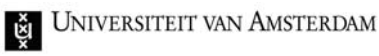
A Meta-Analysis of the Effect of Education on Social Capital

J. Huang, H. Maassen van den Brink
And W. Groot

TIER WORKING PAPER SERIES
TIER WP 10/09



A Meta-Analysis of the Effect of Education on Social Capital

by

Huang Jian[**]
"Scholar" Research Center for Education and Labor Market
Department of Economics, University of Amsterdam
and
Tinbergen Institute

Henriëtte Maassen van den Brink
"Scholar" Research Center for Education and Labor Market
Department of Economics, University of Amsterdam

Wim Groot
Department of Health Sciences, Maastricht University
And
"Scholar" Research Center for Education and Labor Market
Department of Economics, University of Amsterdam

[**] Address: Huang Jian, Department of General Economics, University of Amsterdam, Room 11.04, Building E, Roetersstraat 11, 1018 WB Amsterdam, the Netherlands; Telephone number: +31 -20 - 525 6309; E-mail: huang@tinbergen.nl. Henriëtte Maassen van den Brink, Department of General Economics, University of Amsterdam, Room 11.05, Building E, Roetersstraat 11, 1018 WB Amsterdam, the Netherlands; Telephone number: +31 -20 - 525 4311; E-mail: h.maassenvandenbrink@uva.nl. Wim Groot, Department of Health Sciences, Maastricht University, P.O. Box 616, 6200 MD Maastricht, The Netherlands; Telephone number: +31 - 43 - 388 1588/1727; Fax number: +31 - 43 - 367 0960; E-mail: w.groot@beoz.unimaas.nl.

Abstract

To assess the empirical estimates of the effect of education on social trust and social participation - the basic dimensions of individual social capital – a meta-analysis is applied, synthesizing 142 evaluations on social trust, and 268 evaluations on social participation. The means of the study weighted population effect sizes are 0.046 for social trust, and 0.055 for social participation per year of schooling (p-value<0.001) after correcting for publication bias. Therefore, one standard deviation of years of schooling accounts for 12-17 percent of the standard deviation in social trust and social participation. These results lend support to the argument that education plays a crucial role in the generation of social capital. Further analysis confirms the existence of a relative effect of education on social participation, and of a reciprocal mechanism between the dimensions of social capital. The analysis also suggests that the erosion of social capital during the past decades has coincided with a decrease of the marginal return to education. Finally, we find differences in the return to education between US and other nations, and variations for different education attainments.

Keywords: meta-analysis; education; individual social capital; social trust; social participation; publication bias;

JEL Classification: I21, Z13

1. Introduction

The interest in social capital has led to a profusion of studies on its economic and social effects, as well as its sources of origin and accumulation mechanisms. Social capital as Putnam (1993, 1995, 2000) connotes, is an aggregate concept that encompasses the association networks, norms and trust that facilitate collective interactions for mutual economic and social benefits. The scope of social capital ranges from the micro and meso levels to the macro level (Grootaert, 1998; Grootaert and van Bastelaer, 2001). The micro level of social capital, also called individual social capital, is generally seen as an aggregate of two dimensions - trust in general people and personal involvement in social activities. The meso level refers to average level of trust, number and density of social groups in a given community. The macro level of social capital includes the social and

political environment that shapes social structure and enables norms to develop. Putnam (1993) and Fukuyama (1995) also define an ethnic level or cultural level to capture the heterogeneity in the level of trust, norms of reciprocity and conventional habits in participating in civic activities across nations and races.

In this paper we focus on the effect of education on individual social capital. So far, the most compelling empirical evidence in support of the social capital theory comes from micro level studies of social capital. The micro level of social capital lends itself easier to a generalization of empirical research than meso and macro level models. At the meso and macro level, there is no uniform definition for social capital and no standard quantitative economic measure of collective social capital available. In general, decisions to invest in social capital are made by individuals, not communities. Without a uniform definition at an individual level, it is difficult to understand its formation (Glaeser, 2001).

It is commonly accepted that education is a central factor in the generation of social capital. There are many empirical studies to corroborate this perspective. However, results sometimes vary across studies due to heterogeneous survey sources and model specifications. It is therefore of academic concern as well as of policy value to evaluate the possible sources of the variations in the estimated effect of education on social capital in the literature.

Before proceeding with the empirical analysis, we highlight the hypothetical effect of education on social capital. In the empirical section, we begin with the evaluation of the magnitude of the global effect of education, by using the fixed effects and random effects models. We will extend the appropriate model for further analysis on the influences of study characteristics on the education effect. Sensitivity tests - The Egger's test and Hedge's procedure - are applied to check and correct for publication selection bias.

2. Causal Effect of Education on Social capital and Research Questions

According to Putnam (1998), Glaeser and Sacerdote (1999), and Alesina and Ferrara (2000), education is one of the most important determinants of social capital. Education reflects an orientation towards the future by strengthening human capital and social capital for economic and social development. Schooling spreads knowledge - the basic component of human capital, and cultivates social norms - the core of social capital.

Schooling is the first non-familial context in an individual's life where moral and cognitive capacities are trained (Offe and Fuchs, 2002). Through civil education from schooling, students learn the basic norms and responsibilities in society, as well as the functioning of democracy. Schools also provide forums and sponsor programs for community activities where students can apply their civic knowledge to real world situations. During their education, students practice in a peer culture that shapes values such as reciprocity, respect and trust. Education also promotes social cohesion and strengthens citizenship when children of different socio-economic backgrounds are enrolled in the same school system.

Glaeser et al. (1999) assert that the most robust correlate of social capital variables is years of schooling: "For example, the raw correlation of years of education with membership in organizations is 34 percent in the General Social Survey" (Glaeser et al., 1999). Using the World Values Survey, they find a positive relationship between schooling and membership of organizations in almost every country. Denny (2004) finds that acquiring a four year university degree is associated with a 10% higher probability of an individual volunteering.

Putnam (1995, 2000), Uslaner (1997, 1998), Alesina and Ferrara (2000) also show that more educated people are more likely to have higher trust in other people and they tend to join more social organizations and participate in social engagements more frequently. Though education is not the only factor that determines trust in general people and participation in social activities, it is a very powerful generator at the individual level, even after controlling for health, income, age and gender (Nie et al., 1996; Putnam, 2000).

It is noteworthy that, according to Nie et al. (1996), one's social capital can be affected not only by one's own education, but also by that of others around him. Generally, the impact of education on social capital can be distinguished into a relative effect and an absolute effect. The relative effect indicates that education is a proxy for relative status, a sorting mechanism for people with higher ability in acquiring social capital. The absolute effect refers to the accumulation of civic values and knowledge. Given that education merely serves to sort people of different capabilities in social capital, and does not add to civic values and knowledge, it is not one's own education

level, but his relative education status in the region (compared to the average education level in the region or community), that indicates the level of individual social capital (Nie et al., 1996; Putnam and Helliwell, 1999). Therefore, if more people have a college degree, Nie et al. (1996) argue, perhaps the sociological significance of the credential has been devalued. This perspective offers a potential resolution for the apparent paradox that social participation has not risen (and by some accounts has even fallen) with the increase in educational attainment.

In this paper we address several empirical questions on the relation between education and individual social capital. The main question we address is: What are the effects of education on trust in general people and participation in social or civic activities? We further provide some interpretation for the effects that we find.

