Social Context and Hours Worked

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Short Abstract

We investigate, both theoretically and empirically, the causal relationships between social capital and the amount of hours worked. This kind of investigation is novel. We consider two types of social capital, intrinsically motivated participation to social networks (relational goods) and extrinsically motivated participation to social networks (extrinsic networks). Our theoretical model provides two main predictions. First, more relational goods decrease the hours worked while more participation to extrinsic networks increases them. The economic intuition underlying these results is that, since relational goods are partial substitutes for material ones, more relational goods allow individuals to devote relatively less time to the obtainment the purchasing power needed to buy material goods. Besides, since extrinsic networks are a complement in the production of material goods, more participation to extrinsic networks drives individuals to devote relatively more time to their obtainment. Second, more local participation to both kinds of social networks boosts the individual participation. The economic intuition underlying these result is simple: since participation of other individuals has a positive impact on the rewards to individual participation – due to network externalities – it fosters the latter.

We further provide an empirical test of our model against US data for 1972-2004. Results are consistent with the above predictions. This findings may contribute to solve the American version of the so-called happiness-work paradox, i.e. the presence of both a decreasing long-term trend of subjective well-being (SWB) and an increasing trend – in the last 30 years – of the hours worked on the market. This evidence is paradoxical because increasing efforts to make money coexist with a negative correlation between happiness and growth. Our results support the hypothesis that the decline of relational goods observed in US in the last 30 years (Putnam, 2000) may be partly responsible for the increase in hours worked, besides being largely responsible for the decline in happiness. This is consistent with what shown in Bartolini, Bilancini and Pugno (2008): the decline in the consumption of relational goods may account for a large part of the negative happiness trend.

1 Extended abstract

The paradox raised by Easterlin (1974) – the non-increasing long-term trend of subjective well-being (SWB) in developed countries – is further complicated if SWB trends are compared with the trends of the hours worked on the market. In fact, the greatest part of the growth in productivity in the last decades has been used to increase output instead of decreasing the amount of hours worked. In other words, the reduction of the labor supply is very limited if compared with income growth. Moreover, the moderate decline in hours worked observed in most OECD countries until the 70s has diminished its pace or turned into an increase. Why industrialism tends to produce more goods instead of more free time? This question increases the paradoxical aspect of the happiness trends, generating a further paradox besides the Easterlin's one: "why do people strive so much for money if money does not buy happiness?" The happiness-work paradox displays its extreme example in the case of US where, in the last 30 years, a decline in happiness coexisted with a rise in hours worked on the market.

One of the proposed explanations of the Easterlin paradox is based on the decline in the consumption of relational goods. This explanation rests on the idea that the positive effects of growth on well-being may be offset by the negative effects due to poorer relational activities. Evidence of a positive effect of relational activities on well-being is now available (Bruni and Stanca, 2007; Helliwell, 2006). Moreover, Bartolini, Bilancini and Pugno (2008) show that the decline in the consumption of relational goods in the US during the last 30 years, can potentially account for a large part of the negative happiness trend. The basic idea is that individuals are on a relational treadmill: growth is accompanied by poorer relational activities and therefore fails to increase their well-being.

In this paper we explore both theoretically and empirically, the hypothesis that a decline in the consumption of relational goods may boost the hours worked. In doing this we explore the potential of the relational treadmill approach in explaining the happiness-work paradox. This kind of investigation is novel, both for social capital theory and labor economics. The literature on social capital and labor has mainly concentrated on the links between social networks and job search (see for instance Calvó-Armengol and Jackson, 2007). We found no empirical work exploring the link between social capital and the amount of hours worked.

Our simple model is based on three features.

First. We focus on a particular type of social capita, namely the participation to social groups and organizations. Such social relations have a different nature. Participation to social networks can be intrinsically or

extrinsically motivated.[1] We distinguish between these two different motivations by adopting Knack (2003) labels: 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 on the impact of private associations on economic performance and social conflict. Olson (1982) emphasized 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; Glaeser et al., 2000).

