic culture.

Proposition 2. The following statements hold:

(i) Social losses $C(D(a, w), w)$ decrease in civic culture a.

(ii) For any w, there are values $a \in (0,1)$ such that $\frac{\partial}{\partial w} C(D(a, w), w) > 0$; furthermore such values can be found arbitrarily close to 1.

(iii) If $C_{Dw}(0, w) < 0$, then there is $\tilde{a} < 1$ such that $\frac{\partial}{\partial w} C(D(a, w), w) > 0$ for all $a \in [\tilde{a}, 1]$.

(iv) If $\frac{\partial}{\partial D} \frac{U_C}{U_D} \leq 0$ (cost of expropriation to the society is a "normal bad" for the government) and

$$\frac{\partial}{\partial D} \frac{C_D}{C_w} < 0, \tag{4}$$

for $D = D(a, w)$, then $\frac{\partial}{\partial w} C(D(a, w), w) < 0$.

(v) If the utility function U is linear in D and C (e.g. $U(D, C; a) = D - aC$), then $\frac{\partial}{\partial w} C(D(a, w), w)$ and $\frac{\partial}{\partial D} \frac{C_D}{C_w}$ have the same sign.

According to statement (ii) in the above proposition, one can always find circumstances when horizontal social capital *in*creases social losses from expropriation, and hence has a negative marginal payoff for social welfare. Such outcomes can be observed for high levels of civic culture. Furthermore (statement (iii)), with a mild additional assumption, horizontal social capital increases social losses for *all* sufficiently high levels of civic culture.

The remaining two statements indicate that horizontal social capital could still have positive overall payoff. This could be the case when the marginal costs of expropriation rise steeply (so that condition (4) is satisfied), which can be expected for high levels of expropriation observed when civic culture is low or absent.

According to Statement (v), condition (4) suffices for positive economic payoff of horizontal social capital, whenever government's utility function is linear. The intuition behind these results is that a society completely deprived of civic culture has nothing to lose in the face of rampant predation, and hence benefits from partial relief provided by horizontal social capital.[7]

Two following specifications illustrate the above general model and its properties. In both of them a linear utility function of the government $U(D, C; a) = D - aC$ is assumed. In the first specification, the government expropriates the society (private sector) through predatory taxation with the sole purpose to generate revenue for the ruling class. To this end, the government levies an income tax with flat rate $t \in [0,1]$. There is a unit continuum of taxpayers with identical utility functions $u(x, l) = x - v(l)$, where x is income, l – labor, and the function $v(l)$ is convex, smooth, monotonically increasing and such that $v(0) = 0, v'(0) = 0$. Market wage is normalized to unity. For tax rate t, the labor supply is as follows: $l(t) = (v')^{-1}(1 - t)$. If the government expropriation target is D, then tax rate should be such that $D = tl(t)$. Assume a single-peaked Laffer curve with tax rate choices made on the ascending portion of the curve, so that t monotonically increases in D until the latter reaches its maximal value $\overline{D} = \max_{t \in [0,1]} tl(t)$. Cost of expropriation borne by a taxpayer is $\tilde{C}(D) = V(0) - V(t)$, where $V(t) \equiv (1 - t)l(t) - v(l(t))$ is taxpayers' residual welfare, and $D = tl(t)$. Notice that $\tilde{C}(D) = D + R$, where R is a deadweight loss of a distortionary tax.

Suppose that horizontal social capital enables some agents to self-organize into groups that obtain exemption from the tax; in exchange each group member contributes a lump-sum payment D, and such contributions are transferred to the government.[8] The government is indifferent between such contributions and taxation, whereas group members save the deadweight loss R. If horizontal social capital is measured by the share w of agents capable of such self-organization, then the total losses of the society from government expropriation are $C(D, w) = wD + (1 - w)\tilde{C}(D)$. This function meets all the assumptions stated above in this section.

Properties of functions $D(a, w)$ and $C(D(a, w), w)$ can be derived from Proposition 1 and statements (i) and (v) of Proposition 2. In particular, social losses decrease in civic culture. As for the payoff to horizontal social capital, notice that $\tilde{C}'(D)=1/(1 - \varepsilon(D))$ where $\varepsilon(D)$ is the elasticity of labor supply estimated at $tl(t) = D$. Since $\varepsilon(0) = 0$, one has $C_{Dw}(0, w) = 0$, and therefore according to (v), $\frac{\partial}{\partial w} C(D(a, w), w) = 0$. It means that when civic culture is at its highest level $a = 1$, and $D = 0$, horizontal social capital is idled and has zero social payoff. For sufficiently high levels of civic culture marginal social payoff of horizontal social capital turns negative, in accordance with (ii). Finally, when $a \to 0$ and $D \to \overline{D}$, $\varepsilon(D) \to 1$ and hence $\tilde{C}'(D) \to \infty$. In this case, according to (v), social payoff to the horizontal social capital becomes positive. We illustrate

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[7] Ahlerup et al. (2009) similarly argue that economic payoff to trust is more pronounced when formal institutions are weak (which is a likely outcome of missing civic culture).