We also ask ourselves to what extent heterogeneity between studies affects the return to education? For instance, are gender differences a critical factor in explaining the variation in the effects of education on social capital?

An issue that has received a lot of attention is the perceived erosion of social capital during the past decades (Putnam 1995, 2000). In this paper we will compare the marginal effect of education obtained from surveys conducted during the 1950s – 1980s, with that from surveys conducted after 1990[1]. If Putnam (1995, 2000) is correct, we may expect a decline in the marginal effect of schooling years.

Americans are believed to have more social capital than people in other nations (Putnam 1995, 2000). By means of a meta-analysis of the estimates taken from the surveys across nations, we are able to examine what role education plays in this inequality.

As mentioned, a relative effect on social capital indicates that education is a proxy for relative status, while the absolute effect refers to accumulation of civic values and knowledge. We will assess both effects of education by evaluating the effects of individual schooling years and average schooling years in the region. We further test whether the impact of one more year of schooling on trusting and participating varies across different levels of education, and whether it rises with education attainments. [2]

Coleman (1990) and Putnam (1993, 1995) suggest a reciprocal effect between trust in general people and participation in social activities: "Social trust, norms of reciprocity, networks of a civic engagement and successful cooperation are mutually reinforcing" (Putnam, 1993, p.180). Brehm and Rahn (1997) posit an asymmetric causal chain in which trust is the direct outcome of civic engagement. But this asymmetric association is disputed by Uslaner (1997), who argues that trust shapes civic participation. These hypotheses will be tested by including controls for reciprocity between trusting and participating in the meta-analysis.

That the accumulation of social capital changes over the life-cycle is a commonly addressed theme in social capital theory; we will take it into consideration by studying the impact of education across different life stages: early adulthood, middle age and aged.

3. Meta-analysis—Indicators, Effect size and Simple Analysis

3.1 Indicators and measurements of the micro level of social capital

As individual social capital is an aggregate of individual trust in general people and personal involvement in social activities, we consider the two distinctive indicators of individual social capital separately in our analysis.

Social Trust - the amount of trust individuals have in most people, those they know and those they do not know - is a common indicator for trust in general people. Social trust reflects the bond that people share across economic and ethnic groups (Rothstein and Uslaner, 2004). High levels of social trust lead people to expect that others are cooperative and not opportunistic in social and economic exchanges. Social trust also reduces transaction cost and helps solve the free-rider problem in providing public goods. Social trust is usually measured by the response to the following question: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" This operationalisation of social trust has been widely used in surveys around the world, including the General Social Survey (GSS) and the World Values Survey (WVS).

Social Participation - an individual's affiliation in groups or organizations, and voluntary participation in community services or activities organized by social groups -

is a general indicator to denote the level of personal involvement in social activities. Social participation covers all types of active affiliation with groups outside the family and voluntary activities unrelated to political purposes, such as voting and lobbying. A high level of social participation is supposed to raise civic norms among people, increase the credibility of a government and fortify the foundation of a democratic society, which in the end improves policy outcomes (Smith 1999). Two sub-categories are distinguished to capture the complexity and diversity of social participation: membership in non-political groups (clubs and other organizations) and participation in voluntary activities[3]. Actually, they are both measured as either the possibility of joining non-political groups or participating in voluntary activities, or the degree of social involvement - number of memberships or frequency of participation.

3.2 Effect size and selection criteria for meta-analysis

A standard comparison, effect size (ES), is necessary in the meta-analysis to evaluate the estimates across studies, between dimensions and within dimension. The effect size, in the simplest form, can be conceptualized as a standardized difference between the treatment group and control group, i.e. the ratio of the difference between the means to the pooled standard deviation (Glass, 1976). In this meta-analysis, the effect size is obtained as the proportion of standard deviation in the dependent variable that one year of schooling accounts for, by standardizing the study estimate with the corresponding standard deviation.

Two criteria were used for the inclusion of available literature in the meta-analysis: (a) studies should focus on the determinants of at least one dimension of social capital at the individual level with formal education as a covariate in the model; (b) studies should have reported statistical data (t-statistics, p-value or standard error) that allow for estimation by the fixed effects and random effects models.

We created a dataset for our analysis that includes 57 studies. 26 studies provide estimates of the return to education on social trust and 31 studies provide estimates on social participation. Table 1 presents some summary information on the authors, year of publication (of the journal or the latest version as a working paper) and survey period,

classified by social trust and social participation. All of the studies were published after 1990. The number of estimates varies markedly from 1 to 103. Most of the surveys used in the individual studies refer to the 1990s. Information on demographic characteristics are extracted from the studies and added to the data base. We also include indicators for whether the individual study has controlled for economic status (income and employment status), environment (population density, residency length and development index), religion, endogeneity of the education variable, the relative effect of education and reciprocal mechanisms within dimensions of social capital.

Table 1 Sources of Meta-analysis

Study of Social Trust	No of ES	Period	Study of Social Participation	No of ES	Period
Alesina & Ferrara<2000>	8	1990	Alesina & Ferrara<2000>	2	1990
Alesina & Ferrara<2002>	8	1974-1994	Brehm & Rahn<1997>	1	1972-1994
Ana et al.<2002>	4	2000	Carolyn Funk<1998>	1	1991
Andrew Leigh<2003>	6	1997	Choi<2003>	1	1993
Brehm & Rahn<1997>	1	1972-1994	Claibourn & Martin<2000>	4	1982
Claibourn & Martin<2000>	4	1982	Cutler & Hendricks<2000>	2	1974-1994
Daniel Lederman<2005>	4	2000	Daniel Lederman<2005>	4	2000
Eric Uslaner<1998>	6	1972-1994	Dhavan V. Shah<1998>	3	1995
Eric Uslaner<1997>	5	1992	DiPasquale et al.<1999>	4	1986-1994
Eric Uslaner<2003>	3	1999	Eliana La Ferrara<2000>	4	1994
Eric Uslaner<2004>	4	1972-1998	Eric M. Uslaner<1998>	6	1972-1994
Glaeser et al<1999>	46	1972-1994	Glaeser et al<1999>	9	1972-1994
Helliwell & Putnam<1999>	6	1972-1996	Helliwell & Putnam<1999>	7	1972-1996
Kenneth Newton<2001>	7	1990	Kevin Denny<2003>	103	1990-1999
Klaus Levinsen<2004>	3	2002	Klaus Levinsen<2004>	9	2002
LEE et al.<2003>	3	1996	Laura Tiehen<2000>	24	1979-1980
Marschall & Stolle<2004>	3	1975	Li et al.<2002a>	12	1988-1989
Milligan et al<2003>	2	1948-2000	Liu & Besser<2003>	7	1994
Rahn et al.<2003>	6	2002	Marc Hooghe<2003>	1	1998
Rothstein & Uslaner<2004>	1	1992	Milligan et al.<2003>	2	1948-2000
Rothstein<2001>	3	1998	Kang & Kwak<2003>	2	1997
Sacerdote & Glaeser<2001>	1	1972-1998	Patricia et al.<1999>	1	1997
Shah et al.<2001>	4	1999	Pattie et al.<2002>	3	2000
Shah & Scheufele<2000>	1	1997	Pippa Norris<1996>	1	1990
Stenman et al.<2005>	1	2003	Sacerdote & Glaeser<2000>	6	1973-1998
Wollebak & Selle<2003>	2	1998	Sacerdote & Glaeser<2001>	22	1972-1998
			Shah et al.<2001>	4	1999
			Soroka et al.<2003>	3	2001
			Thomas Sdee<2003>	14	1992
			Shah & Scheufele<2000>	2	1997
			Wellman et al.<2001>	2	1998

