Aarhus
9/7-2001

Social Capital in Russia and Denmark: A comparative study

Lene Hjøllund
Department of Economics
The Aarhus School of Business
Fuglesangs Allé 20
8210 Aarhus V, Denmark
lehj@asb.dk

Martin Paldam
Department of Economics
Aarhus University
8000 Aarhus C, Denmark
mpaldam@econ.au.dk

Gert Tinggaard Svendsen
Department of Economics
The Aarhus School of Business
Fuglesangs Allé 20
8210 Aarhus V, Denmark
gts@asb.dk

Abstract: Our main purpose in this paper is twofold: First, to compare the level of social capital in two different political systems, namely the cases of a new and an old democracy Russia and Denmark. Second, we will try to establish whether social capital matters for income generation and eventually to economic growth. The two main results are: First, the level of beneficial social capital is roughly three times higher in the old democracy than in the former communist dictatorship. Second, social capital matters in the earnings equation. In both countries it explains roughly 2½% of income differences, respectively, corresponding to 40% of what human capital explains in both countries.

JEL: A12, C71, D23, D70
Keywords: Social capital, capitalism, communism, principal component analysis, Russia.

*) This work is part of the book project Paldam, M. and Svendsen, G.T.: *Trust, Social Capital and Economic Growth: An International Comparison.* Edward Elgar, Cheltenham, UK. Forthcoming 2003. We thank the Rockwool Foundation which funds Martin Paldam's part of the project and the Danish Social Science Research Council and the Research Committee, Aarhus School of Business, for funding Gert Tinggaard Svendsen's part of the project.

1. Introduction

Social capital is an old concept, but it is becoming increasingly popular, as a whole group of researchers as J.S. Coleman, P. Bourdieu, R.D. Putnam, F. Fukuyama and others have provided new definitions that suggest measurement, and have demonstrated that these measures can be used. Lately the World Bank has added more approaches to measurement. We have surveyed the literature in Paldam & Svendsen (2000a) and Paldam (2000) – to save space the reader is referred to these surveys.

Many definitions of social capital are still around, but most can be organized into *three closely related groups*. Social capital is defined as either: (a) people's ability to work together, (b) trust among people, or (c) networks. The tree definitions are closely related: People, who trust each other form networks and can work together. Some hopes have been raised by recent empirical research – especially by the World Bank – that the two social capital dreams listed in Table 1 may be partially realistic.

Table 1. The two social capital dreams

D1	Social capital is a robust concept
D2	Social capital has considerable explanatory power

Robustness means that (most of) the different measures tap into the *same latent variable*. It would be too good to be true if all measures would collapse to just one variable, but even if two or three are found, one may dominate and constitute "social capital", while the other(s) can be identified as something else.

Economists want to explain *production and income*.[1)] They (we) hope that social capital can help (us) to do that. Politologists want to explain civic participation and democracy, see Deth, Maraffi, Newton & Whiteley (1999). We have taken advantage of their findings and include measures of civic participation as a fourth group of social capital indicators. We consequently measure social capital by a questionnaire that has items trying to catch each of the four groups of definitions (see 2.1). Then we analyze the pattern in the answers to see whether one or a few dimensions can be extracted. Finally, we try to explain income by the factors found, and other competing variables.

The data are collected in Russia and Denmark. The purpose in this paper is twofold: first, we want to compare the level of social capital in two different political systems, namely that of former communism (Russia) and that of capitalism (Denmark). In Paldam & Svendsen (2000b) we have developed this theory of social capital destruction under dictatorship (see 2.2). Second, we want to establish the importance of social capital to income. These ideas are tested empirically by using exactly the same questionnaire in the two countries and comparing the answers.

The paper proceeds as follow: Section 2 looks at the four groups of social capital measures. Section 3 (voluntary organizations and trust) and 4 (networks and civic action) compare the four social capital measures for Russia and Denmark. Section 5 studies the interconnections between some of the measures, to see how many dimensions the answers have. Section 6 analyses how well social capital – as found – explains earnings. Human capital is used as the competing explanatory factor. Finally, Section

1. In economic theory income of the household is the sum of the marginal products of the factors it supplies to production, but we only have measures of income at the moment. Thus, we estimate earnings functions only.

7 summarizes the findings.

2. Four groups of definitions and the dictatorship theory

This section surveys two subjects covered in more detail elsewhere: The four groups of social capital measures that can be applied in a questionnaire, and the dictatorship theory of social capital destruction. The actual questions posed are given in the Appendix. A reference to 'Q#' is to question no. # in the questionnaire. We have tried to make our results as comparable as possible to other social capital research by choosing questions used by others as much as possible.[2)]

Many networks are benign for society, but others are harmful, even criminal. Hence, there is **bad** social capital as well as good. We measure social capital by a questionnaire. It means that we can hope to catch only **good** social capital. Bad social capital has to be measured by other methods such as statistics for crime and corruption. Such attempts will not be made in the present article.

2.1 The four groups of social capital measures[3)]

We look at a polled person, *A*, living in a vicinity, *V*, that is a small part of a country, *C*. The social capital measures considered are averages for all people polled in C. The four groups of measures of social capital (g1) - (g4) are:

(g1) Putnam's Instrument: The density of voluntary organizations. How many such organizations does A belong to. See Q1 and Q2 (ie, questions 1 and 2 in the Appendix).

It is a way to measure an aspect of people's ability *to work together* – Coleman's definition of social capital. The literature further suggests that it is a proxy for trust, and it is also a measure of (some) networks. It is the easiest social capital measure to apply, but it is a proxy only. The main problem is to delimit voluntary organizations from public organizations and firms. We want to include only what people themselves consider as voluntary organizations. Also, it is sometimes found that it improves the power of the measure to weight the numbers of contacts to each organization per time unit.

(g2) Trust: The "amount" of trust A has in either (g2.1): others in general (Q3), (g2.2): public institutions (Q4), or (g2.3): local people (Q5), i.e. within the vicinity, V.

Trust is a more abstract quantity to measure, and it is possible that it has several dimensions as indicated. Fortunately, a number of questions have been developed and tested in studies from many countries. We discuss the results reached using the first two groups of measures in Section 3.

(g3) Networks: The density of A's links – weighted by strength – to other people. See Q6 to Q8.