[8] E.g. groups are lobbies making contributions to government in order to prevent taxation of group members (Grossman and Helpman 1996).

the above features by the profiles of $D(a,w)$ (Figure 1, Appendix A) and $C(D(a,w),w)$ (Figure 2, Appendix A) derived for $v(l) = l^2$.

In the second specification expropriation occurs through diversion of public funds, which triggers substituting co-production from the society. Consider a society with population normalized to unity, which is divided into N equally sized communities. The government is responsible for providing a local public good for each of the communities. Each community member has the same utility function $u(x,G) = x + f(G)$, where x is private consumption, and G – local public good (measured in monetary terms). Function $f(G)$ is smooth, monotonically increasing, concave and such that $f(0) = 0, f'(0) = \infty$. The government has a budget NG^* allocated to fund the provision of local public goods for all communities at the socially optimal level G^* meeting the Samuelson condition $f'(G^*) = N$. Part $D \leq \overline{D} = NG^*$ of this budget is diverted, and the actual government funding of local public goods is $G^* - D/N$. Unless communities themselves compensate for the funding shortfalls, the cost of expropriation per community member will be $\tilde{C}(D) = f(G^*) - f(G^* - D/N)$.

In this specification, horizontal social capital enables some communities to fully make up for insufficient government funding by raising privately the missing amounts D/N, in which case the cost of government diversion for such communities will be D/N. If the stock of horizontal social capital is measured by the share w of communities with such capability (ignoring for simplicity that it should be a multiple of $1/N$), then again the total cost of expropriation to the society is $C(D,w) = wD + (1-w)\tilde{C}(D)$. One could easily check that here too $C_{Dw}(0,w) = 0$ and $\tilde{C}'(D) \to \infty$ when $D \to \overline{D}$, and hence the profiles $D(a,w)$ and $C(D(a,w),w)$ are qualitatively similar to those derived in the first specification.

The above theory and specifications suggest that civic culture improves the quality of governance *and,* consequently, social welfare. On the other hand, horizontal social capital adversely affects the quality of governance, whereas its overall economic payoff depends on the stock of civic culture – it could be mildly positive when civic culture is nearly missing, but turns negative for higher stocks of civic culture. We now bring these hypotheses to empirical data for Russian cities.

4. Data

Our main source of data is an all-Russia survey conducted in September 2007 by the Public Opinion Foundation within a multi-year GeoRating polling program which covered 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 included three clusters of questions: (i) on views, norms and values of respondents; (ii) on satisfaction with economic and social conditions in respondents' places of residence, and on their assessment of accountability and performance of local authorities; and (iii) on individual characteristics of respondents. The first and second groups of questions were used to calculate resp. independent and dependent variables, whereas the third group supplied control variables, which also included size and administrative status (national capital, regional capital etc.) of the city or town.

The first group of questions resembles those used in the World Values Survey project (www.worldvaluessurvey.org) and similar international polls (see Appendix B Table 1); these questions reveal respondents' perception of cohesion, self-help and propensity for collective action in the surrounding communities. Other questions from this group characterize respondents' own norms and attitudes, such as trust, help to others, willingness to join collective action, and responsibility for respondents' families, local communities, and cities (towns, villages). Individual characteristics of respondents included age, gender, ethnicity, education, income and economic situation.

Respondents' satisfaction with their lives was a welfare measure. 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. On the one hand, accountable governance is an important outcome of social capital, especially its civic culture stripe; on the other hand, government performance is expected to serve as a mediator (Baron and Keeney 1986) in the causal link from social capital to economic outcomes.

Social capital by definition is a community resource, and communities are usually defined by spatial boundaries. In the literature such boundaries are often those of subnational units (regions), but we opted instead for the city (town, village) level of analysis. This was due to wide 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. Within cities and towns cultural attitudes are more homogeneous, but exhibit significant inter-city variations across the sample – standard deviations of city averages could be as high as 45% of the sample total. Furthermore, local governments' performance and residents' satisfaction with conditions in their cities fluctuate within broad margins as well.

Some of the respondents' attitudes are significantly correlated with each other (40% and more), which points to a more general latent structure of norms and values. This structure was revealed by (common) factor analysis, which yielded two dominant factors (Appendix B Table 2). Attributes that load heavily on the first factor reflect broad social cohesion, accord, mutual help and propensity for collective action. Trust also loads positively on this factor, although to a lesser extent. 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.

