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DOES SOCIAL CAPITAL HAVE AN ECONOMIC PAYOFF? A CROSS-COUNTRY INVESTIGATION*

STEPHEN KNACK AND PHILIP KEEFER

This paper presents evidence that “social capital” matters for measurable economic performance, using indicators of trust and civic norms from the World Values Surveys for a sample of 29 market economies. Memberships in formal groups—Putnam’s measure of social capital—is not associated with trust or with improved economic performance. We find trust and civic norms are stronger in nations with higher and more equal incomes, with institutions that restrain predatory actions of chief executives, and with better-educated and ethnically homogeneous populations.

I. INTRODUCTION

The notion of social capital has attracted great academic and journalistic attention, particularly with the publication of Putnam’s *Making Democracy Work* [1993], in which the concept is used to explain differences in the economic and government performance of northern and southern Italy. We explore in this paper the following issues related to social capital and economic performance:

- i) the relationship between interpersonal trust, norms of civic cooperation, and economic performance, and some of the policy and other links through which these dimensions of social capital may have economic effects;
- ii) the conflicting hypotheses of Putnam [1993] and Olson [1982], on the relationship between associational activity and growth; and
- iii) the determinants of trust and norms of civic cooperation, including levels of associational activity and formal institutions.

Trust, cooperative norms, and associations within groups each fall within the elastic definitions that most scholars have

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applied to the term social capital. Coleman [1990, pp. 300–301] writes that “authority relations, relations of trust, and consensual allocations of rights which establish norms” can be viewed as resources for individuals, noting that Loury [1977] introduced the term “social capital” to describe these resources. Following Granovetter [1973], Putnam points to the potential importance of weak ties across kinship groups. Both Coleman and Putnam refer to trust and norms of civic-minded behavior as other manifestations of social capital.

Our analysis arrives at three major conclusions. First, trust and civic cooperation are associated with stronger economic performance. Second, associational activity is not correlated with economic performance—contrary to Putnam’s [1993] findings across Italian regions. Third, we find that trust and norms of civic cooperation are stronger in countries with formal institutions that effectively protect property and contract rights, and in countries that are less polarized along lines of class or ethnicity.

II. HOW CAN TRUST AFFECT ECONOMIC PERFORMANCE?

Economic activities that require some agents to rely on the future actions of others are accomplished at lower cost in higher-trust environments. According to Arrow [1972, p. 357], “Virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence.” Trust-sensitive transactions include those in which goods and services are provided in exchange for future payment, employment contracts in which managers rely on employees to accomplish tasks that are difficult to monitor, and investments and savings decisions that rely on assurances by governments or banks that they will not expropriate these assets. Individuals in higher-trust societies spend less to protect themselves from being exploited in economic transactions. Written contracts are less likely to be needed, and they do not have to specify every possible contingency. Litigation may be less frequent. Individuals in high-trust societies are also likely to divert fewer resources to protecting themselves—through tax payments, bribes, or private security services and equipment—from unlawful (criminal) violations of their property rights. Low trust can also discourage innovation. If entrepreneurs must devote more time to monitor-

ing possible malfeasance by partners, employees, and suppliers, they have less time to devote to innovation in new products or processes.¹

Societies characterized by high levels of trust are also less dependent on formal institutions to enforce agreements. Informal credit markets dependent on strong interpersonal trust can facilitate investment where there is no well-developed formal system of financial intermediation, or where lack of assets limits access to bank credit. Interpersonal trust can also provide an imperfect substitute for government-backed property rights or contract enforcement where governments are unable or unwilling to provide them.

Government officials in societies with higher trust may be perceived as more trustworthy, and their policy pronouncements as thus being more credible. To the extent that this is true, trust also triggers greater investment and other economic activity. Promises by central bankers that they will not raise interest rates, assurances by ministers of finance that a nominal exchange rate anchor is fixed in stone, and guarantees that tax legislation will not be rapidly amended are all likely to be more credible in societies where people trust each other more. As a consequence, in such societies people adopt more appropriate horizons in making investment decisions, and choose production technologies that are optimal over the long, rather than short, run.

Trusting societies not only have stronger incentives to innovate and to accumulate physical capital, but are also likely to have higher returns to accumulation of human capital. Where trust improves access to credit for the poor, enrollment in secondary education—which, unlike primary education, has a high cost in forgone income—may be higher [Galor and Zeira 1993]. As shown in Section IV, trust and civic involvement are linked to better performance of government institutions, including publicly provided education [Putnam 1993; La Porta et al. 1997; Coleman 1988]. Higher-quality schools increase the return to education. Where trust facilitates the enforcement of contracts, the return to specialized education will increase. Finally, in low-trust societies, hiring decisions will be influenced more by trustworthy personal attributes of applicants, such as blood ties or personal knowledge,

1. This assumption is contained in Clague's [1993] model of "rule obedience" and organizational performance.

and less by educational credentials, than in high-trust societies, reducing the returns to acquisition of educational credentials in low-trust societies.

Norms of civic cooperation can be linked with economic outcomes in some of the same ways as trust. Cooperative norms act as constraints on narrow self-interest, leading individuals to contribute to the provision of public goods of various kinds. Internal (e.g., guilt) and external (e.g., shame and ostracism) sanctions associated with norms alter the costs and benefits of cooperating and defecting in prisoner's dilemmas [Coleman 1990].

For many collective action problems, norms leading to cooperative solutions impose serious negative externalities on non-players. For example, in the classic prisoner's dilemma game, the payoffs to two cooperating criminals are higher than if they both defect. "Civic norms," such as the norm against littering, are defined here as those that resolve prisoner's dilemmas without imposing substantial external costs on other parties (unlike cartel arrangements, for example). They improve allocative efficiency from a societal standpoint: the total benefits to society from attaining cooperative outcomes far exceed the total costs. To the extent that civic norms effectively constrain opportunism, the costs of monitoring and enforcing contracts are likely to be lower, raising the payoffs to many investments and other economic transactions.

In addition to the more direct effects on economic activity outlined above, trust and civic norms may improve economic outcomes indirectly, through political channels. They may improve governmental performance and the quality of economic policies, by affecting the level and character of political participation. Knowledge of politics and public affairs by large numbers of citizens, and their participation, are important potential checks on the ability of politicians and bureaucrats to enrich themselves or narrow interests that they are allied with. But self-interested citizens will rationally decline to vote or to acquire information about the performance of officials. Civic norms help voters (principals) overcome the collective action problem in monitoring officials (agents). Putnam [1993] has shown that regional governments in the more-trusting, more civic-minded northern and central parts of Italy provide public services more effectively than do those in the less-trusting, less civic south. Moreover, citizen-initiated contacts with government officials in the south tend to involve issues of narrowly personal concerns, while contacts in

the more trusting regions tend to involve larger issues with implications for the welfare of the region as a whole.² Survey evidence from the United States is consistent with these findings. Among respondents in the 1992 American National Elections Study (NES), interpersonal trust is a significant predictor of various participatory attitudes and behaviors. Controlling for income and education, trust is associated with an 8.6 percentage-point increase in the probability of voting, and with similar increases in interest in political campaigns and in public affairs generally, and with agreement that voting is a civic duty.³

III. MEASURING TRUST AND CIVIC NORMS

In a critique of Fukuyama [1995], Solow [1995] argues that if social capital is to be more than a “buzzword” its stock “should somehow be measurable, even inexactly,” but “measurement seems very far away.” In this study, we use survey indicators that are no doubt inexact—due to translation difficulties, sampling error, and response bias—but which produce values that are consistent with data from independent sources (as described below).

The World Values Surveys contain survey data on thousands of respondents from 29 market economies: 21 in the 1981 surveys, and 28 in the 1990–1991 surveys, with 29 represented in at least one of these two survey waves.⁴ Some groups—for example, city-dwellers and the better-educated—are oversampled in some countries [Inglehart 1994]. As a correction, we use the weight variable provided in the data in computing country-level means. Higher-status groups still tend to be overrepresented, particularly in the less developed countries, even with use of the weight variable [Inglehart 1994]. This problem should have the effect

2. Political participation can be motivated by groups based on class, ethnic, or other ties seeking to use government for their own ends at the expense of the larger society. Putnam [1993] implicitly assumes that these inefficient effects of enhanced participation are outweighed by the efficient effects. Our measures of trust and civic norms, as explained below, appear to reflect attitudes toward cooperation more broadly, not only with those one associates or identifies with.

3. See Knack [1992] for related evidence.

4. Both “Britain” and Northern Ireland are included in the surveys. We treat Britain’s values as representing the United Kingdom (Northern Ireland accounts for less than 3 percent of the latter’s population). Many nonmarket economies were included in the 1990–1991 surveys. Following Barro [1991] and others, we have not included them in our analyses, because of the lack of available data on education and other variables, and because economic performance is driven by different processes in nonmarket economies. The Eastern European nations and ex-Soviet republics tend to have low values for our trust measure; China’s 60.3 percent ranks among the highest, however.

of attenuating the variation in our measures of trust and civic cooperation—which tend to be positively correlated with income and education levels—making it more difficult to reject null hypotheses involving these variables.

The question used to assess the level of trust in a society is: “Generally speaking, would you say that most people can be trusted, or that you can’t be too careful in dealing with people?” Our trust indicator (TRUST) is the percentage of respondents in each nation replying “most people can be trusted” (after deleting the “don’t know” responses). The mean value is 35.8 percent, with a standard deviation of 14 percent (see Data Appendix for country values).

