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Stefano BARTOLINI[1, 2]
Ennio BILANCINI[3]

University of Siena, Italy[1]
CEPS/INSTEAD, Luxembourg[2]
University of Modena and Regio Emilia, Italy[3]

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Stefano Bartolini

Dipartimento di Economia Politica, University of Siena

Population et emploi, CEPS/INSTEAD, Luxembourg

Ennio Bilancini†

Dipartimento di Economia Politica, University of Modena and Reggio Emilia

Viale Berengario 51, 44100 Modena (Italy)

Abstract

We investigate the relationship between social participation and the hours worked in the market. Social participation is the component of social capital that measures individuals' engagement in groups, associations and non-governmental organizations. We provide a model of consumer choice where social participation may be either a substitute or a complement to material consumption – depending on whether participation is instrumentally or non-instrumentally motivated – and where a local environment with greater social participation increases the return to individual participation. We carry out an empirical investigation of this framework using survey data on United States for the period 1972-2004. We find that non-instrumental social participation substantially decreases the hours worked, while instrumental social participation substantially increases them. Moreover, evidence is consistent with the idea that a local environment with greater social participation fosters individual social participation.

Keywords: social participation, relational goods, social capital, work hours, instrumental and non-instrumental motivations

JEL: A13, D62, J22, Z13

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†Corresponding author: ennio.bilancini@unimore.it

1 Introduction

In this paper we investigate the relationships between social participation and the number of hours worked in the market. Social participation is the component of social capital that measures individuals' engagement in groups, associations and non-governmental organizations. To this aim we construct a simple model of consumer choice where individuals derive their well-being from both consumption and social participation, and where average social participation increases the returns to individual participation. We then estimates the relationship between social participation and hours worked using survey data from the United States for the period 1972-2004.

In the last decades, participation in groups, associations and non-governmental organizations has been declining in the United States (Paxton, 1999; Putnam, 2000; Robinson and Jackson, 2001; Costa and Kahn, 2003) while hours worked in the market seem to have been increasing (Schor, 1992). It is possible that longer work hours have reduced the time available to pursue social interactions, though this might have been mitigated by a steady decrease in housework hours (Aguiar and Hurst, 2007).[1] Intuitively, longer hours of work reduce physical and psychological resources available for other activities and thus may decrease social interactions.

Evidence on this point, however, is controversial. Putnam (1996) argues that individuals who work long hours are more inclined to civic engagement. Costa and Kahn (2003) find that increased female labor force participation has a negative effect on membership in community groups. Rupasingha et al. (2006) find that female labor force participation has a positive effect on membership in community groups. Putnam (2000) uses data from the General Social Surveys to show that employed individuals are more likely to belong to civic groups than those outside of the labor force. Finally, Saffer and Lamiraud (2008) test the effect of an employment law that reduced hours of work in France and find no evidence that the extra hours went to increased social interactions.

What all these studies have in common is that they assume, explicitly or implicitly, that the

[1] Aguiar and Hurst (2007) suggest that in the period 1965-2003 leisure time is increased of a few hours per week. However, their data also suggest that in the period 1985-2003 leisure has not increased anymore while hours of work in the market have increased, at least for women.

causation link between hours worked and social capital runs from the first to the second. However, there are reasons to think that reverse causation might be at work as well. In particular, this is suggested by the recent evidence on the relationship between social capital and well-being. Several studies which exploits survey data from different countries converge to indicate that social capital is strongly correlated to people's subjective well-being (see the pioneering studies by Helliwell, 2003, 2006, 2008; Helliwell and Putnam, 2004).[2] Moreover, Becchetti et al. (2009) provide a causal analysis showing that the relational component of social capital has a strong impact on people's subjective well-being. In sum, evidence suggests that individuals derive their well-being not only from the consumption of material goods but also from the relationships that they maintain with other persons.[3]

Furthermore, social participation is likely to be influenced by the local social environment. More precisely, the idea here is that average social participation affects the returns to individual social participation. This kind of mechanism, which is mostly based on the idea of network externalities, has already been theorized in analysis of growth models with optimizing (Bartolini and Bonatti, 2002, 2008; Antoci et al., 2007) and non-optimizing agents (Antoci and Bartolini, 2004). Such models assume that social capital and private consumption are partial substitutes. The basic message of these models is that endogenous growth may be sustained by the depletion of social capital. The intuition is the following. Growth generates negative externalities which reduce social capital and force individuals to rely increasingly on private material goods to prevent a decline in their well-being. This, in turn, forces individals to work longer hours. In this way individuals contribute to an increase in output. This feeds back into the negative externalities, giving rise to a further diminution in social capital to which agents react again by increasing output, and so forth. A self-reinforcing mechanism thus operates whereby growth generates negative externalities and negative externalities

[2]Bruni and Stanca (2008) and Bartolini et al. (2011) focus on relational goods – also referred to as non-instrumental relational activities – and find similar results. See also Bartolini and Bilancini (2010) for a review of recent evidence on the relationship between relational goods and subjective well-being.

