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Community capacity and micro-economic development: a study from Peru

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A secondary analysis of survey data collected in 1999 was conducted to explore the associations between community capacity and micro-economic development in 20 communities of Peru's mountain region. Elements of community capacity are human capital, social capital and organisational resources. Indicators of micro-economic development are annual household income in soles (Peruvian currency) and perceptions of changes in income and property. Findings revealed that human capital was the most significant predictor of income. Social capital was a significant predictor of the belief that amount of property had increased but not a significant predictor of the belief that incomes had increased. Participation in a development programme for a year or more was the only significant predictor of all three indicators of micro-economic development.

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Key words: human capital, social capital, organisational resources, perceptions of community capacity, income, micro-economic development

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Introduction

The United Nations, the World Bank and other international organisations have since the early 1960s made concerted efforts to promote socio-economic development in poor countries (Midgley, 1995; Todaro, 1999; World Bank, 2005a). Development efforts have focused on the promotion of economic prosperity and the enhancement of living conditions in countries and regions disproportionately affected by widespread poverty and underdevelopment (World Bank, 2005b). Macro-economic development concerns itself with changing the conditions of countries and/or regions, whereas micro-economic development focuses on the progress and wellbeing of organisations, poor families and local communities. As part of micro-economic development efforts, international development organisations have worked for the accumulation of human and social capital in targeted communities (Preston & Dyer, 2003; Todaro, 1999). This strategy is supported by the current social science literature, which suggests a positive association between human capital, social capital and socio-economic development (Midgley & Livermore, 1998; Preston & Dyer, 2003; Putnam, Leonardi & Nanetti, 1993).

Some researchers, however, may view the previously identified factors as unrelated. Chaskin, Brown, Venkatesh and Vidal (2001) have articulated a theory of community capacity that identifies the concepts of human capital, social capital and organisational resources as indicators of community capacity and as predictors of community wellbeing. They define community capacity as the ability of a given group of people to promote or sustain wellbeing and to accomplish agreed-upon goals. The theory proposes that:

> Community capacity is the interaction of human capital, organisational resources, and social capital existing within a given community that can be leveraged to solve collective problems and improve or maintain the wellbeing of that community. It may operate through informal social processes and/or organised efforts by individuals, organisations, and social networks that exist among them and between them and the larger systems of which the community is a part. (Chaskin, et al., 2001: 7)

This article builds on a study conducted in Peru in 1999 that aimed to test social capital theory among an indigenous population from Peru's mountain region (Díaz, Drumm, Ramírez & Oidjarv, 2002). It attempts

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to explore the propositions of Chaskin's theory of community capacity and in this way shed light on the associations between human capital, social capital, organisational resources and micro-economic development.

Literature review

Adjibolosoo (1993) has written extensively on the concept of the 'human factor', which in his view comprises the concepts of human capital and social capital. His theory, in turn, attempts to explain the relationship between the human factor and economic development. He states that:

> *The human factor* is the spectrum of personality characteristics and other dimensions of human performance that enable social, economic and political institutions to function and remain functional over time. Such dimensions sustain the workings and application of the rule of law, political harmony, a disciplined labour force, just legal systems, respect for human dignity and the sanctity of life, social welfare and so on. As is often the case, no social, economic or political institutions can function effectively without being upheld by a network of committed persons who stand firmly by them. Such persons must strongly believe in and continually affirm the ideals of society. (Adjibolosoo, 1995: 33)

> The economic, political and social development of a nation begins with the human factor, which serves as the solid foundation on which all other programs are built. (Adjibolosoo, 1993: 142)

Human capital theory posits that human capital comprises knowledge and skills individuals may have that make them economically productive (Becker, 1964; Schultz, 1961). The theory proposes that the more education and skills people have, the higher their societal rewards will be. It also asserts that investments in education represent the main strategy for human capital accumulation (Becker, 1964; Schultz, 1961). Many social scientists agree with the previous proposition; however, they emphasise that human capital is increased only by education that enhances the financial productivity of individuals (Little, 2003).

