Conferencia Interamericana de Seguridad Social



Este documento forma parte de la producción editorial de la Conferencia Interamericana de Seguridad Social (CISS)

Se permite su reproducción total o parcial, en copia digital o impresa; siempre y cuando se cite la fuente y se reconozca la autoría.

16

DONACIÓN/DONATION

Patricia López-Rodríguez Isidro Soloaga **Guest editors**

Rubén Martínez Cárdenas Edgardo Arturo Ayala Gaytán Ernesto Aguayo Téllez

Diana Manuel Gutiérrez Ricardo Zaragoza Castillo Domingo Faustino Hernández Ángeles Edgar Ramírez Medina

> Héctor H. Sandoval Martín Lima

Patricia López-Rodríguez Isidro Soloaga Rodolfo de la Torre García

> Lindon J. Robison Marcelo E. Siles

Raymundo M. Campos-Vázquez **Emilio Cuilty**

> Delfino Vargas Chanes María Merino Sanz

Well-being

INTRODUCTION.

A QUANTITATIVE ANALYSIS OF SOCIAL CAPITAL IN MEXICO.

RELATIONSHIP BETWEEN SOCIAL CAPITAL AND HEALTH INDICATORS IN MEXICO.

SOCIAL CAPITAL IN LABOR MARKET ACCESS AND POVERTY IN MEXICO.

THE EFFECT OF THE PERCEPTION OF VIOLENCE ON SOCIAL CAPITAL IN MEXICO.

ORGANIZATIONS AND SOCIAL CAPITAL.

DO INVESTMENTS IN PUBLIC SPACES GENERATE SOCIAL CAPITAL? EVIDENCE FOR MEXICO.

PUBLIC SPACES IN MEXICO AS A SOCIAL COHESION PROMOTERS: AN SCTRUCTURAL MODELING PERSPECTIVE.



A QUANTITATIVE ANALYSIS OF SOCIAL CAPITAL IN MEXICO

Ernesto Aguayo Tellez¹ Edgardo Arturo Ayala Gaytán² Rubén Martínez Cárdenas³

Abstract

Social capital has been related to efficiency in markets (Arrow, 1972), contract reinforcement (Durlauf and Fafchamps, 2004) and in general to development and welfare (Keefer and Knack 1997; Putnam 2000; Knack and Zak 2003). In this paper we empirically investigate the determinants of social capital, focusing on three common approximate measures of it: two related to trust, and one related to social organization memberships. Using data for urban areas in Mexico for the year 2006, we find that social capital measured as trust and membership increases with age, and with the perception of higher levels of social capital in the environment; it also tends to be higher in smaller communities, and is different across regions of the country. On the other hand, social capital measured as trust decreases with segregation, while social capital measured as membership increases with education and income, but decreases with the lack of social security.

Key words: Trust, Memberships, Social Capital, Economic Development, Mexico.

Introduction

R ecently, there has been an increasing interest in the study of social capital among economists, lining up with sociologists, anthropologists, and other academicians that have been studying social capital for some time now. Even though there is no consensus about what this asset exactly is and how to measure it, there is a number of points researchers have agreed on to some extent, regarding which indicators can be useful to approximate it and which individual and social variables affect it. The attractiveness of social capital, at least to some economists, lies on the fact that this asset can help us to understand the behavior of individuals and economic outcomes that cannot be explained by the pure forces of the market. In this sense, if social capital is to be accepted as that *something* else that exists among individuals; the factor that facilitates formal economic institutions to work with less friction and, somehow, more efficiently; one should be careful not to try to oversell its power.⁴

¹Department of Economics, Universidad Autónoma de Nuevo León, Mexico, ernestoaguayo@gmail.com.

²Departament of Economics, Instituto Tecnológico y de Estudios Superiores de Monterrey, Campus Monterrey, Mexico, edayala04@gmail.com.

³Department of Economics, The University of York, UK, rubenmtzc@gmail.com

⁴Although this can also be a drawback if we acknowledge that empirical estimates can be attributing part of the unexplained behavior of the dependant variable to social capital, when such behavior is in fact part of the stochastic error and not of the asset.

There are many examples on how social capital can influence individuals' economic decisions. For example, a person experiencing financial difficulties can recur, under the appropriate circumstances, to lending institutions in order to have access to resources paying for this service. Nevertheless, an important number of people does not have access to lending markets, what they use is their social structure and the bonds that this structure provides to have access to financial resources, sometimes even without the need of pecuniary payments. These social bonds are what we here call social capital, and memberships to voluntary organizations and trust are used to get an approximate measure of this asset. Social capital is understood as a bonding mechanism among individuals. It is in this sense that trust and membership can be and are classified as social capital here. The former allows individuals to share the economic value of goods and services with minimum risk involved, while the latter contributes to building bonds and strengthen the social networks through which cooperation can happen. This is also the reason why both are used as approximations of social capital as a concept. The example above can be adapted to the provision of almost any good or service, not to mention the creation of companies or organizations and financial transactions. Take for example transportation and entertainment services that are not paid in advance, job search, babysitting, free lending of expensive goods such as cars, among others.