[3]The literature on subjective well-being quickly developed in recent years and gained large visibility (for a recent survey see Stutzer and Frey, 2010). This literature largely utilizes answers to survey questions concerning the degree of happiness or life satisfaction of individuals. The main reasons for the popularity of this literature lies in the abundance and the reliability of these data. Indeed, they are very well correlated with objective data on people's well-being.

generate growth. One important implication of such a circular mechanism is a negative relationship between social capital and the labor supply.

In this paper we attempt to answer three questions. First, to what extent does causation go from social participation to hours worked, and to what extent the other way around? As we have argued above, two causal links are theoretically possible: from social participation to hours worked and from hours worked to social participation. Second, to what extent are work hours affected by the social environment? Indeed, due to network spillovers, communities characterized by a large endowment of social capital may make it more attractive for an individual to participate in groups, associations and non-governmental organization. This is important because, if more social participation at the individual level causes work hours to shrink, then a larger endowment of social capital at the community level may be the cause of a smaller supply of labor. Third, do hours worked relate to instrumental and non-instrumental social participation in the same way? Instrumental social participation is refers to participation in groups, associations and non-governmental organizations as an instrument to something else. Instead, non-instrumental social participation refers to participation in groups, associations and non-governmental organizations for its own sake. The question arises from the evidence that different forms of social participation correlate differently with subjective well-being. Indeed, Bartolini et al. (2011) show that non-instrumental social participation is positively correlated with subjective well-being while instrumental social participation is negatively correlated with subjective well-being.

In order to explore possible answers to these questions we develop and test a model of time allocation between hours of work and relational activities. The key features of our model are the following. First, instrumental social participation improves labor productivity, while non-instrumental social participation fosters relational consumption. Second, material consumption and relational consumption are partial substitutes. As a result, non-instrumental social participation decreases the hours worked while instrumental social participation increases them. Third, because of network externalities, local average social participation of a given type has a positive impact on the returns to individual social participation of the same type. This results in local social participation boosting

individual social participation. We test these predictions by estimating a structural equation model using survey data from the United States for the period 1972-2004. Estimates turn out to be consistent with the predictions of our model. In particular, our figures suggest that a small exogenous shock to average local participation in groups, associations or non-governmental organizations can generate further important changes in individual behaviour that amplify the initial shock and that result in the economy shifting towards a new equilibrium where average social participation and work hours are substantially different.

The paper is organized as follows. In section 2 we define concepts and measures. In section 3 we develop the theoretical model, while in section 4 we describe the data, the empirical strategy and the estimates. Finally, in section 5 we summarize our findings and comment on their potential implications.

2 Instrumental and Non-Instrumental Social Participation

Healy et al. (2001) gives a definition of social capital, consistent with that of Putnam (2000), as "networks together with shared norms, values and understandings that facilitate co-operation within or among groups". This definition refers to a very far-reaching concept. Indeed, in its statistical embodiments, social capital includes measures that are quite dissimilar, ranging from voter turnout, to trust in institutions, to the quantity and quality of intimate relationships and social bonds among individuals.

In this paper we focus on social participation, namely the component of social capital that measures the participation in groups, associations and non-governmental organizations. Social participation can be instrumental or non-instrumental, depending on the motivation behind the decision to participate. Instrumental social participation is motivated by the expectation to obtain something else in return. Typically, this kind of social participation is aimed at securing access to material consumption. Lobbying, professional networking, and participation in business clubs, are examples instrumental social participation. Instead, non-instrumental social participation, which substantially contributes to the production and consumption of *relational goods* (Uhlaner, 2009; Gui and Sugden,

2005), is done for its own sake. The concept of relational good refers to the quantity and the quality of non-instrumental relations experienced by an individual who interacts with other individuals. Major psychological schools emphasize that non-instrumental social participation is fueled by intrinsic motives issuing from within an individual: according to Deci (1975, pag.105), "one is said to be intrinsically motivated to perform an activity when one receives no apparent reward except the activity itself." The distinction between instrumental and non-instrumental motivations is well-established in social sciences. Various empirical studies in psychology have found that instrumental motivations can crowd out non-instrumental ones. This has generated a lively debate in psychology (Sansone and Harackiewicz, 1975), but it has also attracted interest among the economists (Frey, 1997; Kreps, 1997; Benabou and Tirol, 2003; Frey and Jegen, 2001).