The difference between Olson's and Putnam's groups is modelled 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. The concept of relational goods has been developed to emphasize the economic importance of intrinsically motivated relational activities.[2]

Second. Relational goods are a (non-perfect) substitute for the consumption of material goods while participation to Olson's groups is a complement to labor in the production of material goods. The following is a possible justification for this complementarity: the distributional advantages provided by Olson's groups increase the material rewards to work.

[1] The concept of extrinsic motivations refers to the incentives coming from outside an individual. By contrast, major psychological schools emphasize the intrinsic motives issuing from within an individual. According to Deci (1971, pg. 105), "one is said to be intrinsically motivated to perform an activity when one receives no apparent reward except the activity itself." This definition concentrates on the non-instrumental nature of intrinsically motivated activities which directly enter the utility functions of individuals. The distinction between intrinsic and extrinsic motivations is a well-established concept in social sciences. Various empirical studies in psychology have found that extrinsic motivations can crowd out intrinsic ones. This has arisen a lively debate in psychology (Sansone and Harackievicz, 2000), but it has also attracted interest among the economists (Frey (1997), Kreps (1997), Benabou and Tirole (2003); for a survey see Frey and Jegen (2001)).

[2] Uhlaner (1989), Gui and Sugden (2005). Some studies show their positive impact on reported well-being, as Bruni and Stanca (2008). Helliwell (2006) and Helliwell and Putnam (2004) show similar results although not using the term relational goods.

Third. Local social participation (i.e. the participation of the others to groups) affects the returns to individual participation to groups, through network externalities. Social participation may affect the returns to individual participation in several ways: through the impact on the average size of groups or through its effects on the likelihood of inter-group relationships. Moreover, social participation to Olson's groups positively affects the rewards to work because social participation affects the strength of coalitions. These ideas are modelled as follows: i) in the production function of material goods we include the local social participation to Olson's groups while in the production function of relational goods we include the local social participation to Putnam's groups, ii) positive cross derivative between social and individual participation in both production functions, iii) positive cross derivative between social participation to Olson's groups and hours worked in the production function of material goods.

The main predictions of our model are that:

i) participation to Putnam's groups decreases the hours worked while participation to Olson's groups increases them. The economic intuition underlying these results is that, since the intrinsecally motivated participation to social networks increases the well-being of individuals, participation to Putnam's groups drives individuals to devote relatively less time to the obtainment of material goods. Since extrinsically motivated participation to social networks is a complement in the production of material goods, participation to Putnam's groups drives individuals to devote relatively more time to their obtainment.

ii) local participation to both kinds of groups boosts the individual participation. The economic intuition underlying these result is that, since the participation of others individuals has a positive impact on the rewards to individual participation – due to network externalities – it provides an incentive to individual participation.

We further provide an empirical test on US data. Results are consistent with the above predictions.

The Model

- $c \in \mathbf{R}_+$ is the consumption of material goods
- $r \in \mathbf{R}_+$ is the consumption of relational goods
- $h \in \mathbf{R}_+$ is the amount of time spent working
- $l \in \mathbf{R}_+$ is the amount of leisure time
- $m_o \in \mathbf{R}_+$ is time spent in Olson's groups by the individual
- $m_p \in \mathbf{R}_+$ is time spent in Putnam's groups by the individual
- $t \in \mathbf{R}_+$ is the time endowment
- $\bar{m}_o \in \mathbf{R}_+$ is (regional) average time spent in Olson's groups
- $\bar{m}_p \in \mathbf{R}_+$ is (regional) average time spent in Putnam's groups
- $r = f(m_p, \bar{m}_p)$ is the production function of relational goods
- $c = g(h, m_o, \bar{m}_o)$ is the production function of material goods
- $u(c, r, l)$ is the utility function

The consumer problem is:

$$\max_{h, m_o, m_p} u\left(g(h, m_o, \bar{m}_o), f(m_p, \bar{m}_p), t - h - m_o - m_p\right) \tag{1}$$

The F.O.C.s are:

$$u_c g_h - u_l = 0 \tag{2}$$
$$u_c g_{m_o} - u_l = 0 \tag{3}$$
$$u_r f_{m_p} - u_l = 0 \tag{4}$$

