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Social Capital and Economic Growth: A County-Level Analysis

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ABSTRACT

The effect of social capital on economic growth is examined using linear regression analysis and U.S. county-level data. Results reveal that social capital has a statistically significant, independent positive effect on the rate of per-capita income growth.

Key Words: *economic growth, social capital, U.S. counties.*

The growing literature on social capital has added a new dimension to studies of economic growth, as mainstream economists start to analyze the roles of culture and social ties as factors of production similar to physical and human capital. In particular, economists increasingly recognize that interactions among people and their feelings for each other have clear and predictable economic implications (Robison).

Despite this growing recognition, the effect of social capital on economic growth at the level of U.S. counties has not been formally and systematically analyzed. In this paper the conventional Barro-type empirical growth model is expanded to test for the independent effects of social capital or civic engagement on economic growth. Our results suggest that the level of social capital had a statistically

significant, independent positive effect on the rate of per-capita income growth in U.S. counties between 1990 and 1996. At the same time, excluding the social capital vector does not materially change the estimate of the convergence parameter or the effect of human capital on growth.

Literature and Conceptual Background

Social capital in its present form was first identified by Jane Jacobs, Pierre Bourdieu and Jean-Claude Passeron, and Glenn Loury, but has since been developed most extensively by James Coleman and Robert Putnam.¹ Interest in the concept of social capital was renewed with the publication of Putnam's *Making Democracy Work*.

Putnam uses the term *social capital* to refer to features of social organization, such as networks, norms and trust, which facilitate coordination and cooperation for mutual gain. Coleman defines *social capital* as "a variety of different entities, with two elements in common: they all consist of some aspect of social structure, and they facilitate certain actions of actors—whether personal or corporate

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¹ See Woolcock on the history of the definition of social capital.

actors—within the structure” (p. 598). Woolcock describes *social capital* as “. . . a broad term encompassing the norms and networks facilitating collective action for mutual benefit.” In general, social capital includes the institutions, the relationships, the attitudes, values and beliefs that govern interactions among people and contribute to economic and social development (World Bank).²

Robison, Schmid and Siles address the question of whether social capital has features (such as durability, decay and service potential) that are similar to features of physical capital. They also present results of a survey administered at a conference on social capital that yielded rankings of various definitions of social capital. No single definition of *social capital* was universally agreed to by conference participants.

Putnam’s primary focus is on civic engagement—participation in voluntary associations, along with activities such as voting. He argues that civic engagement builds social capital by fostering personal interaction. Repeated interaction in turn facilitates communication and amplifies information about the trustworthiness and cooperation of others, which reduces transaction costs associated with economic exchange. Robison and Schmid suggest that the main cause of economic and social failures is lack of social capital, in other words a lack of caring, goodwill, loyalty, sense of belonging, sense of community, or social closeness. Fukuyama claims that the presence or absence of social capital or “trust” in a society is a key determinant of economic success. Two recent surveys in the *Journal of Economic Literature* emphasize the importance of social capital in the economic performance of a country or region (Temple; Collier and Gunning).

A major economic effect of social capital is that it reduces information and transaction costs. When transaction costs and the costs of gathering and disseminating information are reduced, less risk is involved and more exchange takes place, thus enlarging the scope

of transactions and interactions. Conversely, a lack of social capital results in demands for more external controls, such as tougher law enforcement and security systems, monitoring and enforcement (Flora and Flora). Schmid and Robison explore how social capital become a part of capital inputs in a production process. They describe how interpersonal trust can be a substitute for physical inputs of police surveillance and legal service (p. 59).

Another contribution of social capital is that it affects the supply of certain public goods. The provision of public goods is subject to free riding or shirking if most users do not participate in joint actions to make the provision of public good a success. In these situations conventional theories of collective action have concluded that individuals will resort to strategic behavior by refusing to contribute toward the public good in order to obtain a benefit far greater than the cost they have to pay. When social capital is present, externalities are internalized, which has the effect of eliminating or reducing the free rider problem and the misuse of public goods while at the same time increasing investments in public goods.

Social capital also has several negative aspects. While “good” social capital may facilitate collective action and promote economic development, “bad” social capital can stifle cooperation and economic development. Good-old-boy (girl) clubs and gangs are examples of bad social capital. Levi suggests that it may have been better for individuals to bowl alone in certain cases (for example, Timothy McVeigh and other co-conspirators in the Oklahoma City bombing were members of a bowling league). Strong ties within groups can lead to the exclusion of others, who are therefore unable to benefit from group membership. For example some ethnic groups dominate certain occupations and industries and merchants in some countries refuse to deal with traders of a different ethnic background, and newcomers are often excluded from strongly tied industrial groups (Portes and Landolt).