In this paper we distinguish between instrumental and non-instrumental social participation by adopting the distinction introduced by Knack (2003): Putnam's groups and Olson's groups. The distinction between Olson's and Putnam's groups is based on the classic works of Olson (1982) and Putnam (1993). They provide conflicting views about the impact of social participation on economic performance and social conflict. Olson (1982) emphasizes the tendency of associations to act as 'distributional coalitions' which lobby for policies that protect the interest of special groups at the expenses of the society as a whole. Since these 'distributional coalitions' impose large costs to the rest of the society they negatively impact on economic growth. Growth-inhibiting policies such as tariffs, tax breaks, competition-reducing regulations or subsidies are the undesirable result of the lobbying activity of associations. Instead, according to Putnam (1993) associations are a source of general trust and social ties leading to governmental and economic efficiency. These different views motivated empirical tests aimed at verifying if different horizontal associations, called Olsonian and Putnamian, have a different impact on economic growth (Knack, 2003; Gleaser et al., 2000). We model the difference between Olson's and Putnam's groups as follows: Olson's groups enter the production functions of material goods (standard consumption goods) while Putnam's groups enter the production functions of relational goods.

3 The Model

3.1 The consumer problem

Basically, our model is a variant of the standard consumer problem where we introduce (non-strategic) peer effects and extend the consumption set to contain, besides material goods, also relational goods. Peer effects arise through social participation. We distinguish between two kinds of social participation: in Olson's groups (motivated by instrumental reasons) and in Putnam's groups (motivated by non-instrumental reasons). We assume that both individual and average social participation can potentially influence consumption. More precisely, participation in Putnam's groups fosters consumption of relational goods while participation in Olson's groups fosters material consumption.

We consider a population of individuals that face the choice of how to spend their time endowment $t \in \mathbb{R}_+$. No assumption is made on the size of population, that can be either finite or infinite. The time endowment can be spent either to work, to have leisure or in social participation. We denote with $h \in \mathbb{R}_+$ the time spent working, with $l \in \mathbb{R}_+$ the leisure time, with $m_o \in \mathbb{R}_+$ the time spent in Olson's groups, and with $m_p \in \mathbb{R}_+$ the time spent in Putnam's groups. Therefore, the time constraint is given by $t = l + h + m_p + m_o$. Moreover, we denote with $\overline{m}_p \in \mathbb{R}_+$ and $\overline{m}_o \in \mathbb{R}_+$ the averages in the population of the time spent participating in, respectively, Olson's groups and Putnam's groups. We abstract from both prices and wages that we assume fixed in the present analysis.

Material consumption is given by $c = g(h, m_o, \overline{m}_o)$ where g is a twice continuously differentiable function with $g_h > 0$, $g_{m_o} > 0$ and $g_{\overline{m}_o} > 0$. Consumption of relational goods is given $r = f(m_p, \overline{m}_p)$ where f is a twice continuously differentiable function with $f_{m_p} > 0$ and $f_{\overline{m}_p} > 0$. The idea is that material consumption is obtained combining productive activities and instrumental social participation, while relational goods are obtained from non-instrumental social participation. Note that leisure does not contribute to either the production of material goods or the production of relational goods. Indeed, here we refer to leisure are pure *otium*.

Individuals' utility function is $u(c, r, l)$, strictly increasing in all arguments and thrice continuously differentiable. The consumer problem is therefore:

$$\begin{aligned} &\max_{\{h,l,m_o,m_p\}} \quad u\left(c,r,l\right) \ , \quad \text{s.t. :} \\ &t = l + h + m_p + m_o \ , \\ &c = g(h, m_o, \overline{m}_o) \ . \\ &r = f(m_p, \overline{m}_p) \end{aligned} \tag{1}$$

The first order conditions (FOCs) of problem (1) implicitly define the following system of choice functions:

$$h^* = \phi^h(m_o^*, m_p^*, \overline{m}_o, \overline{m}_p) \ , \tag{2}$$

$$m_o^* = \phi^{m_o}(h^*, m_p^*, \overline{m}_o, \overline{m}_p) \ , \tag{3}$$

$$m_p^* = \phi^{m_p}(h^*, m_o^*, \overline{m}_o, \overline{m}_p) \ . \tag{4}$$

System (2)-(4) is an equilibrium condition for this consumer economy with social participation. On the basis of (2)-(4), however, we cannot establish how average social participation affects individual choices. The reason is that social participation, besides generating externalities, can also affect the individual incentives to work, to have leisure, and to participate in groups, associations and non-governmental organizations. In particular, how average social participation affects individual choices in equilibrium depends on the complementarity between goods and among different kinds of social participations. In the following we build more structure into the model by introducing complementarities among activities and substitutability between goods.

