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Social Capital and Trust in South-east Asian Cities

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Summary. This paper conducts a comparative analysis of social capital and environmental management in two rapidly growing regions in south-east Asia, Bangkok and Ho Chi Minh City. Theoretical and empirical triangulation are used to clarify the nature of social capital and the ways that gender, in particular, affects trust and co-operation. Theoretical triangulation is accomplished by drawing on conceptual arguments made in economics, geography and urban planning to develop a theoretical framework explaining social capital and environmental management in south-east Asia. Empirical triangulation is accomplished through a multimethod analytical approach, including survey methods and experimental games conducted with the same populations. The results of the comparative analysis among squatter residents in Bangkok and Ho Chi Minh City are presented with a focus on gender differences in trust and co-operation and the paper concludes with a summary of the results and recommendations for policy and future research.

Introduction

The recent economic crisis in south-east Asia left public institutions with even fewer resources than in the past to address the regional problems of environmental degradation and insufficient basic infrastructure. These two brief vignettes represent life in two rapidly developing cities in south-east Asia—Bangkok, Thailand and Ho Chi Minh City, Vietnam.

Early one morning, a young woman struggles down the lane that skirts her community located in the suburbs of Bangkok. She is carrying a toddler in one arm and holding several knotted plastic bags full of waste-paper and plastic in the other. She collected the garbage last evening from the swampy spaces surrounding her one-room house as part of the community-organised efforts to limit the spread of rats and other pests in the neighbourhood. She has promised her next-door neighbour, one of the community leaders, that she will do her part although she notices that most of the homes on the way to the communal trash bin remain completely surrounded by all kinds of garbage. While many of the neighbours appear to be good friends and are willing to help care for her child

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while she does piecework on the floor of her home, surprisingly few of these generous people seem interested in cleaning the slum or actively participating in group efforts to improve community health and hygiene. Consequently, she worries a great deal about malaria, dengue fever and rabies affecting her family.

On a rainy summer afternoon in Ho Chi Minh City (Saigon), several middle-aged women (grandmothers all) work hard to ready the community meeting area for the next meeting of the local mothers' group. The group is planning to meet with People's Committee members and representatives of DOSTE (the local Department of Science, Technology and the Environment) to discuss improving the flow and quality of water reaching homes situated in the core of the historical city centre. Water quality and access have decreased sharply during the recent urban boom and the low-income women living in the area are struggling to get enough water to clean their homes, cook their food and bathe their children. The long-standing and well-organised mothers' group has asked for and received a meeting opportunity with local bureaucrats to achieve some kind of resolution. Many of the members are willing to donate time and energy (as well as whatever money can be spared) to implement repairs and renovations to their water pipes. While few expect that changes will come quickly, many believe that, by standing together, they may be able to improve their quality of life in the near future.

Although neither of these vignettes represents actual individuals, they are compilations of the challenges faced daily by low-income communities in developing countries across the Pacific Rim. More importantly, these vignettes highlight the importance of trust, social integration and co-operation in improving environmental conditions for communities across the developing world. With decreasing capacity by governments to cope with rapid population growth, economic change and environmental degradation, governments and international donor agencies (such as the World Bank) have increasingly looked to the participation of local communities to develop and implement environmental management policies. A primary element of such strategies is identifying and expanding the local capacity of low-income, tenure-insecure neighbourhoods to engage in such policy design and implementation. However, policy-makers and researchers typically have a poor understanding of whether communities are willing to participate in improving access to environmental services as well as how factors, such as social networks and social capital, might influence resident participation in the design and delivery of urban services, such as water treatment and delivery or waste collection and disposal.

To address this issue, this paper conducts a comparative analysis of social capital and environmental management in two rapidly growing regions in south-east Asia—Bangkok and Ho Chi Minh City. Theoretical and empirical triangulation are used to clarify the nature of social capital and the ways that gender, in particular, affects trust and co-operation.[1] Theoretical triangulation is accomplished by drawing on conceptual arguments made in economics, geography and urban planning to develop a theoretical framework explaining social capital and environmental management in south-east Asia. Empirical triangulation is accomplished through a multimethod analytical approach, including survey methods and experimental games conducted with the same populations. The remainder of the paper is organised in the following fashion. The next section provides a brief overview of the social capital literature and outlines a conceptual framework drawing from these disparate approaches. Next, a brief comparison is made of the environmental, social and political conditions in Bangkok and Ho Chi Minh City. The paper then summarises the two empirical methods (survey methods and field experiments) used to elaborate the form and function of social capital and how these relate to environmental management decisions. The results of the comparative analysis among squatter residents in Bangkok and Ho

Chi Minh City are then presented, with a focus on gender differences in trust and co-operation. Finally, the paper concludes with a summary of the results and recommendations for policy and future research.

Social Capital: Form and Function

Scholarly Debates

Although the social capital approach has gained increasing prominence among scholars and policy-makers, there is still wide debate about its form, function and importance. Proponents of social capital present it as a critical element missing in modern society, leading to minimal civic participation and even ineffective governance (for example, Coleman, 1990; Putnam, 1993, 2000; Woolcock, 1998). Simply put, social capital is a resource available to individuals that emanates from group interaction because of trust, reciprocity and co-operation. The expansion of positive social capital, especially for communities with few economic and political resources, consequently results in enhanced economic and political performance and improved quality of life. Like other forms of capital (i.e. human, financial, physical), social capital is productive, providing material benefits to individuals who are connected to other individuals and groups (i.e. networks and relationships) (Bourdieu, 1985; Coleman, 1990; Putnam, 1993). These social networks and relationships as concretely expressed as the reciprocal (and at times asymmetrical) exchange of material goods, services, information and money, as well as less tangible support such as mutual assistance and emotional support (Kim *et al.*, 1997).

Researchers in varying disciplines have started with this premise and explored how relationships among individuals, groups and organisations relate to economic and political outcomes. Economists and political scientists have used the social capital approach to investigate communal action as an outcome of network interaction or relationships rather than as aggregations of individual utility-maximisers (see, for example, Ostrom *et al.*, 1994). Geographers, in addition to the emphasis on communal action and social structure, have focused on the spatial dimensions of social capital. Using this spatial lens, social capital is seen to be very dependent on the interconnectedness of residents in specific geographical locales, where space both facilitates and constrains the initiation and sustainability of such connections (Gertler, 1997). Public policy and urban planning researchers have used social capital arguments to assess the potential for community-building and capacity-enhancing strategies in arenas such as economic development and housing production (for example, Woolcock, 1998). For those studying the developing world, the social capital approach has been seen as particularly important for individuals with constrained material resources, as a necessary precursor to communal action and potential community- and region-wide social, economic, political and economic improvements (see, for example, Narayan and Prichett, 1999).

Social capital, both in its form and its impact, is likely to differ among places, populations and communities. There is speculation—for example, that social capital levels in particular urban Asian environments, such as New Delhi or Jakarta, might be very low (Woolcock, 1998; Isham and Käkhönen, 2001). Many researchers argue that one reason for the lack of economic growth or progress in some developing countries is a lack of general and positive social capital (Woolcock, 1998; Narayan and Pritchett, 1999; Grootaert and van Bastelaer, 2001). In general, scholars argue that countries, regions or communities with greater social capital will be or are better positioned to take advantage of economic and social opportunities.

Critics of the social capital approach highlight two major flaws in this approach. First, scholars point to Putnam's and Coleman's conceptualisation as overreliant on consensus-building (i.e. non-confrontation strategies)[2] and as assuming that low-income households and neighbourhoods lack trust and co-operative relationships (for example,

DeFilippis, 2001; Mayer, 2003). Such critics point out that trust relationships exist in many low-income communities, but that these social networks are unable to access financial capital and political influence, and that a focus on non-confrontation as the pre-eminent tactic to accomplish diverse community goals dismisses the importance of advocacy and grassroots mobilisation. Secondly, critics of social capital argue that, as currently conceived, social capital is both a cause and an outcome—that is, researchers look for evidence of social capital in communities that have beneficial outcomes. This theoretical conflation of cause and effect leads to methodological challenges. While scholars have increasingly refined the concept to clarify its form and function, there remains confusion about its characteristics and its impact. For example, scholars from diverse disciplines tend to use different data and analytical methods to measure the existence of social capital and its effect on specific outcomes (Durlauf, 2002).