Social and behavioural scientists have built on the abstract definition of human capital in an attempt to operationally define the concept. Smith (1991), Schultz (1961) and Baum and Lake (2003), for instance, identify education as one of the most significant indicators of human capital. Other authors, in turn, have identified the earnings capacity associated with education as an indicator of human capital (Haverman, Bershadker & Schwabish, 2003). Under normal circumstances, a strong association between earnings capacity and actual income would be expected; however, such association might not always exist. Macro-economic problems related to supply and demand might cause highly qualified individuals to be unemployed or underemployed. Furthermore, income cannot be used as an indicator of earnings capacity because that would make income both an independent and a dependent variable. Obviously, income cannot be used as a predictor of itself.

High levels of quality education are considered key to economic development and to the promotion and maintenance of any country's overall wellbeing and competitive edge in the international market place. For this reason, various authors have proposed that countries wishing to develop economically must invest heavily in education (Little, 2003; Preston & Dyer, 2003).

Criticisms of the belief that deliberate investments in education enhance human capital are based partly on the argument that the proposition ignores the role of the individual's motivation in the process of human capital formation. Critics also claim that human capital theory ignores the qualitative aspects of education and the extent to which it supports available technologies (Basdevant, 2004; Coupal, 2004; Little, 2003). Despite these criticisms, the current literature identifies formal education as a good indicator of human capital (Baum & Lake, 2003; Schultz, 1961; Smith, 1991; Todaro, 1999).

Social capital is the second concept explored in this study as a component of community capacity and as a predictor of economic development. The concept makes reference to the size, quality and diversity of networks in a community or society (http://www.humax.net). It was used during the 1970s in the USA in an effort to explain why African-Americans seem unable to escape poverty (Lappé & DuBois, 1997: 119). The concept and the theory make reference to social relationships, ties and human networks (Coleman & Nixson, 1986).

Putnam et al. (1993) conducted a 20-year-long qualitative, quantitative and historical research study in Italy related to civic community and social capital. Study findings strongly suggest that social capital is a strong predictor of economic and institutional performance. Furthermore, the study identified dimensions of social capital, such as the extent to which citizens participate in collective decision making, equality of citizens' rights and responsibilities, solidarity, mutual trust, tolerance and the tendency towards associational life (Putnam et al., 1993).

Bullen and Onyx (1998) embarked on a 3-year-long project to create and validate a scale to measure social capital. Their work led to the identification of eight distinct elements or dimensions of social capital: participation in local community, proactivity in a social

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context, feelings of trust and safety, neighbourhood connections, family and friend connections, tolerance of diversity, value of life and work connections (Bullen & Onyx, 1998; Onyx & Bullen, 1997).

According to Midgley and Livermore (1998), social capital theory is concerned with individuals, social dynamics, social relationships and human networks. The theory proposes that high social capital will improve the effectiveness of human functioning, the quality of social institutions and the economic development of communities (Midgley & Livermore, 1998: 31). Furthermore, the theory presents social capital as a requisite for effective human cooperation, social problem solving, achievement of collective goals, high quality social institutions and economic development (Midgley & Livermore, 1998: 29; Tendler & Freedheim, 1994; Uphoff, 1992; Waddock, 1993; http://www.worldbank.org).

The idea that human capital is a better predictor of economic development than social capital seems implicit in statements from various authors. The World Bank (1994), for instance, has identified the two key engines of Japan's economic growth as private domestic investment and rapidly growing human capital. According to Krueger and Lindahl (2001) and the OECD (2000), each additional year of education has been associated with 5–15 per cent higher income. Furthermore, Harberger (1998) has stated that knowledge and human capital tend to promote growth evenly across the economy.

