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MEASURING COMMUNITY STRENGTH AND SOCIAL CAPITAL

by

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ABSTRACT

In 2001/02 a number of case study communities in both metropolitan and regional urban locations in Australia were chosen as test sites to develop measures of ‘community strength’ on four domains: Natural Capital; Produced Economic Capital; Human Capital; and Social and Institutional Capital. Secondary data sources were used to develop indicators to measure community strength on the first three domains, using official data that is readily accessible, including census information. For the fourth domain—Social and Institutional Capital—primary data collection was undertaken through sample surveys of households. A structured approach was devised, involving developing a survey instrument using scaled items relating to four elements—formal norms; informal norms; formal structures; and informal structures—which embrace the concepts of trust, reciprocity, bonds, bridges, links and networks in the interaction of individuals with their community inherent in the notion social capital. Exploratory principal components analysis was used to identify factors that measure those aspects of social and institutional capital, with confirmatory analysis conducted using the Cronbach’s Alpha. This enabled the construction of four primary scales and 15 sub-scales as a tool for measuring social and institutional capital. Further analysis reveals that two measures—Anomie and perceived quality of life and wellbeing—relate to certain primary scales of social capital.

1 INTRODUCTION

How to analyse and benchmark community performance is a long established concern of regional scientists. In Australia the recent literature includes: a study of patterns of community opportunity and vulnerability (Baum et al. 1999, 2002; Stimson et al. 2001a; Stimson et al. 2001b) which identifies localities by their level of performance across a wide range of socio-economic transition measures; a study of the changing roles of Australia's metropolitan cities (O'Connor and Stimson 1995); a study of patterns of change in regional cities (Beer et al. 1994); and a study of the functional roles of regional urban centres (Beer 1999; Beer and Maude 1995). There are also examples of research focusing more narrowly on more specific aspects of socio-economic performance, including: income (Hunter and Gregory 1996); poverty (Fincher and Nieuwenhuysen 1998); and unemployment (Stimson 1997; Stimson et al. 1998). In addition, there is a gathering interest in the nature and measurement of social capital (Onyx and Bullen 1997, 2000; Stone 2001).

In 1999 the Commonwealth Government released its *Stronger Families and Communities Strategy* (FaCS 1999), earmarking in the 1999–2000 federal budget AU\$240 for prevention, early intervention and capacity building initiatives. The development of policy has drawn attention to the various facets of strong communities, such as firm leadership, strong partnerships between the public and private sector, and a solid core of volunteers. The concern is that, in circumstances where the characteristics of a strong community are missing, members of that community have 'less capacity to meet the challenges of economic change and to cope with the pressures that lead to family and social breakdown' (FaCS 1999:4).

As part of its response, the Commonwealth Department of Families and Community Services initiated the *Community Strength Indicators and Measurement Project*. The first phase of that project was to undertake a review to develop a framework to analyse community strength and outcomes (Black and Hughes 2001). The second phase of the project, undertaken by the authors (SERC 2002), took that framework and developed an instrument(s) to measure community strength which comprises a comprehensive and practical set of indicators. This paper provides an overview of the outcomes of that project, focusing on methodological issues in the approach used to measure community

strength with respect to four domains of community performance: (1) Natural Capital; (2) Produced Economic Capital; (3) Human Capital; and (4) Social and Institutional Capital. Particular attention is given to Domain (4).

2 CASE STUDY COMMUNITIES AND INFORMATION COLLECTION

Assessing community strength is complex not least because of the different meanings frequently given to the term ‘community’, which can, for example, be constructed in terms of a ‘community of location’ or a ‘community of interest’. Where secondary data—such as census information—is being used to provide variables to help measure community strength, one is restricted by the spatial units of aggregation/disaggregation for which data is available. In Australia the Statistical Local Area (SLA)—which typically equates with a local government area or sometimes with a suburb—is the spatial unit for which a wide range of census and other secondary data is available, including change-over-time as well as point-in-time information. In this study the SLA is used as a proxy for ‘community’.