Reformulating Social Capital

Given this development of the concept and its varying critiques, this paper offers a conceptual approach that incorporates gender as a critical dimension of social capital and environmental decision-making especially in rapidly developing urban contexts. The underlying assumption is that environmental protection practices among urban squatters are likely to have been developed as a consequence of overlapping social and institutional networks. The form of social capital consists of the connections of community members with other community members and with communities, groups and institutions outside these communities (the bridging and bonding relationships or linkage and social integration argued by social capital scholars). However, in addition to the existence of these networks within and without communities, the function of social capital lies in its effectiveness in bringing resources and material environmental improvements to communities. Consequently, those communities that possess or cultivate social capital can effectively garner the collective action to maintain or build environmental or infrastructure projects that benefit their and other communities, such as communal water supplies. Those communities without sufficient social capital may have developed trust, reciprocity and even co-operation (the forms of social capital), but will find it hard to provide such services (the function of social capital). Thus, social capital is defined here as effectively functioning social networks, with high levels of trust, symmetrical reciprocity and co-operation within and without the community, resulting in the construction and sustainability of communal environmental or infrastructure projects.

There is much debate in the literature regarding if and how gender affects the willingness of individuals to co-operate on different projects or endeavours. Traditionally, economists have argued that gender is not a relevant consideration in the design of economic policies because all human beings basically respond in the same way to incentives. Some economists, feminist critiques of *homo economicus* to the contrary, have not found measurable differences between the genders when it comes to playing co-operation games (Ferber, 1995; Brown-Kruse and Hummels, 1993; Solow and Kirkwood, 2002). Many other social scientists, however, have long believed that context matters and that, in particular, women tend to be more interested in investing in household and communal welfare than men, which is one reason that numerous micro-credit organisations target their loans to women, particularly in developing countries (Anderson *et al*., 2002; Graham and Manning, 2000; Amin *et al*., 1998). Many researchers note further that women tend to be the primary decision-makers in the household concerning water and waste management (for example, White *et al*., 1972; Daniere and Takahashi, 1999) and that communal activities such as community cleaning tend to be seen as extensions of domestic responsibilities (Milroy and Wismer, 1994). More recently, some economists have come to agree that gender may well be

a key policy variable and economic experiments are being conducted to elaborate the role of gender in public and private spheres (Croson and Buchan, 1999; Andreoni and Vesterlund, 2001; Barr and Kinsey, 2002). However, more research is needed to articulate the linkages among social capital, gender and environmental or infrastructure management, especially in rapidly developing urban contexts.

The underlying premise in this paper is that gender influences both the form and function of social capital. If social capital consists of an effectively functioning social network for environmental and infrastructure improvements, then because the socio-spatial characteristics of networks tend to differ among women and men, the form and function of social capital is also likely to differ among women and men, as well as across places and communities. These gender differences in networks and in social capital can be traced to the gender relations within households and communities. With respect to environmental management, social capital is likely to vary across places because the socio-political-cultural context will influence the gender roles in households and communities related to environmental and infrastructure decision-making. However, even given these distinct contexts, gender relations and forms and functions of social capital, we might expect several general tendencies. Women typically have fewer resources available to them than men and would consequently depend more on resources accessed through social networks than men. This would suggest that women in general would be more likely to engage in trust, reciprocity and co-operative relationships than men, although this may not necessarily result in greater social capital since our definition includes the outcome of environmental and infrastructure improvements. The literature on social capital has paid scant attention to gender, although much research on community participation, grassroots mobilisation and advocacy has highlighted the role of women as instigators and sustainers of local environmental improvements, especially in terms of environmental justice movements in the US (for example, Pulido, 1998).

Bangkok and Ho Chi Minh City: An Overview

While the political, economic and social conditions of Bangkok and Ho Chi Minh City differ significantly, the two cities share important similarities including rapid urban growth, an increasingly modern economy based on manufactured or processed exports, and rapidly degrading urban environments. In the case of Thailand, despite the continued effects of the region-wide economic crash sustained in 1997, the metropolitan area appears to be growing more rapidly than the Thai economy overall (approximately 2 per cent in 2001). Environmental degradation has been especially rapid; widespread lack of access to drinkable water, clean air and adequate sanitation has resulted in considerable risks to public health in Bangkok, as in many Association of South East Asian Nations (ASEAN) cities (Daniere *et al*., 2002). Vietnam, also a member of ASEAN, was slightly less affected by the Asian economic crisis compared with other nations, related to its having lower levels of foreign investment (compared with such nations as Indonesia, Malaysia and Thailand). GDP grew by 5 per cent in 2001 and the Vietnamese economy continues to expand steadily. Economic growth, as in Thailand, is concentrated in Vietnam's urban areas, particularly Ho Chi Minh City and Hanoi (Drakakis-Smith and Dixon, 1997; Parenteau, 1997; Gainsborough, 2002).

Bangkok is widely seen by scholars and policy-makers as a stark example of uncontrolled and unsustainable growth and concomitant environmental degradation. Thailand is known for having one of the more *laissez-faire* governments in the world, at least in practice if not in terms of the actual letter of the law. Industrial firms commonly ignore Thai regulations regarding environmental protection. However, recent media accounts have indicated a growing public dissatisfaction with environmental

conditions, expressed through public protests focused on air and water pollution. Local mobilisation such as urban squatter associations, loosely organised through NGOs and/or community groups, can in specific circumstances—particularly with the assistance of well-placed contacts in the Bangkok Metropolitan Authority or one of the national-level Ministries—achieve substantial improvements in local quality of life. Squatter settlements have obtained piped water connections, structural upgrades or daycare centres as well as improved land tenure arrangements through local organisation and lobbying of key bureaucrats.

Ho Chi Minh City, although slightly more than one-third the size of Bangkok, has experienced extremely rapid expansion of its urban area, leading to its characterisation as the world's next 'Bangkok' (Drakakis-Smith and Dixon, 1997). Compared with Thailand, the communist political regime in Vietnam retains much more centralised control, in most cases, over the environmental and public health practices of local industry and the construction and maintenance of basic urban services such as sewers, roads, water pipes and solid waste collection. At the same time, economic conditions are changing so quickly that, especially in Ho Chi Minh City, pollution is growing and squatter settlements are rapidly expanding. Where once the local People's Committees in charge of each ward (Ho Chi Minh City is divided into large districts that in turn are composed of small wards, some as small as a large city block) were able to monitor and control the number of people and households within their particular areas, this is less true today. Many settlements are becoming overcrowded; there is more informal housing being built along the open spaces within and exterior to traditional residential areas; and the supply of public infrastructure lags far behind the creation of housing, particularly in neighbourhoods with low-income residents. In general, however, it is evident that the municipal government in Ho Chi Minh City is more or less following a plan to supply different types of infrastructure to various parts of the metropolitan area, particularly planned high-income areas. It is less clear how responsive the metropolitan government is to the needs of low-income communities, as represented by NGOs and even ward-level People's Committees.

While there are obviously many differences in the politics, economies and cultures of the two cities, the challenges faced are somewhat similar because of two factors: Vietnam is likely to continue to depend on *doi moi* (the liberalisation process) to help jump-start its economy; and both Thailand and Vietnam are increasingly exposed to foreign investment and the consumer culture of the West apparent in most globalizing cities (Kim *et al*., 1997). Consequently, urban environmental degradation is likely to deepen, requiring new and cost-effective environmental management strategies to sustain economic growth. Community participation remains one of the factors believed by international donor agencies, NGOs and government agencies to be vital to the potential success of urban environmental policies. A fundamental challenge to understanding and effectively incorporating community action remains the lack of knowledge about the interests and motivations guiding local residents.

Methodology

The most prevalent approach to studying social capital is to analyse survey data (Putnam, 2000; Onyx and Bullen, 2000; Isham and Kähkönen, 2001; Daniere *et al*., 2002). This mode of analysis depends on individual responses to survey questions on trust, co-operation and relationships to test hypotheses related to the nature of social networks or co-operative behaviour on specific outcomes. Economic games have also been increasingly used to measure directly levels of trust and co-operative behaviour. Such games or experiments record the observed behaviour of participants in terms of strategy exhibited during the game and use these responses to express a measure of trust within a specific community or group of people.[3] This paper

uses these two methods to conduct a comparative analysis of Thai and Vietnamese urban residents to triangulate empirically the form and function of social capital in these two cities.[4]

We focused on five low-income communities in Bangkok, Thailand, and Ho Chi Minh City, Vietnam.[5] In the past three years, we have studied the role of social capital in environmental management within five different slum communities in these two cities. In doing so, we conducted household surveys on demographics and social networks and in-depth qualitative interviews with key community informants and, most recently, we collected data via incentive compatible field experiments designed to estimate the amount and intensity of trust and social capital. This paper compares the results of our findings from more conventional survey-based research on social capital (implemented in 2000) to the data collected from experimental games played in the same 10 communities during the summer of 2002.