Supposing that S.O.C.s are satisfied, the F.O.C.s implicitly define the following choice functions:

$$h^* = h^*(m_o, m_p, \bar{m}_o, \bar{m}_p) \tag{5}$$
$$m_o^* = m_o^*(h, m_p, \bar{m}_o, \bar{m}_p) \tag{6}$$
$$m_p^* = m_p^*(h, m_o, \bar{m}_o, \bar{m}_p) \tag{7}$$

A Particularization of the Model: A Cobb-Douglas Utility Function Where Material Goods and Relational Goods are Partly Substitutes and Produced with Cobb-Douglas Production Functions

The functions $u()$, $g()$ and $f()$ are assumed to be equal to

$$u(c,r,l) = \left(c^{\beta} + r^{(1-\beta)}\right)^{\alpha} l^{(1-\alpha)} \tag{8}$$

$$f(m_p, \bar{m}_p) = m_p^{\delta} \bar{m}_o^{(1-\delta)} \tag{9}$$

$$g(h, m_o, \bar{m}_o) = h^{\gamma_1} m_o^{\gamma_2} \bar{m}_o^{(1-\gamma_1-\gamma_2)} \tag{10}$$

Since $u()$ is a Cobb-Douglas we immediately obtain that $l^* = (1-\alpha)t$ which implies that $\alpha t = h + m_o + m_p$. Therefore we can reduce the consumer problem to

$$\max_{h,m_o} \left[\left(h^{\gamma_1} m_o^{\gamma_2} \bar{m}_o^{(1-\gamma_1-\gamma_2)}\right)^{\beta} + \left(\left(\alpha t - h - m_o\right)^{\delta} \bar{m}_o^{(1-\delta)}\right)^{(1-\beta)}\right]^{\alpha} \tag{11}$$

which gives the following F.O.C.s

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

$$\frac{\beta}{1-\beta} \frac{\left(\alpha t - h - m_o\right)^{(1-\delta+\delta\beta)}}{m_o^{(1-\gamma_2\beta)} h^{-\gamma_1\beta}} = \frac{\bar{m}_p^{(1-\alpha)(1-\beta)}}{\bar{m}_o^{\beta(1-\gamma_1-\gamma_2)}} \tag{13}$$

Equating the left-hand sides of (12) and (13) we get that

$$m_o^* = h^* \frac{\gamma_1}{\gamma_2} \tag{14}$$

which plugged into (12) gives

$$\frac{\beta}{1-\beta} \left(\frac{\gamma_1}{\gamma_2}\right)^{\gamma_2\beta} \frac{\left(\alpha t - h(1+\frac{\gamma_1}{\gamma_2})\right)^{(1-\delta+\delta\beta)}}{h^{(1-(\gamma_1+\gamma_2)\beta)}} = \frac{\bar{m}_p^{(1-\alpha)(1-\beta)}}{\bar{m}_o^{\beta(1-\gamma_1-\gamma_2)}} \tag{15}$$

From (14) we see that h^* and m_o^* are in a (linear) positive relationship. Therefore, both h^* and m_o^* are in a (negative) linear relationship with m_p^*. Moreover, from (15) we see that a greater $\bar{m}_p$ implies a greater m_p^* and lower m_o^* and h^*; similarly, a greater $\bar{m}_o$ implies a lower m_p^* and greater m_o^* and h^* while a greater $\bar{m}_p$ implies a greater m_p^* and lower m_o^* and h^*.

Empirical Strategy and Results

We estimate a linearized version of the system (5)-(7) under the restriction that $\mathbf{b}_{m_o}$ directly affects m_o^* only and that $\bar{m}_p$ directly affects only m_p^*. This provides an immediate, though very rough, approximation of $\nabla(h^*, m_o^*, m_p^*)$. We use a cross-sectional dataset from the US General Social Survey for the period 1975-2004, enlarging the set of variables applied in (5)-(7) to include several controls at both the individual level and the regional level. Actually, we do not have information about the time spent in organizational activities. We assume that the number of groups one belongs to is a proxy of the time devoted to such activities. Variables m_o^*, m_p^*, $\bar{m}_o$ and $\bar{m}_p$ are reinterpreted accordingly. The average participation in Olson's and Putnam's group is calculated at the regional level (US Census Regions).