This trust item is somewhat ambiguous with respect to which “people” respondents have in mind. The term “people” is general enough that responses should not merely reflect expectations about the behavior of friends and family.⁵ Responses, however, could easily reflect a varying mix of two concepts across individuals: how much trust one places in people who are not close friends or relatives, and the frequency of encounters with such persons. People in low-trust environments will transact more with close friends and relatives than with strangers, compared with people in high-trust environments. If by “most people” respondents consider most people that they transact with, the variation in our trust measure will be reduced, making it more difficult to reject null hypotheses regarding the effects of trust.

The strength of norms of civic cooperation is assessed from responses to question about whether each of the following behaviors “can always be justified, never be justified or something in between.”

- a) “claiming government benefits which you are not entitled to”
- b) “avoiding a fare on public transport”
- c) “cheating on taxes if you have the chance”
- d) “keeping money that you have found”
- e) “failing to report damage you’ve done accidentally to a parked vehicle.”

5. In 26 countries in our sample, respondents in the 1990 surveys were asked how much they trusted “your family.” Responses were on a five-point scale ranging from “trust them completely” to “do not trust them at all.” Means of this scale were correlated with TRUST across countries at only .24. Trust in the family—unlike TRUST, as shown below—is uncorrelated with economic and governmental performance, formal constraints on chief executives, income equality, and ethnic homogeneity.

Respondents chose a number from 1 (never justifiable) to 10 (always justifiable). We reversed these scales, so that larger values indicate greater cooperation, and summed values over the five items to create a scale (CIVIC) with a 50-point maximum. Each of these five items reflects the strength of civic norms as that concept is defined above; cooperative solutions to these prisoner's dilemmas impose few or no costs on nonplayers. The mean value for CIVIC is 39.4, with a standard deviation of only 2.

As it is based on multiple survey items, each with numerous response categories, CIVIC may be more discriminating than TRUST, which is based on an item with only two response categories. On the other hand, respondents are likely to be far more reluctant to admit to cheating the government, taxpayers, or other people than to agree that others cheat. This problem may introduce substantial measurement error into CIVIC, likely accounting in part for its low variation across countries. We use TRUST as our primary social capital indicator in our empirical tests, because it is more directly relevant to economic activity—as indicated by the greater attention the concept has received in the literature—and because CIVIC exhibits so little variation across countries. However, results for CIVIC are in most cases very similar, and we often report results using both measures.

Data from experiments conducted by the *Reader's Digest* (as reported in *The Economist*, June 22, 1996) provide reassuring behavioral evidence for the validity of these survey measures. Twenty wallets containing \$50 worth of cash and the addresses and phone numbers of their putative owners were "accidentally" dropped in each of twenty cities, selected from fourteen different western European countries. Ten wallets were similarly "lost" in each of twelve U. S. cities. The number of wallets returned with their contents intact was recorded for each city. The percentage of wallets returned in each country closely tracks the WVS measures: it is correlated with TRUST at .67, and with item (d) of the CIVIC index, on the acceptability of "keeping money that you have found" at .52 (partial correlations controlling for per capita income are even higher). Correlations with the other four CIVIC items are all somewhat lower. This evidence indicates that non-random samples, translation problems, and discrepancies between professed attitudes and actual behaviors do not introduce severe noise into our survey-based measures of social capital.

The high correlation of TRUST with the percentage of wallets returned (by strangers), and its relatively low correlation

with trust in family members, indicate that TRUST is primarily capturing "generalized" trust as opposed to "specific" trust placed in people one has repeated interactions with. Similarly, CIVIC is defined by attitudes toward cooperating with anonymous others in prisoner's dilemma settings. These characteristics of our social capital measures reduce the chances that they are measuring trust and cooperation largely at the level of limited groups based on kinship, ethnic, or special interest ties, which have potentially large negative effects on economic performance. Cooperation and trust among these limited groups may facilitate their organization for rent-seeking purposes or even for violent conflict.

The variables TRUST and CIVIC are in some sense mirror images of each other. The survey item on trust measures expectations of whether others will act opportunistically at one's expense; TRUST therefore reflects the percentage of people in a society who expect that most others will act cooperatively in prisoner's dilemma contexts. Our measure of civic cooperation reflects respondents' own stated willingness to cooperate when faced with a collective action problem; it thus can be thought of as "trustworthiness."

One would naturally expect trust and trustworthiness to be positively correlated across societies: where fewer people prove to be trustworthy, fewer people will be trusting [Hardin 1992, p. 161]. Causation likely runs the other way, also, as many people are "conditional cooperators" who act cooperatively only when they have high expectations that others will reciprocate [Hardin 1982], in contrast to "Kantians" who follow moral rules prescribing cooperation regardless of what others do. Thus, "not only do expectations affect honest behavior, but over time honest behavior affects expectations" [Platteau 1994, p. 760]. Figure I depicts the positive relationship between TRUST and CIVIC in our sample.⁶

IV. TRUST, CIVIC COOPERATION, AND ECONOMIC PERFORMANCE

Little evidence directly connects trust and civic cooperation to economic performance. Narayan and Pritchett [1996] find for a sample of Tanzanian villages that higher levels of associational memberships are related to higher incomes. Economic historians

6. The simple correlation is .39; the partial correlation (controlling for per capita GDP) is .33.

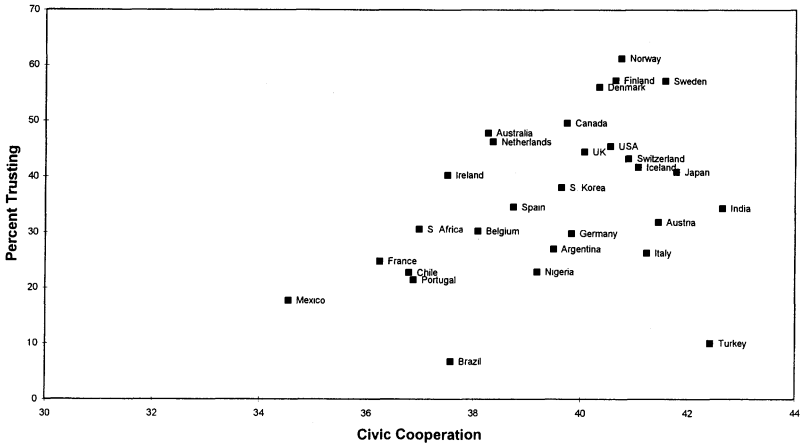


FIGURE I
Civic Cooperation and Trust

have documented cases where trust resulting from repeated interaction between parties, with the expectation that the present value of rewards from future interactions outweighs the benefits from renegeing on current deals, was associated with expanded trade and economic activity. For example, Greif [1989] shows that the development of formal institutions that promote trust (self-enforcing agreements) had a dramatic impact on the spread of long distance trade in the Middle Ages.

Helliwell and Putnam [1995] show that, holding initial income constant, regions of Italy with a more developed "civic community" had higher growth rates over the 1950–1990 period. They measure "civic community" by a composite index of newspaper readership, the density of sports and cultural associations, turnout in referenda, and the incidence of preference voting. Using WVS data, Helliwell [1996a] finds trust (and group memberships) to be significantly and negatively related to productivity growth in a sample of seventeen OECD members.⁷

We test the impact of trust and civic norms on both growth and investment rates using the WVS indicators described above. To minimize endogeneity problems, we measure performance subsequent to the measurement of trust and civic cooperation

7. His sample omits the poor and middle-income nations for which we report below that trust has the largest effects. He also uses 1990 data on trust, rather than from the early 1980s, and controls only for initial income.

wherever possible. As other explanatory variables we include, following much of the literature since Barro [1991], the proportion of eligible students enrolled in secondary and primary schools in 1960, per capita income at the beginning of the period, and the price level of investment goods, relative to the United States.⁸

The dependent variable in equations 1–3 of Table I is average annual growth in per capita income over the 1980–1992 period. Our 29-nation sample over this period behaves similarly to the larger sample and longer time periods used by Barro [1991]. Incomes converge, conditional on the other variables. School enrollment is positively related to growth, and investment goods prices are negatively related to growth.

The social capital variables exhibit a strong and significant relationship to growth. The coefficient for TRUST in equation 1 indicates that a ten-percentage-point rise in that variable is associated with an increase in growth of four-fifths of a percentage point. A one-standard-deviation change in trust (fourteen percentage points) is associated with a change in growth of more than one-half (.56) of a standard deviation, nearly as large as the standardized coefficient for primary education (.64). Each four-point rise in the 50-point CIVIC scale in equation 2 is associated with an increase in growth of more than one percentage point. When both social capital variables are entered together in equation 3, their coefficients drop slightly but remain significant.

Equation 4 introduces an interaction term, equal to TRUST*GDP80. The impact of TRUST on growth should be higher in poorer countries, if trust is more essential where contracts are not reliably enforced by the legal system, and where access to formal sources of credit is more limited due to an underdeveloped financial sector.⁹ On the other hand, if greater specialization increases the number of transactions between strangers, and over time and across space [Platteau 1994, p. 541], trust should reduce transactions costs more in richer than in poorer countries [Putnam 1993, p. 178]. The negative and significant coefficient on TRUST*GDP80 in equation 4 provides support for the former argument. For a country with a per capita GDP in 1980

8. Growth, investment, and investment goods prices are all from the Penn World Tables version 5.6 [Summers and Heston 1991]. Education enrollment data, collected by UNESCO, are from the Barro-Wolf data set used in Barro [1991].