This variable is developed by a whole school of network sociologists (see, eg Lin, 2001). They have developed interviewing methods to map networks. However, these methods demand specially trained

2. We are grateful to many researchers in the field for discussions as regards the best questions.

3. This section summarizes material covered in Paldam (2000).

interviewers and long interviews. They are not applicable in polls conducted by commercial companies. So, we have used more simple approaches involving subjective judgement by the respondents.

(g4) Civic participation: How many times has A participated in political and civic activities during a certain time period, see Q9.

This is easy to measure as it deals with objective events. However, it is clearly a proxy only for social capital. We discuss the results reached by the last two groups of measures in Section 4.

Note that both (g1) and (g4) are proxies, but they ask people about facts. In contrast (g2) and (g3) are subjective questions asking people for evaluations. Further, it should be mentioned that both trust and networks can be measured directly or by payoff questions of the type: How much do you think you can borrow from your friends in time of need? Such questions may make the assessments more concrete and thus more objective.

2.2 The dictatorship theory of social capital destruction[4)]

All dictators have good reasons to fear voluntary organizations and networks outside their control. The most innocent organizations may become a focus of an anti-government movement, and thus it needs to be observed.[5)] It appears that all dictatorships have used two instruments of intimidation:

(i1) It organizes one or more special police forces – controlled by the regime and outside the control of the normal legal system – with secret information networks in order to control such organizations and networks.

(i2) It uses fear, by demonstrating that the regime is above the law. It can and will punish people if it so desires. Most dictators use torture and execute enemies. If the concept of enemies is kept vague and information is left to rumors, it is easy to create an atmosphere of fear.

Old well-established regimes with a clear system of succession as *monarchies or theocracies* do not need to use these methods very much, but the 20th Century knew totalitarian systems that used them to the extreme.

Totalitarian systems are dictatorships that try to control everything by bringing all organizations into the system, and allowing no organization outside its control. In such systems no independent legal system can exist. Trust, networks and voluntary cooperation among people become difficult and even dangerous in such a system. They are described as "atomized societies". That is, as societies with no social capital.

Good social capital is reduced by dictatorship and destroyed by totalitarian systems.

Putnam (1993) analyzes social capital in Italy and finds it much smaller in the South than in the North. The explanation offered is the different history of the North and the South. The North had mixed regimes of which there were frequent republics. The South was for many years under the Kingdom of Naples. The great puzzle of this case is that Italy was united in 1860, so – as Putnam stresses – the

4. This section summarizes material covered in Paldam & Svendsen (2000b).

5. Nothing seems more innocent than a choral society, but several examples can be listed where such societies have been centers of national resistance against a foreign "oppressor".

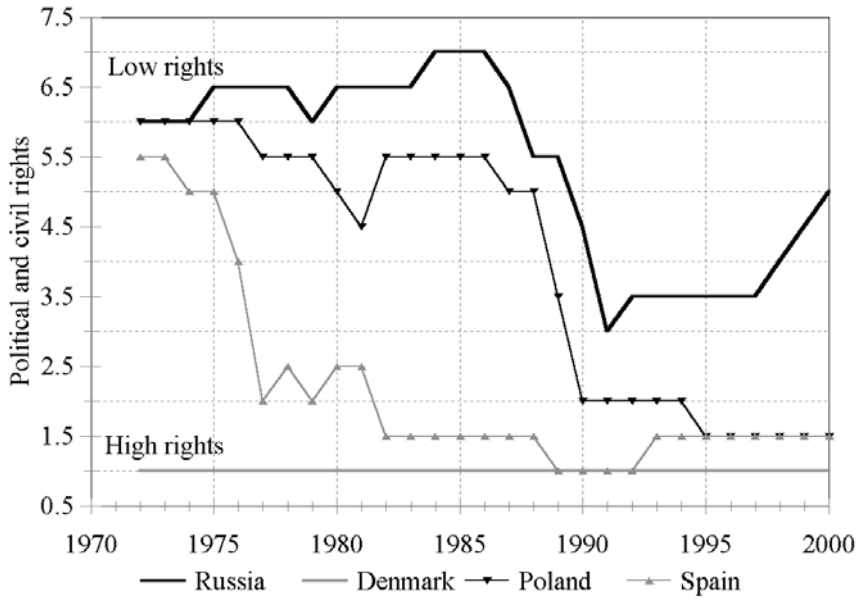
effects of dictatorship must be very long.

While dictatorship destroys *positive* social capital, it is arguable that it creates *negative* social capital. Paldam & Svendsen (2000b) argues that the transition from socialism is particularly likely to create negative social capital, which may even block the creation of positive social capital. The main point is that networks come to exist as a defense against the state. Such networks are illegal and thus they have to be secret. In communist societies they are especially important as the supply of goods and services are regulated, with little regard to demand. Hence people need connections to obtain goods and services. Also, firms are under heavy pressure to produce even if this means using "grey" networks to provide unavailable inputs.

2.3 The comparison of Russia and Denmark

The most simple of the two cases is the one of Denmark that became a formal democracy in 1849. It took till 1901 before the system was really accepted, and there was even something like a royal coup d'etat in 1920, though it quickly collapsed. For the last half century Denmark has been a textbook democracy. Russia became a formal democracy in 1990. Since then a process of democratization has taken place, but the new system is far from accepted.[6)]

Figure 1. The Gastil index of political and civil rights, 1972-2000, for four countries



The NGO Freedom House (see http://freedomhouse.org) annually assesses the state of political and civil rights in all countries.[7)] In the Freedom House's assessment the democratization of the Russian society

6. Many polls have been made in Russia about people's attitudes to democracy. They show that democracy is far from accepted by the Russians, but nor is any other political system. Source: Conference of Russian Pollsters at the Gorbachev Center, November 2000. See also APRI (2000), Colton (2000) and Wyman (1997).

7. The assessment is made by the use of a detailed checklist, also given at the web site. The detailed points are given as well. Even when some of the assessments can be discussed, it is clear that a serious effort is made.

is halfway, even when progress has been impressive. Figure 1 shows the composite indices from Freedom House for Russia and Denmark and for comparison also Spain and Poland.[8)] The worst score is 7 for no political and civic rights and the best score is 1 for all rights, as in Denmark – it appears that Spain and Poland are almost as "good", while Russia has some way to go.