According to empirical findings, social capital is fundamental to economic development. For example, it has been found that social capital promotes growth, facilitates commercial transactions, spurs private provision of public goods, foments empowerment, contributes to improving institution's performance, facilitates access to health services, decreases the probability of mental illness, gives rise to better provision of public services, increases performance and productivity, promotes cooperation, foments participation in civil organizations and incentives collective action (Keefer and Knack, 1997; Gabre-Madin, 2001; Pargal *et. al.*, 2000; Mayoux, 2001; Coffé and Geys, 2005; Hendryx et. al., 2002; McCulloch, 2001; La Porta *et. al.*, 1997; Putnam *et. al.*, 1993; Zak and Knack, 2001; Beugelsdijk and Schaik, 2001; Aral and Van Alstyne, 2007; Polanía-Reyes, 2005; and Narayan and Pritchett, 1999).

Given the importance that social capital seems to have, it is noticeable that it has not been broadly studied in Latin America, particularly in Mexico. Among the few studies that focus on Mexico, Fox (2001) analyzes the common ground between social capital and the authoritarianism in rural areas; Gordon (2004), investigates trust on civil organizations; Flores and Rello (2003), research the use of links on social networks to overcome difficulties in Mexico and Central America; Lopez-Rodriguez, Soloaga and De la Torre (2012) study the effectiveness of interventions in communities via social co-investment programs through NGOs on social capital; Martinez et. al. (forthcoming) study correlations of trust on different socio-economic variables. Also, Lopez-Rodriguez and Soloaga (2012) compile important evidence on social capital in Mexico exploiting the "Encuesta de Capital Social en Mexico".

The present paper aims at contributing to this line of research, extending the latter work including three approximate measures of social capital, and controlling for community effects that can derive from the existing interactions among individuals in the same area. Herein, we approximate social capital using three different measures: two related to trust and one related to social participation. We restrict our analysis to trust and membership, and not other proxies such as network variables, as these are the two proxies of social capital that the survey used as our data source includes and that could be used for our purposes. The two measures related to trust are: a) the

opinion expressed by individuals regarding whether they can or cannot trust others, and b) a trust index regarding several social agents. The measure related to social participation is approximated by the number of memberships of individuals to voluntary organizations.

The data we use to this purpose was obtained from the Mexican Urban Social Capital Survey (ENCASU, by its initials in Spanish).⁵ This survey was conducted in Mexico in the year 2006. The sample consists of 2,100 households in urban areas and includes individual socioeconomic variables, such as age, gender, education and income; environment variables, such as the size of the community where individuals live; and social capital variables, including social participation and the perception of individuals on segregation and trust. The survey was designed to be statistically significant for three large regions of Mexico: the northern, the central-western and the south-southwestern regions, in addition to the central region that is not statistically representative. The design of the survey permits the comparison with international surveys that share the structure of the questions asked to the individuals, in particular with data obtained in the World Values Survey, and other surveys that aim at gathering data on social capital.

1. Empirical model of the determinants of social capital

In this study we make three empirical exercises to test the significance of a number of variables linked to social capital in the literature. Here, social capital is approximated by two measures of trust, and one measure of membership. All the variables are constructed to represent ordinal measures of the individuals' perceptions, or measures of the three variables. Given the nature of the variables constructed, we estimate discrete multinomial choice models that account for responses being ordinal. We select to compute our estimates using an Ordered Probit model (McElvey and Zavoina, 1975). In the case of the model for membership we coded the variable as 0 if the individual is not affiliated to any organization, 1 if it is a member of just one organization and 2 for two or more affiliations. Alternatively, the variable can be modeled by a count model but as the variable memberships practically truncates at a value of 4, the Ordered Probit is appropriate and it is a better alternative, so we reported the estimation using this method for all social capital measures. A maximum likelihood Poisson model for memberships was also estimated, but the estimated coefficients of both models do not differ significantly⁶. The two variables related to trust are constructed using a question related to reported measures of trust on social institutions that also appears in the World Values Survey, and the construction of a trust index. We clarify how these two measures were constructed further in the document.