Bangkok Communities

In Bangkok, the communities were selected through the use of a sampling frame developed from a somewhat dated study of Bangkok slums and the local expertise of the project team (Setchell, 1992). While not random, the selected communities are generally representative of the broad range of squatter areas in terms of size, history, location and environmental conditions existing throughout the Bangkok Metropolitan Region. The selection criteria included low average per capita or household income (as traditionally measured) within the slum or neighbourhood and disparate locations in order to ensure that there would be some variation among the five chosen communities in terms of access to services (for example, Daniere and Takahashi, 1999). We contacted the neighbourhood organisation or community leaders in each of the neighbourhoods to request permission to work with the community. It was understood that we hoped to return to the communities for the next three years to gather information about social relations and networks, environmental management, water and sanitation practices and some socioeconomic data. Each of the five communities we approached agreed to work with us and we only surveyed households and individuals who, when randomly selected, agreed to participate.

In the case of experimental games, potential participants were informed about the opportunity through leaflets and community announcements. Participants were asked to meet at a central location, generally the local community or daycare centre, if they wanted to volunteer for the games. The players were randomly selected from among the volunteers gathered at the site.

Ho Chi Minh City Communities

To select communities in Ho Chi Minh City, we needed to rely even more on local knowledge and connections. The communities could not be selected from a sampling frame but rather were proposed by the People's Committees responsible for specific city districts. We approached five different districts and asked them to nominate one or two of their most impoverished wards or communities for inclusion in the project. The Committees were generally quite co-operative and were very knowledgeable about the most impoverished communities within their geographical boundaries. We normally followed the suggestions of the People's Committees. Since the research project has the support of the Vietnamese government and one of our project team members is a government employee at the Institute for Social Sciences (an academic think-tank), we were able to obtain permission to work in a variety of wards within the city and to conduct the household survey relatively free of control or interference. It is possible, of course, that we were directed to showpiece communities although, given our extensive travels throughout the city, this seems very unlikely to us and to our Vietnamese colleagues.

Playing or conducting experimental games in Ho Chi Minh City was somewhat more

complicated than in the Bangkok communities. We chose to conduct the games in one or two of the meeting rooms within the Institute for Social Sciences as it proved to be the least disruptive to communities, as well as the option the most free of party (or People's Committee) monitoring. Participants from the different communities who volunteered for the experiment were transported by van or taxi to the centre, played the game and were then given transport back to their communities. The participants were all volunteers who were able to spend approximately two or three hours away from their communities. As in Bangkok, potential participants were informed that the game would result in guaranteed and immediate earnings; there was no lack of volunteers.

Household Survey

The first data-gathering effort took place in the summer of 2000 and involved surveying 500 households in each city. We designed and translated two almost identical survey instruments (one in Thai and the other in Vietnamese) to administer in each of the 10 selected neighbourhoods (5 in each city). While very similar, the surveys used in each country nonetheless reflected differences in culture and practice between the two cities.[6] Graduate students or staff recruited from the local authors' universities/research staff administered the surveys. These enumerators were provided with intensive training in how to administer the survey by the principal investigators and relied on procedures used in two previous household surveys conducted with high levels of success in south-east Asian urban communities (Daniere and Takahashi, 1999; Crane and Daniere, 1996).

Approximately 15 per cent of all households within each community for a total of 1000 household representatives (500 per city) were surveyed during the summer. In each household, the individual most responsible for water, sanitation and solid waste management was asked to participate in the survey. In many cases, the respondent was female, as women are generally responsible for these household decisions (Daniere and Takahashi, 1997). The surveys were designed to assess social networks, health behaviours and environmental practices and consisted of three sections: household environmental attitudes and practices, including questions about the time spent in water- and sanitation-related activities, the type of facilities used and monthly expenditures; household health behaviours such as frequency of illness and visits to medical facilities as well as knowledge regarding the relationship between the environment and health; and, the form and function of the household's social networks, such as the number and type of people on whom the household relied for daily assistance, the connections of household members to others outside the household for various purposes, the existence of and participation in community or local organisations, and trust in various external agencies and levels of government.[7]

Experimental Games

The field experiments, or games, were conducted during the summer of 2002 with members of the same 10 communities (5 communities from each city) where the household surveys had been conducted two years earlier. Initially, we conducted the games both with 24 individual workers and labourers in and near the Institute for Social Sciences in Ho Chi Minh City and with students enrolled in NIDA in Bangkok. The latter experiments acted as both pilot tests and controls for the field experiments and allowed us to examine how the behaviour of people in communities who typically face real social dilemmas, such as the maintenance of clean pathways and sewers, compare with the responses of typical workers or student participants.

The games that we played with workers, students and community members were simplified versions of basic voluntary contribution games as described in Davis and Holt (1993) that have already been tested in many North American and other locations.[8] Each game consisted of 10 rounds of play divided

in 2 separate sections, or treatments, of 5 rounds each. During the games, participants who volunteered to play were assigned to groups of 4 people who played together for all 10 rounds. In each community, we conducted 6 games so that, in all, 24 individuals participated from each site. We played 2 games with only male participants, 2 games with only female participants and 2 games composed of 2 men and 2 women. We were able to gather responses from 240 people (2 cities, 5 sites per city, 24 people per site). In some cases, we played 1 game at a time but in the majority of cases we were able to run 2 games at a time in which case the 2 female, male or mixed gender games were played concurrently. The 6 games usually took between 5 and 7 hours to play for a particular community because of the significant organisational requirements of the game. Finally, we set the stakes of the game (depending on currency denominations) so that the potential earnings of game participants if they all cooperated fell somewhere between a half and a whole week's wages (approximately US$44 in Thailand and US$12 in Vietnam).

When we began each game, we sat participants at some distance from each other and requested that they not talk to or communicate with each other until we were completely finished playing all 10 rounds of the game. At the beginning of each round (or period), each player was given 10 bills or coins (5 Baht coins in Thailand and 1000 Dong bills in Vietnam). The experimenter sat close to the players but behind a blind or a chalkboard, or a blanket suspended from the ceiling; in some cases, the experimenter sat outside the room. During each round, every player would go behind the blind twice to either contribute or receive money. In each case, the blind was constructed so that players could make their decisions privately.

First section: voluntary communication mechanism (rounds 1–5). On the first trip behind the blind, participants decided how many of the 10 bills (or coins) to allocate to a common cause (or public good) and how many to keep for themselves. Once every player had been behind the blind for the first time, as they were promised, the experimenter counted and doubled the sum of all the contributions. Each person then returned behind the blind to receive an equal share of the doubled amount. At that time, each player would see a listing of the different contributions of each of the 4 players (including themselves) but were not told which player contributed which amount. This procedure was followed for 5 periods or rounds. Notice that this provides the incentives of a social dilemma because individuals can always do better by free-riding off the contributions of the other group members.[9]

Second section: social sanctioning (rounds 6–10). At the end of round 5, we changed the rules to add the following, simple, social sanctioning mechanism. It is important that we did not tell our participants that we would change the rules between rounds 5 and 6 because we did not want them to condition their early play on the future rule changes. We told the participants that for one-fifth (20 per cent) of a bill or coin (i.e. 1 Baht or 200 Dong), any participant could have a picture displayed (see below) at the beginning of the next round.

In the instructions, we said that the picture is meant to express one's dissatisfaction with the contribution choices of one or more of the participants in the group. In this case, while it is costly to show disapproval, any benefit of the sanctioning must be due to social pressure because the sanction has no material fine attached to it.

The social sanctioning game began each period, as in the previous 5 rounds, with an endowment of 10 bills (or coins) and, on the

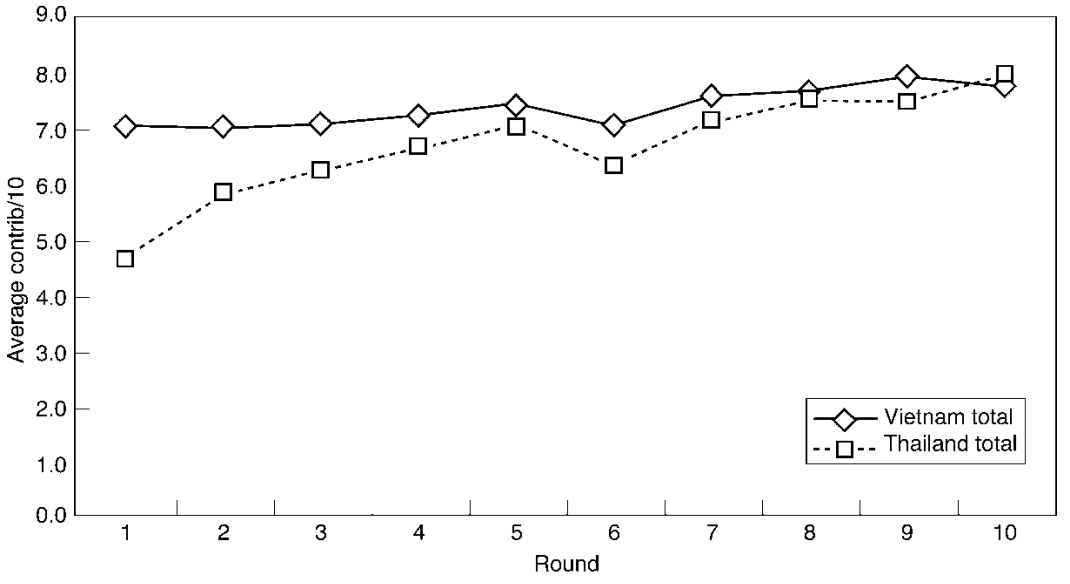

Figure 1. Average contribution per round, by country.

first trip behind the blind, each participant faced the same 2 choices—to allocate some or all of the money to the public good or to keep it all. The only difference occurred on the second trip behind the blind, when the participant was informed how much the other participants contributed and picked up her earnings from the public good. At that point, each participant could elect to pay one-fifth of a bill or coin visually to sanction the rest of the group at the start of the next round.