3.3 Basic statistics and simple analysis for global effect

In table 2 we present the basic statistics of the effect size, the results of the fixed effects and random effects models, and test statistics on the appropriateness of the model. 142 estimates are collected from the studies on social trust and 268 estimates from the studies on social participation

As shown in panel A, the means of effect size are 0.047 for social trust and 0.056 for social participation. The results can be interpreted as: One additional year of schooling increases one's social trust by 4.7 percent of its standard deviation and increases social participation by 5.6 percent of its standard deviation. In other words, one standard deviation of schooling years (2.5-3.3 years for most countries) accounts for the variation in social trust and social participation by 12-17 percent of their standard deviation. For the studies that report probability changes as the estimates, we can translate the mean effect size as: one additional year of schooling increases the probability of trusting people by 0.024 and the probability of participating in associations and voluntary activities by 0.028[4]. Hence for people with a 4-year university degree the probability of trusting or participating is at least 0.10 higher than for high school leavers.

Panel B of table 2 presents the estimates of the pooled effect of education under the assumption that the population effect size is global across studies, i.e. that study characteristics have no impact on the population effect size. Both fixed effects and random effects models are performed to evaluate the global effect size. The main distinction between the two models is that the "true" effect size (obtained if the entire target population is evaluated) is allowed to be heterogeneous in the random effects model but not in the fixed effects model. It is shown that the estimates of the global effect size vary for the fixed effects and random effects models, and the latter gives similar estimates as the descriptive statistics. The test statistics (p-value < 0.0001) indicate a strongly significant, positive return to education for both fixed effects and random effects models. The Q-statistics in Panel C test the null hypothesis that the "true" effect size are homogenous across studies, and thus there is no residual heterogeneity in the global effect size (between studies variance $\tau^2 = 0$). The Q-statistics follow a Chi-squared distribution with $N-1$ degrees of freedom, with N being the number of observations in the meta-analysis. Solid evidence is found (p-value < 0.0001) for between studies

variance for both dimensions of social capital, which reject the null hypothesis that the "true" effect size is homogenous across studies. Therefore only the random-effects model is appropriate for the evaluation of the global effect size. Residual heterogeneity will always be considered in the remaining analysis where we perform the extended model meta-analysis and the sensitivity tests.

Table 2 Descriptive statistics, estimates of global effect and test statistics for fixed effect

	Social Trust		Social Participation	
A. Basic descriptive statistics	**Mean**	**s.d.**	**Mean**	**s.d.**
Effect size	**0.047**	**0.035**	**0.056**	**0.035**
Measure error (s. e of effect size)	**0.014**	**0.018**	**0.022**	**0.050**
N	**142**		**268**	
	Social Trust		**Social Participation**	
B. Estimate of the global effect	**Estimate**	**z-value**	**Estimate**	**z-value**
Fixed effects	**0.031**	**83.54**	**0.061**	**144.69**
Random effects	**0.046**	**18.36**	**0.056**	**21.96**
C. Test for fixed effects	**Social Trust**		**Social Participation**	
Q-statistics	**4529.12**		**8254.26**	
p-value	**<0.0001**		**<0.0001**	
Between studies variance τ^2	**0.001**		**0.001**	

4. Meta-analysis—Extended Model and Sensitivity Test

4.1 Analysis of extended model

If there is no study feature affecting the effect size, the estimates from table 2 indicate that the true effect size of education is around 0.047 for social trust and 0.056 for social participation. In our analysis of the return to education, the assumption of a global effect does not seem realistic and tenable. In table 3 it is shown that the mean effect sizes vary markedly for different educational achievements, for survey periods before 1990 and after 1990, across different stages of the lifecycle and between countries. We also notice that controlling for the average education level in the region raises the effect size substantially.

Table 3 Mean effect size of education by characteristics of the study and the population

	Social Trust			Social Activity		
	obs	mean	std	obs	mean	std
High School or above	45	0.05	0.042	44	0.058	0.041
College graduate or above	31	0.052	0.038	25	0.075	0.045
Middle age people	7	0.029	0.018	10	0.051	0.024
Aged people	3	0.117	0.106	11	0.055	0.027
Survey before 90s	7	0.069	0.076	21	0.063	0.03
Survey after 90s	54	0.034	0.024	149	0.048	0.031
Ave Educ Contr	11	0.045	0.03	14	0.095	0.038
No Ave Educ Contr	131	0.025	0.035	254	0.054	0.034
US Survey	70	0.063	0.04	117	0.071	0.034
Non US Survey	72	0.031	0.019	151	0.045	0.031

In accordance with the results of table 3 and the empirical questions mentioned earlier, some hypotheses are formulated how some of the study characteristics might influence the effect of schooling on social capital. A problem of the dataset is that we do not have much information on specific groups because few studies evaluated the educational return for particular groups, such as at early adulthood, middle age, aged, male or female, urban or rural, etc,. We therefore created an indicator for the presence of information on the target variables in the studies. The coefficients of these group variables therefore represent the effect conditional on a certain group being observed.

Table 4 presents the results of the extended model allowing for residual heterogeneity. We find a statistically significant impact of gender controls, environmental controls and controls for reciprocity for both social trust and social participation. Controls for religion, family (family size or marital status), economic status and average education level in the region, do not have a systematic effect on the two dimensions of social capital. Economic status and average education controls only matter for social participation, while family and religion controls only play a role in social trust. Some study features have no statistically significant influence on the returns to schooling. These factors include modeling (OLS vs. Others), controls for endogeneity (between education and social capital) and media influence (radio, TV and internet). The influence of literacy controls cannot be neglected. The literacy controls reduce the effect of schooling on social participation by a considerable degree.

The benchmark estimates of the overall average return to schooling are 0.064 for social trust and 0.061 for social participation. These benchmark rates show a decline for the period after 1990, although this decline is not statistically significant for social trust. Women seem to benefit less from education than men. The level of educational achievement is a key factor for the marginal return to schooling. People with at least a college degree receive a notably higher return to education. Regional differences have a small influence on the effect size. The variable 'urban regions' has an insignificant, negative impact for both dimensions of social capital. This indicates that urban education may not be so effective to promote individual social capital, compared to rural education. No systematic variation is found for the stages across the lifecycle. Finally, we emphasize the significant distinction in the effects of education between the United States and other countries. Our finding suggests that the higher return to education is one reason why American people tend to have more social capital