9. Rotating credit associations and similar informal institutions “seem in general to disappear as capital markets develop” [Besley 1995, p. 121].

TABLE I
TRUST, CIVIC COOPERATION, AND ECONOMIC PERFORMANCE, 1980-1992

| Equation | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--------------------|-------------------|--------------------|-------------------|-------------------|--------------------------|-------------------|---------------------|
| Method | OLS | OLS | OLS | OLS | 2SLS | OLS | OLS |
| Dependent variable | Growth 1980-1992 | | | | Investment/GDP 1980-1992 | | |
| Constant | -0.935 (1.280) | -10.476 (4.730) | -9.593 (4.520) | -2.829 (1.895) | -1.037 (1.898) | 9.617 (3.820) | -23.893 (11.998) |
| GDP80 | -0.361 (0.131) | -0.273 (0.126) | -0.375 (0.127) | 0.152 (0.274) | -0.366 (0.127) | 0.162 (0.403) | 0.273 (0.364) |
| PRIM60 | 6.192 (1.051) | 5.930 (1.164) | 7.061 (1.224) | 4.818 (1.709) | 6.270 (1.759) | 11.655 (3.558) | 13.030 (3.274) |
| SEC60 | 2.194 (1.632) | 3.457 (1.543) | 1.648 (1.485) | 1.256 (1.930) | 2.085 (2.133) | -0.431 (8.286) | 0.495 (7.067) |
| PI80 | -3.693 (0.867) | -3.117 (1.100) | -3.535 (0.935) | -3.930 (0.755) | -3.713 (0.809) | -4.435 (1.993) | -3.170 (2.154) |
| TRUST | 0.082 (0.030) | | 0.076 (0.030) | 0.192 (0.060) | 0.086 (0.039) | 0.146 (0.078) | |
| CIVIC | | 0.272 (0.098) | 0.207 (0.092) | | | | 0.872 (0.301) |
| TRUST*GDP80 | | | | -0.013 (0.006) | | | |
| Adj. R^2 | .55 | .44 | .56 | .60 | .52 | .37 | .38 |
| SEE | 1.37 | 1.52 | 1.35 | 1.29 | 1.37 | 4.43 | 4.38 |
| Mean, D.V. | 1.45 | 1.45 | 1.45 | 1.45 | 1.45 | 22.4 | 22.4 |

White [1980]-corrected standard errors are in parentheses. Instruments for TRUST in equation 5 include law students/total postsecondary students, Sullivan's homogeneity indicator, GDP80, SEC60, PRIM60, and PI80. Note that R^2 and SEE do not have their usual interpretations in 2SLS. R^2 's without social capital variables are .41 (growth) and .33 (inv./GDP). All equations have 29 observations.

of only \$1000, TRUST's coefficient is .179, more than double the average effect over the whole sample.

The social capital variables are measured near the beginning of our sample period for 21 of our 29 countries. For the other eight, measuring trust in 1990 could introduce reverse causation problems. Deleting these eight reduces the significance of all of the regressors, particularly GDP80, SEC60, and PI80. Coefficients for the social capital variables rise in most cases when these eight countries are deleted, suggesting that reverse causality is not driving our results. This result is not surprising in light of the fact that for the twenty countries with TRUST values for both 1981 and 1990, the correlation between the two is .91.

In equation 5 of Table I we instrument for TRUST to correct for endogeneity problems, or possible measurement error. Sullivan [1991] measures the percentage of a country's population belonging to the largest "ethnolinguistic" group, where groups are identified by race, language, or religion depending on which of these appears to be the most important cleavage in a society. As a second instrument, we use the number of law students in 1963 as a percentage of all postsecondary students.¹⁰ Instrumenting for TRUST with these two variables and all of the other right-hand-side variables, TRUST remains a significant predictor of growth (equation 5).¹¹

We would expect TRUST and CIVIC to affect growth through innovations that increase total factor productivity, and through factor accumulation. When investment's share of GDP is included

10. The source is the 1965 UNESCO Statistical Yearbook. Data are from 1962–1964. Murphy, Shleifer, and Vishny [1991] used similar measures of law and engineering students. Less trusting, more litigious, and more crime-ridden societies will have a higher demand for lawyers, as will more polarized societies in which special interests lobby governments for rent. But lawyers may also be in higher demand where formal institutions such as courts work better. For example, Putnam [1993, pp. 126–127] attributes the proliferation of "notaries, lawyers, and judges" in the Italian city-states to the "unusual confidence in written agreements, in negotiation, and in the law" rather than to "contentiousness." In our sample, there is a strong, negative relationship between TRUST and lawyers. A Hausman test of the overidentifying restrictions indicates that the homogeneity and law students variables do not belong in the growth regression directly.

11. Instrumenting for TRUST with distance from the equator, as measured by Hall and Jones [1996], produces a 2SLS coefficient estimate for TRUST of .158 ($SE = .086$). Hall and Jones use this variable as a climate indicator, arguing that temperate regions have an advantage over tropical or polar regions; they find empirically, however, that income per worker increases (roughly) linearly with latitude over the observable range. This variable is correlated with TRUST in our sample at .63. A Hausman test indicates that latitude does not influence growth independently of its effects on trust in our sample.

as a regressor in growth equations, coefficients for TRUST and CIVIC remain positive but are no longer statistically significant, suggesting that accumulation is the more important channel.¹²

Similar effects are observed with measures of human capital accumulation. When secondary enrollment is omitted from the regressions, TRUST and CIVIC coefficients rise, as expected, given the arguments from Section II that social capital influences human capital accumulation. Substituting attainment measures for the enrollment variables reduces the TRUST and CIVIC coefficients somewhat. The growth effects of TRUST and CIVIC remain significant using literacy rates, or Kyriacou's [1991] estimates of average years of completed education for 1980. The social capital coefficients diminish much more using average years of completed education for 1980 as estimated by Barro and Lee [1993],¹³ but even then the log of TRUST remains a significant predictor of growth.¹⁴

Equations 6 and 7 of Table I examine the impact of social capital on investment/GDP, averaged over the 1980–1992 period, controlling for other determinants of investment. Trust is positively correlated with investment in equation 6, but is significant at the .05 level only for a one-tailed test. Each seven-percentage-point rise in trust is associated with a one-point rise in investment's share of GDP. Civic norms are highly significant in equation 7, with each one-point rise in the index associated with an increase in investment of nearly one percentage point.

The results in Table I are fairly insensitive to changes in specification, the exclusion of influential observations, and the inclusion of additional regressors. These findings are especially remarkable given the small sample size.

As about one half of our sample consists of Western European countries, autocorrelated errors due to spatial correlation, or to common membership in the EC, is a potentially serious problem. Residuals among the subset of EC members (or Western

12. The social capital measures could nevertheless influence innovation, as productive knowledge may be embodied in machinery and other investments, or in human capital.

13. The correlation between TRUST and Barro-Lee attainment for 1980 is .83, the highest correlation with TRUST found for any variable.

14. Since the marginal impact of social capital on performance appears to be greatest at lower levels of TRUST and CIVIC, we considered log specifications. The logged values of TRUST and CIVIC generally produce stronger results than those reported in Table I.

TABLE II
ROBUSTNESS TO ALTERNATIVE SPECIFICATIONS

| Dependent variable Equation (from Table I) | Growth | | Investment/GDP | |
|--|---------------|---------------|----------------|---------------|
| | 1 | 2 | 6 | 7 |
| Specification change | TRUST | CIVIC | TRUST | CIVIC |
| None (from Table I) | 0.082 (0.030) | 0.272 (0.098) | 0.146 (0.078) | 0.872 (0.301) |
| Influential obs. deleted | 0.054 (0.020) | 0.223 (0.081) | 0.081 (0.061) | 0.657 (0.270) |
| 2 influential obs. deleted | 0.038 (0.016) | 0.202 (0.082) | 0.051 (0.060) | 0.575 (0.233) |
| Labor force growth (Exports + Imports)/GDP | 0.082 (0.027) | 0.312 (0.105) | 0.146 (0.075) | 0.928 (0.311) |
| M_2 /GDP | 0.076 (0.029) | 0.185 (0.106) | 0.130 (0.079) | 0.652 (0.289) |
| Black market premium | 0.070 (0.029) | 0.225 (0.094) | 0.128 (0.080) | 0.806 (0.300) |
| Property rights (ICRG) | 0.083 (0.039) | 0.300 (0.084) | 0.155 (0.096) | 0.917 (0.311) |
| Currency depreciation | 0.047 (0.023) | 0.221 (0.103) | 0.108 (0.078) | 0.808 (0.303) |
| Inst. investor credit rating | 0.065 (0.024) | 0.229 (0.086) | 0.115 (0.079) | 0.799 (0.290) |
| Gini (income) | 0.059 (0.028) | 0.099 (0.101) | 0.143 (0.073) | 0.814 (0.418) |
| 1970–1992 gr, inv | 0.039 (0.022) | 0.126 (0.088) | 0.160 (0.059) | 0.773 (0.328) |
| 1960–1992 gr, inv | 0.029 (0.017) | 0.121 (0.096) | 0.160 (0.058) | 0.807 (0.321) |

Standard errors (in parentheses) are White-corrected. Iceland is missing data for Gini. For all other equations where influential observations are not deleted, $N = 29$. Independent variables include PRIM60, SEC60, initial income, and initial investment goods prices.