We were interested in noting the number of times that a participant was willing to pay to show her dissatisfaction as economists use this as a measure of the propensity to punish others, which can be considered an element of trust and co-operation. At the completion of both sections, following the tenth round, all the participants were interviewed and given another payment for staying for the interview. A brief survey was conducted during this final interview and included demographic questions as well as some information regarding individual values/norms and their environmental behaviour.

Results

Overall Trust

Perhaps the most important finding from our research is that both methods, but particularly the game methodology, revealed very high levels of trust and co-operation among participants in both cities and among all the communities studied. As can be seen from both Table 1 and Figure 1, the contribution per round of the experimental game averaged more than 70 per cent of the amount it was possible to contribute for much of the game. Such high levels of contribution are very unusual and almost without precedent, particularly in North America and Europe where the average mean contribution is generally between 40 and 60 per cent of the possible maximum.

In general, we find that the Vietnamese participants are more likely than Thai participants to contribute larger amounts to the common pot. This is particularly true in the first 5 rounds of the game. Assuming each round of players to be independently drawn

Table 1. Overall game results (mean contribution per round)

Cities	Round										Total
	1	2	3	4	5	6	7	8	9	10	
Bangkok ($N = 120$)	4.7	5.9	6.3	6.7	7.1	6.4	7.2	7.5	7.5	8.0	6.7
Ho Chi Minh ($N = 120$)	7.1	7.1	7.2	7.3	7.4	7.1	7.6	7.7	7.9	7.8	7.4
Average of both	5.9	6.5	6.8	7.0	7.3	6.8	7.4	7.6	7.7	7.9	7.1
T-test scores	0.00	0.00	0.02	0.10	0.52	0.05	0.20	0.45	0.30	0.58	0.22

Table 2. Trust index calculated from household survey, 2000

Cities	Trust index	Standard deviation
Bangkok	2.27	0.98
Ho Chi Minh City	1.04	1.37
Total average	1.66	1.18

from the same distributions (which may or may not reflect the underlying reality of the communities in question), a t-test rejects the hypothesis that the mean contributions of residents from Bangkok and residents of Ho Chi Minh City are equal at beyond the 5 per cent level for rounds 1, 2, 3 and 6. The difference between the two cities' participants is not significant on average as can be seen in the total column. In essence, the Vietnamese contributions were fairly steady throughout the course of the game, which is quite atypical for a majority of this type of game. Most researchers report a decrease in contributions over each successive round of the experiment, despite the introduction of a sanction opportunity (Carpenter, 2002; Solow and Kirkwood, 2002). It is also apparent that the participants of both cities were motivated to increase their contributions following the imposition of sanctions; however, it is hard to tell whether punishment mattered, considering that the trend before punishment was to increase one's contribution.

Results from the household survey, collected from respondents in these same communities two years earlier, found similar, but less striking, evidence of co-operation. The survey contained a number of questions regarding trust and co-operation, including the National Opinion Research Centre's General Social Survey that has included questions on trust since 1972.[10] Table 2 presents the mean values of a trust index that we constructed using responses to the trust question to summarise each individual's basic level of trust (Daniere *et al*., 2002).[11]

While we found evidence of a high level of trust using the survey, it appears that respondents in Vietnam are somewhat less trusting of their neighbours and community members than respondents in Thailand. The average value of the trust index is only equal to 1.04 in Vietnam, but is 2.27 in Thailand. Except for being more likely to say that they feel that their immediate neighbours are like family than Thai households (14.9 per cent of Vietnamese respondents compared with only 6.5 per cent of Thai respondents), Vietnamese respondents are less likely to trust their neighbours across the spectrum of trust questions.

A possible explanation for this trend, according to our research collaborators, is that Vietnamese communities are poorer and more politically charged than Thai communities. It is certainly true, based on the socio-economic data we collected at the same time, that the expenditures per household are some 60 per cent less among Ho Chi Minh City respondents than in the Bangkok neighbourhoods that we surveyed. Similarly, there is a much more established and enforced political system at work in Ho Chi Minh City communities than one finds in Bangkok. Our data

Table 3. Social integration results from household survey, 2000 (percentages)

Cities	Q35 Belong to community groups	Q45 Participatory decision-making	Q33c Participate in group project
Bangkok	13.4 (65)	35.7 (36)	71.7 (256)
Ho Chi Minh	30.6 (153)	54.0 (81)	62.1 (195)
Total average	56.0		67.4

Table 4. Game results by gender (mean contribution per round)

	Round										
	1	2	3	4	5	6	7	8	9	10	Total
Female ($N = 120$)	5.6	6.4	6.6	6.9	7.3	6.6	7.1	7.3	7.6	7.8	6.9
Male ($N = 120$)	6.2	6.6	6.8	7.1	7.2	6.9	7.6	7.9	7.8	8.0	7.2
Average of both	5.9	6.5	6.7	7.0	7.3	6.8	7.4	7.6	7.7	7.9	7.1
T-test scores	0.18	0.69	0.67	0.73	0.86	0.39	0.16	0.04	0.57	0.39	0.47

collection—for example, engendered much more monitoring, interference and comment in Vietnam than it did in Bangkok where we were essentially ignored by local, regional and national authorities.

Interestingly, while trust levels in Bangkok, according to survey results, are higher in Bangkok than in Ho Chi Minh City, we did find that other dimensions of social capital appear to be higher in Ho Chi Minh City than in Bangkok. Several questions in the survey were designed to measure or assess the degree of social integration within communities. The social integration questions measured the connection between the level of intracommunity networks and environmental or infrastructure practices. As an example, respondents were asked about the willingness of their household and other community members to raise and contribute significant resources for environmental improvements.

An important point is that respondents in Ho Chi Minh City are more than twice as likely to belong to a community group than Bangkok respondents (Table 3). More than 30 per cent of all Ho Chi Minh City respondents belong to community groups compared with a mere 13.4 per cent of all Bangkok respondents. Furthermore, the groups are described by Vietnamese participants as relatively inclusive and open in their operating principles compared with the groups described by Bangkok respondents. The importance of such features of group dynamics is often highlighted in the social capital literature as helping to create situations that generate positive social capital (Isham and Käkhönen, 2001).

Another indicator of social integration is the percentage of households who said they participated in community improvement projects in the past. In this case, Bangkok respondents overall claim somewhat higher levels of actual participation than the people we surveyed from Ho Chi Minh City. Approximately 62 per cent of all respondents in Ho Chi Minh City reported that they participate in community projects compared with almost 72 per cent of all Bangkok respondents.[12] Interestingly, neither group membership nor participation in community efforts within the past year differed significantly across gender lines. What is evident is that responses to trust questions do not capture all social capital dimensions and, also, there is inconsistency in responses related to other types of social capital question in terms of which cities and gender groups exhibit more social capital potential.

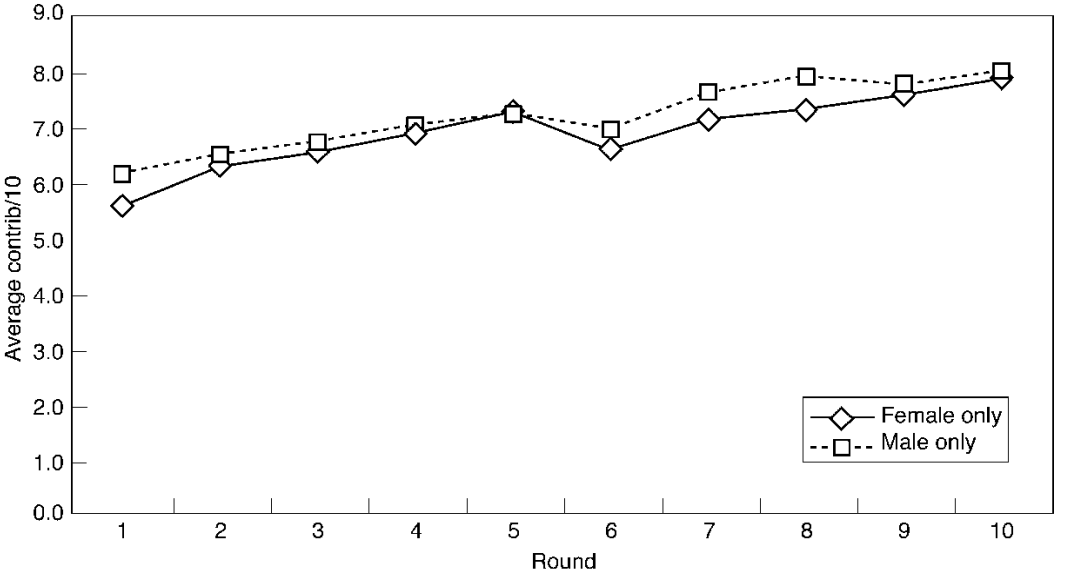

Figure 2. Average contribution per round, by gender.