Table 4 Extended model for random effects meta-analysis

	Social Trust		Social Participation	
	Coef.	z	Coef.	z
Gender control	0.022**	2.18	0.022***	3.57
Family control	0.012*	1.73	0.004	0.91
Economic status control	- 0.003	-0.38	-0.021**	-2.31
Model specification (OLS=0)	0.000	0.00	0.005	1.30
Endogeneity control	0.112	1.11	-0.038	-1.57
Reciprocal mechanism control	-0.012*	-1.80	-0.025***	-3.54
Environment control	-0.015**	-2.47	0.018***	3.42
Religion control	0.018***	2.96	0.002	0.25
Media control	-0.008	-1.30	0.001	0.21
Average education control	0.007	0.48	0.024***	3.64
Literacy control	.	.	-0.022***	-5.68
Membership	.	.	0.012**	1.98
Female	.	.	-0.028*	-1.66
Survey after 1990s	-0.031	-0.85	-0.020**	-2.12
College graduate or above[5]	0.012**	2.11	0.021***	3.16
Urban region	-0.092	-1.03	-0.016	-0.84
Survey nation (US=0)	-0.016***	-2.63	- 0.027***	-5.50
Middle age people[6]	0.013	0.39	.	.
Aged people	0.024	0.65	0.027*	1.91
Constant	0.064***	3.88	0.061***	3.46
τ^2	0.0003		0.0002	
N	142		268	

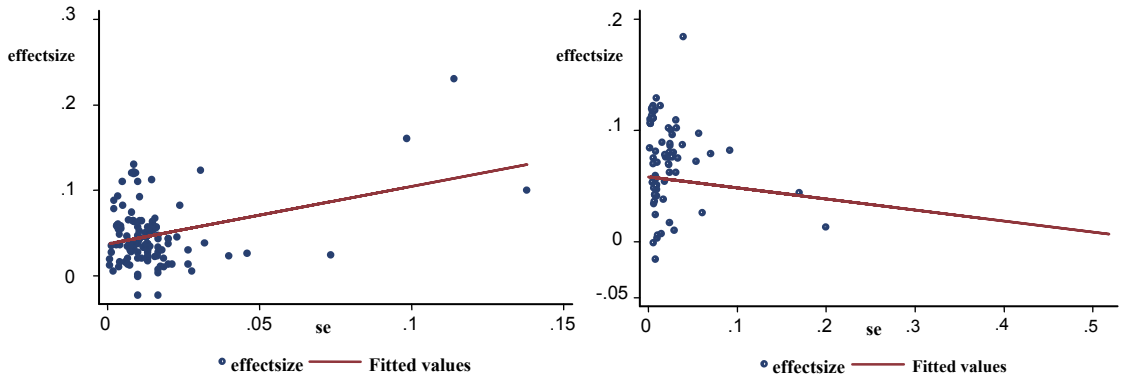
*** Significant at 10% level. **Significant at 5% level. ***Significant at 1% level.**

4.2 Publication bias, test and correction

It is crucial to understand that the results reported in previous tables may be biased because studies which show some kind of significant effect are likely to be published more frequently than those that find no significant effect, and because authors tend to neglect to report the test statistics of insignificant estimates. This problem, known as publication bias, arises in meta-analysis when the probability that an estimate is observed is related to the statistical size of that estimate. Such selection effects can lead to a substantial bias in the magnitude of the effect size (Hedges 1992).

Figures are first presented to provide a straightforward illustration of the correlation between the effect size and its standard error. We will also apply the Egger's test as a check for publication bias, and then employ Hedges' correction method to obtain a more accurate estimate of the effect size.

Scatter plots of the effect size against its standard error are presented in figure 4, together with the fitted value lines. In the absence of any selective reporting, the line of the fitted values should be horizontal, as the return to schooling should not vary in proportion to its standard error. In figure 1, however, the fitted value line for social trust is upward sloping while it is downward for social participation, indicating the presence of publication bias for both dimensions of individual social capital.



Social Trust **Social Participation**

Figure 1 Scatter plot and fitted value line of effect size against its standard error

To check for publication bias, Egger et al. (1997) suggest performing a regression of the standardized effect size (divided by its standard error) against its precision (i.e. the inverse of effect size's standard error) weighted by the reciprocal of the variance of the estimate. If the intercept differs significantly from zero, this may indicate that publication bias is present. The statistics of the Egger's test are presented in table 5. A significant bias is found for both social trust and social participation. Hence the outcomes of the Egger's test strengthen our conviction about publication bias[7].

Table 5 Egger's test statistics

	Social Trust				Social Participation			
Std. Effect size	**Coef**	**s.e**	**t-value**	**p>|t|**	**Coef**	**s.e**	**t-value**	**p>|t|**
Slope	**0.024**	**0.003**	**9.59**	**0**	**0.070**	**0.004**	**17.79**	**0**
bias(intercept)	**2.605**	**0.564**	**4.62**	**0**	**-1.598**	**0.570**	**-2.81**	**0.005**
N	**142**				**268**			

*** Note that the slope and bias in the Egger's test is not the slope and intercept of the fitted value line**.

Hedges' model of publication bias is based on the assumption that there is a weight function of p-values that determines the probability of a study being observed. To isolate the effect of p-values on the magnitude of the effect sizes and the estimates of the study characteristics, the weight function should be introduced into the likelihood. Details of this weight function are outlined in Appendix as well as in the paper of Ashenfelter et al. (1999). In our analysis, the probability of observation of a study is specified according to whether the p-value for that study is $0.01 < p < 0.05$ denoted by ω_2 and $p > 0.05$ denoted by ω_3, relative to a default category of $0 < p < 0.01$ denoted by ω_1. The latter one is normalized to unity. In the absence of reporting bias ω_2 and ω_3 should be equal to one as well.

We begin by estimating the global effect model. Panel A in table 6 gives the results of the restricted model where $\omega_2 = \omega_3 = 1$. The global effect sizes for social trust and social participation are 0.046 and 0.055 respectively, almost identical to the descriptive statistics and the random effects estimates. Panel B presents the results after correcting for publication bias as we allow ω_2 and ω_3 to vary. The global effect sizes are moderately smaller for both dimensions. The likelihood ratio test, following the Chi-squared statistics

with two degrees of freedom, indicates that publication bias is a problem for the effect size of social participation, but not for social trust. This is not totally consistent with the results from the scatter plots and the Egger's test, which indicate that publication bias matters for both dimensions of individual social capital. We will relax the assumption of a global effect in the next procedure and allow for the possibility that the effect sizes vary by characteristics of the studies.

Table 6 Hedges' model of global effect

A. Restricted	**Social Trust**		**Social Participation**	
	Coef.	**z-value**	**Coef.**	**z-value**
ω_2	**1**		**1**	
ω_3	**1**		**1**	
Constant	**0.046*** **	**17.77**	**0.055*** **	**25.28**
τ^2	**0.001**		**0.001**	
Log Likelihood	**422.44**		**753.89**	
B.Unrestricted	**Social Trust**		**Social Participation**	
	Coef.	**z-value**	**Coef.**	**z-value**
ω_2	**1.432*** **	**3.21**	**1.808*** **	**4.62**
ω_3	**0.842*** **	**3.17**	**0.447*** **	**3.22**
Constant	**0.045*** **	**12.62**	**0.052*** **	**18.64**
τ^2	**0.001**		**0.001**	
Log Likelihood	**423.74**		**766.2**	
Chi statistics	**2.598**		**24.6**	
p-value	**0.273**		**<0.0001**	
N	**142**		**268**	

*** Significant at 10% level. **Significant at 5% level. ***Significant at 1% level.**

Hedges' model is extended by introducing the study characteristics into the likelihood and the estimation results are presented in table 7. We find clear evidence concerning publication bias for both social trust and social participation. The Chi-squared test for the global effect also indicates significant influences of study heterogeneities (p-value <0.0001). This result offers a clue why the global effect model does not provide consistent test statistics for social trust. The coefficients for study characteristics are very similar to those in the extended model (see table 4) where we did not correct for publication bias, except that the magnitude changes for several coefficients. Nevertheless, their signs and levels of statistical significance are generally identical.