Six case study SLAs were chosen to represent different types of communities that were also places of interest for FaCS as locales where program intervention has occurred or may be likely to occur. Five were in metropolitan or regional urban settings, namely:

- *Auburn*, a middle western suburban area in metropolitan Sydney, New South Wales
- *Richmond*, an old industrial suburb undergoing gentrification in inner metropolitan Melbourne, Victoria
- *Zillmere*, an outer northern suburban in metropolitan Brisbane, Queensland
- *Boonah*, a small town in a rural setting beyond the southeastern fringe of metropolitan Brisbane, Queensland
- *Eaglehawk*, part of Bendigo, a large regional urban centre in inland Victoria.

The sixth was a remote indigenous community, *Wadeye* (Daly SLA), located in the Northern Territory. However, this community is not included in the detailed discussion in this paper as it was decided that different methodologies were required to address and measure community strength in predominantly indigenous communities.

A summary profile of these communities is given in Table 1.

Table 1: Summary profiles of the case study communities

<p><i>Auburn</i>, located in metropolitan Sydney, is generally considered to be a lower socio-economic community. It had a population of 50,959 at the 1996 census of which 51.5 per cent were born overseas. The community has only a small indigenous population (0.8 per cent) a trait common to many metropolitan communities. 14 per cent of Auburn's labour force are unemployed. The median weekly household income is AU\$593.</p>
<p><i>Richmond</i>, located in the inner suburbs of Melbourne, had a population of 23,175 people with 37.7 per cent being born overseas, with the majority of these (85 per cent) being born in countries other than Canada, Ireland, New Zealand, South Africa, the United Kingdom and the United States of America. Again this community has only a small indigenous population (0.3 per cent), and of the 12,836 people in the labour force, 1,611 were unemployed, representing an unemployment rate of 12.5 per cent. Median household income in Richmond is AU\$644.</p>
<p><i>Zillmere</i> is located in the northern suburbs of Brisbane. It had a population of 7,651, of which only 17.7 per cent were born overseas, with a further 3.4 per cent being indigenous Australians. Of those born overseas almost half were born in Canada, Ireland, New Zealand, South Africa, the United Kingdom or the United States of America. Zillmere's unemployment rate is 10.1 per cent, and it has a median weekly income of AU\$531.</p>
<p><i>Boonah</i>, located on the fringe of the Brisbane metropolitan area, is a rural community with a population of 6,879 in 1996. Only 7.5 per cent of the population were born overseas, with a further 1 per cent being indigenous Australians. 245 of the labour force or 8.8 per cent are unemployed, and the median weekly household income is AU\$464.</p>
<p><i>Eaglehawk</i> is a community within the large regional centre of Bendigo in inland country Victoria. It had a population of 8,054, with only 3.8 per cent being born overseas and 1.2 per cent indigenous Australians. Eaglehawk has a labour force of 3,148 and of these 16.6 per cent are unemployed. The median level of household income in AU\$451 per week.</p>
<p><i>Wadeye</i> is a remotely located indigenous community located on the coastline of the Northern Territory towards the border with Western Australia. It had a population of 1,290 in 1996, of which 91.7 per cent are indigenous Australians. 10.4 per cent of the labour force are unemployed, and the level of median household income is AU\$866 per week¹.</p>
<p>Note:¹ Median household income in this community is high possibly due to (a) the large average household size and/or (b) the presence of highly paid non-indigenous workers in the town. Source: The authors, derived from ABS census data.</p>

Census and other secondary data readily available from the Australian Bureau of Statistics (ABS) and other public agencies was used to measure community strength vis-a-vis Domains (1), (2) and (3), whereas for Domain (4) it was necessary to develop an instrument(s) for primary data collection to gather the information necessary to measure the Social and Institutional Capital aspects of community strength. That involved conducting focus groups with stakeholder representatives from each community, and then developing, testing and validating an instrument(s) for collation of information to measure performance on that Domain, through a survey instrument(s)

administered to a random sample of approximately 100 households in five of the case study communities using the Computer Assisted Telephone Interview (CATI) mode.