OECD (2001) also suggests that education or human capital tends to promote economic development even in the absence of high social capital. High social capital would be necessary, however, to elicit other indicators of human and social wellbeing, given that social capital as a concept is concerned with relationships and collectivities. In this article, however, micro-economic development was targeted as the outcome. For this reason, it was hypothesised that human capital will have a greater impact than social capital on economic development.

Organisational resources represent the third major component of community capacity according to Chaskin's theory (Chaskin et al., 2001). The theory proposes that the development of organisational resources and the strengthening of organisations along with leadership and social capital building will help increase community capacity. Such strengthening will occur, however, only if organisations make a concerted effort to promote a sense of community among its residents and if the organisations help develop a strong sense of commitment to the community.

The previously cited theory strongly suggests that we should focus on the resources available to residents of Peru's mountain region as we explore the factors that may contribute to their socio-economic development. For this reason, the following section provides a description of their available as well as needed resources.

The Peruvian context

Residents of Peru's mountain region have, for a long time, been oppressed, discriminated against and excluded from many of the rights and opportunities available to most Peruvians. Furthermore, they have had to overcome challenges associated with their lack of resources.

Socio-economic inequality was already present in Peru during the Inca Empire, which imposed forced labour and extremely high taxes on its subjects. These practices led to poverty and social stratification (Gispert, 1999). The collective wellbeing of many Peruvians was further aggravated by the system of institutionalised discrimination imposed on them by their Spanish conquerors. Mestizos (people of Spanish and Native-American Indian descent) were particularly affected by such a system, given that the Spaniards perceived them as morally impure (Cadena, 1997). The social stratification system of the Peruvian mountain region became more unequal and complex as a result of the arrival of African slaves and the subsequent arrival of Asians (Gispert, 1999; Tardieu, 1998).

Discriminatory practices against residents of the mountain region became exacerbated by the lack of legal protection. Residents of the mountain region were not recognised as Peruvian citizens until 1923. As a result, they lacked all legal rights and social privileges, including the right to own land (Crabtree & Thomas, 1999). Furthermore, from 1979 to 1992 the Peruvian government failed to provide much needed protection to the country's farmers (Ferrary, 1992). This helps explain why most peasants in the mountain region are poor.

Drastic temperature changes, lack of rain, severe erosion, inadequate housing, lack of clean drinking water and insufficient means of transportation and communication have also contributed to poverty in the region (Crabtree & Thomas, 1999; Espinoza-Uriarte, 1997; Gispert, 1999).

This situation has motivated international development organisations to invest in the highly impoverished communities in Peru's mountain region and to work towards their socio-economic development. The Adventist Development and Relief Agency (ADRA) is one of the organisations that operate in Peru with funding from the United States Agency for International Development. This non-governmental organisation (NGO) has come to represent an invaluable resource for the communities it serves. The Andean Food Security Development Project represents one of the most important ADRA/Peru projects. Started in 1996, the project includes the Infant Nutrition and the Agricultural Income Generation programmes. This

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project targeted areas of extreme poverty in 13 of the country's political departments (ADRA Peru, 1998a).

The primary goal of intervention of the Infant Nutrition Program was to reduce the chronic malnutrition of 58,200 children within the first 2 years of the programme. The strategy consisted of providing participatory training in health and nutrition for mothers through local promoters. Furthermore, the programme facilitated income-generating activities to increase the earnings of mothers. Services such as the recruitment of malnourished children and pregnant women for services, nutritional surveillance, evaluation of behaviour, education of mothers in the area of nutrition, referrals and the supply of needed medicines were provided on a monthly basis. Monitoring of children's growth, evaluation of their nutritional status and the provision of vaccinations were conducted on a bimonthly basis. Cooking classes, nutritional campaigns and administration of surveys to families were conducted quarterly. Training to mothers on micro-credit management was provided twice a year. Lastly, training centres and community banks were created on an annual basis (ADRA Peru, 1998b).