Many researchers agree that the main determinants of social capital at an individual level are mainly associated with socio-demographic characteristics, such as gender, age, education and expenditure and/or income. Additionally, it has been mentioned that social capital also depends on

⁵ Encuesta de Capital Social en el Medio Urbano 2006, United Nations Development Programme and Mexican Ministry of Social Development (PNUD-SEDESOL, 2006).

⁶ The estimated coefficients of the Poisson model for memberships are Education (0.01569**), Age (0.00539**), Ln Income (0.10900**), Environment Social Capital (0.17324**), Lack of Social Security (-0.26349**), Big Population (-0.32822***), Center-West (0.33018*), South-Southwest (0.20814*), where *** means p<0.01, ** p<=.05 and * p<0.1. The rest of the variables were not significantly different from zero.

environment characteristics, such as population size and region, incidence of segregation, coverage of social security, group ethnicity, and average level of social capital in the social environment.⁷

The model of social capital (SC_i^t) estimated in this paper is represented by the following equation:

(1)
$$\Pr(SC_i^i = \mathbf{k} \mid \mathbf{x}_i) = \Phi(\mu_k - \mathbf{x}_i' \cdot \boldsymbol{\beta}) - \Phi(\mu_{k-1} - \mathbf{x}_i' \cdot \boldsymbol{\beta})$$

where $x_i' \cdot \beta \equiv \beta_0 + \beta_1 \cdot D_i + \beta_2 \cdot E_i + \beta_3 \cdot PM_i$, D_i is a vector of socio demographic characteristics of individual i, including having experienced segregation, E_i is a vector of environment characteristics of individual i, and PM_i is a vector of variables of perception of trust in the environment of individual i. The vectors β_g , indicate the coefficients of each group of variables (g = 1,2,3). SC_j^i is the social capital of individual i approximated by measure j: the two measures related to trust and the measure related to social participation (j=1,2,3), finally, the index k refers to the level of confidence (k=1,2,3).

2. Descriptive statistics

Table 1 in the Annex shows the mean and standard deviation of the variables considered in the model. All variables are from the ENCASU 2006 survey. The variable *Trust WVS* is our first measure of trust and takes values of 1, 2 and 3. This variable comes from an ENCASU question similar to the World Values Survey (WVS) question: "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" In this case, 55% of the surveyed individuals do not trust other people, 32% show intermediate levels of trust, and only 13% declare that most people can be trusted.

The variable Trust Index is constructed aggregating individuals' answers to the questions: "From 0 to 10, where 0 is no trust and 10 is complete trust, how much do you trust: family, police, friends, "compadres", government, businessmen, political parties, neighbors, church, judges and teachers? in the ENCASU 2006. We take only answers to police, government, businessmen, political parties, neighbors, church, judges and teachers, excluding friends, "compadres", and family as we want to capture spontaneous social cohesion only. Also, we did not include colleagues nor bosses because of excessive missing values. We verified whether these different trust measures could be aggregated into a single index using the Cronbach's alpha coefficient. The Cronbach's alpha coefficient presented a value of 0.8564 indicating consistence when aggregating such variables. Next, we did principal components analysis to determine the correct weight of each social agent in the index. We used 8 components as weights to construct the index as a weighted average of the trust values reported in the survey, each component corresponding to an item considered. With the obtained results we constructed a continuous variable within a range from 1 to 10. The answer was divided into 10 categories, going from absolutely no trust (1) to complete trust (10). We collapsed the categories of our index from 10 to 3 for two reasons: firstly, to make our index comparable with our other measure of trust; secondly, to avoid difficulties in the interpretation of the results and falling into loose arguments, particularly when interpreting

⁷ See for example Helliwell and Putnam (1999); Keefer and Knack (1997); Putnam et. al. (1993); Alesina and La Ferrara (2002); and Glaeser et. al. (1999); Glaeser, Laibson and Sacerdote (2002); Stone and Hughes (2002); for different specifications to obtain correlates of social capital.

the marginal effects. In order to determine the cutting points, using the optimal stratification rule of Scheaffer et. al. (2007), we calculated the critical points to divide this continuous variable into three categories of trust: low, medium and high. Unlike the *Trust WVS* variable, the *Trust Index* looks more optimistic given that only 45% of people surveyed revealed a low or no trust level.

Finally, the categorical variable Membership, our measure related to social participation, takes values from 0 to 2. This variable reports the number of social organization where the individual participates, where the value 0 means no membership to organizations, 1 means membership to one organization, and so on. The associations taken into account in this work includes organizations for parents, neighborhoods, unions, religious, sports and recreation clubs and self-help. Notice that the average value is 0.2825, which is considerably small.