Olson argued that some groups deliberately suppress economic growth by securing a disproportionate share of national resources or in-

² World Bank Social Capital web-site contains other key references to social capital. URL: <http://www.worldbank.org/poverty/scapital/>

hibiting individual economic advancement by placing heavy personal obligations on members, which prevents them from participating in broader social networks. He points out that in societies that permit free trade and free organization, coalitions will form around marketable goods and services. These coalitions may engage in rent-seeking activities, sometime at the expense of society in general. For example, producer co-operatives form to protect members' assets and, if possible, to boost profits by raising prices. Labor unions organize to bargain for wages. Doctors and lawyers join professional organizations to protect their own interests.

Only a small number of empirical studies directly relate social capital variables to economic growth. Robison and Siles empirically tested the relationship between changes in social capital indicator variables and the level and disparity of household income in the United States and found that changes in social capital have a significant effect on the disparity and level of household income. Temple and Johnson found that various social capital indices perform well in predicting economic growth across countries. Using social capital indicators from the World Values Survey, Knack and Keefer determined that trust and civic norms are stronger in nations with higher and more equal incomes. They also found that membership in formal organizations—Putnam's measure of social capital—is not associated with improved economic performance. Narayan and Pritchett found that for a sample of Tanzanian villages membership levels in various associations were positively correlated with per-capita income. Helliwell and Putnam found significant evidence that per-capita GDP convergence is faster, and equilibrium levels of income are higher, in regions with higher levels of social capital. They used data from northern and southern Italy and three measures of social capital (the extent of civic community, institutional performance, and citizen satisfaction) to test their hypotheses.

In this paper we estimate a Barro-type growth model to analyze the effects of social capital or civic engagement on economic growth in the U.S. at the county level. The

impact of social capital on expanding economic activity has not been empirically substantiated at the county level. One advantage of using county-level data is that they contain fewer structural differences than cross-country data, which is a criticism raised by Miller. In addition, certain measures are available which would be difficult to collect across different countries, and the US data tend to be collected in a consistent manner. Related recent studies of income convergence at the country level include Levine and Renelt, Grammy and Asane, Murthy and Chien, and Greasley and Oxley, who use time series data from selected OECD countries. Goetz and Hu also estimate a county-level economic growth model, but do not include social capital variables among the regressors.

We test the general hypothesis that social capital, while not overriding the effects of conventional measures of growth, has additive effects on economic growth. We examine the impact of the density of various types of associations, economic agents' financial support for charitable organizations and participation in elections, as well as crime rates—as measures of social capital—on the rate of economic growth. We realize that endogeneity is a potential concern but we have dealt with it as best as we could (given the availability of data only in certain years) by including starting conditions at a point in time that precedes the growth period.

Specification

To determine the impact of social capital on income growth we specify an economic growth model using change in county-level per-capita personal income across the U.S. as the dependent variable. In previous studies, per-capita income (output) growth has been modeled as a function of initial per-capita income, initial human capital stock, and a set of control and related variables. An extended version of a general economic growth model can be written as in Barro and Sala-I-Martin, p. 421:

$$(1) \quad Dy_t = F(Y_{t-1}, H_{t-1}, SC_{t-1}, R_{t-1}),$$

where Dy_t is per-capita income growth, Y_{t-1} initial per-capita income, H_{t-1} initial human capital stock, SC_{t-1} initial social capital stock, and R_{t-1} a set of control variables. The empirical specification of the growth model closely follows that in Goetz and Hu (p. 356), with the addition of our measures of social capital stocks:

$$(2) \quad Dy_t = \alpha_0 + \alpha_1 Y_{t-\tau} + \alpha_2 H_{t-\tau} + \Phi SC_{t-\tau} + \Gamma R_{t-\tau} + u_t,$$

where $Dy_t = (Y_t - Y_{t-\tau})/Y_{t-\tau}$, Y_t and $Y_{t-\tau}$ are personal income per capita in 1990 and 1996, $\tau = 6$, α , Φ and Γ are parameters to be estimated, and u is a random disturbance. Educational attainment serves as a proxy for human capital stocks, as in Goetz and Hu: $H_{t-\tau}$ is the percent of population 25 years or older in 1990 with a bachelor's, graduate, or a professional degree.

A major obstacle often cited in studies of social capital is the empirical measurement of the variables in vector $SC_{t-\tau}$. We use County Business Patterns and USA Counties data from the Commerce Department to construct indicators of associational activity, a crime index, and a voter participation rate, and data from the National Center for Charitable Statistics (NCCS) to measure county-level public support for charitable organizations.