Even when Russia is now well on the way to getting a normal democracy it is still a new and only partly accepted system of government. The regime of the millennium before 1918 was a monarchy. Even though it was not particularly hard, it did have a secret police, and people were jailed and sent to Siberia for political crimes, etc. The Communist regime from 1918 to 1990 was, in principle, totalitarian.[9)] During the long reign of Josef Stalin (approx. 1929 to 53), it was one of the most extreme systems known. Then, the Russian people thoroughly learned to take no initiative, to obey orders and to fear everybody. Hence, we imagine that large scale destruction of social capital took place.

3. First two concepts: Voluntary organizations and trust

The present section compares the marginal distribution for the two countries of the items measuring the density of voluntary organizations and trust. The analysis is based on a questionnaire posed to 2500 respondents in Russia and 1206 in Denmark.

3.1 The Putnam Instrument (Q1)

Table 2 shows the distribution of memberships of voluntary organizations and gives us the Putnam's Instrument. The average Russian is a member of 0.41 voluntary organizations, while the average Danish citizen is a member of 1.7.[10)] In both cases the interviewer had a list of the possible categories of organizations.

The right-hand column of the table compares the results from the two countries. Almost three times as many in Russia as in Denmark are members of no organization. The average number of memberships in the two countries differs by no less than 4.2 times. We compare these differences with other differences in Section 3.3. They are parts of a consistent pattern.

Table 2. Results reached by Putnam's Instrument (Q1)

8. In Spain General Franco died in November 1975 and a reform process was carried out till the first election in June 1977. The Polish transition to democracy started already with the formation of the independent trade union Solidarność in 1980. The organization was allowed but not legalized from 1982 to 88. The government negotiated with it in 1988 and it was allowed as a political party at the elections in 1989. In Russia the system remained in place though it gradually weakened till the big "meltdown" in 1990.

9. The main principles making the system totalitarian – such as the principle of one tightly organized party with a central command structure – were laid down by Lenin well before the revolution. Also, the main instrument of control – the Cheka/KGB – was founded in December 1917. The informer networks and the draconian system of punishments for political crimes (as defined by the party) was used from the start, and then followed civil war, mass collectivization, the great purges, the world war and the cold war, all situations in which human life was considered a minor detail.

10. The results for Russia are much like the results for the three Baltic States, and the data for Denmark are like the ones for the three other Scandinavian countries in Siisiäinen (1999).

Member-ships	Russia (2500)		Denmark (1206)		Ratio: Dk/Rus
	Frequency	Percent	Frequency	Percent	
0	1692	67.68	282	23.38	0.35
1	626	25.04	351	29.1	1.2
2	152	6.08	263	21.81	3.6
3	25	1	160	13.27	13
4	4	0.16	82	6.8	42
5	1	0.04	40	3.32	1000
6			16	1.33	∞
7			8	0.66	∞
8			2	0.17	∞
9 up			2	0.17	∞
Average	0.41		1.72		4.2

It has often been argued that some kind of weighting according to the frequency with which an individual is in contact with a specific organization would be an improvement of the measure. Table 3 shows what happens when Putnam's Instrument is weighted, as described in the note to the table. We have experimented with both the weighted and the unweighted variable, but found the results rather similar as shown in Table 3. A sensitivity analysis shows that the resulting measure depends on whether the limit between "normal" and "high" is drawn before (weights 2) or after (weights 1) 12 contacts per year.

Table 3. Comparing the weighted and unweighted versions (Q2)

	Russia	Denmark	Ratio
Unweighted	0.42	1.72	4.2
Weights 1	0.43	1.65	3.8
Weights 2	0.50	1.82	3.6

Note: The weights are 0.5, 1, and 1.5 for the answers: low, normal, and high level of contacts respectively.

3.2 Three dimensions of trust: (Q3) to (Q5)

The generalized trust question has been used in many studies and a whole book considers the question (Uslaner, 2001) in many countries and variants. We have taken the formulation from the World Values Survey. It is formulated as: *Generally speaking, do you believe that most people can be trusted or can't you be too careful in dealing with people?* The answers are given in Table 4. Once again the right-hand column shows the difference between the two countries. It looks as expected.

Table 4. Generalized trust in Denmark and Russia (Q3)

Frequencies in percent	Russia	Denmark	Ratio
Can trust	35	73.9	2.1
Can't be too careful	64	21.3	0.33
Don't know	1	4.8	-

Trust in institutions is measured by four variables. They can be separated into two groups, one consisting of trust in the legal system and the police, and one consisting of trust in the administration and the government. There is a clear difference in the distributions of the responses between these two groups, especially in Denmark.

Table 5. Trust in institutions compared (Q4)

All frequencies are in percent	Russia				Denmark			
	a great deal	quite a lot	not very much	none at all	a great deal	quite a lot	not very much	none at all
legal system	8	22.5	47.8	21.8	31.5	58.9	7.1	2.6
police	5.7	16	45.7	32.5	35.1	60.4	3.1	1.4
administration	7.5	22.4	45.4	24.6	9.6	67.3	19.5	3.6
government	8.4	21.1	46.2	24.3	10.9	62.3	23.1	3.7
Average	7.4	20.5	46.3	25.8	21.9	62.2	13.1	2.8
Ratio					3	3	0.28	0.11

Notes: The category "don't know" has been deleted in the above distributions. The shaded answers are termed "distrust" in the text.

While the police is the least trusted institution in Russia, it is the most trusted in Denmark. Almost 80% of the Russians *distrust* the Police, while only 4.5% of the Danes do so. This may be due to past history, but it is also connected with the low salaries of the Russian militia (the ordinary police) that has turned it into a "semi-privatized" agency and has turned ordinary traffic fines etc. into bribes. People know that the system of justice has to be greased often in order to work. Maybe those who pay the most get the best service. So it is not a trustworthy system.

The government and the administration have a low level of trust in Russia similar to the police and the courts, but also here the Danes have somewhat less than full trust. It is interesting to note that 23% of the Danish population distrusts the administration.