The Agricultural Income Generation Program aimed at raising the incomes of 24,300 peasant households living in extreme poverty. Interventions included providing training in sustainable crop yield enhancing technologies, developing a basic productive infrastructure and providing agricultural micro-credit. Specific activities included: providing peasants with seeds and agricultural equipment; constructing irrigation canals, terraces, modules of processing and marketing facilities; marketing and sale of agricultural products; and construction and rehabilitation of roads needed for business. The duration of specific activities ranged from one to eight months. However, programme participation could last for years (ADRA Peru, 1998b).

Methodology

The present article is based on a secondary analysis of data collected in 1999 for a study exploring the associations between social capital, economic development and food security in Peru's mountain region. As part of that initial study, a cross-sectional survey was administered to 789 persons residing in 10 experimental and 10 comparison communities. Sampling procedures for the experimental communities included random selection from a list of current or former ADRA clients. Subjects within each community were selected from the local community census or through the systematic random sampling of homes. One adult per selected household was interviewed.

This study relied on a comparison group and not on a control group. This means that communities were not randomly assigned to a control group and denied ADRA services for the purpose of the study. The 10 communities that constituted the comparison group were selected from among those communities which, for any given reason, had not been targeted for services up to that moment. The number of poor communities in the mountain region of Peru is so great that NGOs must inevitably serve only a small number of them at a time and place the rest on a waiting list. Additional criteria for selecting the comparison communities were that they had to be located within the same political department as the experimental communities, residents were of the same ethnicity (mostly Quechua Indians), they were located in rural areas of the mountain region and they exhibited similar levels of poverty.

The researchers decided that communities needed to have received services from ADRA/Peru for a year or more in order to be part of the experimental group, since according to project staff it takes at least a year of services to begin to make a difference in targeted communities. However, subjects were asked about changes in their economic status over the previous 3 years, given that they were eligible to receive services for up to 5 years at a time, and some of them could have received services from ADRA more than once. The researchers also realised that it would take some time for the knowledge and skills acquired in a given year to make a difference to the economic status of the programme participants. The subsequent statistical analysis of the collected data revealed that the median length of involvement of residents of the experimental communities with ADRA was 1 year, the mean length of involvement was 1.82 years (SD = 1.95) and the maximum length of involvement was 9 years. Comparison communities had not received services from ADRA or any other NGO, or they had received services for less than a year.

Thirty-two development professionals trained by the principal investigator collected data during July and August 1999. Interviews were conducted in Spanish, or in Quechua through interpreters. All participants signed informed consent forms. Approximately 3 per cent of the residents refused to participate in the study. Their reasons for refusing include: having been excluded from ADRA programmes before, specific religious beliefs, gender biases, perceptions about the role ADRA plays in their communities, lack of trust, not understanding the potential benefits of the study, and not having time to participate. Some residents feared that the interviewers were employees of Peru's internal revenue and taxation agency. All of these factors contributed to their initial resistance to sign the informed consent forms. Most of them, however, were able to overcome their distrust thanks to the fact that most interviewers were indigenous to the region, were able to speak their language and many of them knew key community leaders.

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Special reasons motivated the selection of variables related to perceptions in addition to actual incomes as indicators of micro-economic development. First, most of the people interviewed in Peru's mountain region often engage in business transactions that do not involve currency. Instead, they trade animals, fruits, vegetables and other goods. For this reason, 'household income in soles' may not be the best indicator of economic wellbeing for many families. Second, wives often did not know how much money their husbands earned. This circumstance confirmed the desirability of asking about perceptions of changes in income and amount of property, given that these were questions the wives and mothers could answer. Third, the questions related to perceptions of economic mobility address the dimension of change and economic progress, whereas data on income at one fixed point in time do not. Fourth, perception variables as indicators of economic development were desirable, given that subjects may have not always reported their real incomes. Reportedly, many of them feared that our interviewers were employees of the SUNAT, the income tax collection agency of the Peruvian government, and suspected that we were trying to learn about their incomes in an effort to collect more taxes. Fifth, indigenous cultural norms may have prevented many people from boasting about their incomes. Lastly, perceptions of changes in the amount of assets are important because small financial gains may have practical significance for residents, even if they lack statistical significance.