The Role of Gender

Table 4 and Figure 2 present the average contributions of all participants in each round and in total, broken down by gender. Combining all groups, from both countries, it appears that male participants contributed slightly more, on average, than female participants although this is not a statistically significant difference except for round 8. As can be plainly seen from Figure 2, both male and female participants increase their contributions to the common pot over the course of the game with a slight dip in contributions immediately following the introduction of the sanction option. Again, this is a very unusual pattern as, in most examples in the literature, participants tend to decrease their contribution fairly steadily during the course of the game.

Table 5 presents data for both cities broken down by gender. The most obvious finding here, and one that is supported by our initial premise, is that female participants in Ho Chi Minh City contribute a significantly higher level of *dong* to the common pool than male participants. As shown in Figure 3, female contributions are higher than male contributions for the entire 10 rounds of play. In addition, after sanctioning is introduced in round 6, there is a marked increase in male contributions for a short period that then flattens out somewhat. Again, what is particularly striking for the Vietnamese case is that average contributions are so consistently high across the board. In most instances of similar games played in other experiments, average contributions hover between 40 and 60 per cent of the social optimum when punishment that actually imposes a monetary cost on the punishee is allowed and decreases to 10 or 20 per cent when no punishment is allowed, while in Vietnam the average contributions are close to 75 per cent.

Finally, we see in the final portion of Table 5 and Figure 4, that Thai male participants are more likely than Thai female participants to contribute significant amounts to the common pot. While in both cases contributions increase more or less steadily over the course of play, male participants contribute significantly more (Figure 4). As is the case in Vietnam, these gender differences are statistically significant at the 5 per cent level. Interestingly, the data from the earlier household survey suggested that no real trend ex-

Table 5. Game results by city and gender (mean contribution per round)

	Round										
	1	2	3	4	5	6	7	8	9	10	Total
Bangkok											
Female ($N = 60$)	3.8	4.9	5.4	6.1	6.5	5.6	6.4	6.6	6.8	7.3	5.9
Male ($N = 60$)	5.6	6.8	7.1	7.3	7.8	7.3	7.9	8.4	8.3	8.7	7.5
Average of both	4.7	5.9	6.3	6.7	7.2	6.5	7.2	7.5	7.6	8.0	6.7
T-test scores	0.00	0.00	0.00	0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Ho Chi Minh City											
Female ($N = 60$)	7.5	7.9	7.8	7.8	8.1	7.7	7.8	8.0	8.4	8.2	7.9
Male ($N = 60$)	6.7	6.4	6.5	6.8	6.7	6.5	7.3	7.5	7.3	7.4	6.9
Average of both	7.1	7.2	7.2	7.3	7.4	7.1	7.6	7.8	7.9	7.8	7.4
T-test scores	0.11	0.00	0.00	0.06	0.00	0.01	0.24	0.29	0.01	0.05	0.08

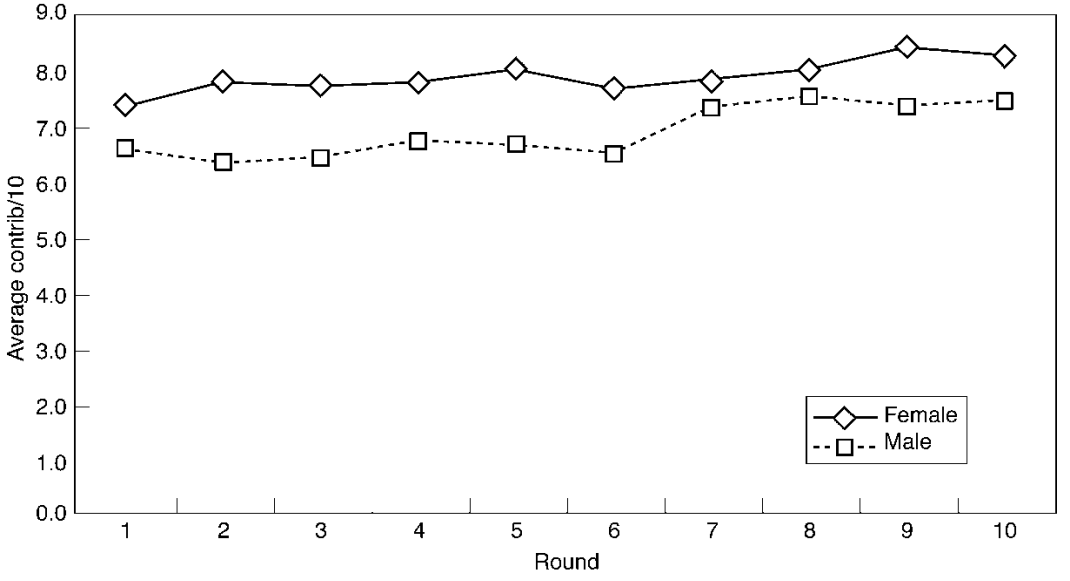

Figure 3. Average contribution per round in Vietnam, by gender.

ists regarding trust between male and female respondents, particularly when the data from the two countries are combined.

In Table 6 and Figure 5, we disaggregate the data even more. As noted earlier, we constructed different types of group to play the game in each of the 10 communities. We had 2 groups each of all-female participants, 2 groups each of all-male participants and 2 groups each of mixed-gender participants. In Table 6, rather than aggregating all the female participants and all the male participants together, we divide the data further by noting whether the participants were in an all-male, all-female or mixed-gender group.

The most striking point to be gleaned from this table is that, while the gender difference between male and female participants in Vietnam holds true for segregated groups, it virtually disappears in the mixed groups. In Bangkok, in contrast, the gender differences noted earlier are apparent in both segregated and mixed-gender groups. Figure 5 summarises the contributions of all mixed groups

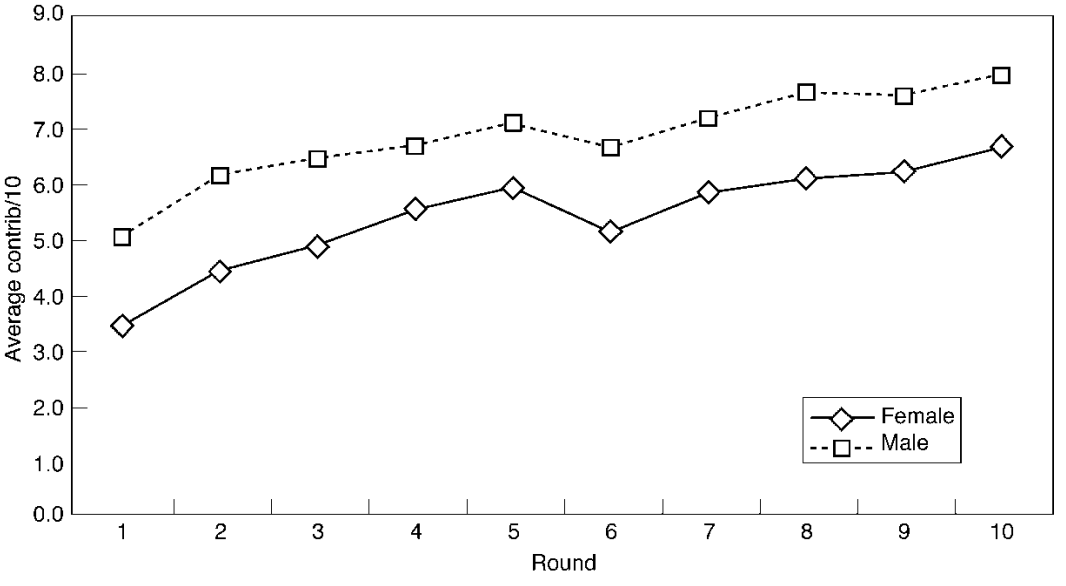

Figure 4. Average contribution per round in Thailand, by gender.

in both countries disaggregated by male and female participants. In the case of Bangkok, the participants in the mixed groups have total higher contributions across the rounds played than participants in the corresponding segregated groups. In other words, playing together is associated with both groups contributing more than when they play in single-sex groups (i.e. females in mixed games contribute on average 6.1 per round vs 5.9 per round in segregated groups and males from mixed groups contribute an average of 8 per round compared with 7.5 when they play in segregated groups). The Vietnamese situation is similar in that the female and male participants in mixed groups contributed higher total average contributions than participants in all-female or all-male groups. Interestingly, Ho Chi Minh City female participants in mixed groups are the highest bidders or contributors of all the different groups we examined.