Table 7 Test statistics and estimates of extended Hedges' model

A. Statistics for unrestricted model		
	Social Trust	Social Participation
Likelihood value(Restricted)	470.21	887.71
Likelihood value(Unrestricted)	474.78	898.99
Chi-statistics for publication bias	9.14	22.56
p-value	0.01	<0.0001
Chi-statistics for Global effect	102.08	265.60
p-value	<0.0001	<0.0001

B. Estimate of unrestricted model				
	Social Trust		Social Participation	
	Coef.	z-value	Coef.	z-value
ω_2	0.862***	3.10	1.367***	4.30
ω_3	0.375***	2.89	0.400***	3.37
Gender control	0.024**	2.31	0.020***	3.15
Family control	0.013*	1.84	0.004	0.80
Economic status control	-0.002	-0.29	-0.018*	-1.88
Model specification (OLS=0)	0.000	0.03	0.004	1.17
Endogeneity control	0.080	0.84	-0.050*	-1.96
Reciprocal mechanism control	-0.011	-1.63	-0.026***	-3.54
Environment control	-0.016***	-2.55	0.019***	3.42
Religion control	0.019***	3.06	0.005	0.65
Media control	-0.009	-1.43	0.002	0.30
Average education control	0.008	0.54	0.025***	3.65
Literacy control	.	.	-0.025***	-5.99
Membership	.	.	0.007	1.07
Female	.	.	-0.030*	-1.79
Survey after 1990s	-0.023	-0.68	-0.019*	-1.95
College graduate or above	0.012**	2.45	0.021***	3.06
Urban region	-0.064	-1.59	-0.022	-1.05
Survey nation (US=0)	-0.020***	-2.94	-0.029***	-5.59
Middle age people	0.010	0.31	.	.
Aged people	0.018	0.51	0.024*	1.66
Constant	0.079***	3.49	0.047***	2.56
τ^2	0.0003		0.0002	
N	142		268	

*** Significant at 10% level. **Significant at 5% level. ***Significant at 1% level**

5. Discussion and conclusion

This meta-analysis confirms a significant, positive return to education on individual social capital. It indicates that one standard deviation of years of schooling accounts for the change in individual social capital by 12-17 percent of the standard deviation in each dimension. The results also suggest a higher impact of education on social participation than on social trust. Trust in general people, one's expectation of other people behavior

regarding common social norms, is a mental state that is more associated with personality, such as optimism (Uslaner, 1996), and personal experiences such as social background, history of divorce and being cheated or robbed (Uslaner, 1998 and Alesina and Ferrara, 2002). Social participation, especially the engagement in community service and other voluntary activities, is a type of behavior which is less subject to individual life experience, but more associated with social structure and the level of civic education.

The hypothesis that the effect sizes are global is rejected by the Chi-squared test as shown in table 7. Gender difference seems to play a role in the mechanism by which education stimulates social capital. Controlling for gender difference is a significant covariate in the regression on both dimensions of individual social capital. It is also found that women exhibit a negative influence on the effect size of social participation.

There is no evidence that urban people receive a higher return to education. The coefficients for urban residents are even negative for social trust and social participation, although not statistically significant at the 10% level. While urban schools may have better access to resources, facilities and financing and may provide better quality education than rural schools, the life experience in urban areas, which are more heterogeneous and complicated, may spill over into people's social values (Uslaner, 1998 and Alesina and Ferrara, 2002) and affect the impact of schooling on social capital. For instance, traumatic experiences (violence, crimes) that one is more likely to receive in urban areas may offset the positive effects of civic education in school.

If we compare the effect size obtained from surveys conducted before the 1990s with that from the studies using data for a later period, we observe a decline in the effect of education on social participation. This is not the case for social trust, although the estimate is also negative in the extended models. The decline in the return to education provides an explanation for the erosion of social capital (civic engagement) in the United States (Putnam 1995, 2000), despite a dramatic increase in educational attainment during the last half century. It is noteworthy that our finding is at odds with the upward trend in the wage effect of schooling, as found in a meta-analysis of wage return to education by Ashenfelter et al. (1999). One possible interpretation for this discrepancy is that there is a trade off between the return to education on human capital and that on social capital. With increased globalization and through public policy measures, competition between

firms and competition between individuals have become more intensive. Increased competition may put more emphasis on the role of education as a source of human capital. The overemphasis of the human capital aspect of education could be detrimental to the contribution of schooling on cultivating social capital for collective welfare. For instance, the programs of civic education, which are not directly associated to the competitive power or income in the future, may have become less important in school programs or may appear less attractive to students who are anxious for an education that provides opportunities for a good job.

The trade off between the returns to human capital and social capital also helps explain why the inequality in returns between urban and rural regions may only exist in the generation of human capital. More intense economic competition in urban societies may force urban schools to focus on the development of human capital at the cost of cultivating social capital.

Our analysis provides proof for the view that education has a higher effect on social capital in the United States than in the rest of the world. These results also support the argument made by Putnam that Americans participate more in community services and voluntary activities than people in other countries (Putnam, 1995, 2000 and Uslaner, 1997). Americans are believed to have a longer tradition in participating and volunteering: "the United States has played a central role in systematic studies of the links between democracy and civil society….because America has traditionally been considered unusually 'civic'" (Putnam, 1995, p.65). This tradition reflects on education as American schools are more active in encouraging students into running student offices, participating in civic engagement and joining various associations. People with larger social network, more trust in other people and who participate more in social activities during schooling will display higher level of social capital in their adulthood as well (Stolle and Hooghe, 2004). The melting pot theory can also help explain why Americans tend to receive a higher educational return on social capital. The United States has accepted more immigrants, from more places around the world, than any other nation. Encouraging tolerance of ethnic diversity and creating core values of a common American heritage are the main subjects of the social education programs in American public schools: "By exposing students to knowledge about ethnic diversity and the

contributions of various groups to our developing American civilization, educators in the social studies may change negative ethnic group stereotypes, reduce intolerance, and enhance cooperation for the common good" (Cohen, 1986).

The strongly significant effect of controlling for average education in social participation confirms the existence of a relative effect. For social trust, no evidence is found in support of a relative effect. The descriptive statistics in table 3 show that the mean effect size for social participation is 0.054 in studies that do not control for average education, and 0.095 in those controlling for average education (both are statistically significant at the 0.0001 level). This provides evidence for both an absolute effect and a relative effect. The relative effect does not dominate the absolute effect of education, so the total effect on social participation is still positive and substantial. It may be difficult to interpret why the effect size is positively associated with the inclusion of control variables for the average level of education. A simple linear model is chosen to elucidate this insight, assuming education to be the only determinant of social participation (SP):

$$SP = a * edu_1 + b * (edu_1 - avedu)$$

where a represents the marginal absolute effect of years of individual schooling on social participation, b represents the marginal signaling effect or relative effect (years of schooling compared to the average years of schooling in the region). If education has a signaling effect as well as an absolute effect on individual social capital, we expect both a and b to be positive. In addition, years of schooling are positively associated with the average level of education in the region where he or she lives. Mathematically, individual education level is included into the calculation of average education level. Furthermore, higher educated people are more inclined to live in regions with a higher average education level, since people have a preference for a homogenous region with similar social-economic status. More details can be found in Alesina and Ferrara (2000), who show that social-economic heterogeneity reduces trust and feelings towards other people. In the restricted model, the covariate of average education level of the region is dropped:

$$SP = c * edu_1$$

Then the negative effect of average education level will be absorbed by individual schooling years. Thus the estimate of the effect of individual education, coefficient c in the restricted model, will be smaller than that in the full model, which equals $a + b$.