Instrumentation

Researchers at the University of Technology in Sydney, Australia, developed the Social Capital Scale. They developed and tested the 36-item instrument over a 3-year period and reportedly it possesses adequate levels of content validity (Bullen & Onyx, 1998). A hierarchical factor analysis produced eight primary independent factors: participation in the local community, proactivity in a social context, feelings of trust and safety, neighbourhood connections, family and friend connections, tolerance of diversity, value of life and work connections. Sample questions from the scale are:

1. Do you help out a local group as a volunteer?
2. Have you attended a local community event in the past 6 months?
3. Have you ever picked up other people's rubbish in a public place?
4. If you have a dispute with your neighbours, are you willing to seek mediation?
5. Do you feel safe walking down your street after dark?
6. Do you agree that most people can be trusted?
7. Can you get help from friends when you need it?
8. In the past 6 months, have you done a favour for a sick neighbour?

The reader may go to the following website for more detailed information about this scale and its validation process: http://www.mapl.com.au/A2.htm.

The author of this article translated the instrument into Spanish and subsequently tested its face validity for use with Indian and Mestizo Peruvians. The translated instrument was administered to a group of Peruvian professionals and to a group of poor Peruvians with low levels of education prior to its use in the study. Their feedback was used to assess the adequacy of the translation, identify questions that were not culturally appropriate, and to establish the instrument's face validity for the targeted population. The author also developed a questionnaire to collect demographic information and data related to education and income levels.

Operational definitions

Human capital. Characteristics of individuals that increase their earnings potential. In this study, the chosen indicator of human capital is number of years of formal education.

Social capital. Quantity and quality of social relations as expressed by a total score on the social capital scale ranging from 0 to 144, or a mean score on the scale ranging from 1 to 4. Higher scores are indicative of higher levels of social capital.

Low social capital. Quantity and quality of social relations as expressed by a mean score of 2.50 or less, or a total score of 72 or less in the social capital scale.

High social capital. Quantity and quality of social relations as expressed by a mean score of 2.51 or higher, or a total score of 73 or higher in the social capital scale.

Micro-economic development. Economic condition of interviewed families as reflected by: (i) their annual gross income in soles; (ii) their perceptions of changes in property; and (iii) their perceptions of changes in income over the last 3 years.

Research hypotheses

1. Number of years of formal education, social capital scores and participation in ADRA programmes for a year or more will be significant predictors of economic development as indicated by incomes and perceptions of changes in income and property.
2. The impact of human capital on the economic development of families will be greater than the

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Table 1. t-tests comparing experimental and comparison communities.

Characteristic		n	Mean	t	SD	Sig. 2-tailed
Age	Experimental	343	37.38	–0.70	12.62	0.48
	Comparison	426	38.04		13.57	
Years of education	Experimental	353	5.13	–2.61	2.98	0.01
	Comparison	423	5.75		3.48	
Family size	Experimental	358	5.80	2.92	1.95	0.00
	Comparison	430	5.38		2.04	

SD, standard deviation.

impact of social capital on their economic development.

3. Those communities that benefited from ADRA's programmes for a year or more will exhibit higher levels of economic development than comparison communities as reflected by incomes and perceptions of economic progress.