In a democratic system many support the opposition against the government. At the time of the poll other polls showed that the government was supported by 1/3 of the population.[11)] Nevertheless, almost 3/4 of the population express trust in the government. This shows a great deal about the nature of the seemingly big political disagreement in the country. The Parliament holds 10 parties, some of which are quite radical, but even then *none* of the parties want to change the political system. So a great deal of the trust in the government is actually support for the system.

In Russia things are different. Many polls have shown that people do not support "Western political institutions", and neither do several of the important political parties in the Duma. However, there is even less support for any other political system. Hence, it is not so puzzling that trust in government is low even though President Putin is supported by a majority of the voters (see note 6 for sources). So a great deal of the distrust in the government is actually distrust in the system.

11. At the time of our Social Capital poll the Danish Government was (still is) a Social Democrat minority government (supported by the small Radical Party). It has a majority in the parliament by relying on the opposition to the left, but at the polls this majority had disappeared at the time of our social capital poll.

Table 6. Local trust (Q5)

	Russia	Denmark	Ratio
People trust	57.9	85.7	1.5
People don't trust	19.9	6.4	0.32
Don't know	18.4	8	-
No answer	3.8	-	-

Finally Table 6 looks at trust in the vicinity, defined as local community or village. The exact formulations of the questions are given as Q5 in the Appendix. It is interesting to see that the difference between the two countries is smaller in a local context.

3.3 Comparing the results

When all types of trust are compared – in Table 7 – the pattern is not fully consistent, but the amount of trust is always higher or much higher in Denmark. We have also compared distrust, where the results are calculated in the reverse way.

Table 7. Comparing aggregate social capital ratios in the two samples

Social capital measure	Trust[a)]	Distrust[b)]	Table
Putnam's Instrument	4.2	-	2
Weighted	3.8	-	3
Generalized Trust	2.1	3	4
Trust in institutions	3	4.5	5
Legal system and police	3.7	10.2	5
Administration and government	2.5	2.8	5
Local trust	1.5	3	6

Notes: The trust ratio has Denmark in the nominator, and Russia in the denominator
The distrust ratio inverts the two countries.

a. The ratio between the sums of the responses "a great deal" and "quite a lot".

b. The ratio between the sums of the responses "not very much" and "not at all".

The social capital ratio is about 3 except for two cases: 1) when the denominator is small, the ratio becomes unreasonably high, and 2) when we look at the local community where people know each other, trust is less different. It is reassuring that the simplest measure: Putnam's Instrument give results much like the others. We conclude that the level of trust is 3-4 times higher in Denmark than in Russia.

4. The remaining two concepts: Networks and civic action

We now turn to the remaining measures, trying to measure networks and civic participation. It is, as already mentioned, impossible to map networks using standard polling techniques. Instead we use measures of network pay off. Civic participation is taken to be a good proxy for social capital, and once more standard questions exist.

See Section 3 and the Appendix for details on the questionnaire. It is a problem for this section that it uses calculations from Section 5, which in turn uses the data from this section. So the two sections should be read simultaneously. Or rather – as the authors are Danes – the reader should know by now that we can be trusted till next section.

4.1 General networks

Networks are important in times of emergency. They can be measured by asking about the most important sources of financial assistance in case of an economic loss (for instance job loss or crop failure).[12)]

Table 8. Financial assistance in case of economic loss (Q6)

Per cent	Denmark	Russia
family	34.7	42
public support	27	1.7
trade union	20.8	2.6
friends	9.5	30.3
neighbors	6.6	11.4
others	5.0	0.1
don't know	24.1	1.1
Sum (6 items)	103.6	88.1

Note: The respondent can indicate up to 3 items, so the sum adds to more than 100 as given. The "don't know" item is not included in sum.

Note that while both Russians and Danes know that they can rely upon their family, Russians rely much more upon their friends, and Danes upon the public system (including Unions).The difference is institutional: Danes do not need to rely upon friends when in need, while Russians have to rely on their friends. And in a society with little trust it gives an interesting dichotomy of friendship, many observers of Russia have noticed: on the one hand Russians appear cold, almost unfriendly, when you just meet them, but once you "break through" there is no end to their helpfulness.

Two points are worth noting: (1) the "don't know" fractions are different. The reason is not obvious. (2) as explained in the note to the table, respondents can give 1, 2 or 3 answers. For example, in the Danish data, out of the 34.7% having answered "family" as one of the three answers, 24.6% have also answered "government support system", and 15% have also answered "trade union". However, most respondents (47%) have given one answer only. This indicates that the total number of people relying on one of the three sources of financial assistance is somewhat smaller than the immediate impression of the simple marginal statistics.[13)]

4.2 Local community feeling (Q7)

12. The data for this particular question have been constructed slightly differently for the two data sets due to different local conditions and the advise of the polling agencies. Still, the results are comparable.

13. Similarly for Russia, the conditional distribution of "the second answer" (conditional on the "first answer" being "family" which is the case for 71.8% of respondents), shows that 63.6% of the non-missing values (answers) are "friends" and 30.8% are "neighbors". So, the 83.7% is presumably somewhat smaller. But it can definitely not be any lower than 71.8% which is the number of respondents who put "family" as the first answer.

Table 9 reports the question posed to measure the level of local community feeling. To make the table self-explanatory the question is included in the table.

Table 9. Local community feeling (Q7)

People here look out mainly for the welfare of their own families and they are not much concerned with village/neighborhood welfare. Do you agree or disagree with this statement?		
	Denmark	Russia
Strongly agree	25.5	37.3
Agree	60.5	42.9
Disagree	13.0	14.0
Strongly disagree	1.6	5.8

The answers look much like the answers to the questions about local trust in Table 6. So we have a good control here.

4.3 Local networks (Q8)

Q8 is concerned with the respondent's networks within the local area, ie the village or neighborhood. In this sense it is an extended version of Q7 investigating the same phenomena, by specifying ten sub-questions about different aspects of the respondent's relationship with his/her local area. Including both Q7 and Q8 makes it possible to test whether the simple question, Q7, can explain just as much as the more detailed Q8.

The method of principal components is used to analyze the relationship among the ten variables. The purpose is to look for underlying dimensions that could approximately describe all the variables and accordingly reduce the number of variables.[14)] The detailed results are given in Section 5. We identify two components in the Danish data and three in the Russian data.

