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SOCIAL CAPITAL AND INCOME GENERATION IN SOUTH AFRICA, 1993–98

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ABSTRACT

The goal of this paper is to determine the nature of the causal relationship between "social capital," as measured by household membership in formal and informal groups and household welfare in South Africa. Using a recently collected panel data set in South Africa's largest province, we estimate per capita expenditure functions and find a positive and significant impact of household-level social capital. For example, after controlling for fixed effects, social capital has no impact on per capita expenditure in 1993 but positive and significant effects in 1998. We interpret this as reflecting structural changes in the South African economy as it removes the many restrictions that underlay apartheid.

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1. INTRODUCTION

The goal of this paper is to determine the nature of the causal relationship, if any, between membership in formal and informal groups and household welfare in South Africa. In economics literature, the extent of household membership in various groups has been used to proxy the household s stock of social capital. While the concept of social capital is relatively new to economists, it is well grounded in sociology literature (see Coleman 1988 for a review) as is the notion that social structure conditions economic growth (Granovetter 1985). The entry point for many economists is Putnam's (1993) book on Italian regional economic performance and his research in the United States. "Social capital refers to features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit" (Putnam 1995, 67).

Two recent studies (Narayan and Pritchett 1997; Grootaert 1998) have collected survey information on household membership in groups and used it to determine the impact of various dimensions of this membership on household welfare. Both studies found large, positive, and significant impacts of group membership on household welfare. This paper begins by replicating the main methods used by these two studies and then extends the analysis, assessing the impact of social capital over time. This is possible because we use a panel data set from Kwazulu-Natal, the most populated of South

Africa s nine provinces. A key advantage is that the panel data set allows us to control for unobserved time-invariant factors at the household and community levels.

Consistent with the above mentioned studies, we find a positive and significant impact of social capital, as measured by characteristics of group membership, on per capita total expenditure. However, this impact differs over time and is somewhat decreased when one controls for household and community fixed effects. For example, after controlling for fixed effects, social capital has no impact on per capita expenditure in 1993, but positive and significant effects in 1998. We interpret this as reflecting structural changes in the South African economy over the recent period. Also, in contrast to the earlier studies, we find the effects of social capital, while large, are generally smaller than the effects of education.

Section 2 provides a brief review of the rapidly burgeoning literature on social capital, with a special reference to South Africa. The section summarizes the definitions of social capital used in empirical work, the pathways by which social capital is hypothesized to affect household welfare, and some of the previous empirical results. Section 3 describes the data used in this study. Section 4 explores the extent of attrition bias in the data, describes the changes in welfare and group membership between 1993 and 1998, and outlines the construction of the social capital indicator we use. Section 5 presents the estimation results that attempt to explain per capita total expenditure with our proxy for social capital, conditional on a number of other factors, including human capital. First, we consider ordinary least squares regressions separately for the 1993 and

1998 cross sections. Second, we pool the two cross-sections, control for household (and therefore community) fixed effects, and test for structural shifts in the relationship between the two periods. After presenting some instrumental variables estimates to control for endogeneity a major concern for our measure of social capital we explore the impact of initial 1993 levels of social. Section 6 concludes the paper and presents a discussion of improvements that need to be made in future work.

2. SOCIAL CAPITAL AND SOUTH AFRICA

The identification of the determinants of persistent poverty and inequality, and the introduction of policies to address this persistence have been identified as priorities by the first democratically elected government of South Africa (May et al. 1998b). To achieve this, the government committed itself to an agenda of social, political and economic transformation through its Reconstruction and Development Programme (RDP), while simultaneously reducing state expenditure and introducing measures to liberalize the economy (ANC 1994; South Africa MoF 1997). An important component of South African antipoverty policy focuses on the provision and accumulation of a wide range of assets to those previously disadvantaged by apartheid, along with reforms intended to provide opportunities to use these assets. How important an asset is social capital in helping households increase their welfare and how might it work?

The three main empirical economics papers on social capital (Narayan and Pritchett 1997; Knack and Keefer 1997; Grootaert 1998) posit similar mechanisms by which social capital is hypothesized to affect household welfare. They borrow primarily from the work of Coleman (1988), Putnam (1995), and Fukuyama (1995). The hypothesized mechanisms by which group membership affects household welfare can be summarized as (1) reductions in the costs of transactions by improving information flows about new opportunities and potential shocks, improving the diffusion of innovations, and improving knowledge about the comparative performance of local government agents, (2) the promotion of consultative decisionmaking as well as collective action that minimizes negative externalities and promotes the production of public goods, and (3) the fostering of time-sensitive exchanges for mutual benefit by developing norms of civic behavior, trust, and reputation dissemination. Moreover, the completion of some of these time-sensitive exchanges might be triggered by a crisis, allowing social capital to perhaps serve as informal insurance.

Empirically, the household-level studies of Narayan and Pritchett (1997) and Grootaert (1998) from Tanzania and Indonesia, respectively, find that the effect of social capital (as they measure it we will come to this later) on household per capita expenditure is large. Narayan and Pritchett find it is 4-10 times as large as the impact of human capital, while Grootaert finds it is twice as large. For the latter in Indonesia, a 10 percent increase in the measure of social capital is associated with a 1.14 percent increase in per capita total expenditure.

Might we expect social capital to be important for income generation in South Africa in 1993 and 1998? Certainly, the notion of social capital has some resonance with the traditional South African institution of *ubuntu*. *Ubuntu* is a conceptualization of humanness that means, I am because you exist. It is seen as an expression of community life and collective responsibilities and invokes notions of caring for and sharing with each other and has been evoked in support of several post-1994 South African government and nongovernment initiatives such as the "war on poverty" declaration of 1998. However, Maluleke (1996) has shown that *ubuntu* had been severely eroded by the enforcement of the pre-1994 apartheid legislation with the imposition of institutions designed to ensure the political control of African communities.