European countries) were not found to differ significantly from those for nonmembers, however.¹⁵

The most influential individual case in Table I regressions is Korea. The first row of Table II (labeled "None") repeats the regression coefficients and standard errors for TRUST and CIVIC from Table I. Succeeding rows report the effects of TRUST and CIVIC on growth and investment when the indicated change is made to the relevant equation from Table I. The second row shows results when the observation in each equation with the

15. De Long and Summers [1991] found no significant spatial correlation in their sample, using more rigorous tests that took into account the distance of each pair of national capitals from each other. They report that the three Southern Cone countries (only two of which are in our sample) had similar residuals, but that the European countries exhibited no geographic pattern.

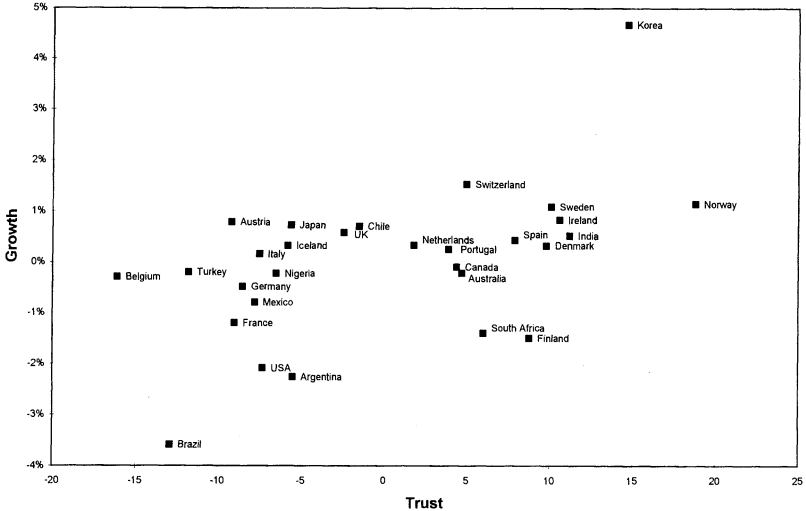


FIGURE II
Partial Regression Plot: Growth(1980–1992) and Trust

largest positive influence on the slope of the social capital coefficient is deleted. For TRUST's effect on growth and investment, and the effect of CIVIC on growth, that observation is Korea. In two of these three cases, the social capital variable remains statistically significant when Korea is deleted. Switzerland is the most influential observation increasing CIVIC's relationship to investment; this relationship remains significant when this case is deleted.

The third row of Table II deletes the two cases most favorable for social capital's impact on economic performance. This procedure deletes Korea and Brazil (TRUST and growth; see Figure II), Korea and Switzerland (CIVIC and growth), Korea and the United States (TRUST and investment), and Switzerland and Japan (CIVIC and investment). All three coefficients that were still significant when the single most influential observation was omitted remain significant after deleting these second observations from our 29-nation sample. Neither Nigeria nor Mexico—two oil-exporting low-trust nations with low or negative growth in the 1980s following rapid petroleum-led growth in the 1970s—are among these influential observations.

The effects of TRUST and CIVIC prove to be robust to the inclusion of other variables often used in growth regressions, in-

dicating that they are not merely capturing the effects of important omitted variables. Table II (beginning with the fourth row) indicates how coefficients and standard errors for TRUST and CIVIC change when the indicated additional regressor is included in the relevant growth or investment equation. Most of the added regressors are significant predictors of growth, but not of investment, in our sample.

Estimates for TRUST and CIVIC are changed little by adding labor force growth, trade openness (as measured by exports plus imports divided by GDP), M_2 /GDP (the primary measure of financial development measure used by King and Levine [1993], the black market premium, or the property rights indicator from ICRG (International Country Risk Guide) introduced by Knack and Keefer [1995]. In results not shown in Table II, TRUST and CIVIC also prove insensitive to the inclusion of the mineral sector's share of GDP, or the government size and political instability indicators used in Barro [1991].

Other policy variables affect the social capital estimates to a somewhat greater extent, but in ways that are consistent with our theory. These are policies that are particularly sensitive to social polarization, which we expect to be associated with (and measured in part by) low trust and weaker civic norms. For example, difficulty in implementing stabilization programs has been attributed to polarization associated with inequalities in income and wealth, and with ethnic tensions [Berg and Sachs 1988; Keefer and Knack 1995]. In more polarized societies, groups are more willing to impose costs on society, for example, by failing to compromise on a reform program in a timely way. High inflation and government debt could therefore be a product in part of low social cohesiveness. Table II shows that coefficients for TRUST and CIVIC fall—although usually remaining significant—when currency depreciation,¹⁶ or international bankers' evaluations of the creditworthiness of governments, are added to the regressions.¹⁷

A more direct approach to social polarization is to examine inequality, a source of polarization that has been linked to unsta-

16. If trust is reduced by untrustworthy behavior by government officials, its impact on economic performance could be associated with policy credibility. This possibility is a second explanation of why the TRUST coefficient may decline when currency depreciation is included in the equation.

17. These variables are averages over the 1980–1990 period. Institutional Investor conducts the survey of international bankers; this measure of creditworthiness is also used in Keefer and Knack [1995].

ble macro policy and to uncertain property rights.¹⁸ There are theoretical reasons to expect inequality to lower trust and weaken civic norms. (This issue is addressed in more detail in Section VII.) The Gini coefficient for income inequality is strongly correlated with TRUST ($r = -.65$) and with CIVIC ($-.43$). When this Gini is added to our regressions (see Table II), the TRUST coefficient declines to .059 (but remains significant at the .05 level), while the CIVIC slope drops to .099. Inequality is not significant in investment equations, however, where it has little impact on TRUST and CIVIC.¹⁹ While there appears to be an important relationship between inequality and social capital, the social capital variables remain significant in three out of four cases with inequality in the model, suggesting that TRUST and CIVIC in Table I are not solely capturing redistributive or other effects of inequality.

If trust and civic norms are viewed as "culture" variables that change only slowly over time, TRUST and CIVIC as measured in the early 1980s should explain cross-country variation in long-term economic performance, as measured by investment or growth rates over 20- or 30-year periods, or even by per capita income levels. This assumption may be reasonable, as TRUST values for 1980 and 1990 are correlated at .91. Moreover, changes in TRUST over the decade are uncorrelated with growth rates. However, there are both theoretical and empirical reasons for caution regarding the assumption that trust and the strength of civic norms are stable over long periods of time. Cooperative equilibria can unravel very quickly, as Yugoslavia demonstrates. The United States, the one country with a long time series on the trust survey measure, shows a steady decline in trust from 55 to 60 percent in surveys from the late 1950s and early 1960s, to the mid- and upper-30s in the 1990s. With these caveats we report tests of long-term performance below, investigating longer-period growth and investment rates as well as levels of output per worker.

The last two rows of Table II show the association of TRUST and CIVIC on investment levels and income growth for the 1970–1992 and 1960–1992 periods.²⁰ Investment results are very simi-

18. See Berg and Sachs [1988] and Keefer and Knack [1995].

19. Inequality is measured as near to 1980 as the data permit. Iceland is missing data for inequality. Sources are the World Development Report and Milanovic [1994].

20. Initial income and investment goods prices are measured in 1970 or 1960 as appropriate.

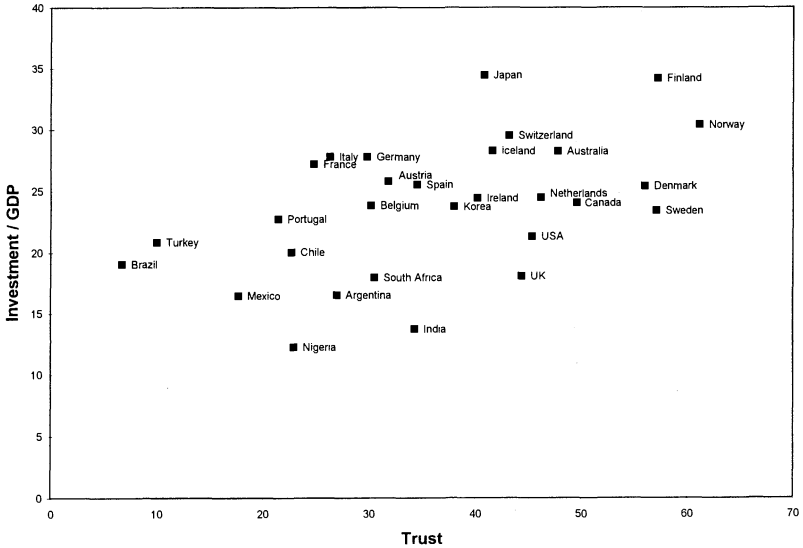


FIGURE III
Investment/GDP (1960–1992) and Trust

lar to those for the shorter period; the TRUST coefficient rises somewhat while the standard error falls. Figure III depicts the simple correlation of TRUST and investment/GDP for the 1960–1992 period. Coefficients in growth regressions fall by more than one-half, relative to the shorter period. The effect of TRUST, but not CIVIC, remains significant at the .05 level for a one-tailed test.²¹

The weaker relationship between social capital and growth in the longer periods is driven mainly by three low-trust countries that grew slowly, if at all, in the 1980–1992 period, but rapidly in the 1960s and 1970s—in part through dramatic increases in oil prices in the case of Nigeria, large inflows of debt in the case of Brazil, and a combination of the two in the case of Mexico. An (admittedly *ex post facto*) explanation of the experiences of these countries may be consistent with our theory. If trust is weak, leaders are more likely to direct revenue windfalls toward

21. For these longer periods, TRUST and CIVIC remain significantly related to investment when additional regressors listed in Table II (appropriately modified for the longer period) are added. For growth, TRUST and CIVIC coefficients remain positive in every case but are rarely significant when other regressors are added.