Table 10. A comparison of the main components of local network in the two countries

Based on Tables 13a & b		Com1		Com2		Com3
		Russia	Denmark	Russia	Denmark	Russia
Com1	Russia	1				
	Denmark	0.94	1			
Com2	Russia	-0.8	-0.65	1		
	Denmark	-0.66	-0.79	0.29	1	
Com3	Russia	-0.06	-0.07	-0.08	-0.08	1

Note: The shaded cells of the table are uninteresting given the construction of the variables.

When Tables 13a and b are compared, it is obvious that Com1 in the two countries are similar. Table 10 reports the correlations among the 12 estimated correlations (that is, the columns in tables 13a & b).

14. The statistical method is explained in more detail in Hjøllund and Svendsen (2001).

It is obvious that Com1 in the 2 countries describes the same latent variable, while it is more dubious whether Com2 is the same latent variable in the two countries – the correlation is 0.29 only.

The first component explains 27% of variation in the Danish case and 22% in the Russian case. It represents mainly Q8a, e, g, i and j, which is evident from the correlation of the variables with the components. The second component (or dimension) is made up mainly by Q8b, d, and f and explains 14% of the variation in Denmark and 16% in Russia.

4.4 Civic action (Q9)

The 13 sub-questions of Q9 measure the involvement in civic actions. Table 11 gives the number of "yes" of the respondents to all the sub-questions. This is an aggregate measure of civic involvement.

Table 11. Civic action (Q9)

	Denmark	Russia	Ratio
Yes	34.7	22	1.6
No	65.1	74.2	0.9
Don't know	0.2	3.7	

Further, this "collection" of civic action indicators can also be analyzed for underlying dimensions by principal components analysis, in the same way as the local networks questions. Again, Section 5 gives a more detailed description of this analysis.

Table 12. A comparison of the main components of civil participation in the two countries

Based on Tables 14a & b		Com1		Com2		Com3	
		Denmark	Russia	Denmark	Russia	Denmark	Russia
Com1	Denmark	1					
	Russia	0.79	1				
Com2	Denmark	-0.71	-0.6	1			
	Russia	-0.53	-0.37	0.7	1		
Com3	Denmark	-0.13	0.2	-0.01	0.36	1	
	Russia	-0.57	-0.63	0.52	-0.01	-0.47	1

Here it is clear that components Com1 and Com2 measure the same latent variable, while Com3 is unrelated in the two countries.

Subsequently, we will test whether one or more of the components identified in the above will be significant in explaining individual earnings.

5. How many social capitals do the data contain?

Principal components analysis is used to investigate the data set for underlying (unobserved) dimensions. In the present context, ideally there would be only one clear dimension (or component) which we could label "social capital".

The method is particularly useful when exploring qualitative concepts. Q4, 8 and 9 (institutional trust, local networks, and civic action) are well suited for this type of analysis, as their structure is multidimensional. The local networks question will be treated thoroughly whereas Q9 will be discussed more briefly.

5.1 Local networks

Looking first at the output from this analysis of the Danish data for Q8, there appears to be two possibly three groups of variables, ie two or three dimensions that describe "local networks". The first group is made up by Q8a, e, g, i, and j. The second by Q8b, c, d, and f. Q8h has been deleted, since 35 % of the respondents have answered "don't know", and therefore the information contained in this variable is limited. Also, it is concerned with whether the neighborhood has prospered over the last five years, which would be expected to be highly correlated with what we seek to explain. Analyzing the remaining 9 sub-questions yields the output:

Table 13a. Principal component analysis of the local network questions for Denmark

	principal components, 2 comp. retained				Eigenvectors		
Comp.	Eigenv.	Diff.	Propor.	Cum.	Question	Com1	Com2
1	2.4	1.108	0.267	0.267	8a	0.428	0.134
2	1.292	0.35	0.144	0.41	8b	-0.171	0.466
3	0.942	0.048	0.105	0.515	8c	0.185	0.524
4	0.894	0.047	0.1	0.614	8d	-0.2	0.56
5	0.847	0.12	0.094	0.708	8e	0.401	-0.069
6	0.728	0.026	0.081	0.789	8f	-0.218	0.35
7	0.702	0.068	0.078	0.867	8g	0.449	0.176
8	0.634	0.071	0.07	0.937	8i	0.387	0.023
9	0.563	-	0.063	1	8j	0.392	0.135

In order to contribute to the explanation of the variance, the eigenvalue of a component must exceed unity. Otherwise, it contributes less than what would be expected to be observed randomly. Therefore, we have identified the existence of two dimensions in the data. The eigenvectors of the components are reported in the right-hand panel of the table. They give the correlation of the analyzed variables with the components.[15)] The higher the correlation the better the variables are "represented" by the component.

15. Again, Q8h has been deleted for the previously mentioned reason.

Accordingly, it is clear that the variables can be separated into two groups, one consisting of variables that are mainly correlated with the first component and one consisting of variables that mainly correlate with the other component. Finally, the components are "constructed" as a weighted sum of all the variables, with the weights given by the correlation of the variables with the components. In this way, the variables that have the highest correlation with the specific component (or dimension) get the highest weight.

Table 13b. Principal component analysis of the local network questions for Russia

	principal components, 2 comp. retained				Eigenvectors			
Comp.	Eigenv.	Diff.	Propor.	Cum.	Question	Com1	Com2	Com3
1	1.873	0.456	0.208	0.208	8a	0.441	-0.127	-0.242
2	1.413	0.395	0.157	0.365	8b	-0.136	0.359	0.595
3	1.018	0.024	0.113	0.478	8c	0.383	-0.062	-0.031
4	0.994	0.091	0.11	0.588	8d	-0.283	0.549	-0.042
5	0.903	0.158	0.1	0.689	8e	0.337	0.194	0.407
6	0.745	0.023	0.083	0.771	8f	-0.095	0.529	-0.34
7	0.722	0.044	0.08	0.852	8g	0.474	0.225	0.02
8	0.677	0.019	0.075	0.927	8i	0.387	0.165	0.313
9	0.659	-	0.073	1	8j	0.249	0.394	-0.453

Table 13b presents the same analysis of the Russian data. In this case 3 components have eigenvalues larger than unity. The first component explains 21% of the variance. The second explains 16% and the third accounts for 11%. And again, it is possible to group the variables according to which dimension they are correlated with. As it is evident from the right-hand panel of the table, these groups of variables are roughly identical to the ones in the Danish data set, as discussed in Section 4.2.