Summary and Conclusions

An important finding elaborated in this paper is the very high, by Western standards, levels of trust and co-operation, as estimated by the average contribution levels during the course of the games, found in both Bangkok and Ho Chi Minh City participants. As noted earlier, most researchers have found that participants contribute between 40 and 60 per cent of the social optimum (or, in terms of our game, between 4 and 6) and that the average contribution decreases with rounds played. We found that average contributions were between 60 and 80 per cent and that players generally increased their contributions or bids over the 10 rounds. One possible explanation for this is that the participants in both cities come from relatively stable and very low-income communities. Most of these communities have a history of working together on minor and major initiatives to improve their communal quality of life. Furthermore, while some of the communities are quite populous (up to 1500 people in the community), many of the individuals know each other to some degree. Thus, both the size and the nature of the communities from which the players are drawn might influence the measured level of trust or co-operation, and are likely to exceed that observed among

Table 6. Game results by group, country and gender (average contribution per round)

	Round										
	1	2	3	4	5	6	7	8	9	10	Total
By group and gender											
Female ($N = 80$)	5.4	6.1	6.4	6.8	7.0	6.5	6.8	7.1	7.6	7.7	6.7
Male ($N = 80$)	5.9	5.9	6.3	6.6	6.7	6.7	7.3	7.6	7.4	7.9	6.8
Mixed ($N = 80$)	6.5	7.4	7.5	7.6	8.1	7.3	8.1	8.2	8.1	8.2	7.7
Mixed female ($N = 40$)	6.3	7.2	7.2	7.2	7.9	7.0	7.9	7.7	7.7	7.9	7.4
Mixed male ($N = 40$)	6.8	7.5	7.9	8.0	8.3	7.5	8.4	8.7	8.6	8.5	8.0
Total average	5.9	6.4	6.7	7.0	7.3	6.8	7.4	7.6	7.7	7.9	7.1
Bangkok, by group and gender											
Female ($N = 40$)	3.6	4.7	5.1	6.1	6.2	5.7	6.2	6.5	7.0	7.5	5.9
Male ($N = 40$)	5.4	6.0	6.7	7.2	7.5	7.1	7.7	8.0	8.1	8.7	7.2
Mixed ($N = 40$)	5.0	6.5	7.0	6.8	7.7	6.6	7.6	8.0	7.5	7.8	7.1
Mixed female ($N = 20$)	4.1	5.4	6.2	6.1	7.0	5.4	7.0	6.7	6.3	6.9	6.1
Mixed male ($N = 20$)	6.0	7.6	7.9	7.5	8.4	7.7	8.2	9.3	8.6	8.7	8.0
Total average	4.7	5.7	6.3	6.7	7.2	6.5	7.2	7.5	7.6	8.0	6.7
Ho Chi Minh City, by group and gender											
Female ($N = 40$)	7.1	7.4	7.7	7.5	7.8	7.2	7.4	7.6	8.2	7.9	7.6
Male ($N = 40$)	6.3	5.8	5.8	6.0	5.9	6.2	6.8	7.2	6.7	7.0	6.4
Mixed ($N = 40$)	8.0	8.2	8.0	8.4	8.5	8.0	8.6	8.4	8.7	8.6	8.3
Mixed female ($N = 20$)	8.4	9.0	8.2	8.3	8.7	8.6	8.7	8.7	9.0	8.9	8.7
Mixed male ($N = 20$)	7.6	7.4	7.9	8.5	8.2	7.3	8.5	8.1	8.5	8.3	8.0
Total average	7.1	7.1	7.2	7.3	7.4	7.1	7.7	7.9	7.9	7.9	7.5

Note: Total averages calculate the combined averages of female, male and mixed categories.

students at major universities or other similar types of unconnected social group (Kollock, 1998).

In terms of the noted differences in gender between countries, we have several competing explanations as to why female participants are more trusting and co-operative than male participants in Ho Chi Minh City but less co-operative and trusting than male participants in Bangkok. In Vietnam, while household management tasks tend to be gender-driven—i.e. if there is a woman of sufficient age and experience in the household, she will be in charge of running the household on a day-to-day basis—women and men in a household do also share budgeting responsibility and decision-making. In addition, most women in Vietnam earn income for work outside or inside the home and are, consequently, material contributors to household income and wealth. Women have been targeted historically by the Communist Party in Vietnam to work on communal projects and are supposed to be treated, in law anyway, as being equal to men. There is an impressive legacy of rhetoric in Vietnam extolling gender equality and the active participation of women in the economy and community noted by a number of commentators (Coit, 1998). This legacy or philosophy may explain the high rates of contribution among the Vietnamese participants overall and the particularly high level of trust and co-operation that we found on the part of Vietnamese female participants.

The household division of labour in Bangkok is somewhat different. Traditionally, men in Thailand are supposed to give

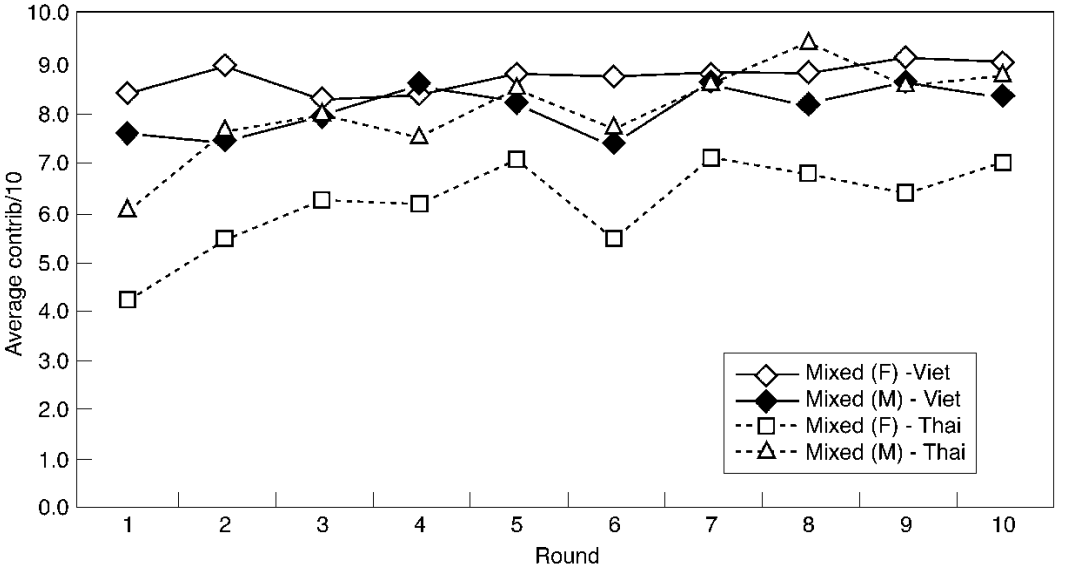

Figure 5. Average contribution per round, mixed by country and gender.

everything they earn to their female partner so that she, with her heightened sense of household needs and priorities, can manage the household budget. While this pattern is becoming less prevalent, it is a well-accepted Thai practice that many claim to follow. In fact, many men apparently hand over a sizeable portion of their earned income to their partners but retain a small part for gambling and gaming purposes. Gambling is endemic in Thailand and is one of the most popular pastimes for men, in particular. While we have no survey evidence on this point to present at this time, it may well be that while the participants in Bangkok who played the game were similar to Vietnamese in that they were residents of long-standing and relatively co-operative communities, they differed in their gender relations and habits.

The Thai female participants played conservatively and were less trusting, perhaps stemming from their personal experience in balancing meagre household budgets. Their play exhibited much more risk-aversion than either Thai male or Vietnamese male or female participants. At the same time, it is possible that Thai male participants who may have looked upon the funds provided as 'play money' actually used it for gambling purposes in that the game can be perceived, by people who gamble regularly, as a gamble with a high probability of paying off or, in other words, as a very good bet. Gambling is unusual and generally scorned in Vietnam, which might explain the lack of this kind of attitude among either Vietnamese male and female participants.