This explains why we observe a positive impact of the control variable for average level of education on the magnitude of the effect of individual schooling years.

The size of the education effect varies with the level of education. Effect sizes are significantly higher for people with a college degree or above. It suggests that the popular one-factor OLS model, where it is assumed that education can always be aggregated into a single measure, say years of schooling, may not be a sufficient model to capture the effects of education on social capital. It is possible that a college education is crucial to learn to respect and trust other people, cultivate civic behavior to join social groups and participate in voluntary activities, and therefore the effect of education demonstrates a substantial leap for people with college degree. Alternatively, a college degree may signal the existence of unobserved ability - individual personality or other inherent psychological attributes - that positively affect both educational achievement and the level of individual social capital.

There is evidence to suggest that controlling for a reciprocal effect between the two dimensions of individual social capital influences the effect size of educational return. This outcome confirms the notion of a "virtuous circle" (Putnam, 1995) in the accumulation of social capital. If social trust is included as an explanatory variable in the social participation equation, the estimate of the marginal effect of schooling years will be lower. The reverse is also true. The intuition behind this is straightforward: since education has a significantly positive effect on both dimensions, and there is a mutual, positive effect between these dimensions, the direct effect of education on a dimension (after controlling for reciprocal effects) will be lower than the total effect (without controlling for reciprocal effects). The significant impact of controlling for reciprocal effect also provides support for the central role of schooling in the generation of social capital. It is noted that the magnitude of the reciprocal effect is smaller for social trust than for social participation, and in the former controlling for reciprocal effects does not have a statistically significant effect in Hedges' extended model (see table 7). One explanation is that, although a "virtuous circle" exists for participation and trust (Putnam, 1995), social trust exerts a stronger effect on social participation than the other way around. Hence, contrary to the findings from Brehm and Rahn (1997), trust may stand at

the beginning of the chain leading to civic involvement and social network, rather than at the end of it (Uslaner, 1997).

We do not find any substantial difference in the effect size of social trust across life stages. For social participation, however, we do find a somewhat positive coefficient for aged people. It may indicate a declining trend in the educational return on social participation over time. Control variables for media, such as radio, television and internet, have hardly any impact on the effect education on social capital. There has been some controversy of the influence of media (television and internet) on the change of social capital. Putnam (2000) blames televisions as the culprit for the decline of social capital in the US. Our results indicate that media do not weaken the role of schooling, one of the most important sources of social capital.

Some outcomes from the meta-analysis pose several topics for future research. For example, it will be interesting to further explore whether there is a trade off between the return to education on human capital or income, and that on social capital. One may also go further and investigate whether a college education is a key treatment for people to obtain more social capital. More studies also need to be done to examine the effects of education for men and women and over the life cycle.

Acknowledgements

The authors are grateful to Hessel Oosterbeek for his assistance and comments on previous versions of this article.

Notes

[1] 1990 is chosen as a critical value because the framework of social capital was established in the 1990s and scholar claimed a major declining trend of social capital in the 1990s and 2000s compared to that in 50s-80s.

[2] We classify education level of people by "high school or above" and "college graduate or above" because few studies provide specific comparison between different education levels.

[3] We create an dummy variable for group membership and participation in the meta-regression of social activities to capture the attribute difference: Being a member of a certain group does not mean that individual will participate in the activities related to the group and other volunteering;

and vice versa, participating in voluntary activities (related or not to groups) does not mean that the individual is a member of any group.

[4] The standard deviation of probability to trust general people and participate in social activities (1=yes, 0=no), is generally 0.5 in most studies.

[5] The reference group for the variable "College graduate or above" is "high school diplomat or above".

[6] The reference group for stages of lifecycle is early adulthood.

[7] The Begg's test also confirms the existence of publication bias for both dimensions of social capital.

Appendix

1. Calculation of the effect size:

Most effect sizes were obtained from the unstandardized regression estimate of the education coefficient. For example, the marginal effect of a year of schooling from unstandardized OLS and binary models (logit and probit) where the dependent variable is 0/1, was standardized by the standard deviation of dependent variable to obtain the effect size. Some studies only provided standardized coefficients for education. Those estimates represent not the effect size, but the proportion that one standard deviation of education years has accounted for the standard deviation of the dependent variable. In this case we divided the standardized coefficient by the standard deviation of schooling years to obtain the effect size of marginal schooling year.

A small proportion of studies (less than 5% of the total number) merely indicated whether the estimate of educational effect exceeded the 1 percent, 5 percent, or 10 percent levels of statistical significance. In these studies, we imputed the p-value of the effect estimate on the basis of the reported statistical significance level. If the level of statistical significance was reported to exceed the 5 percent level but not the 1-percent level, the p-value equaled .03, the midpoint between .01 and .05. If the level of statistical significance exceeded 1-percent, it was assumed that p-value equaled .005. If the level of statistical significance exceeded 10 percent but not the 5 percent level, it was assumed that p-value = .075. We did not include in the dataset the insignificant estimates that do not have specific test statistics.

2. The coding for dummies of education attainments

A large amount of studies included education into the regression as a dummy variable (indicator for high school degree or indicator for college). Simple calculation was performed to translate these estimates into the effect of marginal years: we divided the coefficient for the high school

dummy variable by 4, for some college by 5, and for college graduate by 6 to obtain the equivalent effect size for a year of schooling. This coding does not cause the effect sizes systematically different from those from OLS as the results in table 4 and table 7 provide evidence that model specification (OLS vs. others, mainly binary models) has no impact on the effect size.

Because those dummy variables mentioned above provide further information on the education level of the respondents, we created two variables in the meta-analysis - "high school or above" and "college graduate or above" - to evaluate whether people with higher education obtain a higher return to education. The "high school or above" dummy in the meta-analysis equaled 1 if we obtained the effect sizes from studies using a binary variable whether the respondents has a high school certificate or not (people with at least a high school diploma compared to those who do not finish high school). The "college graduate or above" dummy in meta-analysis equaled 1 if we obtained the effect sizes from studies using a binary variable indicating whether the respondents had a college degree or not (so we obtained the effect sizes of education from those with at least college degree compared to those without).

3. Treatments of missing values on specific groups

On specific groups we do not have much information because few studies evaluated the educational return for groups like people with a particular education level, gender urban or rural, or people at particular life stages. Rather than dropping studies without information on these four variables, we used the following procedures that enable us to retain them: **a.** we included a full set of indicators, including education level, urban and rural, gender and lifecycles. For each of these group variables mentioned, the category "missing" was included as a separate indicator variable, showing whether that study focuses on the effect of education for the specific group. **b.** We interacted each of the group variables mentioned in **a**, with the category indicators that the variable is non-missing. The coefficient reported in the tables for each of these group variables, is the coefficient on the interaction of the group variable (e.g. female) with the indicator that the group variable has non-missing value. These coefficients therefore represent the effect of the group variable conditional on its value being observed. **c.** The indicators for missing values were included in the Chi-squared test for the global effect; but this inclusion does not have any impact on the rejection of global effect in the extended model, as the p-value is smaller than 0.0001 for both dimensions, when we exclude the category indicators.