5.2 Civic Action

Like Q8 also the structure of Q9 (civic action) is a set of sub-questions. Again, we use principal component analysis. The pattern is not quite as clear as for Q8, however.

Again, we first look at the Danish data for Q9. There is hardly any variation in the responses to Q9i participation in sit-in or disruption of government meetings/offices. Hence, it will not be correlated with any of the other variables, and therefore forms a dimension of it's own. Consequently this sub-question is removed from the set. This leaves us with 12 variables, and a principal component analysis of these yields the results given in Tables 14a for Denmark and 14b for Russia.

The left-hand panel of the Table shows that the first component explains 22% and is by far the most important. The second component explains only 10%. The eigenvectors of the components show that the first component is mainly formed by Q9b, c, d, e, h. The second dimension (or component) is mainly formed by Q9a, j, and l. The third component (explaining 9%) is correlated mainly with Q9a, g and m. Again, we are now able to construct the three components as weighted sums, using the correlations (eigenvectors) as weights for the variables.

Table 14a. Principal component analysis of the civic action questions for Denmark

	principal components, 2 comp. retained				Eigenvectors			
Comp.	Eigenv.	Diff.	Prop.	Cum.	Question	Com1	Com2	Com 3
1	2.69	1.469	0.224	0.224	civ a	0.07	0.484	-0.507
2	1.222	0.14	0.102	0.326	civ b	0.305	0.176	0.123
3	1.082	0.091	0.09	0.416	civ c	0.422	-0.18	-0.12
4	0.99	0.093	0.083	0.499	civ d	0.354	-0.159	-0.114
5	0.897	0.026	0.075	0.574	civ e	0.394	-0.087	-0.07
6	0.871	0.033	0.073	0.646	civ f	0.278	-0.266	-0.276
7	0.838	0.051	0.07	0.716	civ g	0.183	-0.186	0.57
8	0.788	0.049	0.066	0.782	civ i	0.392	-0.124	-0.26
9	0.739	0.024	0.062	0.843	civ j	0.199	0.46	0.098
10	0.715	0.068	0.06	0.903	civ k	0.188	0.225	0.198
11	0.647	0.127	0.054	0.957	civ l	0.17	0.535	0.138
12	0.52	-	0.043	1	civ m	0.276	0.039	0.4

Table 14b. Principal component analysis of the civic action questions for Russia

	principal components, 2 comp. retained				Eigenvectors			
Comp.	Eigenv.	Diff.	Prop.	Cum.	Question	Com1	Com2	Com3
1	2.58	1.312	0.215	0.215	civ a	0.096	0.106	0.698
2	1.267	0.187	0.106	0.321	civ b	0.318	-0.068	0.031
3	1.081	0.096	0.09	0.411	civ c	0.329	0.017	-0.108
4	0.985	0.032	0.082	0.493	civ d	0.323	-0.322	-0.099
5	0.952	0.079	0.079	0.572	civ e	0.305	-0.419	-0.079
6	0.874	0.025	0.073	0.645	civ f	0.297	-0.263	0.062
7	0.849	0.041	0.071	0.716	civ g	0.283	-0.132	-0.019
8	0.807	0.081	0.067	0.783	civ i	0.361	-0.114	-0.029
9	0.726	0.059	0.061	0.843	civ j	0.257	0.239	0.517
10	0.667	0.047	0.056	0.899	civ k	0.284	0.273	0.096
11	0.62	0.027	0.052	0.951	civ l	0.281	0.517	-0.16
12	0.593	-	0.049	1	civ m	0.243	0.454	-0.421

The results of the analysis of the Russian data are, again, similar to the Danish case. In particular, the amount of variance explained by each component is almost identical, namely 22%, 11% and 9% respectively. So, there is one clear dimension and two less so in the Russian data set for Q9. Also, if the variables are grouped according to which component they correlate with, the pattern is similar to the Danish one.

6. Social capital and earnings

Now, we are ready to investigate which measures perform best in explaining the level of income. As a first step the indicators can be separated into four "families" of social capital measures as discussed in Section 2: (1) Memberships of voluntary organizations Q1-2. (2) Trust measures Q3-5. (3) Network measures Q6-8. (4) Civic action Q9. Note that we have decided to disregard the possibility that there is a counter causality bias. We assume it is small and of the same size relatively as the counter causality bias for human capital.

6.1 The set-up of the analysis

The aim is to identify the measure with the highest explanatory power within each family. We make simple linear regressions of the variable of income on the various measures of social capital.

In practical terms, we try to determine how much each measure contributes to the explanation of income. Therefore, we are interested in the partial R^2s of the social capital measures. For both countries, these are reported in Table 15 for the different variables as well as for the variable of education. It is defined as three categories: shorter, middle and longer. Education was included in order to be able to compare the contributions of social capital with that of human capital.[16)]

As there is an indication of *some* correlation between some of the variables, we have to approach the analysis from (at least) two directions. As a first step, we perform univariate regressions using each measure separately. This yields what we have called the partial R^2. The partial R^2 is included to illustrate the correlation of the specific variable with the other explanatory variables. If, for instance, the partial and marginal R^2 for a variable are identical, this variable would be fully independent of all other variables.

Subsequently, we have performed a multivariate regression, initially including all the possible measures, and then removing the variables one at the time noting the change in R^2. In this way we obtain the marginal R^2 for each variable, ie how much the variable adds given that all the other variables are already included. This approach is an attempt to detect (and reduce) the effects from the correlation between the variables, although it is rather limited for most cases.

It should be mentioned that the polled income in the Russian case is much lower than GDP per capita, while the two numbers from Denmark are as alike as they should be. Our Russian pollster reported that the numbers were the usual ones reported in Russian polls. The difference probably is that Russians report their official salary. Many have additional incomes, but they are not reported.