As measure of economic status (*Ln Income*) we decided to use total monthly household expenditure reported by the individuals in the survey. We divided the variable by the number of members in the household weighting each household member by age group, using the weights estimated by Teruel, Rubalcava y Santana (2005). We distinguish *Big Population* form small population using a cut of 100,000 habitants. The variable *Lack of Social Security* takes a value of 1 if the individual reports not to have access to public or private social security. The *Environment Social Capital* variable is a dummy that equals one if the individual responds positively to the question: do you believe that nowadays people help each other more than a year ago? The *Segregation* variable is equal to 1 if the individual reports that he or she feels that his or her rights have been truncated or not respected. Finally, the variable *Gender* takes the value 1 if the respondent is female and 0 if male, *Education* measures the number of years of formal education, *Age* is measured in number of years, *Indigenous Language Speaker* takes the value of 1 if the answer was affirmative and 0 otherwise, and North, Center-West, and South-Southwestern are dummy variables with value 1 if the individual is resident in the region and 0 if not.

3. Results

We estimate Equation 1 independently for each of our three measures of social capital: Trust WVS (SC_1) , Trust Index (SC_2) , and Membership (SC_3) . The results are shown in Table 2, there the maximum likelihood estimations for each explanatory variable are shown clustering the variance-covariance estimators by municipality, also Cuts 1 and 2 are shown, which refer to the sectioning points in the probability density function that result from the best fit estimation via the maximum-likelihood estimation. Given the ordered nature of our categorical trust variables, a positive sign in the coefficient means that when the regressor increases, the probability that the individual belongs to a higher trust group increases, while the probability of belonging to a lower trust group decreases, but the sign on the probability of belonging to the intermediate group is undetermined a priori. The variables age, social capital perceived in the environment, experiencing any kind of segregation, living in a large area, and living in the central-western region were significant in both estimated trust models. Coefficients indicate that belonging to any indigenous speaking group, and living in the south-southwestern region were significant only

⁸ The classification of trust typically used divides the answer in two aggregated categories: no trust (1 to 5) and trust (6 to 10). However, in our case, using this classification biases the results towards low levels of trust, about 70% of respondents reveal no trust. To avoid this bias, we aggregate the answer categories into 3 levels of trust. Level 1 is assigned to individuals with scores lower than 6, level 2 to those individuals with scores between 6 and 8 and the high level of trust for those with scores above 8.

for model 1 (*Trust WVS*), whereas education, the measurement of income, lack of social security and living in the northern region of the country were only significant for model 2 (*Trust Index*).

Finally, for model 3 (*Membership*), all but gender, segregation, speaking an indigenous language, and the variable that indicates living in the northern region are significant. In general, and considering the estimated coefficients of the three models, results show that age, the perception of trust in the environment, and living in the central-western region have positive effects on social capital. On the contrary, negative effects were found for the variable that measures lack of social security in models 2 (*Trust Index*) and 3 (*Membership*), and the variable that indicates feeling of segregation in models 1 (*Trust WVS*) and 2 (*Trust Index*), similarly for living in a large population for the three models. With respect to the variable income, the effect is negative in model 2 (*Trust Index*) and positive in model 3 (*Membership*). Interestingly, these results widely agree with the findings reported by López-Rodríguez and De la Torre (2010) in their work on social capital in Mexico for the variables education, the variables representing the size of the population, and social security, but not for the variable age. The results also coincide with Alesina and la Ferrara (2002), Helliewell and Putnam (1999), Glaeser et. al. (1999), and Knack and Zak (2003), just to mention a few.

Tables 3, 4 and 5 show the estimated marginal effects for the three models respectively. In the case of trust, the results measure the change in the probabilities that an individual belongs to each trust group when the explicative variable increases by one unit. Therefore, the sum of the probabilities must add up to zero, the change in the condition of low trust must be the negative of the sum of the other two cases. In the case of dichotomous discrete variables, such as gender, the marginal effect represents an increase in the probability of having a certain level of trust when the corresponding attribute is present.

Thus, the results for model 1, which uses the measure of trust based on the WVS question, indicate that on average, controlling for other explanatory variables, the probability of belonging to the most trusted group increases by 14 percentage points for the cases of living in the central-western region, while belonging to the group of speakers of indigenous languages increases the probability of passing to the most trusted group by 9.3 percentage points. If we consider only these two results, taken together, the fact that a person belongs to an indigenous group or lives in the central-western region of the country increases by almost 25 percentage points the probability of belonging to the most trusted sector in comparison with those who do not share these characteristics.