3 SECONDARY DATA ANALYSIS AND INDICATORS FOR DOMAINS (1), (2) AND (3)

3.1 The approach

The approach was to develop relatively simple measures of community strength regarding the three Domains—(1) Natural Capital; (2) Produced Economic Capital; and (3) Human Capital—using data on SLAs available from the ABS and other public agencies. All the data sources used are readily available and may be readily accessed by any community. In the majority of cases the measures developed are presented as percentages or as rates per 10,000 population and are benchmarked against the comparable figure for Australia as a nation vis-a-vis an indicator. In other cases a *location quotient* (LQ) is produced, which compares the incidence of a phenomenon for a SLA (community) against the equivalent measure of the incidence of that phenomenon for Australia as a whole; thus where $LQ \geq 1$ there is an equal or greater incidence of that phenomenon in a community vis-à-vis Australia, and where $LQ < 1$ the incidence of that phenomenon in a community is lower than it is for Australia as a whole.

The initial task associated with secondary data analysis was to identify suitable measures (indicators) to operationalise Domains (1), (2) and (3). Measures had to be: (a) available at the SLA level; (b) readily accessible; and (c) easily understood.

3.2 Measuring Domain (1): Natural Capital

According to Hart (2000), Natural Capital assets of a community include: (a) natural resources; (b) ecosystems services; and (c) the authenticity or beauty of nature. Natural resources are those things a community can take from the natural environment and use either as raw materials or in the production process. Ecosystems services are natural processes on which we depend; for example, the processes whereby trees convert carbon dioxide into oxygen and sequester the carbon. The third form of Natural Capital consists of those natural attributes which are admired; for example, wilderness,

mountain ranges or native wildlife. All of these contribute to the strength of local communities. However, the challenge is to use and develop Natural Capital in ways that sustain and enhance that Natural Capital.

Among the ways to conceptualise this Domain is to refer to the Condition-Pressure-Response framework, as suggested by Black and Hughes (2001), and as commonly used in state of environment reporting (Newton et al. 2001). The problem is that for many of the indicators proposed in such approaches, data is not available at the disaggregated level of scale of the SLA, and nor is it readily available (e.g. social quality, fish stocks, per capita water consumption, emissions of air pollutants, availability of recycling, etc.). Comprehensive national databases at a standardised disaggregated level of scale simply do not exist. It is indeed important that comprehensive measures of Natural Capital are, in the future, developed at the SLA level, but currently there exist very considerable restrictions on what aspects of Natural Capital can be measured according to the criteria set out above. Those measures used are given in Table 2, along with the measures derived for the case study communities.

Gross population density is used to measure an aspect of the *condition* of the environment. The *pressures* on the environment are measured by three indicators—*population* and *household growth* over the decade 1986 to 1998, and an *in-migration* indicator. *Population in-movement* can impact on the *condition* of the Natural Capital Domain, but it also impacts on other measures of local community performance (for instance, a community with a higher level of population turnover may witness a lower level of social capital and community cohesion).

It is certainly difficult to measure the *condition* of the Natural Capital in a community based on a single indicator or the restricted set of indicators listed in Table 2. However, even on those restricted indicators used, there are substantial differences even among the case study communities. The indicators of pressure suggest there is likely to be more *pressure* on the Natural Capital Domain of a community that is experiencing population growth; however, balancing that is the fact that fast growing communities are growing from a relatively small population base, and hence the subject of population growth may not be as significant as in other places.

Table 2: Natural Capital (Domain 1)

	Auburn	Richmond	Zillmere	Boonah	Eaglehawk	Daly (Wadeye)	Australia
Gross population density (2000) ¹	1796.70	3970.20	2061.80	4.64	699.90	0.10	4.85
Annual average rate of population growth (1986–96) ²	0.75	–0.04	0.59	1.29	0.24	4.90	1.28
Annual average rate of household growth (1986–96) ²	0.60	0.60	2.20	2.20	1.90	5.00	2.20
In-migration surrogate ^{2, 3}	37.18	48.82	42.30	34.75	36.28	23.60	39.91
Persons per dwelling ²	3.30	2.30	2.50	2.00	2.80	4.70	2.80

Notes:

1. Taken from Australian Bureau of Statistics, *Regional Population Growth*, Cat. No. 3218.0.
2. Taken from Australian Bureau of Statistics, CData96.
3. The in-migration indicator was derived from the Census question relating to previous place of residence.