Moreover, the recorded rates of almost all types of crime rose dramatically in South Africa between 1990 and 1994, with serious crimes increasing by between 18 percent and 42 percent. The incidence of crime is of direct relevance to the accumulation and erosion of social capital (Louw and Shaw 1997; Maluleke 1996). Together with the history of forced resettlement, high levels of migration and extreme poverty, violence completes the undermining of social cohesion in South African communities observed during the 1980s (Sharp and Speigel 1985, 144; Wilson and Ramphele 1989) in 1982. Many communities are divided with little commonality in terms of needs and aspirations, a social context that elsewhere has been described as being bereft of stocks of social capital (Moser and Holland 1997, 41). We might reasonably conclude from these observations that stocks of social capital in 1993 South Africa were low, and when not low, the stocks were

employed for political and physical survival rather than economic advancement. Alternatively, however, repression by the state may have stimulated a self-help ethic at the household and community level.

What about social capital and its impact in 1998? There are several factors that might lead one to expect stocks of social capital to increase. First, the flagship policy of the 1994 government in South Africa, the Reconstruction and Development Programme (RDP), explicitly recognizes the important role to be played by local institutions in the implementation of policy. Noting that the apartheid governments had left a legacy of a fragmented legal and institutional framework lacking the capacity to deliver essential services, the RDP places democratization of the state and society as one of its six basic principles (ANC 1994, 6). In addition to enfranchisement, a bill of rights, and accountability, the RDP stress that "social movements and CBOs (community-based organizations) are a major asset in the effort to democratize and develop our society (ANC 1994, 121). As a result, community involvement in the development process is an important component from the beginning for several key programs (e.g., water supply, land reform, and public works) where communities must initiate their applications for support. Second, we know that the rates of serious crime and politically motivated violence, while still very high post-1994, did decline post-1994 (Louw and Shaw 1997). Finally, the South African Participatory Poverty Assessment (May et al. 1998a) confirms that the theme of isolation or exclusion from social institutions is viewed as an important component and determinant of poverty in contemporary South Africa. In that report, the

poor were often described as being isolated from community-level institutions and unable to participate in community gardens and other self-help initiatives.

On the other hand, it is unlikely social capital can be accumulated overnight. Morris (1992, 95) discussion of the reproduction of social relations in the shantytowns of South Africa is illustrative of the inherited social context of poor communities in South Africa. His analysis shows how settlements may be bound by socioeconomic networks that can be hierarchical, contradictory, and caught up in the broader social and political context. In addition, rapid social, demographic and economic change, as in South Africa over the 1993-98 period, can undermine the basis for trust and reciprocal relationships. This has been argued by some analysts to lead to the erosion of social capital through the possible increased workload of those who traditionally invest in social networks, increased spatial mobility such as migration and urbanization, demographic transitions that result in smaller families, and increased government and market efficiency, which may crowd out or substitute for the provision of goods traditionally provided via social networks (Moser 1997; Woolcock 1998).

Finally, social capital does not necessarily have a positive effect on household income generation; it can also have negative outcomes. Coleman (1988) and others recognize that certain forms of social capital may constrain desired actions such as innovation and a given form of social capital that is valuable in facilitating certain actions may be useless or even harmful for others (Coleman 1990, 598). In particular, economies in transition, or those with high levels of inequality, may be especially prone

to the "dark side of social capital" and may be trapped in a syndrome of distrust, in which cronyism and corruption can flourish (Holland 1998, 67; Beall 1997, 960; Putzel 1997, 945). The mechanism of trust building, based on the assumption of repeated transactions, may fail during transitions where large rents may be captured in first moves that are not dependent on reciprocal actions (Humphrey and Schmitz 1996, 20). In addition, Fine (1999) warns against the catch-all view of social capital. The embrace of an imprecise discussion of social capital may make it easier for governments to be less rather than more accountable. Premature arguments about the crowding out of social capital by government interventions, it is argued, might make it too easy for governments to avoid a legitimate role in public action against poverty.

3. THE KWAZULU-NATAL INCOME DYNAMICS DATA SET

The first South African national household survey, the Project for Statistics on Living Standards and Development, (PSLSD), was undertaken in the last half of 1993 by a consortium of South African survey groups and universities under the leadership of the Southern Africa Labour and Development Research Unit (SALDRU) at the University of Cape Town with financial and technical support from the World Bank (PSLSD 1994).

Households in KwaZulu-Natal Province, on the east coast, were resurveyed from March to June 1998.[1] Formed by combining the former Zulu homeland and the former

[1] The 1998 resurvey was directed by a consortium including the University of Natal, the University of Wisconsin, and the International Food Policy Research Institute. The choice of KwaZulu-Natal was in part the

Natal Province, KwaZulu-Natal is now South Africa's largest province containing one-fifth of a population of approximately 40 million. Though not the poorest province, it is relatively poor despite being relatively urban (35 percent). It is ethnically diverse: 76 percent are African[2]; 14 percent, Indian; 7 percent, white; and 3 percent, colored. During the mid-1980s and again in the early 1990s, there was substantial political unrest and violence in KwaZulu-Natal. This last feature makes KwaZulu-Natal an especially interesting place to study social capital, as it may have been somewhat eroded by the violence and unrest during the period (Moser 1998).