Perceiving a favorable environment increases the probability of belonging to the high trust group by 5.5 percentage points and reduces the probability of belonging to the low trust group by 7 percentage points. Additionally, every additional year of age increases the probability of belonging to the high trust group by 0.13 percentage points and decreases the probability of belonging to the low trust group by 0.17 percentage points.

In contrast with these results, living in the south-southwestern region of the country increases the probability of belonging to the low trust group by 7 percentage points; while experiencing any kind of segregation increases the probability of being in this same group by about 6 percentage points.

Regarding model 2, which uses the constructed trust index, results indicate that those individuals from the northern region are 18 percentage points more likely to belong to the high trust group relative to the central region, while for those from the central-western region the value is approximately 12 percentage points higher. The perception of a favorable environment, interpreted as an indicator of a high environment social capital level, contributes in almost 11 percentage points

to belonging to the high trust group, if in addition the individual belongs to the medium trust group, then the contribution is approximately of 17 percentage points. Other variables have minor but not negligible contributions. An additional year of education contributes by 1.3 percentage points to belonging to the medium and high trust groups (12.3 percentage points every ten years) and 0.3 percentage points for each additional year of age (3 percentage points every 10 years).

By contrast, a negative effect is reported on trust when individuals experience some kind of segregation, which increases the probability of belonging to the low trust group by 12 percentage points. Living in a large population decreases the probability of belonging to medium and high trust groups by almost 6 percentage points, while lacking social security contributes by 5 percentage points to the probability of belonging to the low trust group. Another negative effect on trust is found in the coefficient of measurement of income, which increases the probability of belonging to the low trust group by 4.5 percentage points.

Finally, for model 3, where the number of memberships is used, we find that the largest marginal effect (in absolute value) on belonging to the none memberships group is reported for the central-western variable, indicating that belonging to this region decreases the probability of no participating in any organization by 11 percentage points. Additionally, the probability of having at least one membership (i.e. the variables take values 1 or 2) increases by 6 percentage points when environment social capital increases by one unit; it increases by 0.5 percentage points for every additional year of education, by almost 0.2 percentage points for every additional year of age, and by 4 percentage points for a one percentage increase on income. For the case of negative contributions, living in a large population decreases the probability of having at least one membership by 10 percentage points, and the lack of social security by 8 percentage points.

4. Conclusions

The contribution of this study is the empirical exploration of the determinants of social capital in Mexico using measurements of trust and the number of social organization memberships as proxies of social capital. Even if there is a positive effect of education and age, social capital in Mexico is highly sensitive to the environment of the individual variables, in particular we find a strong effect of the region and the size of the community in which individuals live, and also the level of social capital perceived in the environment (perception of support). Moreover, we find evidence that segregation and the lack of social security diminish the level of social capital in individuals, measured as trust and social participation. The findings suggest that the impulse to the creation of social capital in Mexico should be particularly relevant in the most vulnerable groups of the society.

An important limitation of this research is that the measure of social capital relies on the imperfect proxy variables trust and memberships, and such variables depend on the perception and the situation of respondents. Respondents' answers may be conditioned to temporal determinants at the moment of the interview. It is also important to mention that the economic background, socially and historically, lie behind the raw regional variables used in this study. One possible line of future research is to compare cohorts of individuals who have moved from one region to another to assess whether their level of trust changes with their place of residence.

References

- Alesina, A. y E. La Ferrara (2002). Who Trusts Others? *Journal of Public Economics*. 85, 207-234.
- Aral, S., E. Brynjolfsson & M. van Alstyne (2007). Productivity Effects of Information Diffusion in E-Mail Networks. ICIS 2007 Proceedings. Paper 17. Available in: http://aisel.aisnet.org/icis2007/17
- Arrow, K. (1972). Gifts and Exchanges. Philosophy and Public Affairs. I, 343-362.
- Beugelsdijk, S. & T. van Schalk (2001). Social Capital and Regional Economic Growth. Discussion paper, No. 2001-102. Tilburg: Tilburg University
- Coffé, H. & Geys, B. (2005). Institutional performance and social capital. An application to the local government level. *Journal of Urban Affairs*, 27(5), 485-501.
- Durlauf, S.N. y Fafchamps, M. (2004). Social Capital. The Centre for the Study of African Economies Working Paper Series, No. 214. The Berkeley Economic Press.
- Flores, M. and F. Rello (2003). Social Capital and Poverty Lessons from Case Studies in Mexico and Central America. ESA working paper, 03-12. Rome: FAO. Agricultural and Development Economics Division (ESA)
- Fox, J. (2001). De la teoría a la práctica del capital social: El Banco Mundial en el campo mexicano. LASA 2001. Washington. September 6th -8th, 2001.
- Gabre-Madhin, E. Z., & International Food Policy Research Institute. (2001). Market institutions, transaction costs, and social capital in the Ethiopian grain market. Washington, D.C: International Food Policy Research Institute.
- Glaeser, E., D. Laibson, & B. Sacerdote (2002). An Economic Approach to Social Capital. *Economic Journal*. 112, 483, 437-458.
- Glaeser, E., D. Laibson, J. Scheinkman y C. Soutter (1999). Measuring Trust. *The Quarterly Journal of Economics*. 115 (3), 811-846.
- Gordon S. and R. Millán (2004). Capital Social, una lectura de tres perspectivas clásicas. Revista Mexicana de Sociología (66) 4.
- Helliwell, J. F. & Putnam, R. D. (1999). Education and social capital. Cambridge, MA: National Bureau of Economic Research.