4. Fixed effects model, random effects model and Hedge's test for publication bias

4.1 Fixed effects model, random effects model

Two types of statistical models have been used in meta-analysis to isolate the effects of heterogeneity between studies that cause estimates to differ across the literature: the fixed effects model and the random effects model. In the fixed effects model, the "true" effect size (obtained if the entire target population is evaluated) is assumed to be homogeneous in the studies included in the analysis:

$$t_i = t_i^* + \mu_i$$
$$t_i \sim N(t_i^*, v_i)$$

where t_i is the estimated effect size and t_i^* is the "true" effect size; v_i is the variance of the measurement error μ_i due to estimation on a sample smaller than the entire target population.

The random effects model allows for heterogeneity in the population effect sizes, usually by assuming the "true" effects follow a normal distribution with a mean $\bar{t}_i^*$ and a variance τ^2:

$$t_i = t_i^* + \mu_i$$
$$t_i \sim N(t_i^*, v_i)$$
$$t_i^* \sim N(\bar{t}_i^*, \tau^2)$$

In meta-analysis τ^2 is commonly called between studies variance. Clearly, the fixed effects model, where $\tau^2 = 0$, is a special case of the random effects model.

Most study estimates, however, are produced for different treatments and different population groups, over different time periods, in different locations, and so forth. Therefore the "true" effect size t_i^* may be subject to the characteristics of studies. In general, a linear model is considered sufficient to capture the effect of study characteristics:

$$t_i^* = x_i\Delta + \varepsilon_i$$
$$t_i = x_i\Delta + \varepsilon_i + \mu_i$$

where x are observed characteristics of the studies that cause variations in the "true" effect and Δ is the vector of coefficients of the variables. There is no residual heterogeneity in the fixed effects model, thus residual $\varepsilon_i = 0$. In the random effects model, residual ε_i follow a normal distribution with a mean zero and a variance τ^2.

4.2 Hedge's test for publication bias

The weight function outlined in here is identical to the one in the paper of Ashenfelter, Harmon, and Oosterbeek (1999). More detail can be found in Hedges' paper (1992).

$$L = c + \sum_{i=1}^{n} \log w_i(t_i, \omega) - \frac{1}{2} \sum_{1}^{n} \left(\frac{t_i - x_i\Delta}{\eta_i^{\,2}}\right) - \sum_{i=1}^{n} \log(\eta_i^{\,2}) - \sum_{i=1}^{n} \log\left[\sum_{j=1}^{n} \omega_j \beta_{ij}(x_i\Delta, \tau)\right]$$

Where $w_i(t_i, \omega)$ is a weight function which determines the probability of being observed, with the relationship with the effect size t_i coming via the p-value. $\beta_{ij}(x_i\Delta, \tau)$ denotes the probability of a normally distributed random variable with mean $\mu = x_i\Delta$ and variance $\eta_i^{\,2} = v_i + \tau^2$. In the restricted model of global effect, all variables of study characteristics (x_i) drop out except the constant term, which denotes the true effects.

Reference:

Alesina A., and La Ferrara E. (2000) Participation in Heterogeneous Communities. *The Quarterly Journal of Economics* 115(3), 847-904.

Alesina A., and La Ferrara E. (2000) The Determinants of Trust. NBER Working Paper 7621.

Alesina A., and La Ferrara E. (2002) Who trusts other? *Jounral of Public Economics* 85, 207-234.

Ana, Maria Ibáñez., Lindert, Kathy., and Woolcock, Michael. (2002) Social Capital in Guatemala: A Mixed Methods Analysis. Technical Background Paper No. 12, prepared for the *Guatemala Poverty Assessment.* Washington, D.C.: The World Bank.

Ashenfelter, O., Harmon, C. and Oosterbeek, H. (1999) A review of estimates of the schooling/earnings relationship, with tests for publication bias. *Labour Economics* 6, 453-470.

Brehm, John and Wendy, Rahn. (1997) Individudal-Level Evidence for the Causes and Consequences of Social Capital. *American Journal of Political* Science 41, 99-1023.

Choi, L.H. (2003) Factors Affecting Volunteerism Among Older Adults. *The Journal of Applied Gerontology* 22 (2), 179-196.

Claibourn, Michele P. and Martin, Paul S. (2000) Trusting and Joining? An Empirical Test of the Reciprocal Nature of Social Capital. *Political Behavior* 22 (4), 267-291.

Cohen, Cheryl Bernstein. (1986) Teaching about Ethnic Diversity. ERIC Digest No. 32. ERIC Clearinghouse for Social Studies/Social Science Education Bloomington IN.

Coleman, James. (1990) Foundation of Social Theory Cambridge, MA: Harvard University Press.

Conley, R. and Uslaner, Eric M. (2003) Civic Engagement and Particularized Trust: The Ties that Bind People to Their Ethnic Communities. *American Politics Research* 31 (4), 331-360.

Cutler, Stephen J. and Hendricks, Jon. (2000) Age Differences in Voluntary Association Memberships: Fact or Artifact. *Journal of Gerontology: Social Sciences* 55B(2), 98-107.

Dee, Thomas S. (2003) Are There Civic Returns to Education? NBER Working Paper 9588.

Denny, Kevin. (2003) The Effects of Human Capital on Social Capital: a Cross-Country Analysis IFS Working Papers W03/16, Institute for Fiscal Studies.

DiPasquale, D.and Glaeser, Edward L. (1999) Incentives and Social Capital: Are Homeowners. Better Citizens? *Journal of Urban Economics* 45(2), 354-384.

Egger, M., Smith, GD., Schneider, M. and Minder, C. (1997) Bias in Meta-Analysis Detected by a Simple, Graphical Test. *British Medical Journal* 315, 629-634.

Eliana La Ferrara. (2000) Inequality and Group Participation: Theory and Evidence from Rural Tanzania. Bocconi University and IGIER Revised: December 2000.

Franzen, Axel. (2000) Does the Internet make us lonely? *European Sociological Review* 16 (4), 427-438.

Fukuyama, Francis. (1995) Trust. New York: Free Press.

Funk, C.L. (1998) Practicing What We Preach? The Influence of Societal Interest Value On Civic Engagement. *Political Psychology* 19(3), 601-614.

Glaeser, Edward L. (2001) The Formation of Social Capital. *Canadian Journal of Policy Research* 2 (1), 34-40.

Glaeser, Edward L., Laibson, D., Scheinkman, Jose A. and Scoutter Christine L. (1999) What is social capital, the determinants of trust and trustworthiness. NBER working paper 7216.

Glaeser, Edward., Laibson, David., and Sacerdote , Bruce. (2002) An Economic Approach to Social Capital. *Economic Journal* 112, 437-458.

Glaeser Edward L., Sacerdote, Bruce. (2000) the Social Consequences of Housing. NBER working paper 8034.

Glaeser Edward L. Sacerdote, Bruce. (2003) Education and Religion. NBER working paper 8080.

Glass G.V. (1976) Primary, Secondary and Meta-Analysis of Research. *Educational Researcher* 10, 3-8.