4.3 Measuring Domain (2): Produced Economic Capital

Black and Hughes (2001:50) define Produced Economic Capital as being all products harvested and manufactured, the built environment and physical infrastructure, financial resources, and cultural and intellectual property. An *impact* issue is the extent to which it is owned within, or is available to, a community, and the degree to which there is an equitable distribution of resources throughout the community. The Domain relates to three areas: (a) economic resources associated with individuals, families and households; (b) economic resources associated with business and other organisations; and (c) infrastructure and public facilities within a community.

Hustedde et al. (1995) review a range of tools suitable for assessing community performance with respect to Produced Economic Capital, including econometric and spatial analytic tools to calibrate economic multipliers, and to measure trade areas, employment shifts and the efficiency of firms. The data required to operationalise tools such as input-output analysis and shift-share analysis are rarely available at the level of disaggregation applicable to a community such as a SLA. Thus, many of the indicators of Produced Economic Capital as proposed by Black and Hughes (2001:42–55) cannot be used at the level of the SLA.

The indicators used for this Domain and the measures for the case study SLAs are given in Table 3. They were chosen as representing measures relating to the above three areas of Produced Economic Capital. Economic resources of individuals and households were measured using the indicators *home ownership*; a measure of *housing related financial stress*; *per capita household income*; *households without a motor vehicle*; the *incidence of recipients of government benefits*; the *rate of household income tax to benefits received*; and the *percentage point change over time (1986–1996) in the incidence of high and low income households*. Economic resources associated with business and other organisations were measured by the *ratio of the shares of non-residential investment in construction to the share of national population*; and the *total value of non-residential construction investment over the period 1989–1998*. Infrastructure and public facilities are measured by: the *ratio of the shares of public sector construction investment to the share of national population*; the *Accessibility Remoteness Index of Australia (ARIA)* for localities; the *number of banks and financial institution establishments per 10,000 resident population*; *medical services per 10,000 population*; and *preschools and schools per 10,000 population*.

Table 3: Produced Economic Capital (Domain 2)

	Auburn	Richmond	Zillmere	Boonah	Eaglehawk	Daly (Wadeye)	Australia
Economic resources of individuals and households							
• Home owners ¹ (%)	63.0	45.8	56.3	78.4	71.8	25.4	69.0
• Housing stress ¹ (%)	26.3	18.3	16.9	22.4	20.0	4.8	19.3
• Per capita household income ²	242.0	393.0	265.0	221.0	213.0	171.0	310.0
• Households without a motor vehicle ¹ (%)	20.9	27.4	18.2	7.0	13.5	35.6	11.6
• Government benefit recipients (16 yrs +) ³ (%)	41.4	33.8	27.4	44.1	51.6	25.9	32.1
• Tax: benefits ratio ³	0.8	1.6	1.3	0.7	0.5	1.2	1.6
• Point change in high-income households ⁴	8.1	15.1	4.3	5.2	1.4	12.5	9.3
• Point change in low-income households ⁴	1.1	-2.8	6.1	-0.6	5.0	-3.8	-1.3
Economic resources associated with business and other organisations							
• Share of non-residential investment—share of total investment to population share ⁴	4.3	2.1	0.25	0.25	0.25	1.0	
• Total investment (\$000,000) ⁴	1652	374	19	17	14	3	130,909
Infrastructure and public facilities							
• Share of public sector construction—share of total investment to population share ⁴	8.9	0.46	0.25	0.25	0.5	3.5	
• Remoteness index ⁵	0.0	0.0	0.0	2.1	0.36	8.2	
• Banks and financial institutions per 10,000 persons ⁶	1.6	7.2	3.9	6.0	—	—	5.0
• Medical services per 10,000 persons (doctors surgeries) ⁶	11.9	103.6	106.6	10.8	2.2	—	21.1
• Pre-schools and schools per 10,000 persons ⁶	3.0	5.6	53.3	18.1	7.8	54.3	10.1

Notes:

1. Taken from Australian Bureau of Statistics, CData96.
2. Taken from *Australia in Profile: A Regional Analysis 1996*, Australian Bureau of Statistics.
3. Taken from Rob Bray and William Mudd 1998 *The Contribution of DSS Payments to Regional Income*, DSS Technical Paper No. 2.
4. Taken from unpublished ABS data.
5. Taken From GISCA 1999 *Measuring Remoteness: Accessibility/Remoteness Index of Australia*, Department of Aged Health Care, Occasional Paper No. 6.
6. Taken from Marketing Pro database.