Attributes with positive loads on the second factor are the indexes of restricted and exclusive social connectedness and of limited radius of trust and social norms (trust only in those who have much in common with a respondent, and the preference to dealing with such people). Indexes measuring broad social cohesion and propensity for collective action have significant negative loads on the second factor, which thus reflects cautious and possibly adverse attitude to "others". The second factor features weaker responsibility for the city, but stronger belonging to the community, which is symptomatic of a lack of civic culture in the "clan vs. city" dichotomy (Greif and Tabellini 2010). Hence, the second factor can be interpreted as an index of bonding social capital.

The first two factors explain over 60% of the total variation. These results are robust to various factor analysis techniques. In what follows social capital indexes are normalized so that their minimal values are zero, and standard deviations equal unity.

The two measures of social capital are significantly correlated with individual characteristics of respondents; in particular, bridging social capital is, in agreement with Welzel and Inglehart (2005) and Helliwell and Putnam (2007), positively correlated with education, income, and economic well-being. Bonding social capital is more prevalent among less educated and less economically successful groups. Bridging social capital is positively, and bonding – negatively associated with respondents' age; this could reflect the damage caused to the social capital of younger cohorts whose formative years overlapped with the tumultuous economic transition (Aghion et al. 2010; Gaber et al., 2018).

In the empirical analysis that follows, we use the first factor as a proxy for civic culture, and the second one – as a proxy for horizontal social capital prompting exit from public life. While bonding social capital is commonly considered as antithetic to civic involvement (see also Section 6), using the first factor as a measure of civic culture requires additional arguments, since the bridging social capital is a broader concept (Acemoglu et al. 2014).

Additional validation can be found in subsequent surveys of the GeoRating program, conducted after 2007, where respondents were asked about their political and social views, attitudes and experience. Correlations of our social capital measures with such views, averaged at the city level, are presented in Table 3, Appendix B, for all cities and towns in the sample (1,822) and for larger cities (population of 100,000 and up), where the effect is more pronounced. The first factor exhibits highly significant correlation with the preference for reform, with the aversion to the "strong hand" rule, with the refusal to observe bad and unfair laws, with the confidence that corruption can be eradicated, and with the support of protest actions. For the second factor such correlations most of the time have opposite signs or are much less pronounced. Therefore our bridging social capital measure shows strong affinity with all main bearings of civic culture, including its "elite-challenging" aspect, and is correlated with individual emancipation which is expected to produce such attitudes (Welzel et al. 2005).

Affinity of the above bridging social capital measure with civic culture can be further demonstrated by a positive correlation of this measure with voters' turnout in the first cycle of mayoral elections held after 2000, when such elections were relatively free and fair (Appendix B, Figure 1). No such correlations were observed for later electoral cycles, when mayoral elections were increasingly manipulated and rigged, and ultimately cancelled in many cities.

5. Social capital, local governance and welfare

We begin with estimating regression models relating the quality of local governance (QLG; measured by the answers to the survey question "Do local authorities understand and take into account the interests of people such as you") to the two above described stripes of social capital – civic culture (CC) and horizontal social capital (HSC), and control variables:

$$QLG_i = const + \beta_1 CC_i + \beta_2 HSC_i + \gamma_{ik} Control_k + RegionDummy_i + \epsilon_i; \qquad (5)$$

Here i is town's index. Estimations of the above regressions (Appendix B, Table 4) confirm predictions of the theory presented in Section 3: government effectiveness is positively and highly significantly associated with civic culture, and also highly significantly, but negatively – with the horizontal social capital. These conclusions are robust to various sets of controls. Moreover, they remain qualitatively unchanged if the full sample is reduced only to larger cities, where the impact of social capital on government performance is even stronger: one standard deviation in the civic culture corresponds to one standard deviation of the quality of governance index. These are evidences that more civic of the Russian cities and towns are by and large better governed.

Next, we relate welfare (W; measured by the reported satisfaction of respondents with conditions in their cities), to social capital:

$$W_i = const + \beta_1 CC_i + \beta_2 HSC_i + \gamma_{ik} Control_k + RegionDummy_i + \epsilon_i. \qquad (6)$$

Estimation results are presented in Appendix B, Table 5. Here, too, in agreement with the theory, civic culture makes positive contribution to welfare. The corresponding coefficient is significant at the 1% level and quite substantial: a one standard deviation change in the civic culture index is associated with an improvement of social and economic conditions in the city by a quarter of standard deviation. The contribution of the horizontal social capital is highly significant, too, but negative. Inclusion of various controls as robustness checks leave estimated coefficients and their significances practically intact. We can conclude that more civic among Russian cities and towns enjoy ceteris paribus higher well-being.