TABLE III
TRUST AND LEVELS OF OUTPUT, FACTOR ACCUMULATION, AND TFP

| Equation | 1 | 2 | 3 | 4 |
|-----------------------|------------------|-----------------------|---------------------|----------------------------------|
| Independent variables | | | | No ICRG, years open, or latitude |
| Dependent variable | Trust only | Full Hall-Jones model | No ICRG, years open | |
| log output/worker | .0258 (.0061) | .0035 (.0081) | .0197 (.0085) | .0397 (.0177) |
| log capital/worker | .0336 (.0062) | .0015 (.0107) | .0223 (.0102) | .0454 (.0198) |
| School/worker | .1533 (.0156) | .0977 (.0298) | .1312 (.0268) | .1667 (.0427) |
| log TFP | .0023 (.0038) | -.0056 (.0048) | .0025 (.0046) | .0127 (.0094) |

Cells of table report TRUST coefficients; White-corrected standard errors are in parentheses. Full Hall-Jones model includes latitude (distance from the equator), percent English-speaking, percent speaking another "international language," a dummy for "capitalist-statist" systems (as contrasted to "capitalist"), fraction of years, 1950-1994, with open economy (from Sachs and Warner [1995]), and the ICRG property rights index (from Knack and Keefer [1995]). Sample size is 29.

consumption than toward productive investments. Because of low trust, leaders cannot credibly promise supporters future benefits from worthwhile investments. To maintain support, leaders must divert resources to supporters who, again because of low trust, do not find it advantageous to invest these resources in productive investments inside the country—making the country more vulnerable to crisis. Moreover, once crisis hits, the lack of social cohesiveness reflected in low values of TRUST and CIVIC makes it less likely that a consensus on needed policy reforms can be built.

We also analyze the relationship between TRUST and levels of output per worker, physical and human capital per worker, and total factor productivity (TFP), following the levels accounting approach of Hall and Jones [1996] and using data provided by them. Table III reports the relationship of TRUST with (1) the log of output per worker, net of mineral production, for 1988 (from Summers and Heston [1991]), (2) the Hall and Jones estimate of (the log of) capital per worker for 1988 (using investment data from Summers and Heston), (3) human capital per worker (the Barro-Lee [1993] attainment measure for 1985), and (the log of) TFP for 1988, estimated by Hall and Jones as a residual. Column 1 of Table III reports coefficients and standard errors for TRUST from four bivariate regressions: TRUST is positively and signifi-

cantly correlated with output, capital, and schooling, while the correlation with TFP is positive but insignificant.²²

Hall and Jones [1996] report regressions of each of these four variables on a set of variables (listed in the note to Table III) that they contend are exogenous and that measure "basic characteristics" of an economy. When TRUST is added to their full model, its coefficient is significant only for schooling (column 2 of Table III). Theory and evidence provided elsewhere in this paper strongly suggest that policy is endogenous to trust: accordingly, in column 3 of Table III we delete from the regressions the two policy variables used by Hall and Jones: the ICRG property rights index from Knack and Keefer [1995], and the openness measure from Sachs and Warner [1995]. As in the simple bivariate regressions, output, capital, and schooling are all significantly related to TRUST when these policy variables are dropped. The most powerful "determinant" of output, factor accumulation, and TFP in Hall and Jones [1996] is latitude (distance in degrees from the equator), a variable with an ambiguous theoretical interpretation, and which is highly correlated with TRUST. When latitude and the two policy variables are dropped from the models in column 4 of Table III, coefficients for TRUST are all larger than in the bivariate regressions, although still not significant in the case of TFP.

Causality could go in both directions for income and trust, and for education and trust. For example, trust could be a product of optimism [Uslaner 1995] generated by high or growing incomes. But if trust were largely a product rather than a cause of high incomes, it should follow rather than lead per capita income levels. In fact, TRUST is more strongly correlated with per capita incomes in later years, such as 1990, than with income in earlier years, such as 1970.

Similarly, education may strengthen trust and civic norms, for example, if ignorance breeds distrust, or if learning reduces uncertainty about the behavior of others, or if students are taught to behave cooperatively [Mueller 1989, pp. 364–365].²³

22. Measurement error may be partly responsible for this low correlation, as implausibly high TFP estimates are concentrated among low-trust countries in our sample. For example, TFP estimates are far higher for Mexico, Italy, and Brazil than for Norway, Finland, Denmark, and Sweden (and higher than for Germany, Switzerland, and the United States).

23. The rise of Japan in the late nineteenth century coincided with a government-initiated shift from "limited-group" morality to a more generalized morality, using the system of universal compulsory education as an important tool in this campaign [Platteau 1994].

However, TRUST is more highly correlated with recent than with past measures of attainment or enrollment, suggesting that causality does not run solely from education to social capital.

V. ASSOCIATIONAL ACTIVITY AND ECONOMIC PERFORMANCE

The importance of trust in expanding economic activity is perhaps not surprising, although not previously empirically substantiated at the cross-country level. The role of associational activity is a subject of greater contention. Putnam attributes the economic success and governmental efficiency of northern Italy, relative to the south, in large part to its richer associational life, claiming that associations “instill in their members habits of cooperation, solidarity, and public-spiritedness” [Putnam 1993, pp. 89–90]. This cooperation and solidarity is invoked most commonly to resolve collective action problems at the level of smaller groups, however. If the economic goals of a group conflict with those of other groups or of unorganized interests, the overall effect of group memberships and activities on economic performance could be negative. Adam Smith (quoted in Granovetter [1985, p. 484]) noted that when “people of the same trade” meet “even for merriment and diversion” the result is often “a conspiracy against the public” or “some contrivance to raise prices.” In a more extreme example, Marx blamed the inability of the nineteenth century French peasantry to overthrow capitalism on the absence of dense networks of social interaction: the peasants did not enter into “manifold relations with one another . . .” (quoted in Hardin [1982, p. 189]). Similarly, Olson [1982] observes that horizontal associations can hurt growth because many of them act as special interest groups lobbying for preferential policies that impose disproportionate costs on society.

Keefer and Knack [1993] provide some evidence for the conflicting influences of associational activity on growth, using a variable from Banks and Textor [1963] called “interest articulation” which assesses (on a subjective scale ranging from 1 to 4) how effectively groups articulate their policy preferences to government. Although the ability of groups to articulate their interests is likely to be an important restraint on government, it also provides groups a way to capture private benefits at the expense of society. Consistent with the view that these two effects tend to counteract each other, “interest articulation” proves to be an insignificant predictor of growth when introduced into Barro-type cross-country tests.

We obtain a similar result here on the influence of horizontal associations. Respondents in the World Values Surveys were asked whether they belonged to any of the following types of organizations:

- a) social welfare services for elderly, handicapped, or deprived people;
- b) religious or church organizations;
- c) education, arts, music, or cultural activities;
- d) trade unions;
- e) political parties or groups;
- f) local community action on issues like poverty, employment, housing, racial equality;
- g) third world development or human rights;
- h) conservation, the environment, ecology;
- i) professional associations;
- j) youth work (e.g., scouts, guides, youth clubs, etc.).²⁴

Our measure of the density of associational activity (GROUPS) is the average number of groups cited per respondent in each country (see Data Appendix for values). This indicator unfortunately does not measure the intensity of participation in groups. Assuming that group memberships are correlated with levels of activity, GROUPS constitutes a reasonable approximation of Putnam's notion of the density of horizontal networks in a society.²⁵ Independent data on union memberships as a proportion of the labor force are available from Wallerstein [1989], for eighteen of the countries in our sample (for the late 1970s), permitting a check on the reliability of the survey data. The correlation of this variable with item (d) on trade union memberships is a reassuring .68.

In Table IV we test the relationship between GROUPS and economic performance, using models similar to those in Table I. Group membership is not significant in either growth or investment equations.²⁶ An obvious possible explanation for this result

24. "Sports and recreation clubs"—of particular interest in Putnam's work—and other groups were also included in the survey, but for too few countries to be analyzed. Group memberships for most countries are from the 1981 wave of surveys, and from the 1990 wave for the others, as with TRUST and CIVIC.

25. Putnam [1995b] uses similar measures of associations from the WVS and, for the United States, from the General Social Survey.

26. The sample size drops from 29 in Table I to 26 in Table IV, as there are no data on group memberships for India, Nigeria, or Turkey. The greater measured impact of TRUST and CIVIC relative to GROUPS is not due to the changing sample, however: coefficients for TRUST and CIVIC in Table I actually rise when those three countries are dropped.

TABLE IV
GROUP MEMBERSHIPS AND ECONOMIC PERFORMANCE, 1980-1992

| Equation | 1 | 2 | 3 | 4 |
|--------------------|-------------------|-------------------|---------------------------|--------------------|
| Dependent variable | Growth, 1980-1992 | | Investment/GDP, 1980-1992 | |
| Constant | 1.156 (3.323) | 1.558 (3.618) | 21.676 (8.210) | 22.698 (8.528) |
| GDP80 | -0.219 (0.153) | -0.274 (0.164) | 0.648 (0.414) | 0.448 (0.455) |
| PRIM60 | 4.421 (1.641) | 4.800 (1.482) | 1.933 (5.302) | 2.968 (5.383) |
| SEC60 | 4.196 (1.995) | 4.065 (2.061) | 4.237 (7.076) | 5.098 (7.328) |
| PI80 | -3.102 (1.657) | -3.601 (1.767) | -2.954 (3.118) | -4.235 (3.316) |
| GROUPS | -0.232 (0.872) | | -6.199 (3.306) | |
| O-GROUPS | | 2.186 (1.551) | | -1.200 (5.980) |
| P-GROUPS | | -1.303 (1.412) | | -10.589 (3.890) |
| Adj. R^2 | .19 | .18 | .19 | .16 |
| SEE | 1.71 | 1.72 | 4.50 | 4.59 |
| Mean, D.V. | 1.54 | 1.54 | 23.2 | 23.2 |

White-corrected standard errors are in parentheses. Sample size is 26.

is that the harmful effects of groups as rent-seeking organizations theorized by Olson [1982] are offsetting any positive effects posited by Putnam [1993].