- Hendryx, M., M. Ahern, N. Lovrich & A. McCurdy (2002). Access to health Care and Community Social Capital. *Health Services Research*. Feb, 2002. Available in: http://findarticles.com/p/articles/mi_m4149/is_5_39/ai n6228861.
- Keefer, P. and S. Knack (1997). Does Social Capital Have an Economic Payoff? A Cross-Country Investigation. *Quarterly Journal of Economics* (112). 1252-1288.
- Knack, S. and P.J. Zak (2003). Building Trust: Public Policy, Interpersonal Trust, and Economic Development. Supreme Court Economic Review (10).
- La Porta, R., F. Lopez-de-Silanes, A. Shleifer & R. Vishny (1997). Trust in Large Organizations. *American Economic Review*, 87, 333-338.
- López-Rodríguez, P. and R. De la Torre (2010). "Social Capital in the Presence of Market Failures. *International Journal of Social Inquiry.* 3 (1), 63-188.
- López-Rodriguez, P., and I. Soloaga (Comps.) (2012). Capitol Social y Política Pública en México. Mexico DF. El Colegio de México.
- López-Rodriguez, P., I. Soloaga, and R. De la Torre Garcia (2012). Capital social y políticas públicas: Análisis del efecto del programa de coinversión social sobre las organizaciones de la sociedad civil. Documento de Trabajo No. II-2012. Centro de Estudios Económicos. El Colegio de México.
- Martinez Cardenas, R., E. Ayala Gaytan and E. Aguayo Tellez (forthcoming). Confianza y Capital Social: Evidencia para México. Economia, Sociedad y Territorio. Forthcoming.
- Mayoux, L. (2001). Tackling the Down Side: Social Capital, Women's Empowerment and Micro Finance in Cameroon. Development and Change The Hague Then London-, 32 (3), 435-464.
- McCulloch, A. (2001). Social environments and health: cross sectional national survey. *British Medical Journal*. 323 (7306), 208-209.
- McKelvey, R. and W. Zavoina (1975) "A statistical model for the analysis of ordinal level dependent variables." Journal of Mathematical Sociology 4, 103-20.

- Narayan, D. & L, Pritchett (1999). Cents and Sociability: Household Income and Social Capital in Rural Tanzania, Economic Development and Cultural Change, 47(4), 871-97.
- Pargal, S., D. Gilligan & M. Huq (2000). Private provision of a public good Social capital and solid waste management in Dhaka, Bangladesh. Policy research working papers, 2422. Washington: The World Bank, Latin America and the Caribbean Region, Private Sector Cluster.
- Polanía-Reyes, S. (2005). Social Capital and Household Income in Urban Colombia. Revista Desarrollo y Sociedad, 56 (2).

- Putnam, R. (2000). Bowling Alone. New York: Simon and Schuster.
- Putnam, R., R. Leonardi & R. Nanetti (1993). Making Democracy Work: Civic Traditions in Modern Italy. Princeton: Princeton University Press.
- Scheaffer, R., W. Mendenhall and L. Ott (2007), Elementos de Muestreo, Thompson, México.
- Stone, W. & J. Hughes (2002). Social Capital: Empirical meaning and measurement validity. Australian Institute of Family Studies.
- Zak, P. & S. Knack (2001). Trust and Growth. Economic Journal. 111, 295-321.