Our theory also suggests that civic culture affects welfare via the quality of governance, whereas horizontal (bonding) social capital affects welfare both directly (positively) *and* via the quality of governance (negatively). Put differently, we expect that civic culture's impact on welfare is fully mediated (Baron and Kenny 1986) by the quality of governance, whereas for horizontal social capital such mediation is partial and works in the direction opposite to the direct (unmediated) impact. To verify this empirically, we modify model (6) by including local government performance as an *independent* variable and estimate the following regression (Table 6, Appendix B):

$$W_i = const + \beta_0 QLG_i + \beta_1 CC_i + \beta_2 HSC_i + \gamma_{ik} Control_k + RegionDummy_i + \epsilon_i. \qquad (7)$$

Predictably, government performance turns out to be highly significant for welfare. Civic culture, heretofore highly significant, loses significance altogether, once the quality of governance is controlled for, which proves full mediation. Horizontal social capital remains significant but changes sign from minus to plus – the quality of governance absorbs the heretofore dominant negative effect of mediation, and leaves the residual direct effect, which is, as expected, positive.[9] Sobel-Goodman tests (MacKinnon 2008) confirm mediation effects of the quality of governance for civic culture and horizontal social capital at the 0.01 level.

Finally we test another prediction of the theory, i.e. that the payoff to horizontal social capital is contingent on the stock of civic culture, by subdividing the range of civic culture into five equal segments, and

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[9] For the whole sample inclusive of smaller towns such effect is less pronounced.

performing a rolling regression of model (6) for each of the segments. Coefficients of horizontal social capital and 95% confidence intervals are shown on Figure 2, Appendix B. Consistently with the theory, at the bottom of civic culture range, such coefficient is mildly positive (and insignificant). For higher civic culture levels, this coefficient becomes negative and significant. Finally, when the regression window is in the upper part of the civic culture range, the coefficient approaches zero and becomes insignificant again, reflecting the "idling" effect of horizontal social capital for high stocks of civic culture, demonstrated in the specifications in the model presented at the end of Section 3.

6. Validation and causality

Validity of the above findings could be questioned due to possible omitted variable bias, measurement errors, 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 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 (detailed results are available from the authors upon request).

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. Such data are only partially compatible with the 2007 poll, but still allow for meaningful cross-checking, and our results are robust to such checks: replacing outcome measures by those similarly derived from other years' surveys do not qualitatively change the conclusions. The same is true for *objective* measures of economic well-being, such as official data on wages, retirement benefits, households' bank deposits, etc., used as proxies for economic outcomes.

We have similarly performed validation of social capital indexes by measures of social accord and cohesion derived from a later 2009 GeoRating survey; again, the obtained results were close to those reported in the previous section.

Finally, we turn to the endogeneity problem in the link between social capital and economic outcomes. One can argue that social capital is not only a factor, but also a product, of development (see e.g. Inglehart and Welzel 2005). Similarly, good governance instills greater trust in institutions and broader cooperation, which are conducive for social capital buildup (Kumlin and Rothstein 2005). Conceivably, horizontal social capital required to fix governance failures could accumulate in response to bad governance, not the other way around.

A general response to such concerns is that social capital and culture more generally are "slow-moving institutions", and path-dependencies make reverse causality less likely (Roland 2004). Further evidence that causality runs from social capital to economic outcomes could be provided by valid instruments for the social capital indexes. Instruments for social capital used elsewhere in the literature (see Section 2), in our case either failed the validity test, or no satisfactory data for such potential instruments were found. Eventually we instrumented civic culture by the size of the middle class. The latter cultivates civic values and cohesion (see e.g. Moore 1966; Hooghe and Stolle 2003; Easterly et al. 2006), and as such could serve as a potential

instrument for social capital.

To increase the odds of meeting the exclusion restriction requirement, we take middle class measures from a quarter-century earlier survey, conducted in 1980 by the Institute of Sociological Studies of the Soviet Academy of Science (Levyikin et. al. 1980), which was broadly comparable in its scale, scope and methodology to the 2007 Geo-Rating survey.[10] 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.[11] 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. Two-stage least squares estimation (not reported here) shows that our proxy for the middle class in 1980 is indeed a valid instrument for social capital in today's Russia.

To instrument horizontal social capital, we use data from a Georating survey held in 2008, where respondents indicated, how many friends or acquaintances they could rely upon in dealing with complicated and serious problems. Respondents chose their answers from the following options: (i) there are no such people; (ii) there is one such person; (iii) there are several such people; and (iv) there are many such people. The fourth option indicates the availability of a social network ("clan") with significant membership, which can be mobilized to deal with problems in people's life at the grassroots; predictably, the percentage of respondents in a locality who selected this option is highly positively correlated with the horizontal social capital index. This index is similarly correlated with the first option, which corresponds to "amoral familism" (Banfield 1958), when problems are solved within a family. The combined share of people in a locality who choose either of these two options is a valid instrument for horizontal social capital in a 2SLS estimation (not reported here), which passes Wu-Hausman and other required tests.

7. Concluding comments

Much of the recent literature on social attitudes and their economic outcomes focuses on problems caused by a lack of cooperation and coordination in the society. In this paper, we shift focus from cooperation (or lack thereof) per se to different kinds of cooperation which implement "collective voice" and "collective exit" options and require distinct kinds of social capital with vastly different consequences for governance and welfare.