We explored this possibility further by attempting to differentiate "Olsonian" from "Putnam-esque" groups. Groups b, c, and j from the above list were identified as those groups least likely to act as "distributional coalitions" but which involve social interactions that can build trust and cooperative habits. The total memberships per respondent in these three "Putnam" categories (P-GROUPS) range from .83 (for the United States) to .06 (Finland). Groups d, e, and i were deemed most representative of groups with redistributive goals; total memberships in these "Olson" groups per respondent (O-GROUPS) range from .76 (Iceland) to .12 (Korea).

Membership in "Olson" groups is not significant in either the growth or investment equations (equations 2 and 4). Perversely,

“Putnam” groups appear to harm investment (equation 4). These results are little changed by tinkering with the definitions of Putnam and Olson groups, for example, by leaving out religious and church organizations from P-GROUPS, on the grounds that hierarchical religions weaken trust [Putnam 1993], or by deleting political parties and groups from O-GROUPS, on the grounds that parties may be relatively “encompassing,” aggregating the preferences of many different groups [Olson 1982].

This attempt at distinguishing types of groups thus provides no empirical support for our conjecture that groups have neutral effects on performance because positive “Putnam” forces are counterbalanced by negative “Olson” influences.²⁷ These tests can be regarded as only preliminary, however: the categories of groups are overly broad, it is not clear what some of these groups do, and the depth of involvement is not measured. While TRUST and CIVIC appear to capture *generalized* trust and norms of *civic* cooperation, our data on groups do not permit us to convincingly distinguish between socially efficient and inefficient memberships and activities.

VI. ADDITIONAL LINKS FROM TRUST TO GROWTH

This section further explores the channels through which trust might affect economic outcomes. Some of these channels must remain largely unexplored due to data limitations. Following arguments in Section II, we consider two possible channels here: the impact of trust on the strength of property and contractual rights, and the impact of trust on the performance of government.

We constructed an index of perceived government performance from items in the WVS. Respondents were asked “how much confidence” they had in various governmental and societal institutions, with responses ranging from “a great deal,” to “quite a lot,” to “not very much,” to “none at all.” The index was built from responses to items concerning the education system (largely government-run in most countries), the legal system, the police, and the civil service. For each of these we calculated the percent-

27. Membership in groups classified here as “Putnam” groups could simply be proxying stronger preferences for leisure, which might harm measurable economic performance. Trade associations—“Olson” groups—do more than lobby for legal barriers to entry and tax breaks. They may have positive effects on economic performance by establishing ethical codes and standards [Bergsten 1985] or by reducing transactions costs, e.g., by spreading information about the identity of cheaters. See Greif [1996] and Granovetter [1985].

TABLE V
LINKS FROM TRUST TO GROWTH

| Equation | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|----------------------|--------------------------------|--------------------------------|------------------|------------------------|------------------|--------------------------------|------------------|
| Dependent variable | Confidence in government (WVS) | Bureaucratic efficiency (ICRG) | BERI | Property rights (ICRG) | | Contract enforceability (BERI) | |
| Constant | 0.626 (0.074) | 2.662 (1.244) | 2.065 (0.755) | 4.812 (1.102) | 2.647 (1.100) | 1.395 (0.281) | 1.266 (0.318) |
| GDP80 | .0085 (.0091) | 0.235 (0.102) | 0.134 (0.056) | 0.293 (0.149) | 0.170 (0.104) | 0.065 (0.029) | 0.057 (0.031) |
| PRIM60 | -0.162 (0.093) | 2.195 (1.263) | 0.750 (0.578) | 5.765 (1.468) | 6.483 (0.954) | 0.054 (0.333) | 0.101 (0.360) |
| SEC60 | -0.215 (0.145) | 2.220 (1.412) | 0.675 (0.964) | 1.938 (1.847) | 1.586 (1.507) | 0.485 (0.426) | 0.465 (0.421) |
| TRUST | .0045 (.0013) | 0.050 (0.025) | 0.018 (0.010) | 0.065 (0.020) | 0.037 (0.029) | 0.015 (0.005) | 0.014 (0.005) |
| Executive constraint | | | | | 0.616 (0.260) | | 0.037 (0.039) |
| Adj. R^2 | .20 | .73 | .69 | .74 | .82 | .73 | .73 |
| <i>SEE</i> | .096 | 1.33 | .645 | 1.81 | 1.51 | .324 | .324 |
| Mean, D.V. | .605 | 9.66 | 4.91 | 16.3 | 16.3 | 2.75 | 2.75 |
| N | 28 | 29 | 28 | 29 | 29 | 28 | 28 |

White-corrected standard errors are shown in parentheses.

age of respondents in each country with either “a great deal” or “quite a lot” of confidence. The mean of the four percentages is used as a measure of perceived overall government performance (see Data Appendix for values).²⁸

Equation 1 of Table V regresses this index on TRUST, controlling for per capita income and education enrollments.²⁹ The only significant determinant of government performance in this equation is TRUST: each two-percentage-point rise is associated with a rise in confidence of about one percentage point.

28. Switzerland is the only one from our 29-country sample in which these questions were not asked. While rankings suggest a certain amount of “face validity” for this index, there are several anomalies. Japan scores poorly (46 percent) and Nigeria scores very highly (73.1 percent). It is unclear to what extent these “confidence” items reflect how responsive the government is to the narrowly self-interested demands of respondents, or how effectively it carries out its legally mandated responsibilities, or something else.

29. Where incomes are higher, governments may have access to more tax revenue to provide better services, and better-educated citizens may place more effective demands on government to provide services efficiently.

For alternative subjective measures of governmental performance, we use data from two firms that evaluate risks to foreign investors. For one index of bureaucratic efficiency, we create an additive index from two variables from *International Country Risk Guide* (ICRG): "corruption in government" and "quality of the bureaucracy." The maximum possible value for this index is twelve; higher scores indicate less corruption and higher-quality bureaucracies. For a second index of bureaucratic efficiency, we add two variables from *Business Environmental Risk Intelligence* (BERI): "bureaucratic delays" and "transportation and communications quality." The maximum possible score is eight, with higher scores indicating shorter delays and better infrastructure.³⁰

These ICRG and BERI variables are shown in Knack and Keefer [1995] to be strong predictors of investment and growth. Equations 2 and 3 of Table V show that these bureaucratic efficiency indexes are positively and significantly related to TRUST. This evidence suggests that the relationship between "social capital" and governmental performance Putnam discovered for Italy may generalize across countries.

Table V also demonstrates strong relationships between TRUST and two subjective measures of property rights security. In equations 4 and 5 the dependent variable is an index of two ICRG variables, "risk of repudiation of government contracts" and "risk of expropriation" of assets. The maximum possible value is twenty, with higher scores indicating lower risks. In equations 6 and 7, the dependent variable is "contract enforceability," a BERI measure with a maximum value of four. Consistent with our tests of the determinants of government performance, we control for income and education.³¹ In equations 4 and 6 TRUST is significantly related to the ICRG and BERI property rights indicators. Equations 5 and 7 control for formal sources of secure property rights, with "executive constraints," a subjective variable coded by Gurr [1990] in his *Polity II* data set. Countries are scored on a 1 to 7 scale on the extent to which the executive of a country is able to rule by decree (coded as 1), or

30. These indexes were created using averages over the 1980–1990 period for BERI and 1982–1990 for ICRG. All countries in our sample are included in ICRG data. Iceland is missing in BERI.

31. High incomes may proxy the number and size of business transactions, which will be related to the "demand" for enforceable contracts, and may give the government access to more revenue to establish an effective judicial system.

must gain the consent of others before acting (coded 7). The independent effect of TRUST on the ICRG index is reduced somewhat (equation 5), but TRUST remains a significant determinant of the BERI measure.

These preliminary explorations into the links between social capital and growth have provided some suggestive evidence that trust may improve governmental efficiency and increase investors' confidence that contracts will be enforced. The evidence is not entirely unambiguous, however. We have not attempted to develop complete models of governmental performance or of the security of property rights, or enforceability of contracts. The ICRG and BERI measures that are strongly linked to economic performance in Knack and Keefer [1995] are not significant predictors of investment and growth in the small sample used here. The "confidence in government" index constructed from WVS items does not predict investment rates, and is of only borderline significance in a growth equation (slope = .035; *SE* = .019). Thus, we cannot directly explain the paths by which economic performance is related to TRUST and CIVIC in Table I. Neither have we addressed empirically the possibility of reverse causality, as the behavior of governments can influence levels of trust and civic cooperation [Gambetta 1988, pp. 158–163; Hardin 1992]. For example, where the police violate traffic laws and norms, cooperative equilibria among drivers will tend to unravel. Finally, Table V results are much weaker when CIVIC is substituted for our primary indicator, TRUST.³²

VII. DETERMINANTS OF TRUST AND CIVIC COOPERATION

Using the survey results and other data sources, we undertake a preliminary investigation of the determinants of trust and civic cooperation, an issue of special interest to policy makers. We test the effects of group memberships, income inequality and ethnic polarization, formal institutions for protecting property and contract rights, per capita income, and education rates.