We estimate a linearized version of our particularization. The system that we estimate is of the following form

$$h^* = a_1 + a_2 m_o^* + a_3 m_p^* + \mathbf{a}_h \mathbf{X}_h + \epsilon_h \tag{16}$$

$$m_o^* = b_1 + b_2 h^* + b_3 m_p^* + b_4 \bar{m}_o + \mathbf{b}_{m_o} \mathbf{X}_{m_o} + \epsilon_{m_o} \tag{17}$$

$$m_p^* = c_1 + c_2 h^* + c_3 m_o^* + c_4 \bar{m}_p + \mathbf{c}_{m_p} \mathbf{X}_{m_p} + \epsilon_{m_p} \tag{18}$$

where a_i, b_i and c_i, $i \in \{1, \ldots, 5\}$ 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 use 3-Stages Least Square (3SLS) to estimate the model (16)-(18) without imposing particular restrictions on ϵ_h, ϵ_{m_o} and ϵ_{m_p} apart from standard orthogonality conditions with respect to the exogenous variables of the model. The relevant estimates of our model are reported in the table 1.

dependent variable: h^*	estimated coefficient	$\|z\|$-stat
m_p^*	-6.68**	-2.31
m_o^*	15.34***	3.15
dependent variable: m_o^*	estimated coefficient	$\|z\|$-stat
h^*	-0.001	0.12
m_p^*	-0.026	0.24
$\bar{m}_o$	0.85***	6.13
dependent variable: m_p^*	estimated coefficient	$\|z\|$-stat
h^*	-0.033***	5.17
m_o^*	0.15	0.45
$\bar{m}_p$	0.69***	4.40

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, $\bar{m}_p$ is the regional average membership to Putnam's groups, and $\bar{m}_o$ is the regional average membership to Olson's groups

Summary of results:

- h^* and m_p^* affects each other negatively,
- m_o^* positively affects h^* while h^* has no effect on m_o^*,
- m_o^* and m_p^* does not directly affect each other (though they do it indirectly through h^*),
- $\bar{m}_o^*$ affects positively m_o^* and $\bar{m}_p^*$ affects positively m_p^*.

In conclusion, the estimates are consistent with the predictions of our theoretical model. More precisely, we have that

1) evidence is consistent with the hypothesis of a bi-directional influence between hours worked and participation to Putnam's groups; taking into account the time constraint one may see as obvious the fact that more hours worked decreases participation to Putnam's groups; however, the fact that a lesser participation to Putnam's groups increases the hours worked does not seem obvious at all and it is consistent with the idea that relational goods and material goods are, at least partially, substitutes;

2) evidence is consistent with the idea that participation to Olson's groups increases the amount of hours worked; in turn, this is consistent with

the hypothesis that extrinsic networks and hours worked are complents in the production function of material goods; however, the inverse causation does not seem to hold: more hours worked does not increase participation to Olson's groups;

3) evidence is not consistent with the idea that participation to Olson's groups and participation to Putnam's groups may affect each other directly; evidence however is consistent with the idea of an influence through the impact on hours worked: a greater participation to Olson's groups generates a lesser participation to Putnam's groups through an increase in the rewards to working and, hence, an increase in the total amount of hours worked; similarly, a greater participation to Putnam's groups decreases the participation to Olson's groups by increasing the rewards to the consumption of relational goods and, hence, decreasing the relative advantage of working;

4) evidence is consistent with the idea that average regional participation to Olson' and Putnam's groups increases the probability of individual participation to, and only to, Olson' and Putnam's groups, respectively; this is consistent with the hypothesis that a greater local participation to social networks increases the returns to individual participation.

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Definition and Source of Variables

The U.S. General Social Survey (dataset 1972-2004)
Hours worked per week: reported hours worked last week (GG source variable: hhtot)
Female: 1 if subject is female (GSS source variable: sex)
Age: number of years since born (GSS source variable: age)
Age square: 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)
2nd+ Marriage: 1 if respondent reports to be married but not for the first time (GSS source variable: marnum)
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 (dollars 2000)