Associational Activity

The measure of principal interest is the number of the following establishments in each county: (a) bowling centers, (b) public golf courses, (c) membership sports and recreation clubs, (d) civic and social associations, (e) religious organizations, (f) labor organizations, (g) business associations, (h) professional organizations, (i) political organizations. Our measure of the density of associational activity (*All Groups*) in counties is the total number of establishments per 10,000 persons in 1990. We also test the possibility indicated in Knack and Keefer, that rent-seeking organizations have a negative effect on economic performance, by dividing the above organizations

into "Olsonian" and "Putnam-esque" groups. Groups (a) through (e) are "Putnam-esque" (*P-Groups*) or those groups that are unlikely to be rent-seeking, but which involve social interaction that can promote trust and cooperation. Groups (f) through (i) are considered to be rent-seeking organizations in the sense of Olson (*O-Groups*).

"Perverse" Social Capital (or Negative Social Capital)

Criminal activity has been interpreted as a symptom of deteriorating social capital or lack of social capital (e.g., Rubio). Low crime rates in a county may indicate a more cohesive community. The modified crime index (crime index and arson) for 1990 from the USA County data set is used to measure "perverse" social capital (*Crime*).

Charitable Giving and Voting

These two variables complete the vector of social capital indicators (Knack). County-level public support data for charitable organizations (*Charity*) are obtained from the National Center for Charitable Statistics (NCCS). The NCCS Core files are based on the IRS's Annual Return transaction files. The *Charity* variable had 230 missing values which were replaced by the sample mean value for the analysis. Variable *voting* is the percent of eligible voters participating in the federal election, averaged over 1988 and 1992 (county-level data on participation in local elections are not available on the CD-Rom).

On the basis of Goetz and Hu's study, the following variables are included in vector R as controls and related influences. *Urban* denotes metropolitan counties and *Rural* is counties having places with no more than 2,500 residents. These capture the effects of population agglomeration in a county on growth; non-urban/non-rural counties are the excluded category. *Highway* indicates whether (=1) or not (=0) the county has an interstate highway access ramp, to measure basic physical infrastructure and the degree of isolation of a county. Public highway spending (*Hiwyexp*)

proxies for public investment. Variable *Corp-tax* is the percent of state taxes that are collected from corporations. A higher value is hypothesized to discourage new firm locations and, therefore, to depress economic growth. A state-level *right-to-work* law indicator variable (0, 1) is included to measure the strength of labor, independently of item (*f*) (Labor organizations) above. Seven other indicator variables are included to capture regional effects: New England, Mideast, Plains, Southeast, Southwest, Rocky Mountain, and Far West (the East/North central region or Great Lakes region is the excluded category).

Empirical Results

Table 1 reports ordinary least squares (OLS) estimates of equation (2), using data from 3,040 U.S. counties, corrected for heteroskedasticity.³ The growth period covers 1990 through 1996. In Model 1 all social capital indicators are excluded. According to Model 2, the association activity variable, *All Groups*, exerts a statistically significant, positive effect on economic growth. This indicates that association activity influenced county-level economic performance in the 1990s to a significant degree and independently of the other factors affecting economic growth. As hypothesized, *Crime* is negative and significant, indicating that a high crime rate in a county has a negative impact on its economic growth. The effect of *charitable giving* on growth, on the other hand, is positive but not statistically different from zero. *Voting* exhibits a non-linear effect, leading first to an increase and then a decrease in income growth. The maximum value of this quadratic function is reached at a voter participation rate of 50.5 percent. This result therefore confirms that participation in elections affects economic growth, but the effect is subject to diminishing returns. Parameter estimates for all of the other regressors are statistically different from zero and, with the exception of corporate taxes and the right-

to-work law variable, each has the expected sign.

A comparison of Models 1 and 2 shows that the coefficient estimates on starting income (α_1) and human capital (α_2) do not differ materially, so that the specification bias associated with excluding social capital variables in this regression model and this particular data set is relatively small. Even so, a Wald test of the hypothesis that the coefficients of all the social capital variables (*All Groups*, *Crime*, *Charity*, and *Voting*) are jointly zero is rejected at the 1-percent level, indicating that this vector needs to be included in the regression.

We next test for the possibly negative effects on economic growth of rent-seeking organizations (*P-Groups*) and positive effects of organizations that promote trust and cooperation (*O-Groups*). The results in Model 3 indicate that both types of organizations have positive and statistically significant effects on economic growth in US counties. Thus we find no support for Olson's argument that organizations with redistributive goals encourage anti-growth rent-seeking. In contrast, rent-seeking organizations in this data set have a positive and significant effect on economic growth. These results do not change when we include only labor organizations in *P-Groups*, or delete religious organizations from the *O-Groups*.

The positive effect of social capital on economic growth may be more pronounced in poorer counties, if social capital is more productive in situations where local cooperation substitutes for the direct provision of services by government or profit-seeking firms. To test this hypothesis—and explore potential interactions between social capital and initial income levels—we estimated auxiliary regressions with selected interaction terms. Only results for the interacted variables and interaction terms are reported here.