3.2 Substitute goods and complementary activities

We let individuals have homothetic preferences over consumption and leisure, with consumption of relational goods and consumption of material goods being partial substitutes. The idea is that individuals can always compensate, though in an increasingly costly way, the consumption of one good with the consumption of the other. Formally, we have:

$$u(c,r,l) = \left(c^{\beta} + r^{(1-\beta)}\right)^{\alpha} l^{(1-\alpha)} \ , \tag{5}$$

where $0 < \beta < 1$ is an index of the importance of material goods relative to relational goods, while $0 < \alpha < 1$ represents the fraction of time spent in activities giving rise to consumption.

Participation in Olson's groups is both an essential input and a complement to labor in the production of material goods. Essentiality is assumed for technical reasons and it is by no means crucial for our argument. Complementarity instead is important. It can arise because of the distributional advantages provided by participation in Olson's groups or because material rewards to work directly depend on participation (e.g., greater access to relevant information, better informal training, etc). Participation in Putnam's groups is essential to the production of relational goods. Again, this is a technical assumption and by no means crucial.

Average local participation is a complement to individual participation. Average social participation may affect the returns to individual participation in several ways: through the impact on the average size of groups (larger groups are more effective in providing greater benefits to participants) or through its effects on the likelihood of within-group relationships (greater average participation increases the likelihood of experiencing beneficial interactions). In particular, average local participation in Olson's groups may positively affect the rewards to work and to individual participation because it affects the strength of coalitions thereby increasing the probability to obtain distributional advantages. Average local participation in Putnam's groups may positively affect the rewards to individual participation because the group is more likely to fulfill its objectives or because participation in a more participated group is more exciting. These ideas are modelled as follows:

$$g(h, m_o, \overline{m}_o) = h^{\gamma_1} m_o^{\gamma_2} \overline{m}_o^{(1-\gamma_1-\gamma_2)} \tag{6}$$

$$f(m_p, \overline{m}_p) = m_p^{\delta} \overline{m}_p^{(1-\delta)} \tag{7}$$

where $0 < \gamma_1 < 1$, $0 < \gamma_2 < 1$ and $0 < \delta < 1$. Note that both production functions generate positive cross derivatives between average social participation and individual social participation. This is a standard way to model complementarities.

Since preferences are homothetic over consumption and leisure, we can rewrite the consumer problem (1) as:

$$\max_{h,m_o}\left[\left(h^{\gamma_1}m_o^{\gamma_2}\overline{m}_o^{(1-\gamma_1-\gamma_2)}\right)^{\beta}+\left((\alpha t-h-m_o)^{\delta}\,\overline{m}_p^{(1-\delta)}\right)^{(1-\beta)}\right]^{\alpha} \tag{8}$$

which gives the following FOCs:

$$\frac{\beta}{1-\beta}\frac{(\alpha t-h-m_o)^{(1-\delta+\delta\beta)}}{h^{(1-\gamma_1\beta)}m_o^{-\gamma_2\beta}}=\frac{\overline{m}_p^{(1-\alpha)(1-\beta)}}{\overline{m}_o^{\beta(1-\gamma_1-\gamma_2)}} \tag{9}$$

$$\frac{\beta}{1-\beta}\frac{(\alpha t-h-m_o)^{(1-\delta+\delta\beta)}}{m_o^{(1-\gamma_2\beta)}h^{-\gamma_1\beta}}=\frac{\overline{m}_p^{(1-\alpha)(1-\beta)}}{\overline{m}_o^{\beta(1-\gamma_1-\gamma_2)}} \tag{10}$$

Equating the left-hand sides of (9) and (10) we get that

$$m_o^*=h^*\frac{\gamma_1}{\gamma_2} \tag{11}$$

which plugged into (9) gives

$$\frac{\beta}{1-\beta}\left(\frac{\gamma_1}{\gamma_2}\right)^{\gamma_2\beta}\frac{\left(\alpha t-h(1+\frac{\gamma_1}{\gamma_2})\right)^{(1-\delta+\delta\beta)}}{h^{(1-(\gamma_1+\gamma_2)\beta)}}=\frac{\overline{m}_p^{(1-\alpha)(1-\beta)}}{\overline{m}_o^{\beta(1-\gamma_1-\gamma_2)}} \tag{12}$$

From (11) and (12) we see that, in equilibrium, both a greater h^* and a greater m_o^* imply a lower m_p^* and viceversa. This is because both h^* and m_o^* are complementary inputs in the production of material goods while m_p^* is an input in the production of relational goods.

Moreover, we can study the effects of a change in average social participation. A greater $\overline{m}_p$ increases m_p^* and decreases both m_o^* and h^*, while a greater $\overline{m}_o$ decreases m_p^* and increases both m_o^* and h^*. Importantly, if we take into account that individual choices feed back on average social participation, this result means that there is a reinforcing mechanism that magnifies exogenous shocks in average social participation. For instance, a small negative shock, say 1%, in average participation in Putnam's groups can generate further reductions in individual participation in Putnam's groups and increases in both work time and participation in Olson's groups. Hence, in the new equilibrium average participation to Putnam's groups can be lowered well beyond the initial 1%.