We propose a theoretical model that shows that horizontal social capital mobilized to deal directly with problems caused or left unattended by an insufficiently accountable government could be detrimental for economic welfare, especially if the society has accumulated some stocks of a superior social capital kind, i.e. civic culture. We verify and confirm this conclusion by using city-level data collected in Russia. In agreement

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[10] By using Soviet-time data we take advantage of the fact that middle class concentration followed the industry location decisions under central planning, which were not driven by market forces (Dellenbrant 1986) and hence could be viewed as a source of exogenous variations.

[11] Proxy for the middle class was respondents' description of their social status (white collars, as opposed to workers and peasants).

with the proposed theory, some stripes of Russian social capital advance urban development, whereas others obstruct it. Rose (2000) pointed out to a path dependency in the Russian social capital and cohesion where "informal networks substitute for the failure of modern bureaucratic organizations" (p. 155) and are used as a protection against the state. Such forms of social capital are considered "anti-modern", as opposed to modern ones, which ensure accountable governance and uphold economic, legal and political institutions. In 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.

A sanguine development view holds that economic growth and accumulation of human capital foster civic culture and pro-social values (Glaeser et al. 2007), which in their turn improve institutions and governance in the economy and society (Glaeser et al. 2004). However, "exit-type" 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 formal institutions, and suppress investments in civic culture and intergenerational transmission of pro-social norms and civic virtues (Tabellini 2008), while entrenching anti-modern social practices of adjustment to bad institutions.[12] The outcome of such "race" between different kinds of social capital is uncertain, and multiple equilibria are possible.

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

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Appendix A

Proof of Proposition 1. For an interior solution of problem (2), one has

$$\tilde{U}_D(D; w, a) = U_D(D, C(D, w); a) + C_D(D, w)U_C(D, C(D, w); a) = 0, \qquad (A.1)$$

where $\tilde{U}(D; w, a) \equiv U(D, C(D, w); a)$. According to the Implicit Function Theorem,

$$D_a(a, w)\tilde{U}_{DD}(D; w, a) + \tilde{U}_{Da}(D; w, a) = 0.$$

One can easily check that due to (A.1) and the first condition (1) (sorting condition),

$$U_{Da}(D(w, a), C(D(w, a), w); a) < 0,$$

and hence $D_a(a, w) < 0$ (as always, $\tilde{U}_{DD}(D; w, a) \leq 0$ due to the second-order condition). One can similarly verify that $D_w(a, w) > 0$, using this time the second condition (1) and bearing in mind that $C_{Dw}(D, w) \leq 0$. ∎

Proof of Proposition 2. Statement (i) holds trivially. To prove the rest of the proposition, denote $\Gamma \equiv \frac{\partial}{\partial w} C(D(a, w), w)$ and observe that

$$\Gamma\left[-U_{DD}\frac{U_C}{U_D} + 2U_{CD} - U_{CC}\frac{U_D}{U_C} + U_C\frac{C_{DD}}{C_D}\right] = U_{DD}\frac{C_w}{C_D} + U_{CD}C_w + U_C\frac{C_{DD}}{C_D}C_w - U_C C_{Dw}, \qquad (A.2)$$

for $D = D(a, w)$. The expression in brackets in the left-hand side of (A.2) is always non-positive due to quasi-concavity of U as a function of D and C, and convexity of C as a function of D, and hence unless the right-hand side of (A.2) equals zero, its sign is opposite to the sign of Γ.