The two sets of results drawn from the survey and the experimental games provide an opportunity to assess the complex nature of trust, reciprocity and co-operation among these Thai and Vietnamese participants. According to the survey, respondents in Bangkok say that they are more trusting of their neighbours than in Vietnam, indicating that social capital is more solidified among Bangkok respondents. However, the behavioural measures of trust (through the experimental games) indicate that the survey questions may not provide an accurate portrait of the level of trust within a community (self-report is likely to inflate the degree of trust). These self-reports may be seen instead as providing a sense of the socially acceptable norms of behaviour within communities. That is, the responses reflect the prevailing

norms of behaviour within specific communities across places. While it is important for our definition of social capital to understand the direct linkages among trust, reciprocity, co-operation and environmental improvements, it is also vital to explore whether these networks are empowering or coercive. The social capital approach assumes that resources acquired through networks are positive and empowering but, as Bourdieu (1985) has argued, such networks can also reinforce existing relations of power, resulting in coercive and disempowering, although perhaps economically advantageous, circumstances.

The experimental game results indicate that the Vietnamese participants contributed significantly more to a common pool of money from which all would reap benefits than the Thai participants. These results are consistent with the surveyed reported behaviour of Ho Chi Minh City respondents *vis-à-vis* Bangkok respondents in terms of social integration—i.e. group membership and community participation. The game results measure a different component of social capital than the trust questions on the survey; the experimental game assesses face-to-face interaction under relatively controlled circumstances, providing additional insight into how participants might behave when faced with the social dilemmas inherent in communal environmental and infrastructure projects.

The two empirical analyses together provide a more complete portrait of social capital than either method alone. The survey results provide insight into the stated preferences of respondents, indicating the prevailing norms of behaviour especially in these two cultures, where conflict and disagreement are typically avoided. The experimental game results provide data on potential behaviour given a narrowly defined set of rules, actions and outcomes. These results provide insight into potential actions by participants given the complexity of actual projects and also indicate the potential high level of community support that might be gained if communities in both places were made aware of individual resource gains through social network interaction and communal action.[13]

There are several research and policy implications that may be drawn from this analysis. First, in terms of implications for investigating social capital, especially for scholars interested in developing countries, the analysis made clear that the use of a multimethod approach is critical in highlighting the complex dimensions of trust and co-operation. Using a combination of the two methods (surveys and experimental games) tended to compensate for weaknesses in either method alone and also highlighted potential areas for policy intervention. The gender differences in trust and co-operation indicated by the survey and the experimental game results suggest that there are aspects of social and cultural norm structure (for example, gambling, household budget decisions) that play central roles in the nature of communal action. For example, researchers have suggested that women in the developing world are decision-makers in household activities concerning water, solid waste and sanitation, further indicating that women may therefore be the key actors in any communal activity associated with community environmental improvements. However, this analysis indicates that trust and co-operative action may be more complex than the aggregation of household action to larger groups. Instead, the findings indicate that participants' stated beliefs and attitudes may differ radically from their co-operative behaviour and that such behaviour may depend on the gender relations of the specific group (i.e. mixed-gender groups versus single-gender groups). While social capital may be seen in the literature as generally non-gender specific, this analysis points to the need for detailed articulation of trust and co-operation across many dimensions of social relationships (age, race/ethnicity, household size, etc.). Much more work is necessary to determine how broader social relationships, such as gender, point to viable strategies or significant obstacles to harnessing and sustaining the form and function of social capital in distinct places and communities.

Related to this, a second set of implications involves how social capital should be

conceptualised and framed given a multimethod empirical approach. Multimethod approaches have embedded within them disparate and at times contradictory conceptual underpinnings, making interpretations and conclusions challenging. For example, in this analysis, survey methods and experimental games resulted in seemingly contradictory results concerning the gender differences in trust and co-operative behaviour between Thai and Vietnamese participants, and between male and female participants. We would argue, however, that each method highlights significant but distinct elements of social capital that provide components to a comprehensive understanding of this concept. It is difficult to assess which result is more accurate, the survey results or the experimental games, since accuracy is dependent on the conceptual assumptions made prior to the analysis. However, there is a larger issue that emanates from a multimethod approach, that both results are accurate but that they measure varying dimensions of social capital that are relevant for developing distinct policy strategies for community action. Consequently, the charge for future research is to continue to use multimethod approaches to develop a more comprehensive portrait of social capital, trust and co-operation.

Finally, the third set of implications is related to developing effective and appropriate policy interventions that will incorporate the norm structures and daily practices of community members, to improve local environmental conditions and quality of life for low-income residents. The analysis indicated that residents in low-income settlements across the two cities are likely to participate in communal action around environmental improvements and that, more importantly, there remains individual commitment to communal goals through time (as indicated by activities throughout the rounds of the games) and across place (as indicated by the similar patterns across neighbourhood participants in each city). There are specific policy levers that should be investigated further, such as mixed-gender groups in designing, promoting and implementing communal projects, and the relatively untapped potential exhibited for communal action when projects are depicted as public goods with individual and communal benefits. Community participation will remain a critical component of all environmental management policies throughout the developing world. Continued investigation of the nature and problematic of communal action is necessary for such policies to be both cost-effective and appropriate.

Notes

1. Decisions within households concerning water and solid waste are usually made by women, especially in the developing world (Daniere and Takahashi, 1999), and as extensions of such domestic responsibilities, women are also often the instigators of community cleaning (Milroy and Wismer, 1994). However, more research is needed to articulate the linkages among social capital, gender, and environmental or infrastructure management within neighbourhoods, especially in rapidly developing urban contexts (Andreoni and Vesterlund, 2001; Croson and Buchan, 1999).
2. The social capital theorist Bourdieu (1985) makes clear the conflict and normalisation inherent in resources available through social networks and groups.
3. A key feature of experiments, for example, is that participants have some incentives to behave selfishly because their behaviour is linked with potential earnings and, typically, more self-interested behaviour pays more. Notice this also means that behaving non-selfishly in an experiment is different from saying one would behave unselfishly on a survey. For example, in social dilemma games, it is materially costly to co-operate because free-riding always yields a higher pay-off. Hence, forgoing the free-rider's increment means one is essentially willing to pay a cost to co-operate and this cost is not incurred when filling out a survey. Conversely, surveys are able to control the framing or contextual issues of the situation much more effectively than experiments and can usually, therefore, be generalised to broader populations. Furthermore, in terms of implementation, surveys may be administered to all sorts of groups and communities, beyond 'captive' students in economic experiments (Carpenter, 2002).

4. Few studies utilise the two methods together to study the same community or group although there are a number of reasons why it might make sense to rely simultaneously on both types of approach when evaluating the impact of social capital in a population (Carpenter, 2002). Many researchers have argued that self-reported responses to behavioural questions having to do with social dilemma situations (for example, questions on trust) in surveys do not match actual behaviour (Glaeser *et al.*, 2000). On the other hand, the data from experiments are criticised because of their questionable external validity (for example, how can the results of experiments conducted with students in a homogeneous laboratory be generalised beyond the confines of the university or student body?).
5. Details regarding the location and characteristics of these communities are available from the authors.
6. Some questions differed in tone or exact translation because native speakers felt that the language used or the approach taken in English or the other language was not appropriate for that given context. Details regarding the survey and implementation procedures can be found in Daniere *et al.* (2002).
7. Following the United Nations (1987), we defined households to mean any group of people who lived together and pooled their resources to manage their day-to-day existence.
8. See Ledyard (1995) for a survey of the results from the voluntary contribution mechanism. The instructions to participants are available from the authors upon request.
9. The pay-off function for each player is simply

$$Payoff_j = (10 + x_j) + \frac{2\sum x_j}{4}$$

where, x_j is individual j's contribution to the public good (and a behavioural measure of the propensity to co-operate in a social dilemma). This is a social dilemma because putting any money in the public good returns only half that amount to the participant; this means free-riding is the dominant strategy. But, if all participants allocate everything, they each receive 20 back which is larger than the 10 they receive if each participant keeps it all, so contributing is socially efficient.
10. The questions included items such as:

    Q28: "If your household was short of food and/or money, could you ask people in this neighbourhood for help?"
    Q29: "Do most people try to be helpful to their neighbours?"
    Q30: "Would you ask neighbours to keep an eye on your house when you are away?"
    Q31: "How do you feel about your next-door neighbour?".
11. 11. The trust index (*trustind*) is an additive index (range: 0–4) composed of the following items

    Q28: If your household was short of food and/or money, could you ask people in this neighbourhood for help? If "yes", then *trustind* increases by one; if "no" or "don't know" or "refused", then *trustind* remains unchanged.
    Q29: Do most people try to be helpful to their neighbours? If "yes", then *trustind* increases by one; if "no" or "don't know" or "refused", then *trustind* remains unchanged.
    Q30: Would you ask neighbours to keep an eye on your house when you are away? If "yes", then *trustind* increases by one; if "no" or "other", then *trustind* remains the same.
    Q31: How do you feel about your next-door neighbour? If participant responds, "like family," then *trustind* increases by one; any other response does not affect the value of *trustind*.
12. This question was asked only of respondents who said that they were aware of community improvement projects within the past year. In the case of Bangkok, some 357 respondents (or 71.4 per cent) of respondents claimed to know of such projects compared with only 314 respondents (or 62.8 per cent) of all Ho Chi Minh City respondents.
13. At the same time, however, we should note that the monetised experimental games are heavily imbued with Western values and may actually teach participants even more mistrust of academic researchers. Finding an alternative way to conduct an experimental game that relies on more culturally appropriate values may be the best way to proceed. We are indebted to an anonymous reviewer for this insight.