Greenberg, David H., Michalopoulos, Charles. and Robins, Philip K. (2003) Meta-Analysis of Government Sponsored Training Programs. *Industrial and Labor Relations Review* 57(1), 31-53

Grootaert, Christiaan. (1998) Social Capital: The Missing Link? World Bank SCI Working Paper No. 3.

Grootaert, Christiaan. and van Bastelaer,Thierry. (2001) World Bank SCI Working Paper No. 24.

Hedges L.V. (1992) Modelling publication selection effects in meta-analysis. *Statistical Science* 7, 246-55.

Helliwell John F. and Putnam Robert D. (1999) Education and Social Capital. NBER Working Paper No.7121.

Helliwell, John F., Soroka, Stuart N. and Johnston, Richard. (2003) Measuring and Modeling Trust Forthcoming in Fiona Kay and Richard Johnston, eds., Diversity, Social Capital and the Welfare State, Vancouver, BC: University of British Columbia Press.

Hooghe, Marc. (2002) Television and Civic Attitudes: The effect of television time, Programmes and stations. *Harvard International Journal of Press/Politics* 7(2), 84-104.

Hooghe, Marc. (2003) Why should we be bowling alone? Results from a Belgian survey on civic participation. *International journal of voluntary and nonprofit organizations* 14(1), 41-59.

Johansson-Stenman, Olof. and Mahmud, Minhaj. and Martinsson, Peter. (2005) Trust, Trust Games and Stated Trust: Evidence from Rural Bangladesh. Göteborg Working Paper.

Kang, Naewon. and Kwak, Nojin. (2003) A Multilevel Approach to Civic Participation. *Communication Research* 30(1), 80-106.

Lederman, Daniel. (2005) Income, Wealth, and Socialization in Argentina, *Cuadernos de Economía* 42 (Mayo), 3-30.

Lee G, Cappella J.N., Southwell B.G. (2003) The Effects of News and Entertainment on Interpersonal Trust: Political Talk Radio, Newspapers, and Television. *Mass Communication & Society* 6(4), 413–434

Leigh, Andrew. (2004) Trust, Inequality, and Ethnic Heterogeneity. Working Paper.

Levinsen, Klaus. (2004) New Media and Social Capital - Internet Use and Social Capital in Six European Countries. Working Paper.

Li, Y., Savage, M. and Pickles, A. (2002) Social Inequalities and Associational Involvement in England and Wales (1972-1999). *British Journal of Sociology* 54 (4), 497-526.

Liu, Amy Qiaoming. and Terry L. Besser. (2003) Social Capital and Participation in Community Improvement Activities by the Elderly in Small Towns and Rural Communities. *Rural Sociology* 68 (3), 343 –365.

Markus, Gregory B. (2002) Civic Participation in American Cities. Working Paper.

Melissa, Marschall. and Stolle, Dietlind, (2004) Race and the City: Neighborhood Context and the Development of Generalized Trust. *Political Behavior* 26(2), 125-154.

Milligan, K., Moretti, E. and Oreopoulos, P. (2003) Does Education Improve Citizenship? Evidence from the U.S and the U.K. NBER Working Paper 9584.

Moy, P., Scheufele D.A. and Holbert, R.L. (1999) Television use and social capital: Testing Putnam's time displacement hypothesis. *Mass Communication & Society* 2, 25-43.

Newton, Kenneth. (2001) Trust, social capital, civil society and democracy. *International Political Science Review* 22(2), 201-14.

Newton, Kenneth. (2001) Social Trust and Political disaffection: Social Capital and Democracy. Paper prepared for the EURESCO Conference on Social Capital: Interdisciplinary Perspectives Exeter.

Nie, Norman H., Jane Junn and Kenneth, Stehlik-Bany. (1996) Education and Democratic Citizenship in America. Chicago, University of Chicago Press.

Norris, Pippa. (1996) Does Television Erode Social Capital: A Reply to Putnam. *Political Science and Politics* 29(3), 474-480.

Offe, Claus. and Fuchs, Susanne. (2002) A decline of social capital?: The German case in *Democracies in Flux: the evolution of social capital in contemporary society*. Oxford University Press, Oxford.

Pattie, Charles., Seyd, Patrick. and Whiteley, Paul. (2003) Citizenship and Civic Engagement: Attitudes and Behaviour in Britain. *Political Studies* 51(3), 443–468.

Putnam, R.D. (1993) Making democracy work: civic tradition in modern Italy. Princeton: Princeton University Press.

Putnam, R.D. (1995) Bowling Alone: America's Declining Social Capital, *The Journal of Democracy* 6(1), 65-78.

Putnam, R.D. (2000) Bowling Alone: The Collapse and Revival of American Community. New York: Simon & Schuster.

Rothstein, Bo. (2001) Creating trust from above: social capital and institutional legitimacy. Paper presented at the conference on "Corruption in contemporary politics".

Rahn, W.M., Kwang Suk Yoon., Michael Garet, Steven Lipson, and Katherine Loflin. (2003) Geographies of Trust. Paper presented at the 58th Annual Meeting of the American Association for Public Opinion Research, Nashville, TN.

Scheufele, Dietram A. and Shah, Dhavan V. (2000) Personality Strength and Social Capital. *Communication Research* 27(2), 107-131.

Shah, Dhavan V. (1998) Civic Engagement, Interpersonal Trust, and Television Use: An Individual Level Assessment of Social Capital. *Political Psychology* 19(3), 469-496.

Smith, E. (1999) The effects of investment in the social capital of youth on political and civic behaviour in young adulthood: a longitudinal analysis, *Political Psychology* 19(4), 749-779.

Soroka, Stuart N., Johnston, Richard. and Banting, Keith. (2003) Ethnicity, Trust, and the Welfare State Francquiprize Conference.

Stolle, Dietlind. and Hooghe, Marc. (2004) The Roots of Social Capital: Attitudinal and Network Mechanisms in the Relation between Youth and Adult Indicators of Social Capital. *Acta Politica* 39, 422–441.

Tiehen, Laura. (2000) Has Working More Caused Married Women to Volunteer Less? Evidence from Time Diary Data, 1965 to 1993. *Nonprofit and Voluntary Sector Quarterly* 29 (4), 505-529.

Uslaner, Eric M. (1997) Voluntary Organization Membership in Canada and the United States. Working Paper.

Uslaner, Eric M. (1998) Social capital, Television and the Mean world, trust, optimism and civic participation. *Political Psychology* 19 (3), 441-467.

Uslaner Eric M.and Rothstein, Bo. (2004) All for All: Equality and Social Trust", Working Paper.

Uslaner, Eric M. (2004) Where You Stands Depends Upon Where Your Grandparents Sat: The Inheritability of Generalized Trust. Working Paper.

Uslaner, Eric M. (2004) Trust, Civic Engagement, and the Internet. *Political Communication* 21(2), 223-242.

Wellman, Barry., Haase, Anabel Q., Witte, James. and Hampton, Keith. (2001) Does the Internet Increase, Decrease, or Supplement Social Capital? Social Networks, Participation, and community commitment. *American Behavioral Scientist* 45 (3), 436-455.

Wilson, J.M. (2005) Group Identity and Social Trust in the American Public. Working paper.

Wollebæk, Dag. and Selle, Per. (2003) Participation and social capital formation: Norway in a Comparative Perspective. *Scandinavian Political Studies* 26(1), 67-91.

TIER WORKING PAPER SERIES
TIER WP 10/09

ISBN 978-94-003-0010-1