If the above hypothesis is valid, the interaction terms for “good” social capital variables (*All Groups* and *Voting*) with initial income will be *negative*, suggesting that decreases in income enhance the positive effects of these social capital variables on eco-

³ The Breusch–Pagan chi-squared statistic shows that heteroskedasticity is present in the data set.

Table 1. Regression Results for Determinants of Income Growth, 1990–1996

	Model 1		Model 2		Model 3		Descriptive statistics	
	Coefficient	t-ratio	Coefficient	t-ratio	Coefficient	t-ratio	Mean	Std. Dev.
Constant	0.3846**	25.39	0.191**	3.62	0.187**	3.59	11.824	5.534
All Groups			0.003**	3.38			10.545	5.247
P-Groups					0.004**	2.70	1.279	1.314
O-Groups					-5.73E-07**	3.73	4473.3	24062.9
Crime			7.48E-06	0.97	6.80E-06	0.89	124.5	259.8
Charity			0.668**	3.63	0.681**	3.78	0.573	0.101
Voting			-0.662**	3.85	-0.675**	4.00	0.339	0.120
Voting ²			-1.25E-05**	9.59	-1.25E-05**	9.55	14855.3	3403.9
Y _{t-1}	-1.16E-05**	-9.64			0.457**	9.33	0.134	0.604
H _{t-1}	0.445**	9.92	0.464**	9.60	0.019**	4.78	0.261	0.439
Urban	0.012**	3.52	0.019**	4.85	0.019**	4.78	0.253	0.435
Rural	-0.055**	10.08	-0.041**	8.48	-0.041**	8.32	0.427	0.495
Highway	0.008*	2.38	0.007*	2.23	0.007*	2.19	6677.2	25413.3
Hwyexp	1.88E-07*	2.32	7.39E-07**	4.92	7.39E-07**	4.93	5.992	3.259
Corptax	0.001	1.33	0.001*	2.06	0.001**	2.09	0.534	0.499
Right-to-work=yes	-0.013**	3.07	-0.009*	2.15	-0.008*	2.07	0.022	0.147
New England	-0.028**	3.82	-0.017*	2.04	-0.016*	1.95	0.058	0.234
Mideast	-0.026**	5.20	-0.029**	5.24	-0.028**	5.11	0.203	0.403
Plains	-0.012*	2.28	-0.016**	2.74	-0.015**	2.53	0.329	0.470
Southeast	0.020**	3.84	0.022**	3.96	0.022**	4.02	0.125	0.330
southwest	-0.063**	8.02	-0.059**	7.33	-0.058**	7.22	0.070	0.256
Rocky Mountains	-0.061**	7.40	-0.037**	3.70	-0.037**	3.70	0.049	0.217
Far West	-0.070**	10.39	-0.057**	7.68	-0.057**	7.68		
Adjusted R	0.2447		0.2720		0.2723			
Model test	F[15, 3024] = 66.62		F[20, 3019] = 57.80		F[21, 3018] = 55.14			
Breusch-Pagan chi-squared	2724.07		4289.80		4269.55			

Notes: t-statistics are in absolute values. Sample size = 3040. Significance levels: ** = 1% or lower, * = between above 1% and 5%.

economic growth, while the interaction term between “bad” social capital (*Crime*) and initial income will be positive (and significant). In this case, a decline in income increases the negative effect of the “bad” social capital on economic growth. The estimated coefficients in this case are:

$$Dy_t = 0.0014All\ Groups - 0.13-04Y_{t-\tau}$$

(0.62) (5.04)

$$+ 0.87-07All\ Groups*Y_{t-\tau}$$

(0.67)

$$Dy_t = 0.76\ Voting + 0.11-05Y_{t-\tau}$$

(4.07) (0.82)

$$- 0.22-04Voting*Y_{t-\tau}$$

(2.77)

$$Dy_t = -0.28-05Crime - 13-04Y_{t-\tau}$$

(4.52) (9.60)

$$+ 0.12-09Crime*Y_{t-\tau}$$

(3.65)

where t-statistics are in parentheses. The interaction term *All Groups*Y_{t-τ}* is positive but not statistically significant. The negative and significant coefficient on *Voting*Y_{t-τ}* and the positive and significant coefficient on *Crime*Y_{t-τ}* tend to provide support for our hypothesis.

Conclusion

The results presented here suggest that social capital or civic engagement is an important independent determinant of economic growth in U.S. counties. We find significant evidence that per-capita income grows more rapidly in counties with high levels of social capital, measured using the density of membership organizations, crime rate, charitable giving and voter participation. These results also suggest that future studies of economic growth should incorporate measures of social capital to avoid specification bias, although this type of bias may be relatively small.

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