Findings

Description of the sample

The study sample consisted of 789 heads of households who resided in the experimental and comparison communities. Fifty-four per cent of them were female and 46 per cent were male. The mean age of respondents was 38 (SD = 13.15), the median was 36 and the mode was 28. The mean annual family gross income was 1980 soles (or US$582) at the 1999 currency exchange rate (SD = 2,278), and the mode was 600 soles (or US$176). The sample's mean, median and modal level of education was fifth grade (SD = 3.27); nevertheless, 108 people reported having only one year of education or less. Two per cent of the sample (n = 17) reported having one or more years of university education. Mean social capital scores ranged from 1.39 to 3.94 on a 4.00 scale. The mean score was 2.86 (SD = 0.51) and the mode was 3.25. Total social capital scores ranged from 44 to 126. The mean total score was 90.46 (SD = 15.88), the median was 92 and the mode was 101. An overview of the 10 experimental and the 10 comparison communities showed that they were comparable (Table 1).

The size of all surveyed communities ranged from 25 to 125 families. Most subjects were Quechua Indians residing in the mountain region. Experimental communities were 60 per cent (n = 213) female and 40 per cent (n = 142) male, and the comparison communities were 49 per cent (n = 210) female and 51 per cent (n = 219) male.

Hypothesis 1. Number of years of formal education, social capital scores and participation in ADRA programmes for a year or more will be significant predictors of economic development, as indicated by incomes, perceptions of changes in income and perceptions of changes in property.

Yearly household gross income is the first dependent variable we used as an indicator of micro-economic development. Subjects were assigned to income groups and a linear regression analysis was conducted to explore the extent to which years of formal education, social capital scores and participation in ADRA programmes contributed to increases in household income levels. Findings revealed that number of years of formal education was a significant predictor of income levels in soles ($b^* = 0.15$, $t = 4.13$, $p = 0.00$), and that participation in ADRA programmes for a year or more was also a significant predictor of higher income levels ($b^* = –0.08$, $t = –2.03$, $p = 0.04$). Social capital scores, however, were not found to be significant predictors of higher income ($b^* = –0.02$, $t = –0.49$, $p = 0.62$). Table 2 summarises this regression analysis.

Perception of changes in income is our second indicator of micro-economic development. A linear regression analysis found that participation in ADRA programmes was predictive of a perception of higher incomes ($b^* = –0.09$, $t = –2.36$, $p = 0.02$). In this analysis, however, social capital scores were not predictive of the perception of higher incomes ($b^* = 0.07$, $t = 1.78$, $p = 0.08$). Similarly, years of education was not a significant predictor of the perception of higher incomes ($b^* = –0.07$, $t = –1.79$, $p = 0.07$). Table 3 summarises this regression analysis.

Perceptions of changes in the amount of property owned during the last 3 years is the third indicator of micro-economic development in this study and a dependent variable. This time, a linear regression analysis revealed

Table 2. Community capacity and yearly household gross income groups in soles (Peruvian currency).

Model		Unstandardised coefficients		Standardised coefficients		
		Beta	SE	Beta	t	Sig.
1	(Constant)	3.865	0.810		4.774	0.000
	Social capital scores	–0.004	0.008	–0.019	–0.499	0.618
	Years of education	0.164	0.040	0.154	4.133	0.000
	Prog. participation	–0.539	0.265	–0.077	–2.031	0.043

This model accounted for 0.023 of the variance in the dependent variable (adjusted $R^2 = 0.023$). SE, standard error.

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Table 3. Community capacity and perceptions of changes in income over the last 3 years.

Model		Unstandardised coefficients		Standardised coefficients		
		Beta	SE	Beta	t	Sig.
1	(Constant)	0.630	0.198		3.179	0.002
	Social capital scores	0.004	0.002	0.066	1.777	0.076
	Years of education	–0.017	0.010	–0.066	–1.786	0.074
	Prog. participation	–0.151	0.064	–0.088	–2.362	0.018

This model accounted for 0.016 of the variance in the dependent variable (adjusted $R^2 = 0.016$). SE, standard error.

Table 4. Community capacity and perceptions in changes in the amount of property.