In Section V we argue that associational activity has ambiguous effects on economic performance: it may increase trust, but also facilitate rent-seeking. Here, we argue that even the rela-

32. When GROUPS is substituted for TRUST in Table V, it is significantly and positively related to two of the four dependent variables: "confidence in government," consistent with Putnam's [1993] results, and the BERI contract enforceability measure.

tionship between associations and trust is double-edged. Involvement in formal or informal groups and associations (the density of networks of horizontal association) may build trust and civic-minded behavior [Putnam 1993]. The underlying idea is that such relationships either break down information asymmetries or create a pattern of repeated interactions that allow self-enforcing agreements to be reached; people who belong to such networks "trust" others who belong to them, and are more likely to exhibit civic behavior.

However, many societies are polarized by ethnic, political, religious, or income differences. Associations in such societies will often form along (e.g.) ethnic lines. These relatively homogeneous associations in heterogeneous societies may strengthen trust and cooperative norms within an ethnic group, but weaken trust and cooperation between those groups. This effect creates the potential for a negative relationship between horizontal associations and trust or norms of civic cooperation when measured at the national level. Additionally, participation in formal groups may constitute only a small percentage of the social interactions that can build trust and cooperative norms.

We therefore hypothesize that at best horizontal associations are only weakly related to trust or norms of civic cooperation. Even if a positive correlation were found, it could be attributable to reverse causality: high-trust individuals are more likely to join formal associations in which many transactions at least initially will involve interacting with strangers.

Social polarization is a second possible determinant of trust and civic cooperation. Polarization by definition implies greater distances between preferences of individuals in a society. Individuals and groups in such a society have a greater incentive to renege on policy agreements [Keefer and Knack 1995]. When policy coalitions are unstable, trust relations among individuals often break down.³³ In polarized societies, individuals are less likely to share common backgrounds and mutual expectations about behavior, so it is more difficult to make self-enforcing agreements. Platteau [1994] discusses examples of the importance of religious and linguistic homogeneity in facilitating trade in West

33. Weingast [1993] provides multiple examples, including the former Yugoslavia, arguing that institutional guarantees of policy bargains related to inter-ethnic distributional issues disappeared with the fall of communist regimes, leading in short order to the breakdown of trust between individuals from different ethnic groups.

Africa. Finally, polarization can increase rent-seeking activities—whether legal, through the political system, or illegal, through theft—that undermine trust. Through any of these various channels, polarization can erode trust and weaken cooperative norms. We proxy for polarization using income inequality and ethnic homogeneity.

A third possible determinant of trust and civic norms is the formal institutional structure of a country. Where these institutions restrain arbitrary behavior by government leaders, for example, government policies are likely to be more credible (or trustworthy). If formal institutions enforce private agreements and laws more effectively, trust and adherence to civic norms among private citizens may be strengthened:³⁴ “In a Hobbesian view . . . trust is underwritten by a strong government to enforce contracts and to punish theft. Without such a government, cooperation would be nearly impossible and trust would be irrational” [Hardin 1992, p. 161].

There is little empirical or theoretical research to provide guidance as to other determinants of trust and the strength of civic norms.³⁵ We control here for 1980 per capita income, and school enrollment in 1960, recognizing that causality is likely not unidirectional.

Tables VI and VII report results on the determinants of trust and civic cooperation. The effect of income is always positive, as expected, and is significant in most of the TRUST equations. The effect of secondary education is uniformly positive, and often significant. Coefficients for primary education are always negative, and sometimes significant.

34. The relationship between trust and civic cooperation, on the one hand, and property rights and government performance on the other, is likely to be complex, with each influencing the other. Formal institutions can be substitutes for—as well as causes of—trust and civic cooperation. Societies with low trust require more robust formal institutions if they are to undertake the exchanges that are crucial to growth.

35. Using individual-level data on group memberships for the United States, Germany, and Sweden from the WVS and other sources, Stolle and Rochon [1996] find memberships increase trust, controlling for age, education, and income. They find mixed evidence on whether groups that are more diverse (in terms of age, socioeconomic status, ideology, and sex) produce more trust among members. They acknowledge that their results could be influenced by self-selection. Helliwell [1996b], using individual-level WVS data for the United States and Canada, finds group members are more trusting, controlling for education and region. He finds no difference in the strength of this effect across different types of groups. Note that such individual-level analyses, unlike our aggregate-level analysis, cannot capture the external effects of group memberships on the trust and trustworthiness of nonmembers.

TABLE VI
DETERMINANTS OF TRUST AND CIVIC COOPERATION:
GROUP MEMBERSHIPS AND GOVERNMENTAL INSTITUTIONS

| Equation | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|------------------------|---------------------|-------------------|---------------------|-------------------|--------------------|-------------------|--------------------|
| Dependent variable | TRUST | CIVIC | TRUST | CIVIC | TRUST | CIVIC | TRUST |
| Constant | 34.391 (16.275) | 39.053 (3.600) | 34.746 (14.415) | 39.172 (3.387) | 23.425 (7.397) | 40.217 (1.951) | 25.921 (3.497) |
| GDP80 | 1.403 (0.604) | 0.213 (0.137) | 1.047 (0.645) | 0.122 (0.131) | 1.118 (0.547) | 0.013 (0.163) | 1.256 (0.532) |
| PRIM60 | -22.959 (13.107) | -2.770 (3.168) | -20.947 (11.780) | -2.352 (2.954) | -16.234 (6.082) | -3.944 (1.604) | -35.782 (8.227) |
| SEC60 | 22.824 (11.682) | 3.168 (2.288) | 18.987 (10.923) | 2.685 (2.218) | 25.008 (10.484) | 2.700 (2.351) | 16.540 (10.263) |
| GROUPS | 5.052 (6.378) | -0.447 (0.903) | | | | | |
| P-GROUPS | | | -4.993 (8.568) | -3.119 (1.128) | | | |
| O-GROUPS | | | 27.019 (14.035) | 3.896 (1.345) | | | |
| Executive constraints | | | | | 1.522 (0.933) | 0.345 (0.203) | |
| Independence of courts | | | | | | | 8.192 (2.220) |
| Adj. R^2 | .46 | .30 | .51 | .42 | .51 | .24 | .60 |
| SEE | 9.94 | 1.61 | 9.46 | 1.46 | 9.77 | 1.75 | 9.05 |
| Mean, D.V. | 37.4 | 39.2 | 37.4 | 39.2 | 35.8 | 39.4 | 35.6 |
| N | 26 | 26 | 26 | 26 | 29 | 29 | 28 |

White-corrected standard errors are shown in parentheses. Iceland is missing data on independence of courts. India, Nigeria, and Turkey are missing data on group memberships.

TABLE VII
DETERMINANTS OF TRUST AND CIVIC COOPERATION: POLARIZATION

| Equation | 1 | 2 | 3 | 4 |
|-----------------------|--------------------|-------------------|--------------------|-------------------|
| Dependent variable | TRUST | CIVIC | TRUST | CIVIC |
| Constant | 57.938 (12.108) | 47.704 (2.112) | 25.717 (4.645) | 39.883 (1.710) |
| GDP80 | 1.341 (0.516) | 0.054 (0.143) | 1.776 (0.473) | 0.224 (0.150) |
| PRIM60 | -24.228 (7.137) | -5.509 (1.511) | -25.660 (8.219) | -8.305 (1.766) |
| SEC60 | 17.425 (9.566) | 0.906 (2.667) | 5.968 (9.350) | 1.313 (2.413) |
| Gini (income) | -0.453 (0.173) | -0.099 (0.027) | | |
| Ethnic homogeneity | | | 0.349 (0.107) | 0.064 (0.023) |
| Lawyers (1963) | | | -1.254 (0.194) | 0.012 (0.068) |
| Adj. R^2 | .55 | .31 | .73 | .30 |
| SEE | 9.53 | 1.68 | 7.32 | 1.68 |
| Mean, D.V. | 35.6 | 39.4 | 35.8 | 39.4 |
| N | 28 | 28 | 29 | 29 |

White-corrected standard errors are shown in parentheses.

As Putnam [1995b] has noted, there is a strong bivariate relationship between trust and group memberships across countries.³⁶ However, we find in equations 1 and 2 of Table VI that horizontal associations have no significant effect on TRUST or CIVIC when income and education are controlled for, consistent with the ambiguities noted above on the effects of group memberships. A possible explanation for this result is that groups with social goals are better than those with political goals at building trust and cooperative habits. In equations 3 and 4 we investigate this possibility using the distinction made in Section V between Putnam groups and Olson groups. Memberships in the more politically oriented "Olson" groups are associated, surprisingly, with stronger trust and cooperative attitudes, while the "Putnam"

36. However, the marked decline in trust in the United States since the 1960s has not been accompanied by a decline in group memberships. Even if the two variables were correlated, causality arguably runs primarily from trust to groups rather than the other way around, as more trusting individuals may have a greater propensity to affiliate with strangers in groups.

groups have no effect on trust (equation 3) and appear to reduce civic cooperation (equation 4).³⁷

“Executive constraints” is positively and (marginally) significantly related to both TRUST (equation 5) and CIVIC (equation 6). Each one-point rise in the seven-point Executive Constraints scale is associated with a rise in TRUST of 1.5 percentage points. As a second proxy for formal institutions, we use a variable called “Independence of the courts” from Humana [1987]. This variable is a four-point scale, with higher numbers indicating greater independence of the judiciary from the chief executive. It is strongly related to TRUST (equation 7), with each one-point rise associated with an eight-percentage-point increase in TRUST. There is no relationship between independence of the judiciary and CIVIC, however (results not shown). These results on formal institutions, although perhaps fraught with multiple directions of causation, constitute important evidence for the interaction of formal and informal institutions.