In 1993, the Kwazulu-Natal sample was representative at the province level, conditional on the accuracy of the 1991 census used as the sampling frame, and contained 1,558 households. It was decided not to resurvey white and colored households in 1998. While there were advantages to retaining these groups, namely the maintenance of overall sample size and the political cover provided by sampling all ethnic groups in the province, the sample size of these two sets of households was small (112 white and 53 colored), precluding comparative ethnic analyses. Moreover, due to the general lack of

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result of practical considerations including a confluence of research interests, resources, and the feasibility of locating the households interviewed in 1993. The survey is called the KwaZulu-Natal Income Dynamics Study or KIDS.

[2] "African" here excludes the "colored" and Indian (or Asian) populations.

spatial integration of the population, the households in these groups were entirely located in a small number of clusters, which appear to be nonrepresentative at the ethnic group level. The sample, then, includes Africans and Indians in both rural and urban areas of KwaZulu-Natal Province.

To ensure comparability, the 1998 household questionnaire largely followed the 1993 version, an integrated household survey similar in design to a World Bank Living Standards Measurement Survey (LSMS), though there were some important changes. One of these was a greater focus on the individual, especially in terms of ownership of assets and control over their use. A second underlying change was an expanded emphasis on the set of individuals not living in the household but economically linked to it. Four new sections were added, gathering information on economic shocks (both positive and negative), assets brought to marriage, household decisionmaking, and group memberships.

The 1998 questionnaire lists nearly 20 different types of groups or associations identified through pretesting. These fall into several general categories, including financial (e.g., saving clubs, burial societies), production (e.g., farmers, informal trader's), sports and music, community service committees (school, water, development), religious, and political organizations.[3] Households indicated whether any individual was a member of each type of group in 1998 and/or had been a member of the group five years earlier, in

[3] Given the sensitive nature of politics in KwaZulu-Natal, questions regarding political organizations were kept rather general to avoid jeopardizing the interview. These groups appear to be underreported in the data.

1993; the identity of all members was recorded. (Below we assess the accuracy of the 1993 retrospective information.) For (up to four of) the groups the household deemed most important, additional information about their characteristics was collected. These included questions on different types of fees, the gender composition of the group, performance of the group, and the frequency of meeting attendance.

To the extent possible, analogues to the household-level questions were asked in 69 community-level surveys, which were completed by interviewing a group of key informants in the community. For each of the general categories (e.g., financial, religious, etc.), the number of groups serving the community in 1993 and 1998 was asked. For a subset of these deemed the most important in the community, information about the group characteristics (e.g., gender composition) was collected.

4. DESCRIPTIVE RESULTS

This section describes (1) attempts to explore attrition bias between the 1993-98 rounds, (2) the changes in welfare and group membership between 1993 and 1998 and their associations, (3) the quality of the group membership recall data for 1993, and (4) the construction of the social capital index and its association with levels and changes in per capita total expenditure.

Attrition Bias

A prior question for any analysis using panel data, and particularly important in a study examining the dynamics of poverty, is the extent and nature of sample attrition. The 1993 (and thus 1998 target) sample included 1,389 households[4] (215 Indian, 1,174 African), and 1,178 were successfully reinterviewed in 1998 (168 Indian, 1,010 African) or 85 percent. This completion rate includes 5 percent who moved but were successfully tracked to their new residences and reinterviewed. Of course, appealing to a relatively low *level* of attrition is not sufficient in order to claim that analysis on the balanced panel is not distorted by attrition; one must examine the processes underlying it (Fitzgerald, Gottschalk, and Moffit 1998).

Maluccio, Thomas, and Haddad (1999) present a detailed examination of attrition in these data. Larger households were more likely to be reinterviewed but there is little association with 1993 per capita expenditures. An important factor determining whether

[4] Households are defined using the 1993 PLSLD survey definition. A household member is someone who (1) lived in the surveyed dwelling 15 days out of the preceding year and (2) shared food from a common source during their residence and (3) contributed to or shared from a common resource pool during their residence. A further distinction was made in the survey for *resident* household members as those who had lived in the dwelling for at least 15 days out of the preceding 30 days. Measures in this research are based on this latter definition resident household members. All members in four households died over the period so they are excluded from the analysis.

households were reinterviewed is the quality of enumeration in 1993, a characteristic unlikely to bias any subsequent estimates that rely on the 1998 households and individuals. While it is not possible to definitively rule out selection bias due to attrition, we interpret this evidence to suggest such bias is likely to be small.

Changes in Welfare and Group Membership for the Panel Households 1993-98

Over the last five years, while GNP growth in South Africa averaged about 2 percent, it turned negative in 1998. Unemployment has steadily increased over the same period and the most recent estimates indicate that in 1997 nearly one-fourth of the work force was seeking employment (Klasen and Woolard 1999). Under this background, the dramatic changes during this period have been accompanied by changes in household per capita expenditures. We begin a description of these changes comparing the density functions of real logarithmic per capita expenditures in 1993 and 1998.[5] Figure 1 shows a slight flattening of the density over the period suggesting marginally increased inequality.

A primary advantage of panel data, however, is the capacity to describe changes over time for the same households, something the density functions in Figure 1 ignore. Comparison of per capita expenditure levels in the two survey years for the same

[5] These comparisons are made using total monthly expenditures measured in 1993 Rand divided by the number of resident household members. The deflation factor for the 1998 survey is 1.372 based on the South African consumer price index. There are few differences between this approach and one using community-level Laspeyres price indices calculated from price data collected in the community survey.

households indicates that there were both winners and losers. For example, using these same data, Carter (1999) finds that for the sample restricted to only those interviewed in both periods, headcount poverty rates appear to have increased over the period but fully one-third longer so in 1998. There appears to be significant movement both in and out of poverty.