References

ALRECK, P. L. and SETTLE, R. B. (1995) *The Survey Research Handbook*, 2nd edn. Boston, MA: Irwin McGraw-Hill.

AMIN, R., BECKER, S. and BAYES, A. (1998) NGO-promoted microcredit program and women's empowerment in rural Bangladesh: quantitative and qualitative evidence, *Journal of Developing Areas,* 32(2), pp. 221–236.

ANDERSON, C. L., LOCKER, L. and NUGENT, R. (2002) Microcredit, social capital and common pool resources, *World Development,* 30(1), pp. 95–105.

ANDREONI, J. and VESTERLUND, L. (2001) Which is the fair sex? Gender differences in altruism, *The Quarterly Journal of Economics,* 116(1), pp. 293–312.

BARR, A AND KINSEY, B. (2002) *Do men really have no shame*. Working Paper WPS2002.05, Center for the Study of African Economics.

BOURDIEU, P. (1985) The forms of capital, in: J. G. RICHARDSON (Ed.) *Handbook for Theory and Research for the Sociology of Education*, pp. 241–258. New York: Greenwood.

BROWN-KRUSE, J. AND HUMMELS, D. (1993) Gender effects in public goods contribution: do individuals put their money where their mouth is?, *Journal of Economic Behavior and Organization,* 22, pp. 255–267.

CARPENTER, J. (2002) Measuring social capital: adding field experimental methods to the analytical toolbox, in: S. RAMASWAMY, J. ISHAM and T. KELLY (Eds) *Social Capital, Economic Development and the Environment*, pp. 119–137. Cheltenham: Edward Elgar Publishers.

COIT, K. (1998) Housing policy and slum upgrading in Ho-Chi-Minh City, *Habitat International,* 22(3), pp. 273–280.

COLEMAN, J. (1990) *Foundations of Social Theory*. Cambridge, MA: Harvard University Press.

CRANE, R. and DANIERE, A. (1996) Measuring access to basic services in global cities: descriptive and behavioral approaches, *Journal of American Planning Association,* 62, pp. 203–221.

CROSON, R. and BUCHAN, N. (1999) Gender and culture: International experimental evidence from trust games, *American Economic Review,* 89, pp. 386–391.

DANIERE, A. and TAKAHASHI, L. M. (1997) Environmental policy in Thailand: values, attitudes, and behavior among the slum dwellers of Bangkok, *Environment and Planning C,* 15, pp. 305–327.

DANIERE, A. and TAKAHASHI, L. M. (1999) Environmental behavior in Bangkok, Thailand: a portrait of attitudes, values, and practices, *Economic Development and Cultural Change,* 47(3), pp. 525–557.

DANIERE, A., TAKAHASHI, L. and NARANONG, A. (2002) Social capital, networks and community environments in Bangkok, Thailand, *Growth and Change,* 33(4), pp. 453–484.

DAVERN, M. (1997) Social networks and economic sociology: a proposed agenda for a more complete social science, *The American Journal of Economics and Sociology,* 56, pp. 287–302.

DAVIS, D. and HOLT, C. (1993) *Experimental Economics*. Princeton, NJ: Princeton University Press.

DEFILIPPIS, J. (2001) The myth of social capital in community development, *Housing Policy Debate,* 2(4), pp. 781–806.

DRAKAKIS-SMITH, D. and DIXON, C. (1997) Sustainable urbanization in Vietnam, *Geoforum,* 28, pp. 21–38.

DURLAUF, S. (2002) On the empirics of social capital, *The Economic Journal,* 112, pp. F459–F479.

FERBER, M. A. (1995) The study of economics: a feminist critique, *American Economic Review,* 85, pp. 357–361.

GAINSBOROUGH, M. (2002) Understanding communist transition: property rights in Ho Chi Minh City in the late 1990s, *Post-Communist Economies,* 14, pp. 227–243.

GERTLER, M. (1997) The invention of regional culture, in: R. LEE and J. WILLS (Eds) *Geographies of Economies*, pp. 47–58. London: Edward Arnold.

GLAESER, E., LAIBSO, D., SCHEINKMAN, J. A., and SOUTTER, C. L. (2000) Measuring trust, *Quarterly Journal of Economics,* 65, pp. 811–846.

GRAHAM, P. E. and MANNING, L. M. (2000) Women's poverty and entrepreneurship: replicating microloan programs in the developed world, *Journal of Economics,* 26(2), pp. 23–33.

GROOTAERT, C. and BASTELAER, T. VAN (Eds) (2001) *The Role of Social Capital in Development: An Empirical Assessment.* Cambridge: Cambridge University Press.

ISHAM, J. and KÄKHÖNEN, S. (2001) What determines the effectiveness of community-based water projects: evidence from Central Java, Indonesia, in: C. GROOTAERT and T. VAN BASTELAER (Eds) *The Role of Social Capital in Development: An Empirical Assessment*, pp. 123–154. Cambridge: Cambridge University Press.

KIM, W. B., DOUGLASS, M. and HO, K. C. (1997) *Culture and the City in East Asia*. Oxford: Oxford University Press.

KOLLOCK, P. (1998) Transforming social dilemmas: group identity and cooperation, in: P. DANIELSON (Ed.) *Modelling Rationality, Morality and Evolution*, pp. 186–210. Oxford, UK: Oxford University Press.

LEDYARD, J. (1995) Public goods: a survey of experimental research, in: J. KAGEL and A. ROTH (Eds) *The Handbook of Experimental Economics*, pp. 111–194. Princeton, NJ: Princeton University Press.

MAYER, M. (2003) The onward sweep of social capital: causes and consequences for understanding cities, communities and urban movements, *International Journal of Urban and Regional Research,* 27(1), pp. 110–132.

MILROY, B. M. and WISMER, S. (1994) Communi-

ties, work and public/private sphere models, *Gender, Place and Culture,* 1(1), pp. 71–90.

NARAYAN, D. and PRITCHETT, L. (1999) Cents and sociability: household income and social capital in Rural Tanzania, *Economic Development and Cultural Change,* 47, pp. 871–888.

ONYX, J. and BULLEN, P. (2000) Measuring social capital in five communities, *The Journal of Applied Behavioral Science,* 36, pp. 23–42.

OSTROM, E., GARDNER, R. and WALKER, J. (1992) Covenants with and without a word: self-governance is possible, *American Political Science Review,* 86, pp. 404–417.

OSTROM, E., GARDNER, R. and WALKER, J. (1994) *Rules, Games and Common-pool Resources.* Ann Arbor, MI: University of Michigan Press.

PARENTEAU, R. (1997) *Habitat et Environnement au Vietnam: Hanoi et Ho Chi Minh-Ville*. Paris: Editions Karthala.

PORTES, A. (1998) Social capital: its origins and applications in modern sociology, *Annual Review of Sociology,* 24, pp. 1–24.

PULIDO, L. (1998) Community, place, and identity, in: J. P. JONES, H. NAST and S. ROBERTS (Eds) *Thresholds in Feminist Geography*, pp. 11–28. Lanham, MD: Rowman & Littlefield.

PUTNAM, R. (1993) *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, NJ: Princeton University Press.

PUTNAM, R. (2000) *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon and Schuster.

SETCHELL, C. (1992) *Final report of the Greater Bangkok slum housing market study*. Prepared for the Regional Housing and Urban Development Office, United States Agency for International Development, Bangkok, Thailand.

SOLOW, J. and KIRKWOOD, N. (2002) Group identity and gender in public goods experiments, *Journal of Economic Behavior and Organization,* 48, pp. 403–412.

UNITED NATIONS (1987) *Statistical Yearbook*. New York: United Nations, Statistical Office.

WHITE, G. F., BRADLEY, D. J. and WHITE, A. U. (1972) *Drawers of Water: Domestic Water Use in East Africa*. Chicago, IL: University of Chicago Press.

WOOLCOCK, M. (1998) Social capital and economic development: toward a theoretical synthesis and policy framework, *Theory and Society,* 27, pp. 151–208.