Model		Unstandardised coefficients		Standardised coefficients		
		Beta	SE	Beta	t	Sig.
1	(Constant)	0.474	0.193		2.451	0.014
	Social capital scores	0.007	0.002	0.130	3.502	0.000
	Years of education	–0.164	0.009	–0.013	–0.353	0.724
	Prog. participation	–0.162	0.062	–0.097	–2.604	0.009

This model accounted for 0.027 of the variance in the dependent variable (adjusted $R^2 = 0.027$). SE, standard error.

that social capital scores were the most significant predictors of the perception of gained property during the last 3 years ($b^* = 0.13$, $t = 3.50$, $p = 0.00$). Social capital score was followed by 'participation in ADRA development programmes' as the second most significant predictor ($b^* = –0.10$, $t = –2.6$, $p = 0.01$). Number of years of education was not a significant predictor of the perception of gained property during the previous 3 years ($b^* = –0.01$, $t = –0.35$, $p = 0.72$). Table 4 summarises this regression analysis.

Pearson correlations were conducted to explore the associations between number of people in the household and perceptions of changes in income and amount of property. Findings revealed no significant correlation between these variables. Number of people in the household was not correlated with perceptions of changes in income ($r = –0.015$, $p = 0.68$), nor was it correlated with perceptions of changes in amount of property ($r = –0.05$, $p = 0.13$). Findings show that not all independent variables were significant predictors of all indicators of micro-economic development. Findings provided only partial support for our first hypothesis.

> *Hypothesis 2*. The impact of human capital on the economic development of families will be greater than the impact of social capital on their economic development.

As previously indicated, findings suggest that human capital was the most significant predictor of higher incomes ($b^* = 0.15$, $t = 4.13$, $p = 0.00$); however, high social capital was the most significant predictor of the perception of increased property during a 3-year period ($b^* = 0.13$, $t = 3.50$, $p = 0.00$). Neither social capital nor human capital scores were significant predictors of the perception of increased income over the previous 3 years. These findings are inconclusive and make it impossible for us to accept or reject this second hypothesis.

> *Hypothesis 3*. Those communities that benefit from ADRA's programmes for a year or more will exhibit higher levels of economic development than comparison communities as reflected by incomes and perceptions of economic progress.

Independent sample t-tests conducted on the full sample revealed that heads of households in the experimental communities held significantly higher perceptions of gained incomes during the previous 3 years than did members of the comparison communities ($t = 2.99$, $p = 0.00$). They also had significantly higher perceptions of gained property than did members of the comparison communities ($t = 3.94$, $p = 0.00$). Residents of the experimental communities had higher incomes than residents of the comparison communities; however, differences in income were not significant at the 0.05 level ($t = 0.156$, $p = 0.11$). The lack of statistical significance associated with this finding may be partially explained by the fact that most people in Peru's mountain region are members of an agricultural society in which residents often engage in business transactions that do not involve currency and where wealth is not always measured based on currency. This finding also suggests the possibility that unknown extraneous variables influenced income levels.

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In summary, the findings show that:

- Human capital as expressed by the number of years of formal education was the most significant predictor of actual income. Human capital, however, was not a significant predictor of the perception of higher incomes or the perception of gained property.
- Social capital was a significant predictor of the perception of increases in property over the last 3 years; however, it was not a significant predictor of income or the perception of higher income.
- Participation in one of ADRA's development programmes for a year or more was the only indicator of community capacity that was a significant predictor of the three indicators of micro-economic development.

Discussion

The data and findings of this study seem insufficient to explain why neither social capital nor human capital was a significant predictor of the perception of higher income. Similarly, data and findings do not explain why human capital was not a significant predictor of the perception of changes in property. A finding worth highlighting, however, is that participation in ADRA's development programmes for a year or more was a significant predictor of all three indicators of micro-economic development. This finding seems consistent with one of the conclusions of ADRA/Peru's midterm evaluation of its food security project completed on 22 January 1998. This qualitative evaluation reported that 'ADRA has clearly performed outstandingly in the area of community confidence building and mobilisation' (ADRA, 1998a: Section 2).