Figure 1 Density functions of real logarithmic per capita expenditures in 1993 and 1998

Table 1 presents the 1993–1998 transition matrix for per capita expenditure quintiles. In addition to confirming that there is a great deal of movement within the distribution, it reveals that no group is immune to these changes, although households in the lowest and highest quintiles are less likely to have changed category. Nearly two-thirds of the households in the lowest quintile in 1993 had moved up in the distribution by 1998. For the three middle quintiles, fully three-fourths of the households have transited to a different quintile.

Table 2 presents some basic information on group membership at the household level. This measure was constructed by treating the membership of any individual or individuals in the same group as a single group membership for the household as a whole.

As in the other studies cited above, this implicitly assumes that having more than one member in a group does not increase social capital. In terms of networks, it suggests that any household member belonging to the group opens up that group's network and additional members do not extend it further. The data indicate that households in South Africa are increasingly joining groups. On average, each household was a member of 0.8 groups in 1993 and this increases by 70 percent to 1.3 in 1998. The types of groups vary but two predominate. These are financial groups, which include *stokvels* or savings clubs and burial societies that provide insurance for funeral costs, and religious organizations. Increases in membership rates are not limited to these groups, however, and in terms of growth, membership in the groups with far smaller absolute percentages is substantial.

The Quality of the Group Membership Recall Data for 1993

The finding that group membership increases, and much of the analysis below, relies critically on the validity of the retrospective information collected in the 1998 survey about 1993. A number of factors suggest that these measures are valid. This does not mean, however, that they are measured without random error, something we will address further in the empirical work.

When long(er) term recall is required,[6] its accuracy is enhanced if the information is related to some salient event in the respondent's life, for example, one's wedding. In

[6] Of course, one of the benefits of collecting panel data is to avoid the need to ask difficult retrospective questions. Nonetheless it is usually necessary to have some longer-term recall and can often be useful, e.g., for validation and assessment of measurement error.

South Africa, it seems likely that one of the most important events in recent (and not so recent) history was the 1994 national democratic election bringing the African National Congress (ANC) and President Nelson Mandela into power. Since the 1993 survey was undertaken about six months prior to these elections, interviewers were carefully trained to introduce retrospective questions relating to 1993 with a phrase such as "just before the first democratic national elections." Therefore, a priori, the retrospective data are likely to be of good quality.

We present three types of empirical evidence that address the question of reliability of the recall data: (1) a comparison of the independently collected community-level data with the household level data, (2) an examination of the timing of joining groups, and (3) an assessment of the apparent reliability of other information in the questionnaire.

Comparison of Independently Collected Community-Level Data with Household-Level Data

Collected in key informant group interviews ranging from 2 to 11 participants in size, the community-level surveys provide recall data for 1993 that is independent of the household questionnaire. On the whole, the community-level information is consistent with the picture presented in the household-level data. The number of groups, or "supply," serving a community increases nearly 40 percent (from 12.9 to 17.5 on average). Further, in no cases do households report belonging to more groups than were identified in the community survey.

Using the community-level data as a check on the household-level data assumes, of course, that the former is "correct." But it is possible that both sources of data are subject to similar retrospective biases. What sorts of factors might influence the accuracy of responses and in particular, recall in the community survey?

One possibility is that the number of respondents in the group interview could be important; presumably the more respondents, the greater recall. Other factors that might influence recall include the age, gender, and education composition of the key informants. To explore these possibilities, we regress the total number of groups reported in a community in 1993 (and in a separate regression 1998) on these basic characteristics of the key informants (size of group, average education, average age, and the proportion of women) and find no statistically significant relationships. Interviews with more key informants did not tend to report more groups in a community, in either year. In addition, we implement the same specification but with the change in groups between 1993 and 1998 and find no significant influences. Therefore, if the retrospective data are biased, it is in a fashion unrelated to the size and composition of the key informant group. We interpret this to mean that they are a reasonable check for the household data.

Notice that it is not possible to do a similar analysis at the household level because there we might expect age, education, gender, etc., to influence *being* in a group (and not just reporting being in a group).

Examination of the Timing of Joining Groups

A second check on the household-level recall data is to look at the pattern of joining groups. For the self-reported, most important group memberships in 1998, the median time an individual was a member is 6 years. Group membership appears to be rather long-term, consistent with an observed low risk of exit. Entry rates over time do not exhibit bunching, with roughly equal percentages entering in each of the five years before 1998 and fewer entries prior to that. Again, while we do not know the true entry rates, the fact that entry is spread out somewhat evenly over the past decade and that there is little telescoping of the entry rates suggests that the data are reliable.

Assessment of Apparent Reliability of Other Information

A final piece of evidence to assess the reliability of retrospective data is to examine how well time invariant variables were measured in the two surveys. There are a few (relatively) time invariant variables for which a direct comparison of information collected in 1993 and 1998 can be made; these include education for adults who have completed schooling and familial relationships within the household. Under the assumption of random measurement error, the correlation coefficient between the 1993 and 1998 values for these variables is a measure of the reliability ratio.[7] Even if we were

[7] Formally, the reliability ratio with *x* representing the true variable and v the (random) measurement error is $ó_x^2 / (ó_x^2 + ó^2_v)$.

not using retrospective data, it would be important to examine these correlations because of the well-known problems for estimation using panel data with measurement error.

Mean completed education for resident adults age 30 and over in 1993 changes very little between the surveys and the reliability ratio is 0.79. Consistent identification of one's parents suggests much higher reliability ratios, however, of 0.99 for mothers and 0.95 for fathers. These latter figures may be partly inflated, since interviewers were given basic relationship information linking each individual in the household to the household head some of these would be direct children of the head, possibly reducing error in the reinterview (conditional on the correctness of the 1993 information). Clearly there is measurement error in any survey, and as suggested above, it varies by the type of information collected. On balance, while there is evidence to suggest that the retrospective group membership information is not measured with any systematic bias, we do not expect it to be measured without random error; for example, it is unlikely to be better measured than years of education.