Annex

Table 1

Descriptive Statistics of the Social Capital Measures and their Determinants

Variable	Average	Standard Deviation	Minimum	Maximum
Trust WVS [†] (SC ₁)	0.47108	0.77533	0	2
Trust Index‡ (SC ₂)	1.70269	0.71813	1	3
Memberships* (SC ₃)	0.28254	0.52889	0	4
Gender	1.56853	0.49540	1	2
Education	7.42857	4.81709	0	20
Age	42.40609	16.98512	18	97
Ln Income	7.65235	0.80621	3.9	11.2
Environment Social Capital	0.22104	0.41505	0	1
Segregation	0.54038	0.49848	0	1
Lack of Social Security	0.45547	0.49813	0	1
Indigenous Language Speaking	0.11075	0.31390	0	1
Big Population	0.41394	0.49265	0	I
North	0.26765	0.44284	0	1
West-Center	0.14905	0.35622	0	1
South-Southwest	0.36825	0.48244	0	1
Center	0.21504	0.41095	0	1

Source: Author's elaboration with data from the Mexican Urban Social Capital Survey.

[†] Trust approximated by the WVS question: "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?"

[‡] Trust approximated by the constructed trust index using reports on trust over different social actors.

^{*}Number of memberships in voluntary organizations.

A QUANTITATIVE ANALYSIS OF SOCIAL CAPITAL IN MEXICO

Table 2.
Estimates Results for the Social Capital in Mexico Models

Variable	SC1 [†]	SC2 [‡]	SC3 [¥]
Gender	-0.0842	-0.10023	0.07103
	(0.06020)	(0.0634)	(0.056000)
Education	0.00698	0.03286***	0.01569**
~	(0.00651)	(0.00843)	(0.00711)
Age	0.00507***	0.00765***	0.00539**
U	(0.00188)	(0.00207)	(0.00213)
Ln Income	0.03281	-0.11576**	0.10900**
	(0.04568)	(0.05449)	(0.044107)
Environment Social Capital	0.20713***	0.44970***	0.17324***
•	(0.06609)	(0.05935)	(0.06022)
Segregation	-0.16917**	-0.31216***	0.067695
	(0.07068)	(0.07309)	(0.06272)
Lack of Social Security	-0.01655	-0.12855**	-0.26349***
	(0.06348)	(0.05767)	(0.06867)
Indigenous Language Speaker	0.33100**	-0.08026	-0.02901
	(0.15905)	(0.14947)	(0.12181)
Big Population	-0.12332*	-0.14754**	-0.32822***
	(0.08468)	(0.08197)	(0.10298)
North	0.07989	0.72214***	0.02196
	(0.09352)	(0.11117)	(0.11571)
Center-West	0.48570***	0.49522***	0.33018*
	(0.13556)	(0.09388)	(0.18378)
South-Southwest	-0.20943**	0.15869	0.20814*
	(0.10177)	(012242)	(0.12381)
cutl	0.88395	-0.49134	1.94896
	(0.40132)	(0.48067)	(0.39918)
cut2	1.29142	0.77818	3.18892
	(0.40376)	(0.48654)	(0.40882)
N	2010	1536	2016
Chi2	95.77***	294.77***	74.71***
Pseudo R2	0.0272	0.0684	0.0333

Source: Author's elaboration with data from the Mexican Urban Social Capital Survey.

[†] Trust approximated by the WVS question: "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?"

^{*} Trust approximated by the constructed trust index using reports on trust over different social actors.

Y Number of memberships in voluntary organizations. For SC1 and SC2 we estimate Ordered Probit models and for SC3 we estimate a Poisson model. Statistical significance of coefficients indicated by: * p<.10, ** p<.05, *** p<.01. Robust standard errors are reported in parenthesis.

Table 3.

Change in the Probability of Belonging to the Trust Groups (WVS)

(Marginal Effects)

SC1[†]

Variables	Low	Trust level Medium	High
Gender	0.0289054	-0.0076373	-0.0212681
	(0.02054)	(0.00545)	(0.01512)
Education	-0.0023974	0.0006334	0.001764
	(0.00224)	(0.00059)	(0.0065)
Age	-0.0017404***	0.0004598***	0.0012805***
	(0.00065)	(0.00018)	(0.0005)
Ln Income	-0.0112598	0.002975	0.0082847
	(0.01563)	(0.00416)	(0.01148)
Environment Social Capital	-0.0730971***	0.0179989***	0.0550982***
	(0.02388)	(0.00591)	(0.01816)
Segregation	0.0582337**	-0.0152228**	-0.0430109**
	(0.02464)	(0.00631)	(0.01846)
Lack of Social Security	0.0056769	-0.0015013	-0.0041756
	(0.02179)	(0.00575)	(0.01604)
Indigenous Language Speaker	-0.1203757**	0.026855**	0.0935207*
	(0.0614)	(.01129)	(0.05036)
Big Population	0.042025	-0.0112358	-0.0307892
	(0.02888)	(0.00768)	(0.02126)
North	-0.0276783	0.0071575	0.0205208
	(0.03345)	(0.00857)	(0.02489)
Center-West	-0.17884***	0.0371402***	0.1416998***
	(0.05316)	(0.00762)	(0.04623)
South-Southwest	0.0707303**	-0.0191736**	-0.0515567**
	(0.03398)	(0.0097)	(0.02441)

Source: Author's elaboration with data from the Mexican Urban Social Capital Survey.