The partial and marginal R^2 are all low for two reasons. First, the results are in first differences. We want to see how well the "production factor" of social capital can explain income. Second, the partial and marginal R^2s will inevitably come out low, because the level of social capital is actually split between a range of aspects all concerning the same phenomenon. Accordingly, the contributions from the various aspects should, in principle, be added up in order to get the total contribution from the

16. We have discussed the results for human capital with several colleagues (Nina Smith and Michael Rosholm), who have estimated human capital models on other Danish data sets. It appears that the results for Denmark are exactly as expected. Also, it appears that the level of explanatory power is as could be expected.

suggested social capital measures. This action requires, however, that the explanatory variables were completely uncorrelated, which (as mentioned) they are not.[17)]

Table 15. Income effects of social capital measures

Dependent variable: polled income	Denmark		Russia	
	Partial R^2	Marginal R^2	Partial R^2	Marginal R^2
Putnam Instrument	2.54	0.57	3.74	1.96
weighted PI	1.98	-0.07	-0.04	-0.04
st. generalized trust	1.07	0.09	0.08	-0.24
institutional trust*	0.28	-0.05	0	-0.02
loan question	0.2	-0.07	-0.02	-0.01
local comm. feel	-0.06	-0.07	-0.04	-0.03
local networks Com1	0.19	-0.08	0.1	0.14
local networks Com2	-0.03	-0.08	-0.01	-0.08
local networks Com3	-	-	-0.04	0
civil engagement Com1	1.96	0.03	0.46	-0.01
civil engagement Com2	0.36	-0.02	-0.01	-0.03
civil engagement Com3	1.25	1	0	-0.02
education	8.05	4.99	8.79	6.98

Note: For local networks and civic engagement the principal components from Tables 13 and 14 are used.

6.2 Discussing the results

The correlation between the variables is evident from the difference between the partial R^2 from the individual regressions and the marginal R^2 from the full regression. It is noted that all variables decrease their contributions to R^2 when we go from the partial to the marginal perspective. This is, of course, due to the presence of correlation between the variables.

It is an important finding that Putnam's Instrument works better without intensity weights and that it "swallows" the whole of the trust dimension in both countries. However, apart from Putnam's Instrument it varies which of the variables works best in the two countries.

There are several ways to select the social capital variables for best multivariate model.[18)] The most straightforward approach is to consider all the explanatory variables at the same time and identify

17. Social capital and human capital have some multicollinearity. Removing *all* the social capital variables from the multivariate regression, ie regressing income on education alone shows that the social capital variables explain 1.92% of the variance of the income variable. In the aggregate perspective, this is the number that is comparable to the marginal contribution of human capital (5.03%).

18. Of course the usual "caution" is applicable. The number of measures that we will be left with depends on the determination of selection criteria which is a somewhat subjective exercise.

the significance of the variables. As the negative contributions to R^2 indicate insignificant variables, it is easy to identify the significant explanatory variables. This restriction is the most appropriate as it takes the correlation of the variables into account.

For Denmark, the significant explanatory variables are the Putnam Instrument, the standard generalized trust measure, "civic involvement" and "civic involvement3". For Russia the significant variables are the Putnam Instrument and "local network1". Table 16 compares the best regressions for the two countries.

In the Danish data the four measures of social capital explain 2.3 % marginally, and education explains 5.2 % marginally. Compared with the marginal contributions from table 15, this is slightly overestimated which is, again, due to the presence of correlation between the variables.

Table 16. Social capital indicators and income (marginal R^2)

dependent variable: polled income	Russia	Denmark
Putnam Instrument	2.16	0.72
generalized trust	-	0.19
local networks	0.72	-
civic engagement 1		0.03
civic engagement 3	-	1.03
all soc. cap. indicators [a)]	2.75	2.29
education	7.42	5.2

a. Removing all variables at the same time.

For Russia the results are similar. Table 16 shows that the contribution from social capital to explaining income is 2.8 % whereas human capital explains 7.4 %.

Accordingly, the overall result suggests that social capital is a new production factor at a 40% level compared with the importance of human capital to income in both Russia and Denmark. It is worth pointing out that human capital is a powerful variable in many connections, so 40% of human capital is a substantial amount.

7. Conclusion

The main purpose of this paper was twofold: First, we wanted to compare the level of social capital in two political systems with different histories. One is an old successful "capitalist" democracy. The other is a former communist country with a short and not entirely happy history of democracy. The comparison showed that the level of (good) social capital is roughly three times higher in Denmark than in Russia. This result suggests that the slowness of the transition of the old communist countries of Eastern and Central Europe could be caused by the lack of social capital. Though the former East Bloc countries have started implementing market-based reforms since 1989, the stock of social capital has presumably not changed yet as it takes a long time to build it. Putnam (1993) claims that it may even

take centuries, but other evidence suggests it may take a few decades only.[19)]

Second, we wanted to establish whether social capital matters to earnings (and eventually growth). Both in Russia and Denmark, social capital explains roughly 2½% of income. This corresponds to 40% of what human capital explains of income in both countries. Many attempts have been made to determine the importance of human capital to economic growth and in general, most experts agree that human capital contributes about half of the total. It matters roughly twice as much as physical capital, while many other factors share the remaining quarter. In other words, if social capital explains 40% of what human capital explains in terms of income, then social capital may potentially be able to explain most of the remaining quarter. This result is quite remarkable and demonstrates the potential of social capital. However, more research in more countries is needed to test this preliminary proposition thoroughly.

19. The evidence is surveyed in Paldam (2000).

Literature

АПРИ (APRI), 2000. *Общественное Мнение России.* Moscow

Colton, T.J., 2000. *Transitional Citizens. Voters and What Influence Them in the New Russia*. Harvard UP: Cambridge, MA.

Deth, J.W.v., Maraffi, M., Newton, K., Whiteley, P.F., eds. 1999. *Social Capital and European Democracy*. Routledge/ ECPR Studies in European Political Science: London

Hjøllund, L., Svendsen, G.T., 2001. Social Capital Measurement? The Preliminary case of Russia. Paper for the European Public Choice Society Meeting in Paris, April 2001

Inglehart, R., Basenez, M., Moreno, A., Moreno, M., 1998. *Human Values and Beliefs: A Cross-Cultural Sourcebook: Political, Religious, Sexual, and Economic Norms in 43 Societies: Findings from 1990-1993*. University of Michigan Press: Ann Arbor, MI

Krishna, A., Shrader, E., 1999. Social Capital Assessment Tool. The World Bank

Lin, N., 2001. *Social Capital A Theory of Social Structure and Action*. Cambridge UP: Cambridge UK

Paldam, M., 2000. Social Capital: One or Many? Definition and Measurement. *Journal of Economic Surveys* 14 (5): 629-653. Special Issue on Political Economy.