4 Data, Empirical Strategy and Results

We estimate a linearized version of the system (2)-(4). Our identifying assumption will be, as implied by (5)-(6)-(7), that $\overline{m}_o$ directly affects only m_o^* and that $\overline{m}_p$ directly affects only m_p^*.

We use a cross-sectional dataset from the U.S. General Social Survey (GSS) for the period 1975-2004. We select such a dataset because it contains information on both work hours and social participation. The GSS provides a rich database containing more than forty-five thousands observations distributed on about thirty years. Typically, survey waves are carried out once every two years, though some times they have been carried out more frequently. Sampling strategy aims at representing current population, with some wave being exceptionally built to over-represent demographic group (e.g., blacks) for special purpose investigations. Unfortunately, the variables which are relevant to our analysis are missing in some waves. For this reason we end up using observations only for the years 1975, 1977, 1984, 1987, 1988, 1990, 1991, 1993, 2004, for a total of about 8,000 observations out of more than 40,000.

We enlarge the set of variables that appear in (5)-(7) to include several controls at both the individual and the regional level. In particular, we want to control for individual heterogeneity, wages, prices, regional shocks and time shocks. For this purpose we include as regressors: reported health, gender, race, age, years of education, household income (other than individually earned), regional unemployment, presence and number of children in the household, size of the household, marital status, year dummies, and regional dummies (as defined by the U.S. Bureau of Census). A more detailed definition of these variables is given in the Appendix.

Actually, we do not have exact information about the time spent in Putnam' or Olson's groups. We try to cope with this problem by assuming that the number of groups one belongs to is a proxy of the time devoted to social participation. More precisely, we measure participation in Olson's group by summing up the number of memberships in the following kinds of groups: farm organizations, unions, professional organizations, and fraternities. Similarly, we measure participation in Putnam's group by summing up the number of memberships in the following kinds of groups: fraternal groups, service groups, sport groups, hobby clubs, art and literary clubs, church organizations, political

parties, and national organizations.[4] Moreover, local social participation is measured by average individual participation for each U.S. census region in a given year. Variables m_o^*, m_p^*, $\overline{m}_o$, and $\overline{m}_p$ are reinterpreted accordingly.

Under these assumption and definitions we estimate the following linearized version of (2)-(4):

$$h^* = a_1 + a_2 m_o^* + a_3 m_p^* + \mathbf{a}_h \mathbf{X}_h + \epsilon_h \tag{13}$$

$$m_o^* = b_1 + b_2 h^* + b_3 m_p^* + b_4 \overline{m}_o + \mathbf{b}_{m_o} \mathbf{X}_{m_o} + \epsilon_{m_o} \tag{14}$$

$$m_p^* = c_1 + c_2 h^* + c_3 m_o^* + c_4 \overline{m}_p + \mathbf{c}_{m_p} \mathbf{X}_{m_p} + \epsilon_{m_p} \tag{15}$$

where a_i, b_i and c_i, with $i = 1, \ldots, 5$, are scalars, $\mathbf{a}_h$, $\mathbf{b}_{m_o}$ and $\mathbf{c}_{m_p}$ are vectors of reals, and $\mathbf{X}_h$, $\mathbf{X}_{m_o}$ and $\mathbf{X}_{m_p}$ are the matrices of controls (demographic and socio-economic at both the individual and regional level) for the choice of, respectively, h, m_o and m_p.

We estimate the empirical model (13)-(15) with 3-Stages Least Square (3SLS). Our choice is based on the computational advantages of 3SLS as well as on the fact that 3SLS do not require to impose special restrictions on ϵ_h, ϵ_{m_o} and ϵ_{m_p} – only the standard orthogonality conditions with respect to the exogenous variables.

The most relevant estimates of our model are reported in the Table 4. Further details on the estimation can be found in the Appendix. Figures indicate that h^* and m_p^* affect each other negatively, as expected. Moreover, m_o^* positively affects h^* while h^* has no direct effect on effect on m_o^*. Similarly, m_o^* and m_p^* have no direct effect on each other – though they do have an indirect effect through h^*. Most importantly, $\overline{m}_o^*$ positively and strongly affects m_o^* while $\overline{m}_p^*$ positively and strongly affects m_p^*, both as expected.