Constructing an Index of Social Capital

Above we described some of the changes in per capita expenditure over time and some features of group membership in the data. Are there apparent relationships between the two? To begin to assess this, we present some aspects of the bivariate relationship between log per capita expenditures and an index of social capital.

In constructing a proxy measure for social capital we follow Narayan and Pritchett (1997) and Grootaert (1998) and derive a measure based on the characteristics of group membership at the household level. While there are weaknesses to this approach, and indeed the data allow further refinements, which will be explored in future research (see Section 6), it has the merit of being more directly comparable to the existing literature.

Specifically, the index of social capital is constructed in order to mimic that used by Narayan and Pritchett (1997) to the extent possible with these data.[8] It includes three components: *density* the number of group memberships; *gender heterogeneity* the percentage of most important groups that are mixed gender; and *performance* the average reported performance of the most important groups. The third component is the response to the question, "Overall, how well do you think the group works?" asked both in 1993 and 1998 and coded on a five-point scale with higher scores representing better performance. This indicator is rescaled into five categories, assuming it is uniformly distributed between 0 and 100.

As with Narayan and Pritchett (1997), we assume social capital increases with higher density, gender heterogeneity, and performance. The index is computed by multiplying the three components and then rescaling it to lie between 0 and 100; it is

[8] Grootaert also includes measures of meeting attendance, fees, democratic participation, and whether the group was founded by the community in his index of social capital. Unfortunately, the latter two measures are not available in these data.

identical to the sum of equally weighted sub-indices of the characteristics for each group. Since the scaling is arbitrary, we do not discuss the distribution of the index other than to note that in 1993 nearly 50 percent of the sample scored zero (because they were not members of any groups) but this declines to about 30 percent in 1998.

In Table 3, we begin to explore the relationship between our index of social capital and per capita expenditures. Using the format and observations from the transition matrix presented in Table 1, each cell contains the average of the 1993 social capital index for observations in that cell. Reading from the right-hand-side total column, it appears that the 1993 social capital index is, if anything, negatively related to per capita expenditures in 1993. In 1998, there does not seem to be any relationship between the two (bottom row). Examining the body of the table, however, suggests that initial 1993 levels of social capital are higher for the upwardly mobile, i.e., those who improved their position in the overall distribution. In sum, while social capital, as proxied by this measure of group membership and characteristics, does not appear to be positively associated with contemporaneous income, initial 1993 levels are associated with *changes* in expenditures. In the analysis, then, we will consider both of these sorts of effects to the extent possible.

5. MULTIVARIATE RESULTS

We begin with a replication of earlier work that estimates "standard" expenditure functions augmented by the inclusion of measures of social capital in the cross section.

The base controls include indicators for location, race, household size, gender of the head, and age of the head. Also included are household-level and community average social capital indices. These separate regressions, one for 1993 and one for 1998, are shown in Table 4. T-statistics are based on robust standard error estimates allowing for clustering at the community level (Stata Manual 1997).

The results for both years conform to the typical findings in the literature. Urban households, households with male heads, households with older heads, and more educated households all have higher per capita expenditures. Larger households have lower per capita expenditures. Conditional on these characteristics including education and location, African households still have lower expenditures per capita, reflecting, in part, the legacy of apartheid. With the exception of an indicator for those who lived in the former province of Natal and the "return" to education, the coefficients are remarkably similar across the two time periods.

Household and community measures of social capital are individually and jointly insignificant in 1993. In 1998, however, both are positive and significant. To help interpret the effects, we calculate the point elasticities. For example, a 10 percent increase in either the household level or the community social capital index is associated with a 1.2 percent increase in per capita expenditures. For comparison, a similar increase in average education levels has an effect four times as large. This contrasts with Narayan and Pritchett (1997) and Grootaert (1998) who both find the effect of social capital to be larger than that of human capital in similar specifications.

Have the dramatic changes in South Africa led to an increase in the value of social capital or are these results simply reflective of measurement error in our retrospective data? Above we discussed in detail why we believe the retrospective information on social capital to be reliable. Furthermore, the standard errors for the coefficients on household-level social capital in 1993 and 1998 are the same, suggesting that the estimates are not dramatically noisier in 1993.

Instrumental variables estimation provides another possible way in which to evaluate the effect of measurement error on the estimated coefficients. Plausible instruments for individual-level social capital are characteristics of local groups collected in the community survey. For example, the number of groups, or supply, might be expected to influence membership, reflecting more opportunities to join similar to a price effect. Of course, the key question is whether these characteristics have a direct influence on per capita expenditures, beside that which operates through household-level social capital, or are correlated with something that does and is not included in the regression. In the 1998 cross section, since community-level social capital appears to be significant, this assumption would be inappropriate. For 1993, it also turns out to be invalid. Although the community variables do not apparently belong in the main equation, an overidentification test of the joint hypothesis that the underlying model is correctly specified and the instruments are valid, fails (Davidson and MacKinnon 1993). We therefore are unable to instrument for household-level social capital in either cross section.

Given the apparent changes in coefficients on education and social capital between the two years, it may not be appropriate to estimate a standard fixed-effects model that assumes time invariant parameters. Therefore we estimate a household fixed-effects model that allows time varying parameters and tests whether there have been any structural changes. If the parameter estimates do not differ significantly over time, we can then consider the more efficient standard fixed-effects model. Table 4 presents the estimation results of the following specification:

$$y_{it} = X_{it}\,\beta_{93} + d_{98} + d_{98}\,X_{it}\,\beta_{\Delta 98} + (\alpha_i + \varepsilon_{it}) \ ,$$

where X_{it} contains the set of controls (excluding the constant) used in Table 4, d_{98} is a dummy variable that is 0 in 1993 and 1 in 1998, and α_i is an unobserved household-level fixed effect.[9] The interpretation is that $\hat{a}_{93}$ represents the effect of variables in 1993, while $\hat{a}_{93} + \hat{a}_{\Delta 98}$ represent the effect in 1998.