Ramírez-Johnson, Díaz and Drumm (2003) conducted a qualitative study that explored the role of research and education in the empowerment of development workers in Peru. Some of the findings of this study, particularly those related to education, may also apply to the experience of mountain residents who participated in our survey. The issue to be analysed here is related to the type of education that is likely to lead to socio-economic development. Available literature proposes that only education that is consistent with modern technologies will make individuals financially productive and lead to their economic progress (Basdevant, 2004; Coupal, 2004; Little, 2003). The study conducted by Ramírez-Johnson et al. (2003) suggests, however, that the education that makes up human capital must include an understanding of the political, economic and cultural environment and a willingness to act on it. The poor and the oppressed must be able to see themselves as having value and respect, and they must also be able to understand the role of the dominant groups in society in the creation and perpetuation of inequality (Ramirez et al., 2003: 190). Reportedly, the education that may lead to socio-economic development requires a process of conscientisation, the ability to look at the bigger picture and the willingness to act on it.

Additional support for the desirability of involvement in socio-economic development programmes comes from the findings of the study conducted by Díaz et al. (2002). These findings strongly suggest that residents of the experimental communities enjoyed higher levels of social capital and greater access to food than the residents of the comparison communities. That study also found that communities with higher levels of social capital also enjoyed significantly higher incomes.

It is very unlikely that desirability bias may have led interviewers to consistently report that participation in ADRA programmes for a year or more was positively associated with the economic development of the experimental communities. First of all, no single interviewer helped survey more than two of the 20 studied communities. Furthermore, interviewers were not very knowledgeable of the many indicators that made up each construct explored in the initial study. For instance, social capital was measured using the Social Capital Scale, a 36-item instrument covering eight different dimensions; food security was measured through two question items; and economic development was conceptualised as having three indicators. The complexity of the constructs, the sample size (789 subjects in 20 communities), the lack of access by any interviewer to all subjects, and the lack of knowledge related to how each construct was expected to theoretically relate to other constructs would have made it very difficult for anyone to manipulate the responses in order to support the various research hypotheses, even if this had been their inclination or desire.

Implications and recommendations

The findings of this study are significant, given that they provide some support for Chaskin's theory of community capacity. As reflected in the present study, human capital, social capital and organisational resources were found to be significant predictors of different indicators of the economic development of families in Peru's mountain region. This study is also significant because it helps validate social capital theory for non-Western type cultures.

In the present study, participation in a development programme for a year or more was a significant predictor of all three indicators of micro-economic development. This author recognises that the findings of the study cannot be generalised to any population outside of Peru's mountain region. Nevertheless, the findings of the study, in conjunction with the findings of others, may motivate policy makers and political leaders in various countries to formulate policies and implement programmes that have socio-economic

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development as their primary goal. Such initiatives should strive to make disadvantaged populations economically self-sufficient and to harmonise social and economic policies to prevent situations of extreme poverty and poor health despite strong performance by the national economy. The advisability of implementing development-oriented policies and programmes is also supported by the current literature on community capacity and economic development, which proposes that the strengthening of organisations in a community can contribute to increases in both social and human capital.

Recommendations for future research include conducting longitudinal as well as qualitative studies that can inform policy makers better as they try to respond to the needs of the poor. Longitudinal studies would be better suited than cross-sectional surveys to assess economic changes and changes in living conditions over time. Qualitative studies, on the other hand, could provide policy makers with valuable insights related to the plight of the poor and the strategies they believe would work best for them. A specific recommendation is to always use indigenous interviewers and co-researchers while conducting international studies. The success of this study, conducted in the mountain region of Peru, can be attributed to a large extent to the fact that most members of the research team were indigenous to the area and that they knew the local culture, languages and key community leaders.

More rigorous research studies are needed to further explore the complex ways in which social capital, human capital and organisational resources interact with one another to elicit economic progress and the collective wellbeing of communities and families.

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