These indicators are seen to differ markedly across the case study SLAs. Home ownership rates are an important measure as home ownership represents a significant, if not the most significant asset of households. The housing related stress measure is a good indicator of socio-economic disadvantage as it measures the proportion of households in the bottom 40% of the income distribution who are paying more than 30% of gross income on housing costs. The other income and related measures used represent indicators showing the degree to which households in a community are dependent on transfer payments as well as the transition over time in the incidence of households in the top and bottom quintiles of the household income distribution. Lack of household access to a car is a useful measure of transport flexibility which may effect the welfare of household individuals. The ARIA index measures the remoteness of a community. The various measures of community shares of non-residential construction investment by the public and private sectors are useful proxies of investment in economic ability and infrastructure, and the indicators of per capita provision of community services and facilities are self-evident.

The data in Table 3 indicate that all communities perform strongly on at least one of the measures of Produced Economic Capital relating to households, but there exists considerable variability in the mix of performance on those indicators. Measures of Produced Economic Capital associated with businesses and organisations, and infrastructure and public facilities, tend to show that the metropolitan-based communities do better than the rural and regional communities.

3.4 Measuring Domain (3): Human Capital

Black and Hughes (2001:3) define Human Capital as ‘the capacity of people to contribute to , and this is important as it relates to the ability of a community to undertake activities in which the other forms of capital domains can be developed or produced. Human Capital can be measured with respect to: (a) skills and knowledge; (b) capacity to adjust to changing circumstances; (c) ability to contribute through participation; (d) social interaction and decision-making; and (e) management of health and disability. The first of these is readily measured through census data; but the degree to which other aspects of this domain are measurable using secondary data at the SLA level is not at all clear.

Table 4 sets out the indicators selected to measure the Human Capital Domain and gives the scores for the case study SLAs. These relate to: (a) measures of *local labour force skills and ability* using: data on the *incidence of degrees and vocational qualifications*; the *proportion of people who left school before 15 years of age*; and the *participation rate in tertiary education*; and (b) measures of the *size and quality of the labour force*, including data on: *labour from participation rates*; *female labour force participation rates*; *unemployment rate*; *change over time, 1956–1996, in labour force participation*; the *incidence of part-time work*; and the *concentration of employment in broad occupation groupings*.

The data in Table 4 show that the measures relating to skills, expertise and ability of the labour force do tend to differentiate between the case study SLAs, while for those indicators relating to the size and quality of the labour force tend to display less variability. However, the occupational characteristics of the labour force bring out differences between communities. As with the indicators of Produced Economic Capital, the Human Capital indicators are not necessarily interpreted in terms of their contribution to community strength.

3.5 Appraising the framework for Domains (1), (2) and (3)

The framework for the three Domains proposed by Black and Hughes (2001) discussed above is conceptually appealing, but it has proven to have some operational difficulties. Data limitations impose considerable constraints and it is not always possible to obtain secondary data at the SLA level to develop explicit indicators that truly reflect the intent of the implied measures for all components of the Domains as discussed by Black and Hughes. This is a particular problem with respect to Natural Capital. But there is also a difficulty with respect to the measurement of the infrastructure and public facility provision component of Produced Economic Capital. The utility of the measures contained presupposes that the use of the infrastructure facilities occurs within a given bounded area; the measure of community adopted—the SLA—is an administrative statistical unit, not a functional area. In metropolitan areas this becomes a significant problem for interpretation because a lower measure on an indicator might be an artifact of boundary definition and not of actual access opportunity for the resident population, with respect to the proximate provision of that facility. This is less a problem in rural and regional SLAs where the SLAs are more likely to be functional geographic areas encompassing a whole urban area (and perhaps its hinterland as well).