The function $D(a, w)$ is continuous and montonically decreasing in $a < 1$; one can easily verify that it is also continuous at $a = 1$ and hence $\lim_{a \to 1-0} D(a, w) = 0$. Therefore (ii) can be restated as follows: there are $D > 0$ sufficiently close to zero such that the right-hand side of (A.2) is negative. To prove this, we show that for any $B, \varepsilon > 0$ there exists $D \in (0, \varepsilon)$ such that $\frac{C_{Dw}(D, w)}{C_w(D, w)} > B$ (in which case $-U_C C_{Dw}$, being negative, dominates over the rest if of the expression). Indeed, otherwise for some $B, \varepsilon > 0$ one has $\frac{C_{Dw}(D, w)}{C_w(D, w)} \leq B$, for all $D \in (0, \varepsilon)$. Integration of the previous inequality yields $\ln(-C_w(D, w)) \geq \ln(-C_w(\varepsilon, w)) - B(\varepsilon - D)$, for all $D \in (0, \varepsilon)$, which is in contradiction with $\lim_{D \to +0} C_w(D, w) = 0$. To establish (iii), observe that $\lim_{D \to +0} \frac{C_{Dw}(D, w)}{C_w(D, w)} = \infty$, and the convergence is uniform over $w \in [0,1]$. In addition, $\lim_{a \to 1-0} D(a, w) = 0$, and this convergence is also uniform over $w \in [0,1]$ due to Dini's Theorem since $D(a, w)$ monotonically decreases in a.
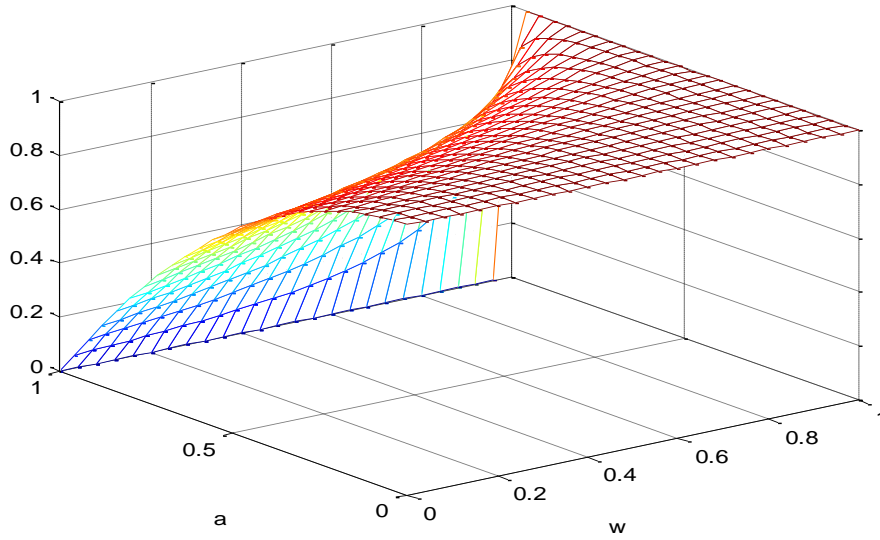
Statement (iv) holds, because under the first-order condition (A.1), one has $U_{DD}\frac{C_w}{C_D} + U_{CD}C_w \geq 0$, if C is a "normal bad", and $U_C\frac{C_{DD}}{C_D}C_w - U_C C_{Dw} > 0$ due to condition (4); therefore the right-hand side of (A.2) is positive. Finally, if the utility function U is linear in D and C, then (A.2) is reduced to

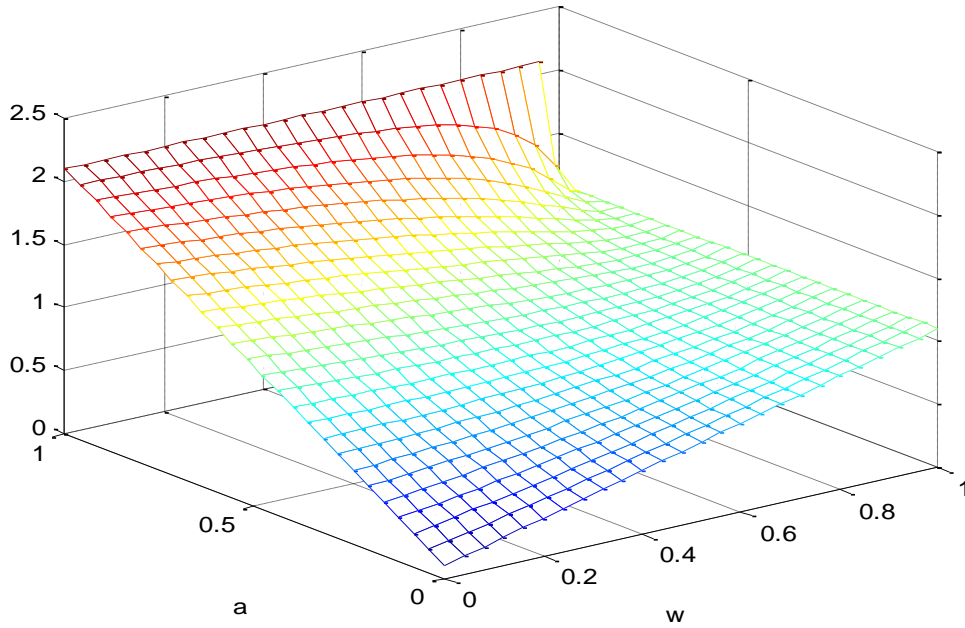$$\Gamma = C_w - \frac{C_{Dw}C_D}{C_{DD}},$$

which has the same sign as $\frac{\partial}{\partial D}\frac{C_D}{C_w}$. ∎

Figure 1: Social capital and abuse of power

Figure 2: Social capital and economic outcomes

Appendix B

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Table 1: Social norms, attitudes, and outcomes