The top panel of Table 5 presents the estimates of $\hat{a}_{93}$ and the bottom panel, below the heading "Interacted with 1998," estimates of $\hat{a}_{\Delta}$. The first finding is that after controlling for household-level fixed effects, the estimated effects of gender and the age quadratic of the household head are no longer significant, in part because they change

[9] Random effects estimation was also considered but rejected on the basis of a Hausman test.

little over time. Household size remains negatively significant, is similar in magnitude to estimates from the cross sections, and does not vary over time. Average adult education no longer has a significant impact in 1993, although it is positive and significant in 1998. As the South African economy has opened up and the various restrictions on property rights, labor, and capital markets have been lifted, it appears that returns to education are rising. Turned around, in 1993, when the economy was less open, education was not associated with per capita expenditures, at least for the African and Indian populations.

Household-level social capital remains insignificant in 1993 and significant in 1998, although its estimated effect has declined by 25 percent relative to the 1998 cross-sectional estimate. Community-level social capital remains insignificant in 1993 and is now no longer significant in 1998. Once again, comparing the impact of a 10 percent change in 1998 household social capital or education on per capita expenditures, it is 0.9 percent and 2.7 percent respectively.

An important concern in this analysis is that the measure of household-level social capital, based on group membership, is likely to be endogenous to per capita expenditures. While it may be that joining groups has a positive impact on one's income, it is also possible that some groups are akin to consumption goods and thus having more income leads one to join more groups. In other words, it may be that the underlying structural model is such that per capita expenditures and group membership are simultaneously determined. In terms of the specification used above, what makes social capital endogenous is its potential correlation with the unobserved error term, $(\acute{a}_i + \mathring{a}_t)$.

One innovation in this paper, possible with the panel data, is that we control for fixed effects, avoiding biases due to unobserved time invariant heterogeneity ($\acute{a}_i$), one form of (statistical) endogeneity. Indeed, when we do, the coefficient on social capital decreases, consistent with there having been a positive bias. Having removed the potential correlation between social capital and $\acute{a}_i$, there still may remain correlation with $\mathring{a}_t$ within periods. Our hypothesis is that the correlation, if it exists, is positive, leading to upward bias in the coefficient estimates. Therefore, since the estimates of the effect of household and community social capital in 1993 and community-level social capital in 1998 are insignificant (and have small point coefficients), we doubt these are as contaminated by endogeneity. Controlling for individual- (and thus community-) level fixed effects, then, the 1993 individual and community and 1998 community-level variables may now be valid instruments for 1998 individual-level social capital. We exploit this to assess the impact of endogeneity of household-level social capital in 1998.

First, we reestimate the specification from Table 5, excluding the three insignificant social capital variables (household and community social capital levels, community social capital interacted with the 1998 dummy variable) and retaining only the interaction of year 1998 and household social capital. Excluding these (insignificant) variables leaves the other results unchanged (results not shown). We then instrument for 1998 social capital, using four instruments: (1) lagged 1993 household-level social capital, (2) (3) (4) interactions of average education, head age, and head age squared with the total number of groups in the community, measured in the community questionnaire.

Finally, to ensure that the instruments are not picking up community-level effects, we also include cluster dummy variables in each of the 69 clusters (in other words, interactions of year and cluster).

The first-stage regressions indicate that all the instruments are very strong predictors of household-level social capital, particularly lagged social capital (not shown). An overidentification test fails to reject the joint hypothesis that the underlying model is correctly specified and the instruments are valid with a p-value of 0.41 (Davidson and MacKinnon 1993).[10] The results of the two-stage least squares estimation are presented in Table 6.

The negative effects of household size remain strong in 1993 and are now somewhat larger compared with those in Table 5. The impact of education has declined but remains significant if only for 1998. Focusing on the household social capital index in 1998, it remains significant and the point estimate is nearly identical to that in Table 5. As before, a 10 percent increase in the index suggests an increase of 1 percent in per capita expenditures, about one-half the effect of education for this specification.

[10] Excluding lagged social capital from the instrument set increases the estimated effect of social capital, further reducing concern that it is an invalid instrument, but also substantially decreases the precision of the estimates and social capital is no longer significant. Estimates without instrumenting (but still controlling for cluster effects in 1998) are about 10 percent larger than those presented in Table 6.

Above we have shown that the effect of household-level social capital on per capita expenditures is robust to a suite of controls for household fixed effects, community fixed and time varying effects, and contemporaneous correlation with the error term in the expenditure function. It is less clear whether there is a similar impact at the community level, perhaps driven by spillover effects. The evidence in Table 5 suggested that community-level effects are not present but given the difficulties of instrumenting for both household- and community-level social capital, we are unable to further evaluate that claim.

Recasting the Model: What Else Can We Learn?