Table 4: Human Capital (Domain 3)

	Auburn	Richmond	Zillmere	Boonah	Eaglehawk	Daly (Wadeye)	Australia
Level of skill, expertise and ability							
• Workforce with degree qualifications ¹	8.90	21.30	5.90	5.40	3.60	4.70	10.40
• Workforce with vocational training ¹	19.90	21.00	21.90	18.20	21.70	14.00	25.70
• Persons who left school before 15 years ¹	28.90	19.90	44.60	55.90	41.10	29.50	33.30
• Tertiary education participation rate ¹	27.80	52.30	21.70	11.90	12.90	4.90	30.50
Size and quality of the labour force							
• Labour force participation rate ¹	54.00	67.00	56.00	55.80	51.70	42.70	61.90
• Female labour force participation ¹	32.30	51.20	38.40	33.40	32.80	20.80	40.60
• Change in the labour force ¹	0.80	8.40	4.30	6.80	2.30	31.00	14.70
• Unemployment rate ¹	14.30	12.50	10.10	8.80	16.60	14.40	9.20
• % Professionals/para-professionals ¹ (location quotient)	20.80 (0.73)	40.09 (1.41)	21.24 (0.74)	19.61 (0.69)	21.54 (0.75)	31.47 (1.11)	28.42
• % Clerical based workers ¹ (location quotient)	35.15 (1.21)	26.94 (0.92)	34.15 (1.17)	24.60 (0.83)	30.52 (1.05)	16.74 (0.57)	28.99
• % Routine production/old economy workers ¹ (location quotient)	36.80 (1.19)	22.10 (0.72)	38.50 (1.25)	33.10 (1.08)	41.60 (1.36)	38.20 (1.24)	30.70
• % Part time employment (location quotient)	23.50 (0.79)	25.90 (0.87)	27.00 (0.90)	27.80 (0.93)	35.10 (1.17)	23.30 (0.78)	29.90

Notes:

1. Taken from Australian Bureau of Statistics, CData96.

There is also a degree of overlap between these three Domains, and in particular between the Produced Economic Capital and Human Capital measures. For example, there is an interdependency between measures of household service and levels of labour force skills.

For universal meaning to be derived from the measures of community strength relating to these three Domains, the use of a small number of case studies the project funding restricted us to is inadequate. A full national analysis of performance across all SLAs is needed in order to both categorise and differentiate between categories of like communities and to determine the range of values across the nation for each indicator. The use of the LQ to benchmark is of limited value in this regard. More meaningful results could be obtained through a nation-wide approach such as that used by Baum et al. (1999) in their study of community opportunity and vulnerability based on SLAs and using multi-variate analytical modelling tools (cluster analysis and discriminant analysis).

4 PRIMARY DATA COLLECTION, ANALYSIS AND INDICATORS FOR DOMAIN (4): SOCIAL AND INSTITUTIONAL CAPITAL

To address Domain (4), primary data collection was required in the case study communities. The objective was to measure community performance on this domain through a structured approach and to produce a survey instrument that has been tested in the case study communities, and which is suitable for application in any community.

4.1 Defining and conceptualising ‘social capital’

The concept *social capital* has been gaining wide interest among researchers and policy makers, and a push is evident also from the general community to use social capital as a way to both describe and understand community well-being. As a concept, social capital has been around for some time, and its origins can be traced to as early as the 1910s. In the 1980s Coleman (1988) put the notion of social capital firmly on the intellectual agenda, arguing that it is embodied in the relations among people, and that it can facilitate productive activity, and that it is manifest in the *trustworthiness* and *trust*. Woolcock (1998) suggests that social capital is a ‘broad term encompassing the norms and networks facilitating collective action for mutual benefit’. Putnam (2000:19) suggests that ‘social capital refers to connections

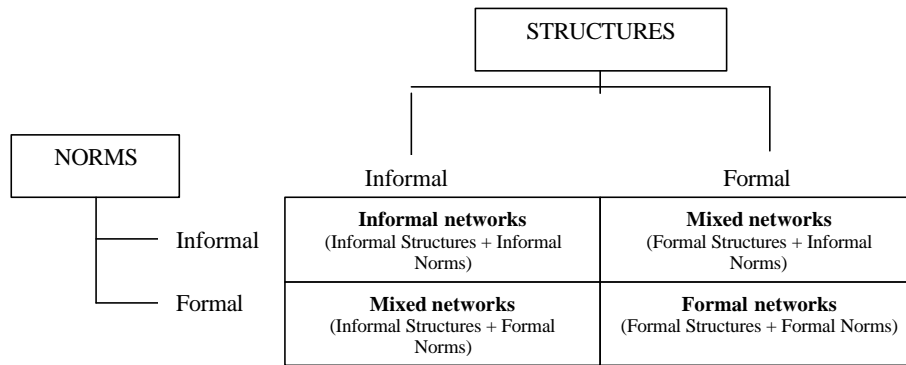
among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them’.