Variable	Question	Min	Max
sc_unit	How often people around you are prepared to jointly solve their problems?	0	4
sc_unit_self	How often people around you are prepared to jointly solve social problems, even if the latter have no immediate bearings for them?	0	4
sc_agr_all	What is more common in our country today – social accord and cohesion, or discord and alienation?	0	3
sc_agr_close	What is more common among people around you – social accord and cohesion, or discord and alienation?	0	3
sc_trust	Do you think that people can be trusted, or you cannot be more careful in dealing with people?	0	1
sc_com_val	Do you meet people that have much in common with you?	0	3
sc_trust_com	Do you trust those who have much in common with you more, less, or the same as all others?	0	3
sc_help	How often people around you are ready to help each other?	0	3
ind_unit	Are you closer to those who are ready to join others for collective action only if they have the same interests and share the same ideas, or to those who are ready for collective action even if interests and ideas of other participants are different?	0	3
ind_help	Have you over the last year offered assistance and support to those who are not your immediate family members?	0	3
resp_fam	How strongly do you feel responsibility for your family?	0	3
resp_outdrs	How strongly do you feel responsibility for your apartment building or local residential area?	0	3
resp_city	How strongly do you feel responsibility for your city (town, village)?	0	3
soc_pow	Do you think authorities understand and take into account interests of people like you?	0	3
soc_outc	Overall, are you satisfied or dissatisfied by the situation in your city (town, village)?	0	3

Greater value corresponds to higher frequency, stronger agreement etc.

Table 2: Factor loadings

Attributes	1st factor	2nd factor
Willingness to help	0.7	0.2

Propensity to form groups	0.7	-0.3
Willingness to jointly solve problems	0.6	-0.3
Agreement and cohesion in the community	0.5	-0.4
Willingness to join groups	0.5	0.3
Plenty in common with others	0.4	0.3
Volunteer to help others	0.3	0.3
Feel responsible for the family	0.2	0.4
Feel responsible for the community	0.2	0.4
Feel responsible for the town (city)	0.3	0.2
Trust people like myself	0.3	0.4
Trust people in general	0.3	-0.1

Table 3: Correlation of civic culture and horizontal social capital with values and attitudes

Survey question	Civic culture		Horizontal social capital	
Is it more important for Russia to implement radical reforms (0), or to preserve stability (1)?	-0.041	-0.225***	0.298***	0.304***
Should all power be in one person's hands (1 – yes, 0 – no)?	-0.055***	-0.114***	-0.190***	0.051**
Should the Russian society be more resembling Western societies (1 – yes, 0 – no)?	0.087***	0.007	-0.201***	-0.340***
Do you agree that even bad or unfair laws need to be observed (1), or that bad laws should not necessarily be observed (0).	-0.061*	-0.258**	0.175**	0.346***
Is it possible or not, in your opinion, to eradicate corruption in Russia (1 – yes, 0 – no)?	0.069**	0.326***	0.008	-0.005
Do you agree that protest actions can be useful in solving various problems (1), or that no problems can be solved by protest actions (0)?	0.183***	0.233***	-0.0844	-0.179***
Do you personally consider participating in protest actions (1 – yes, 0 – no)?	0.287***	0.618***	0.215*	0.208***
Do you think that people such as yourself can succeed in life without government's help (1 – yes, 0 – no)?	0.142	0.249***	-0.224***	-0.0712***
Do you think your economic well-being depends more on you personally (your efforts, character, hard work, shrewd decisions) (1), or on circumstances beyond your control (general situation in the country or your city; actions of your superiors; random events; luck, etc.) (0)?	0.233***	0.307***	-0.0231	-0.186***

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OLS regression results with standard controls. The first column for a given type of social capital shows regression results for all cities and towns, the second one – for larger cities. * p value < 0.1, ** p value < 0.05, *** p value < 0.01

Table 4: Municipal government performance and social capital

(Survey question: "Do local authorities understand and take into account the interests of people such as you?")

Full sample

VARIABLES	(1)	(2)	(3)
Civic culture	0.128***	0.124***	0.123***
	(0.002)	(0.004)	(0.004)
Horizontal SC	-0.098***	-0.095***	-0.095***
	(0.004)	(0.005)	(0.005)
City population		-0.0001	
		(0.0001)	
Age		-0.003*	-0.003*
		(0.001)	(0.001)
Education		-0.007***	-0.004***
		(0.001)	(0.001)
Economic well-being		0.064***	0.065***
		(0.000)	(0.000)
City size dummy	NO	NO	YES
Regional fixed effects	YES	YES	YES
Observations	1822	1822	1822
R-squared	0.289	0.296	0.297

* p value < 0.1, ** p value < 0.05, *** p value < 0.01

Larger cities

VARIABLES	(1)	(2)	(3)	(4)
Civic culture	0.205***	0.204***	0.183***	0.165***
	(0.016)	(0.012)	(0.017)	(0.028)
Horizontal SC	-0.136***	-0.136***	-0.118***	-0.131***
	(0.027)	(0.027)	(0.022)	(0.022)
City population		-0.002	-0.015	-0.022*
		(0.012)	(0.011)	(0.009)
Age			0.000	-0.006
			(0.006)	(0.009)
Education			0.002	0.025**
			(0.026)	(0.006)
Economic well-being			0.167***	0.162***
			(0.011)	(0.008)
Observations	86	86	86	65
R-squared	0.521	0.521	0.561	0.505

* p value < 0.1, ** p value < 0.05, *** p value < 0.01

Table 5: Socio-economic outcomes and social capital

(Survey question: "Are you overall satisfied with the conditions in your town?")