Paldam, M., Svendsen, G.T., 2000a. An Essay on Social Capital. Looking for the fire behind the smoke. *European Journal of Political Economy* 16 (2): 339-366. June 2000.

Paldam, M., Svendsen, G.T., 2000b. Missing social capital and the transition in Eastern Europe *Journal for Institutional Innovation, Development and Transition (IB Review)*, forthcoming.

Putnam, R.D., 1993. *Making Democracy Work. Civic Traditions in Modern Italy*. Princeton UP: Princeton, NJ

Siisiäinen, M., 1999. Voluntary associations and social capital in Finland. Cpt 6 in Deth, Maraffi, Newton & Whiteley (1999)

Uslaner, E., 2001. *The moral foundation of trust.* Forthcoming from Cambridge UP

Wyman, M., 1997. *Public Opinion in Postcommunist Russia*. (CREES series). Macmillan: Houndmills.

Appendix. The questionnaire

The questionnaire had 2500 respondents in Russia and 1206 in Denmark. The interviews were conducted by phone in Denmark and by face-to-face interviews in Russia, where phone ownership is not universal.

Our key explanatory variables have been selected from two existing questionnaires. First, questions have been replicated from Krishna and Shrader (1999) concerning structural social capital, namely Q1 and 5 through 9. Second, cognitive aspects Q3 and 4, are taken from the World Values Survey, see Inglehart et al. (1998).

SOCIAL CAPITAL QUESTIONNAIRE AND MARGINALS (Russia, 27-03-01)

Putnam's Instrument

1 – 2 How many voluntary organizations are you a member of:

	Name	Code from*	Frequency of Contacts		
			week	month	year
1					
2					
3					
4					
5					
6					
7					
8 up					

Frequency should be filled in only for lowest possibility

A contact is when the respondent takes part in an activity of the group

* Type codes

	% of those, participated in a organization				
1	Farmers'/fisherman's group		11	Parent group	
2	Traders' association/business group		12	School committee	
3	Cooperative		13	Health committee	
4	Women's group		14	Water/waste	
5	Credit/finance group (formal)		15	Sports group	
6	Political group		16	NGO	
7	Youth group		17	Civic group (ie, Rotarian)	
8	Religious group		18	Professional Association	
9	Cultural Association		19	Trade Union	
10	Neighborhood/village association		98	Other	

Trust

3 Standard generalized trust

Generally speaking, do you believe that most people can be trusted or can't you be too care

Most people can be trusted	
You can't be too careful	

4 Trust in institutions

How much confidence do you have in the following institution?

	Institution	(1) A great deal	(2) Quite a lot	(3) Not very much	(4) None at all	(5) Hard to answer
1	The legal system					
2	The police					
3	The administration					
4	The government					

5 Loan question

Do you think that in this neighbourhood/village people generally trust each other in

(1) Do trust	(2) Do not trust	(3) Don't know/ not sure	(4) No answer

6 Networks

Suppose your neighbor suffered an economic loss, say (RURAL: “crop failure”; URBAN “job loss”). In that situation, who do you think would assist him/her financially? [Record first three mentioned.]

1	No one would help	
2	Family	
3	Neighbors	
4	Friends	
5	Religious leader or group	
6	Community leader	
7	Business leader	
8	Police	
9	Family court judge	
10	Patron/employer/benefactor	
11	Political leader	
12	Mutual support group to which s/he belongs	
13	Assistance group to which s/he belongs	
14	Other	
15	Don’t know/not sure	
16	No answer	

7. People here look out mainly for the welfare of their own families and they are not much concerned with village/neighborhood welfare. Do you agree or disagree with this statement?

1	Strongly agree	
2	Agree	
3	Disagree	
4	Strongly disagree	
5	Don’t know/not sure	
6	No answer	

8

Please tell me whether *in general* you agree or disagree with the following statements:

		Strongly Agree	Agree	Disagree	Strongly Disagree
a	Most people in this village/neighborhood are basically honest and can be trusted				
b	People are always interested only in their own welfare				
c	Members in this village/neighborhood are always more trustworthy than others				
d	In this village/neighborhood one has to be alert or someone is likely to take advantage of you				
e	If I have a problem there is always someone to help you				
f	I do not pay attention to the opinions of others in the village/neighborhood				
g	Most people in this village/neighborhood are willing to help if you need it				
h	This village/neighborhood has prospered in the last five years				
i	I feel accepted as a member of this village/neighborhood				
j	If you drop your purse or wallet in the neighborhood, someone will see it and return it to you				

9 Civic actions:

In the last three years have you personally done any of the following things

		(1) Yes	(2) No	(3) Don't Know
a	Voted in the election			
b	Actively participated in an association			
c	Made a personal contact with an influential person			
d	Made newspapers, radio and TV interested in a problem			
e	Actively participated in an information campaign			
f	Actively participated in an election campaign			
g	Taken part in a protest march or demonstration			
h	Contacted your elected representative			
i	Taken part in a sit-in or disruption of government meetings/offices			
j	Talked with other people in your area about a problem			
k	Notified the court or police about a problem			
l	Made a donation of money or in-kind			
m	Volunteered for a charitable organization			

DEMOGRAPHICS

Gender

Male	
Female	

Age

18-24	
25-34	
35-44	
45-59	
60-	

Education

Incomplete middle	
Middle, specialized middle	
Incomplete higher, higher	

Social position

Businessman	
Manager	
Professional (with higher education)	
Blue collar worker	
Supporting personnel (no higher education)	
Military	
Student	
Unemployed	
Pensioner	
Housewife	

Monthly per capita income

Below 600 roubles	
600-1000	
1000-1500	
1500-2000	
Above 2000	

Type of population center

Cities 1mln and above	
300,000-1,000,000	
100,000-300,000	
Towns below 100,000	
Rural	

Regions (Federal Districts)

St.Petersburg	
Moscow	
Urals	
Privolzhski (Volga)	
Yuzhnyi (Southern)	
Severo-Zapadnyi (North-Western)	
Tsentralnyi (Central)	