Roughly, these estimates are consistent with the predictions of our theoretical model. We find it important to emphasize four points in this regard. First, evidence is consistent with the hypothesis

[4]Participation in the last two organizations might be though of as instrumentally motivated, differently from what we assume here. Indeed, their classification is particularly difficult, as the actual motivation of participation can vary from person to person and across countries. In any case, excluding these organizations from the measure of non-instrumental social participation does not affect the quality of our results.

dependent variable: h^*	estimated coefficient	z-stat
m_p^*	$-$ 6.538**	-2.26
m_o^*	15.379***	-3.17
dependent variable: m_p^*	estimated coefficient	z-stat
h^*	$-$ 0.033***	-5.17
m_o^*	0.151	0.45
$\overline{m}_p$	0.691***	4.43
dependent variable: m_o^*	estimated coefficient	z-stat
h^*	$-$ 0.001	-0.13
m_p^*	$-$ 0.027	-0.25
$\overline{m}_o$	0.858***	6.12

Table 1: * means significant at 10%, ** means significant at 5%, *** means significant at 1%; h^* is hours worked per week, m_p^* is the number of Putnam's groups the individual belongs to, m_p^* is the number of Olson's groups the individual belongs to, $\overline{m}_p$ is the regional average memberships in Putnam's groups, and $\overline{m}_o$ is the regional average memberships in Olson's groups.

of a bi-directional influence between hours worked and participation in Putnam's groups. This is consistent with the idea that relational goods and material goods are, at least partially, substitutes.

Second, while evidence is consistent with the idea that participation in Olson's groups increases the number of hours worked, it seems that the reverse causation does to hold: more hours worked does not increase participation in Olson's groups. Admittedly, this was not expected. However, it is not necessarily at odd with the hypothesis that instrumental social participation and hours worked are complements in the production function of material goods. Indeed, given the small number of Olson's groups recorded in the GSS, greater participation might take the form of more intense participation to *the same number* of Olson's groups. This would not show up in our figures.

Third, participation in Olson's groups and participation in Putnam's groups seem not to affect each other directly, but through their impact on the number of hours worked in the market. This is consistent with the idea that a greater participation in Olson's groups generates a lesser participation

in Putnam's groups through an increase in the returns to work.

Fourth, average regional participation in Olson' and Putnam's groups increases the probability of individual participation in the same groups. This is consistent with the hypothesis that a greater average social participation increases the returns to individual participation.

Overall, our figures suggest that a small exogenous shock to average social participation can generate further important changes in individual behaviour that amplify the initial shock and that result in the economy shifting towards a new equilibrium where average social participation and work hours are substantially different. If this mechanism is at work, then it might have important policy implications. The relevance of these, however, would crucially depend on the order of magnitude of the mentioned effects.

We can attempt to provide a measure of such an order of magnitude. Using our estimates, we can calculate changes in equilibrium work hours and social participation induced by small exogenous shocks to, respectively, average participation in Olson's groups and Putnam's groups. We consider the system (13)-(15) where, according to Table 4, we insert our figures and set equal to zero the coefficients which are not statistically significant at least a the 10% level. Then, we solve for h^*, m_o^* and m_p^*, obtaining:

$$h^* \approx \xi_1 + 1.860\overline{m}_o - 0.656\overline{m}_p \tag{16}$$

$$m_o^* \approx \xi_2 + 0.850\overline{m}_o \tag{17}$$

$$m_p^* \approx \xi_3 - 0.614\overline{m}_o + 0.906\overline{m}_p \tag{18}$$

where ξ_1, ξ_2 and ξ_3 are coefficients that only depend on a_1, a_2, a_3, $\mathbf{a}_h\mathbf{X}_h$, $\mathbf{b}_{m_o}\mathbf{X}_{m_o}$, $\mathbf{c}_{m_p}\mathbf{X}_{m_p}$, and therefore are independent of $\overline{m}_o$ and $\overline{m}_p$.

As one can see, exogenous shocks to average social participation are far from being innocuous. For instance, a negative shock of .1 on average regional participation in Putnam's groups generates a .09 decrease in individual participation in Putnam's groups and a .066 increase in hours worked. A negative shock of .1 on average regional participation in Olson's groups generates a .085 decrease

in individual participation in Olson's groups, a .061 increase in individual participation in Putnam's groups, and a .186 increase in hours worked.

5 Conclusions

In this paper we dealt with three issues concerning the relationship between social participation and hours worked. Social participation is the component of social capital that measures individuals' engament in groups, associations and non-governmental organizations. The first issue we dealt with is about the causal link between social participation and hours worked. We argue that both directions of causation might be present. We formalize this idea with a theoretical model that is empirically tested on U.S. data from the General Social Survey. Estimates turn out to be consistent with causation going from social participation to hours worked and viceversa.