Full sample

VARIABLES	(1)	(2)	(3)	(4)
Civic culture	0.122***	0.114***	0.122***	0.114***
	(0.010)	(0.012)	(0.010)	(0.014)
Horizontal SC	-0.091***	-0.088***	-0.091***	-0.088***
	(0.003)	(0.002)	(0.003)	(0.015)
City 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)
Economic well-being		0.115***		0.116***
		(0.016)		(0.029)
City size dummy	NO	NO	YES	YES
Region FE	YES	YES	YES	YES
Observations	1822	1822	1822	1822
R-squared	0.267	0.282	0.266	0.280

Larger cities

VARIABLES	(1)	(2)	(3)	(4)
Civic culture	0.129**	0.121**	0.130***	0.106**
	(0.032)	(0.039)	(0.017)	(0.029)
Horizontal SC	-0.052	-0.056***	-0.053	-0.078**
	(0.034)	(0.011)	(0.033)	(0.016)
City population		-0.013	0.014	-0.001
		(0.048)	(0.039)	(0.069)
Age		-0.032**	-0.041***	-0.034**
		(0.008)	(0.004)	(0.007)
Education		-0.132**	-0.121**	-0.133**
		(0.039)	(0.026)	(0.035)
Economic well-being			0.063	-0.075
			(0.160)	(0.041)
Observations	86	86	86	64
R-squared	0.061	0.163	0.129	0.117

* p value < 0.1, ** p value < 0.05, *** p value < 0.01

Table 6: Social capital's transmission channels

Larger cities

VARIABLES	(1)	(2)	(3)
Government performance	0.813***	0.813***	0.855***
	(0.059)	(0.058)	(0.176)
Civic culture	-0.038	-0.036	-0.027
	(0.034)	(0.045)	(0.041)
Horizontal social capital	0.058**	0.059*	0.048*
	(0.021)	(0.026)	(0.017)
City population		0.003	0.027
		(0.036)	(0.036)
Age			-0.041***
			(0.008)
Education			-0.123*
			(0.046)
Economic well-being			-0.079
			(0.192)
Observations	86	86	86
R-squared	0.197	0.197	0.267

* p value < 0.1, ** p value < 0.05, *** p value < 0.01

Figure 1: Civic culture and voter turnout in mayoral elections
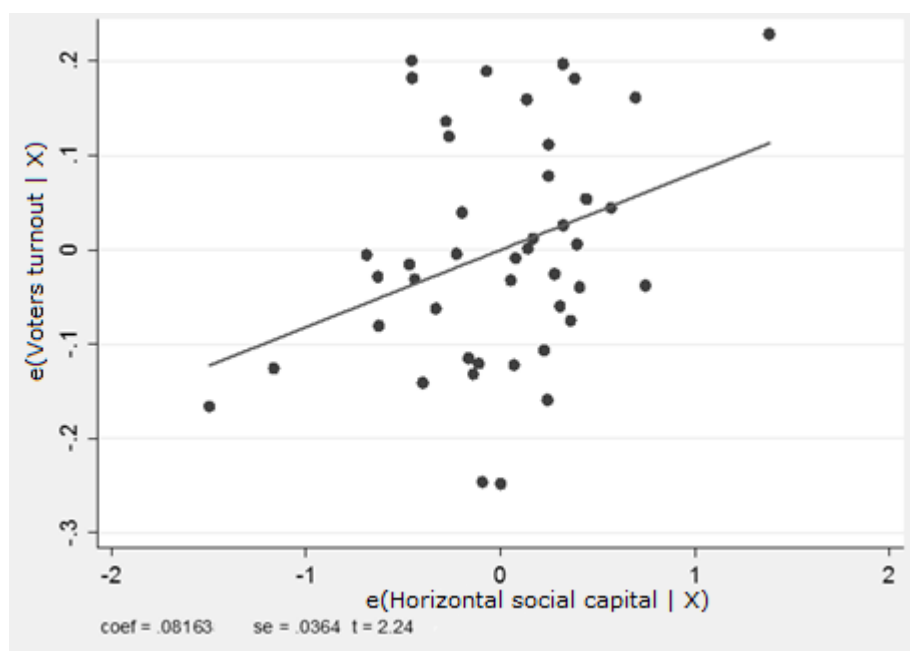
Figure 2: Impact of civic culture on economic payoff to horizontal social capital