With only two periods, the fixed effects model with time varying parameters estimated in Table 5 can be recast into a first differences model. (Recent research following this line include Glewwe and Hall 1998, and Grootaert, Kanbur, and Oh 1997.) Since the models are linear, estimation in either form yields identical results. While on one level this is simply a mathematical result, it offers an alternative interpretation examining the *changes* in per capita income over the period. In particular, if we change the time interaction to 1993, thus using d_{93} instead of d_{98} in equation (1) and subtract each household observation for 1993 from the corresponding observation in 1998, we get the following:

$$\Delta y_i = \Delta X_i \beta_{98} - d_{93} - X_{i93} \beta_{\Delta 93} + \Delta \varepsilon_i \ ,$$

where Ä represents first differences over time (except when a subscript for â). Ignoring the constant and error terms, this is an approximate decomposition of the changes in *y* into one part due to changes in *X* and another due to changes in the parameters ($-\hat{a}_{Ä93}$).[11] If, as we have found, social capital is valuable in 1998, one can think of this value as being due in part to changes in the stock of social capital, Ä*X* (provided it can be accumulated), and in part to the initial 1993 stock that is "revalued" in 1998. Even if there were no change in social capital over the period, it would yield benefits due to the structural change. Essentially, the changing environment has provided the opportunity for initial levels of social capital to matter.

Since the models are identical, we present only the education and social capital coefficients from the specification presented in Table 5 to illustrate this interpretation.

	$\hat{a}_{98}$ (s.e.)	$-\hat{a}_{Ä93}$ (s.e.)
Household Social Capital Index	0.0050 (0.0017)***	0.0046 (0.001)***
Average education	0.0424 (0.0100)***	0.0516 (0.010)***

The structural changes in South Africa have led to increased "returns" for both social and human capital. In 1993 these had no apparent return ($\hat{a}_{98} + \hat{a}_{Ä93}$), but in 1998 they have a large and significant return ($\hat{a}_{98}$). This does not mean, however, that initial

[11] This does not, however, give us any insight into dynamics or the effect of initial values on changes per se. This should not be surprising, since the model only allows for contemporaneous effects of *X* on *y*.

levels are of no use; the changes in structure have made them useful. To the extent that we can think of this as a capital accumulation process, then, we can argue that initial levels matter the changing environment has effectively made them valuable.

6. DISCUSSION AND CONCLUSIONS

South Africa is an economy in transition as it undergoes the economic, political, and social changes effected by the transition to democratic governance and the accompanying liberalization of its economy. The opening of new opportunities, in part due to lifting of the various legal restrictions on labor and capital markets, property rights, and residential location that underlay the policy of apartheid, suggests that there will be structural shifts in the economy and, as a result, changes in the returns to various factors of production. This paper, using a panel of household-level data, begins to explore some of these shifts in South Africa's largest province.

Estimating household-level per capita expenditure functions, with the spotlight focused on an indicator of social capital, we find that there have been substantial changes over the period. Whereas education and social capital had no apparent return for households in 1993, they do yield substantial returns in 1998. In conjunction with the increased mobility documented in Maluccio, Thomas, and Haddad (1999), these findings are consistent with changes leading to a more efficient economy. The effect of household-level social capital is significant, but substantially smaller than that of education in most of the specifications.

The aim of this paper was to determine the causal relationship between membership in formal and informal groups and household welfare as proxied by expenditures. The formulation of an index of group membership, which we refer to as social capital, was deliberately inclusive and did not distinguish by group function, characteristics of groups, length of group membership, or who in the household is a member. To some extent this is a weakness in the analysis, particularly if one is interested in evaluating possible policy responses. Grootaert (1998) begins an effort to do this by separating groups by function and separating out the various characteristics and finds evidence that different characteristics do matter for different groups. Since membership is known at the individual level in the KwaZulu-Natal data, an additional possibility is to disaggregate the effects of social capital by gender. While this represents one direction for future research, it must be balanced with the need to endogenize social capital where possible, limiting to a large extent how many measures one can include in any single specification.

A second direction of future research involves moving away from the group membership measures of social capital to other possible measures. The KwaZulu-Natal Income Dynamics Study (KIDS) survey attempted to quantify social capital in four ways other than via group membership. First among these is through measures of family networks and their use. For example, it may be that family networks and group memberships are substitutes in the households set of strategies. On the other hand, those with large family networks may be the best at building other (group-based) networks. In

the end this is an empirical question that we think these data can address. The other measures of social capital included measures of trust, civic engagement, and violence.

Lastly, Cross, Mngadi, and Mbhele (1998) report the results of qualitative research in KwaZulu-Natal that found an important role for social capital, particularly in household responses to economic shocks. For example, individuals frequently used their networks to access capital both for consumption smoothing as well as for investment such as the start up of small income generation projects. The 1998 household survey collected information on a variety of shocks that households experienced since the earlier survey and we intend to examine the hypothesis that households with more social capital are better able to absorb these shocks.

TABLES

Table 1 Per capita expenditure quintile transition matrix

1993 Expenditure Quintile (lowest to highest)		1998 Expenditure Quintile (lowest to highest) 1	2	3	4	5	Total
1	N	96	71	40	23	5	235
	row percent	40.9	30.2	17.0	9.8	2.1	100.0
	cell percent	**8.2**	6.0	3.4	2.0	0.4	20.0
2	N	74	60	49	47	6	236
	row percent	31.4	25.4	20.8	19.9	2.5	100.0
	cell percent	6.3	**5.1**	4.2	4.0	0.5	20.0
3	N	40	62	52	57	25	236
	row percent	17.0	26.3	22.0	24.2	10.6	100.0
	cell percent	3.4	5.3	**4.4**	4.8	2.1	20.0
4	N	19	34	64	60	59	236
	row percent	8.1	14.4	27.1	25.4	25.0	100.0
	cell percent	1.6	2.9	5.4	**5.1**	5.0	20.0
5	N	6	9	31	49	140	235
	row percent	2.6	3.8	13.2	20.9	59.6	100.0
	cell percent	0.5	0.8	2.6	4.2	**11.9**	20.0
Total							
	N	235	236	236	236	235	1,178