Notes: [†] Trust approximated by the WVS question: "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" Coefficients indicate dy/dx, that is, a unitary discrete change in the variable for dichotomic variables and a continuous unitary change for the continuous variables. Statistical significance of coefficients are indicated by: * p<.10, ** p<.05, *** p<.01. Standard errors are reported in parenthesis.

Table 4
Change in the Probability of Belonging to the Trust Groups (Index)
(Marginal Effects)

SC2[‡]

Variables	Low	Trust level Medium	High
Gender	0.03952	-0.0181	-0.02142
	(0.02502)	(0.01117)	(0.01399)
Education	-0.01296***	0.00593***	0.00702***
	(0.0033)	(0.0016)	(0.00182)
Age	-0.00301***	0.00138***	0.00163***
	(0.00089)	(0.0004)	(0.00051)
Ln Income	0.04565**	-0.02091**	-0.02473**
	(0.02141)	(0.00954)	(0.0121)
Environment Social Capital	-0.1715***	0.06234***	0.10916***
	(0.0216)	(0.0095)	(0.01614)
Segregation	0.12234***	-0.05452***	-0.06781***
	(0.02869)	(0.01383)	(0.0161)
Lack of Social Security	0.05071**	-0.02344**	-0.02726**
	(0.02274)	(0.01102)	(0.01198)
Indigenous Language Speaker	0.03178	-0.01525	-0.01653
	(0.05938)	(0.0296)	(0.2982)
Big Population	0.05822*	-0.02703*	-0.03118*
	(0.03234	(0.01549)	(0.01709)
North	-0.26918***	0.08755***	0.18163***
	(0.03749)	(0.01194)	(0.03427)
Center-West	-0.18555***	0.05892***	0.12662***
	(0.03397)	(0.01012)	(0.02822)
South-Southwest	-0.06228	0.02749	0.03478
	(0.0478)	(0.01971)	(0.02829)

Source: Author's elaboration with data from the Mexican Urban Social Capital Survey.

Notes: [‡] Trust approximated by the trust index constructed for different social actors. Coefficients indicate dy/dx, that is, a unitary discrete change in the variable for dichotomic variables and a continuous unitary change for the continuous variables. Statistical significance of coefficients are indicated by: * p<.10, ** p<.05, *** p<.01. Standard errors are reported in parenthesis.

Table 5
Change in the Probability of Belonging to the Membership Groups (Marginal Effects)

SC3^V

Variables	Low	Membership level Medium	High
Gender	-0.022171	0.01786	0.00431
	(0.01878)	(0.01529)	(0.00354)
Education	-0.00490**	0.00394**	0.00095**
	(0.00219)	(0.00176)	(0.00045)
Age	-0.00168**	0.001356**	0.0003274**
	(0.00067)	(0.00054)	(0.00014)
Ln Income	-0.03402**	0.02741**	0.0066167**
	(0.01413)	(0.01129)	(0.00296)
Environment Social Capital	-0.05580***	0.04424***	0.01156***
	(0.01961)	(0.01571)	(0.00413)
Segregation	-0.02396	0.01931	0.0046435
	(0.01969)	(0.01574)	(0.0399)
Lack of Social Security	0.08140***	-0.06566***	-0.015735***
	(0.02052)	(0.01658)	(0.00443)
Indigenous Language Speaker	0.00898	-0.007260	-0.001723
	(0.03742)	(0.03037)	(0.00705)
Big Population	0.10000***	-0.08100***	-0.0190024***
	(0.03048)	(0.024442)	(0.00652)
North	-0.00688	0.00553	0.0013464
	(0.03646)	(0.02929)	(0.0717)
Center-West	-0.11067*	0.08550*	0.0251726
	(0.06596)	(0.04782)	(0.01839)
South-Southwest	-0.06605	0.025271	0.0133375
	(0.0472)	(0.03211)	(0.00878)

Source: Author's elaboration with data from the Mexican Urban Social Capital Survey.

Notes: \(^4\) Membership measured as the number of memberships in voluntary organizations. Coefficients indicate dy/dx, that is, a unitary discrete change in the variable for dichotomic variables and a continuous unitary change for the continuous variables. Statistical significance of coefficients are indicated by: \(^*p<.10\), \(^**p<.05\), \(^***p<.01\). Standard errors are reported in parenthesis.