The second issue is whether different forms of social participation show different relationships with hours worked. This question arises from the evidence that different forms of social participation have different impacts on subjective well-being. Indeed Bartolini et al. (2011) show that non-instrumental social participation is positively correlated with subjective well being while instrumental social participation is negatively correlated with subjective well-being. We posit that instrumental social participation is a complement to labor in the production of material goods, while non-instrumental social participation is an input in the production of relational goods. Moreover, we assume that relational goods and material goods are partial substitutes. These assumption imply a positive relationship between instrumental social participation and hours worked, and a negative relationship between non-instrumental social participation and hours worked. Also in this case estimates turn out to be substantially consistent with the theoretical model.

The third issue is about the effect of the social environments on hours worked. In particular, we argue that a greater average social participation increases the reward to individual social participation, and hence it fosters individual social participation. Estimates turn out to be consistent with this hypothesis too. More precisely, we estimate that an exogenous shock in average social participation can generate further important changes in individual behaviour that amplify the initial shock

and that result in the economy shifting towards a new equilibrium where average social participation and work hours are substantially different.

These findings suggest the possibility of a self-reinforcing mechanism. Whenever average instrumental social participation increases or non-instrumental social participation decreases, people react by dedicating more time to work, and such an extra work time ends up deteriorating non-instrumental social participation and fostering instrumental social participation. This in turn triggers a further reaction that forces individuals into more work, and so on and so forth.

Such a perspective may have important implications for unemployment policies. Traditionally, therapies to reduce unemployment have attempted to increase labor demand. However, a different strategy might be available which focuses on reducing labor supply. In particular, policies aimed at increasing increasing non-instrumental social participation could have a positive impact on unemployment through a contraction of the labor supply. This is in line with the recent claim that relational activities can be the target of public policies (Rogers et al., 2010; Helliwell, 2011; Bartolini, 2011).

Furthermore, our results can help to shed some light on an important stylized fact regarding work hours. Available evidence shows a substantial cross-country variability in the trends of hours worked in the market during the last fifty years. In particular, the difference between the trends of work hours in the U.S. and Europe is striking. In the mid-1970s the average British, German, and Frenchman worked from 5% to 10% more than the average American; however, thirty years later they were working from 70% to 75% of the average American (see, e.g., Prescott, 2004; Alesina et al., 2006; Stiglitz, 2008). Prescott (2004) attributes such differences to cross-country differences in labor income taxes. According to Blanchard (2004) the key is instead the different preferences about consumption-leisure ratios between Europeans and Americans. Since, differently from the U.S., the trend of social capital has not been found to be decreasing in Europe (Sarracino, 2009), our results suggest to explore the possibility that the differences in work hours between Europe and U.S. are in part explained by different trends in social capital.

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Appendix

The U.S. General Social Survey (dataset 1972-2004)

Hours worked per week: reported hours worked last week (GGS source variable: hhtot)
#Putnam's: number of memberships in Putnam's groups: fraternal groups, service groups, sport groups, hobby clubs, art and literary clubs, church organizations, political parties, and national organizations (GSS source variable: mfrat, msrv, msport, mhobby, mart, mchurch, mpolit, mnation)
#Olsons's: number of memberships in Olson's groups: farm organizations, unions, professional organizations, and fraternities (GSS source variable: munion, mfarm, mprof, mfratern)
Female: 1 if subject is female (GSS source variable: sex)
Age: number of years since born (GSS source variable: age)
Age squared: age to the power of 2 (GSS source variable: age)
Black: 1 if respondent defines himself afro-American (GSS source variable: race)
Other non-white: 1 if respondent neither defines himself as white nor afro-American (GSS source variable: race)
Years of education: number of years the respondent declared to have attended school (GSS source variable: educ)
Working: 1 if respondent declares to have a job (GSS source variable: wrkstat)
Household income: reported household income as provided in the GSS (variable name: coninc) divided by 1000 (dollars 2000) (GSS source variable: coninc)
Household size: number of reported household members (GSS source variable: hompop)
Number of Children: reported number of children (GSS source variable: childs)
Married: 1 if respondent reports to be currently married (GSS source variable: marstat)
Separated: 1 if respondent reports to be currently separated (GSS source variable: marstat)
Divorced: 1 if respondent reports to be currently divorced (GSS source variable: marstat)
Widowed: 1 if respondent reports to be currently widowed (GSS source variable: marstat)
Self-rated health: (range 1-4, dummies) (GSS source variable: hlthsat)

US Dept. of Commerce, Bureau of Economic Analysis

Regional unemployment: average regional unemplyment provided by the US Dept of Commerce