Table 2 Group membership in 1993 and 1998

	1993		1998		
	Average	Percent in any group	Average	Percent in any group	% Change groups 1993–1998
African households (N = 1,006)	0.81	55%	1.38	74%	70%
Indian households (N = 168)	0.41	35%	0.61	47%	49%
All households (N = 1,178)	0.75	52%	1.27	70%	69%

Types of groups (N = 1,178)	Percentage of households belonging to each type	
	1993	1998
	(percent)	
Financial	28	56
Production	2	4
Service	1	5
Political	2	4
Religious	37	44
Culture/sports	3	8

Table 3 Average social capital index, by log per capita expenditure quintiles

		1998 Expenditure Quintile (lowest to highest)					
1993 Expenditure Quintile (lowest to highest)		1	2	3	4	5	Total
1	SCI	13.6	15.2	11.2	17.6	20.5	14.2
	N	96	71	40	23	5	235
2	SCI	11.3	11.5	14.2	15.5	20.1	13.0
	N	74	60	49	47	6	236
3	SCI	10.1	12.9	16.7	17.0	11.5	14.1
	N	40	62	52	57	25	236
4	SCI	11.2	9.9	14.1	12.7	12.5	12.5
	N	19	34	64	60	59	236
5	SCI	2.9	12.9	12.5	9.7	9.0	9.6
	N	6	9	31	49	140	235
Total	SCI	11.8	12.8	14.0	14.1	10.7	12.7
	N	235	236	236	236	235	1,178

Table 4 Cross-section expenditure functions with social capital

	Dependent variable log per capita expenditure					
	1993 Cross-Section			1998 Cross Section		
	coefficient	s.e.	t-statistic	coefficient	s.e.	t-statistic
Constant	6.3734	0.238 ***	26.8	5.5743	0.273 ***	20.5
Natal	−0.5639	0.154 ***	−3.7	−0.0564	0.073	−0.8
(1) if urban	0.2884	0.119 **	2.4	0.2990	0.080 ***	3.8
(1) if African	−0.9853	0.145 ***	−6.8	−0.9902	0.090 ***	−1.1
Household size	−0.0998	0.009 ***	−11.2	−0.0951	0.007 ***	−14.3
Average education	0.0567	0.010 ***	5.5	0.0884	0.008 ***	10.7
(1) if male head	0.1269	0.043 ***	2.9	0.1056	0.033 ***	3.2
Age of head	0.0050	0.007	0.7	0.0042	0.010	0.4
Age of head squared	0.0000	0.000	−0.4	0.0000	0.000	0.1
Household Social Capital Index	0.0015	0.001	1.3	0.0066	0.001 ***	5.7
Community Social Capital Index	−0.0030	0.005	−0.6	0.0068	0.004 *	1.9
N	1,178			1,178		
R-squared	0.51			0.64		
F-test Social Capital variables	1.3			22.6		
p-value	(0.28)			(0.00)		

Notes: *** = 1 percent, ** = 5 percent, * = 10 percent. Ordinary least squares estimates with robust standard errors allowing for clustering at the community level.

Table 5 Expenditure function with social capital fixed effects and time interactions

	Ordinary Least Squares Estimation Dependent variable log per capita expenditure		
	coefficient	s.e.	t-statistic
Household size	−0.0857	0.017 ***	−5.0
Average education	−0.0092	0.010	−0.9
(1) if male head	0.0987	0.059	1.7
Age of head	0.0166	0.017	0.8
Age of head squared	−0.0002	0.000	−1.0
Household Social Capital Index	0.0004	0.002	0.2
Community Social Capital Index	−0.0032	0.012	−0.3
(1) if Year 1998	−0.5598	0.275 **	−2.0
Interacted with 1998			
Household size	−0.0051	0.010	−0.49
Average education	0.0516	0.010 ***	5.05
(1) if male head	−0.0088	0.047	−0.18
Age of head	0.0032	0.012	0.27
Age of head squared	0.0000	0.000	−0.09
Household Social Capital Index	0.0046	0.001 ***	3.82
Community Social Capital Index	0.0002	0.006	0.03
N = 2,356			
F-test all variables	14.9 (0.00)		
F-test 1998 interactions	6.6 (0.00)		

Notes: *** = 1 percent, ** = 5 percent, * = 10 percent; P-values are in brackets. Robust standard errors allow for clustering at the community level. Regression also includes household-level fixed effects.

Table 6 Expenditure function with social capital fixed effects and time interactions, including community-time interactions

	Two-Stage Least Squares Estimation Dependent variable log per capita expenditure		
	coefficient	s.e.	t-statistic
Household size	−0.0980	0.011 ***	−8.8
Average education	0.0143	0.010	1.4
(1) if male head	0.0386	0.062 *	0.6
Age of head	−0.0018	0.013	−0.1
Age of head squared	−0.0002	0.001	−0.2
Interacted with 1998			
Household size	0.0006	0.009	0.1
Average education	0.0340	0.010 ***	3.6
(1) if male head	0.0214	0.044	0.5
Age of head	0.0083	0.010	0.9
Age of head squared	−0.0001	0.000	−0.6
Household Social Capital Index	0.0043	0.002 **	2.5
N = 2,356			
F-test all variables	135.7 (0.00)		
Overidentification Test	2.9 (0.41)		

Notes: *** = 1 percent, ** = 5 percent, and * = 10 percent; P-values are in brackets. Robust standard errors allow for clustering at the community level. Regression also includes household-level fixed effects and 1998 community-level effects. 1998 Household Social Capital is instrumented using (lagged) 1993 social capital and the total number of groups in the community interacted with average education, age of head, and age of head squared, respectively.

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