Table VII analyzes the relationship between polarization and our measures of social capital. The Gini coefficient for income inequality is strongly associated with lower trust and civic cooperation (equations 1 and 2). Both TRUST and CIVIC increase significantly with ethnic homogeneity (equations 3 and 4). With each three-point increase in the percentage belonging to the largest ethnic group, TRUST rises by one point. Each fifteen-point increase in homogeneity increases CIVIC by one point.³⁸ Lawyers are also associated with low trust, whether as a signal of social polarization or through some other channel. Each one-percentage-point increase in law students (as a percentage of all postsecondary students in 1963) is associated with a decline in TRUST of more than one percentage point (equation 3). Lawyers are unrelated to CIVIC, however (equation 4).

This section offers evidence for the following propositions. Income equality and checks on executive power are associated with higher levels of trust and stronger norms of civic cooperation. Ethnic and linguistic divisions coincide with weakened trust and

37. These results—as with those in Section V on group memberships and economic performance—are not sensitive to deleting religious organizations from P-GROUPS.

38. Using individual-level WVS data, Helliwell [1996b] found that U. S. and Canadian respondents classifying themselves first in terms of ethnicity (e.g., Asian-American or French-Canadian) and only secondarily in terms of nationality (e.g., American or Canadian) were less trusting, controlling for education and region.

civic norms.³⁹ Group memberships, in contrast, are unrelated to trust and norms.

We also explored the effects of several other possible determinants of trust and civic cooperation which are less well-developed conceptually here for reasons of space. Urbanization, population, population density, and government size all proved insignificant.⁴⁰ Putnam [1993] views "hierarchical" religions such as Catholicism as being inimical to horizontal ties and trust. Inglehart [1990] and Fukuyama [1995], citing Weber, link Protestantism to higher trust. La Porta et al. [1997] report that trust is lower in countries with "dominant hierarchical religions" as measured by percent of the population that is Catholic, Orthodox Christian, or Moslem. We find that Protestantism is associated with significantly greater trust: each five-percentage-point rise in the number of Protestants (from Taylor and Jodice [1983]) is associated with a one-point rise in TRUST. When percent Protestant, percent Catholic, and percent Moslem are all included in a TRUST regression, coefficients for the latter two regressors are significantly negative, while percent Protestant is positive but not significant.⁴¹

VIII. CONCLUSION AND POLICY IMPLICATIONS

The notion of social capital is emerging with greater frequency in discussions of development, whether of poor countries or of chronically poor areas of industrialized countries. The elasticity of the term social capital has made progress in these discussions difficult. Nevertheless, all concepts have in common the idea that trust and norms of civic cooperation are essential to well-functioning societies, and to the economic progress of those societies. This paper makes three contributions to these discussions. First, it provides some idea of the importance of these dimensions of social capital, supplying the strongest evidence to date that trust and civic cooperation have significant impacts on aggregate economic activity.

Our second contribution is a negative one. Disputes about

39. As discussed above, the WVS indicators appear to measure generalized trust and civic norms. Inequality and ethnic heterogeneity may well strengthen cooperation and trust within certain limited groups.

40. Taylor [1976] claims that large governments "crowd out" norms. Buchanan [1965] among others argues that the force of ethical rules weakens with larger numbers.

41. Results are available on request.

the role of social capital arise when one attempts to define how trust and norms of civic cooperation in a society can be strengthened. Putnam [1993] has suggested that dense horizontal networks reinforce trust and civic norms. However, we find that horizontal networks—as measured by membership in groups—are unrelated to trust and civic norms (controlling for education and income) and to economic performance. The stronger impact on economic performance of trust and civic norms suggests that if declining social capital in the United States has adverse implications for growth, it is the erosion of trust and civic cooperation as documented by Knack [1992] that are of greater concern than the decline in associational life emphasized by Putnam [1995a, 1995b].⁴²

Our third contribution is to demonstrate the importance of two sources of trust and civic norms. Low social polarization, and formal institutional rules that constrain the government from acting arbitrarily, are associated with the development of cooperative norms and trust.

These results carry several implications for policy. Trust's relationship to growth in our study is especially large in poorer countries, which may be attributable to their less well-developed financial sectors, insecure property rights, and unreliable enforceability of contracts. Interpersonal trust seems to be more important in facilitating economic activity where formal substitutes are unavailable. This finding suggests that where interpersonal trust is low and unlikely to improve rapidly, institutional reforms providing better formal mechanisms for the reliable enforcement of contracts and access to credit are even more important than where trust is higher.

Promoting horizontal associations through encouraging the formation of and participation in groups may be counterproductive, according to our findings. Group memberships are not directly related to economic performance, and are unrelated to trust. On the positive side, secondary education is shown here to be associated with trust, although determining causality is problematic. Reforms in this area, already strongly supported by international agencies and donors for other reasons, may improve

42. Moreover, survey evidence indicates that membership in groups has been fairly stable in recent years in the United States. Putnam's "decline" results from adjusting for the rise in education levels over time, which he justifies on the basis of a positive cross-sectional relationship between years of education and group memberships.

DATA APPENDIX

| Country | Trust | Civic | Groups | O-groups | P-groups | Confidence in government | Ethnic homogeneity |
|--------------|-------|-------|--------|----------|----------|-----------------------------|-----------------------|
| Norway | 61.2 | 40.75 | 1.09 | 0.24 | 0.63 | 0.72 | 98 |
| Finland | 57.2 | 40.64 | 0.40 | 0.06 | 0.29 | 0.66 | 90 |
| Sweden | 57.1 | 41.57 | 1.08 | 0.27 | 0.64 | 0.65 | 88 |
| Denmark | 56.0 | 40.34 | 0.97 | 0.24 | 0.61 | 0.76 | 95 |
| Canada | 49.6 | 39.74 | 1.03 | 0.52 | 0.29 | 0.70 | 70 |
| Australia | 47.8 | 38.27 | 1.01 | 0.45 | 0.35 | 0.64 | 98 |
| Netherlands | 46.2 | 38.36 | 1.11 | 0.53 | 0.25 | 0.63 | 99 |
| U. S. | 45.4 | 40.55 | 1.50 | 0.83 | 0.42 | 0.61 | 81 |
| U. K. | 44.4 | 40.07 | 0.92 | 0.38 | 0.36 | 0.54 | 82 |
| Switzerland | 43.2 | 40.89 | 0.73 | 0.22 | 0.29 | 0.73 | 72 |
| Iceland | 41.6 | 41.07 | 1.70 | 0.63 | 0.76 | 0.46 | 100 |
| Japan | 40.8 | 41.79 | 0.38 | 0.14 | 0.21 | 0.73 | 99 |
| Ireland | 40.2 | 37.51 | 0.85 | 0.48 | 0.24 | 0.73 | 94 |
| Korea, South | 38.0 | 39.64 | 0.47 | 0.31 | 0.12 | 0.61 | 100 |
| Spain | 34.5 | 38.75 | 0.45 | 0.23 | 0.14 | 0.55 | 75 |
| India | 34.3 | 42.65 | 0.76 | 0.26 | 0.37 | 0.67 | 72 |
| Austria | 31.8 | 41.45 | 0.84 | 0.52 | 0.16 | 0.60 | 99 |
| South Africa | 30.5 | 36.99 | 0.56 | 0.26 | 0.20 | 0.70 | 73 |
| Belgium | 30.2 | 38.08 | 0.74 | 0.22 | 0.35 | 0.60 | 57 |
| Germany | 29.8 | 39.83 | 0.47 | 0.19 | 0.21 | 0.54 | 99 |
| Argentina | 27.0 | 39.50 | 0.38 | 0.12 | 0.20 | 0.28 | 91 |
| Italy | 26.3 | 41.23 | 0.42 | 0.16 | 0.18 | 0.44 | 99 |
| France | 24.8 | 36.26 | 0.59 | 0.33 | 0.14 | 0.62 | 94 |
| Nigeria | 22.9 | 39.19 | 0.43 | 0.21 | 0.14 | 0.73 | 32 |
| Chile | 22.7 | 36.80 | 0.57 | 0.28 | 0.14 | 0.64 | 78 |
| Portugal | 21.4 | 36.89 | 0.68 | 0.31 | 0.16 | 0.45 | 99 |
| Mexico | 17.7 | 34.55 | 0.57 | 0.28 | 0.14 | 0.53 | 58 |
| Turkey | 10.0 | 42.43 | 0.45 | 0.21 | 0.14 | 0.61 | 82 |
| Brazil | 6.7 | 37.58 | 0.68 | 0.31 | 0.16 | 0.55 | 88 |

economic performance through increasing interpersonal trust. Our findings also reinforce the case for reducing income disparities in developing countries. These policies—often advocated on other grounds—have not proved easy to implement, however. The building of social capital has been broached as a significant new road to development. Our results suggest that this road is no less difficult than the more heavily traveled ones.

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