Descriptive statistics for coded variables

Variable	#Obs.	Mean.	Std.Dev.	Min.	Max.
hours worked	44866	24.57077	22.94223	0	89
# Putnam's	20458	0.9948187	1.188773	0	8
# Olson's	20536	0.3643845	0.6024991	0	4
Regional average Putnam's	27182	0.9940749	0.1570895	0.5789474	1.55
regional average Olson's	27182	0.3652875	0.0829673	0.0921053	0.675
health 1st rated	34975	0.3137956	0.464041	0	1
health 2nd rated	34975	0.4456326	0.4970425	0	1
health 3rd rated	34975	0.1842745	0.3877134	0	1
female	46510	0.5606106	0.4963181	0	1
age	46344	45.26474	17.48464	18	89
age squared	46344	2354.603	1754.712	324	7921
black	46510	0.1375833	0.3444658	0	1
other non-white race	46510	0.0350677	0.183953	0	1
education	46369	12.60765	3.166813	0	20
education squared	46369	168.9813	78.22348	0	400
other source of income	36414	349.5479	562.4338	-1049.74	10383.03
regional unemployment	38882	0.0632316	0.018056	0.028	0.125
# children	46351	1.964316	1.812595	0	8
household size	46504	2.730346	1.539986	1	16
married	46502	0.555417	0.4969248	0	1
separated	46502	0.1161025	0.3203513	0	1
divorced	46502	0.0349447	0.1836418	0	1
widowed	46502	0.1003398	0.3004557	0	1

Table 2: Descriptive statistics of the variables as coded for the analysis. Data source: U.S. General Social Survey for the yeras years 1972-2004.

3SLS estimation: System of three equations

eq. by indep. variable	#obs.	#params.	RMSE	R^2	χ^2	p-value
hours worked h^*	7945	37	20.5374	0.1897	3031.42	0.0000
#Putnam's m_p^*	7945	36	1.2616	-0.1166	846.56	0.0000
#Olson's m_o^*	7945	36	0.5577	0.1573	1777.50	0.0000

	Equations by independent variables					
regressors	hours worked		#Putnam's		#Olson's	
	Coef.	z stat	Coef.	z stat	Coef.	z stat
hours worked h^*	.	.	-0.0326	-5.17	-0.00064	-0.13
#Putnam's m_p^*	-6.5383	-2.26	.	.	-0.02656	-0.25
#Olson's m_o^*	15.3787	3.17	0.1505	0.45	.	.
reg. Putnam's $\bar{m}_p$	.	.	0.6913	4.43	.	.
reg. Olson's $\bar{m}_o$	.	.	.	.	0.85765	6.12
health 1st rated	12.5966	9.52	0.6144	6.26	0.05907	0.69
health 2nd rated	12.2907	9.92	0.5757	5.97	0.05591	0.69
health 3rd rated	6.4251	5.54	0.2814	3.55	0.02371	0.48
female	-8.6915	-10.22	-0.3538	-4.39	-0.15343	-2.63
age	1.3303	12.67	0.0559	5.43	0.01195	1.43
age squared	-0.0170	-16.71	-0.0006	-4.82	-0.00011	-1.16
black	-0.7843	-1.06	0.0108	0.24	-0.02238	-1.15
other non-white	-1.2017	-0.83	-0.1383	-1.56	-0.08555	-2.06
education	1.5271	2.54	0.0239	0.61	-0.09741	-9.86
education squared	-0.0311	-0.87	0.0048	2.04	0.00689	8.93
other source of income	-0.0033	-5.68	.	.	.	.
reg. unemployment	-44.2766	-2.43	.	.	.	.
# children	-0.4028	-2.42	-0.0124	-1.18	-0.00307	-0.62
household size	-0.3869	-1.87	0.0023	0.18	0.00069	0.12
married	2.6180	3.44	0.0743	1.54	0.01783	0.76
separated	5.5460	5.64	0.1850	2.58	0.04059	1.01
divorced	2.2193	1.59	0.0580	0.67	0.00744	0.19
widowed	4.4977	3.98	0.1515	2.01	-0.01339	-0.35
year dummies	yes	.	yes	.	yes	.
regional dummies	yes	.	yes	.	yes	.
constant	-13.1151	-2.77	-1.7286	-6.67	-0.18692	-1.02

Table 3: Estimates of the system (13)-(15) using 3SLS. The top table reports overall statistics and tests. The bottom table reports point estimates and z-values for each equation, regressor by regressor. A line separates regressors on which this paper focuses from regressors that are used as controls. The first column reports the name of regressors, the second and third columns report the estimates for equation (13) with hours worked as independent variable, the forth and fifth columns report the estimates for equation (14) with memberships in Putnam's group as independent variable, and the sixth and seventh columns report the estimates for equation (15) with memberships in Olson's groups as independent variable. The omitted category of reported health is 4th (worst) rated.

CEPS
INSTEAD

3, avenue de la Fonte
L-4364 Esch-sur-Alzette
Tél.: +352 58.58.55-801
www.ceps.lu