There are two aspects to social capital: (a) *social structure*, or *social networks*; and (b) the *norms governing behaviour* in those social structures and social networks. A high level of social capital is seen in situations where there are *cohesive networks* of considerable density and where interactions are governed by *norms of trust and reciprocity*. Cohesive and strong communities therefore are characterised by high levels of social capital, whereas weak communities are characterised by low levels of social capital.

A starting point is thus to view social capital as a two-dimensional construct: one *structural*; the other *normative*. The structural identifies *networks of social relations*, while the normative includes norms of trust and reciprocity. Networks of social relations may be large or small and formal or informal. These social structures are, in a sense, overlaid by normative structures that contribute to their relative stability. Putnam (1998) makes a further distinction amongst these dimensions in highlighting a difference between *informal* and *formal networks*. Informal networks include relationships people have with their families, partners, friends and neighbours; whereas formal networks include relationships at work, within community groups and churches, and with formal bodies such as businesses and governments. In this way social capital can be thought of as four broad groupings: Informal Structures, Formal Structures, Informal Norms, and Formal Norms.

Thus, it is possible to conceptualise social capital in terms of the framework set out in Figure 1, which gives a four-fold cross classification of *norms* and *structures*, and *formal* and *informal networks*. The combination of *formal structures* and *formal norms* defines *formal social networks*, while the combination of *informal structures* and *informal norms* defines *informal social networks*. Networks characterised by *formal norms* and *informal structures* and *informal norms* and *formal structures* as defined by the remaining two cells are *mixed networks*.

Figure 1: Structures and norms in social capital



Note: In developing the measurement approach to social capital for the community strengths project focuses on the outer categorisations of the table rather than the cells of the table, that is : (a) Formal Norms; (b) Informal Norms; (c) Formal Structures; and (d) Informal Structures.

Traditionally social capital has been measured in one of two broad ways by measuring (a) the physical *structure of a network* or (b) its *normative attributes* (Stone, 2001). Mapping the *structure* of a network is done by measuring attributes such as *size*, *capacity*, *openness*, *homogeneity* and *density* (Coleman 1988, 1990; Krishna and Shrader 1999; Gluckman 1967). *Size* equates to the number of people that are part of a network and even their geographical dispersion. *Capacity*, on the other hand, relates to quality of the network and to the ability to draw favours from people within a given network. *Openness* of a network is probably best understood by its opposite sense, closedness. A closed network is one in which social relations exist amongst all members of the network and is particularly effective in creating a strong sense of culture, and shared norms and sanctions amongst group members (Coleman 1988, 1990). *Homogeneity* measures how similar network members are on a social construct such as class, religion, gender, wealth and the like. And finally *density* relates to overlapping of networks: the affinity of members of a network to be part of other networks.

Norms governing network behaviour relate to *trust*, *unity* and *reciprocity*. Within *informal networks* individuals have what is called *particularised trust*, a trust that is specific to the individual a person knows (Uslaner 1999; Cox and Caldwell 2000). This is different to the trust people have for strangers since the probity of a stranger can not be predicted with the same certainty as it can of a person known to the individual. The trust afforded to strangers is by its very nature generalised and is termed generalised trust (Putnam, 1998; Dasgupta, 1988; Uslaner, 1999). Trust in *formal networks*, (*institutional trust*) is similarly general because it is

not aimed at individuals but rather institutions and relates to, for example, trust of ‘the government’, of ‘the police’ or of ‘the church’ (Giddens 1990; Stone 2001; Black and Hughes 2001). Closely related to trust are *unity* and *reciprocity*. *Unity* is a feeling of belonging to a network together with the feeling that a two-way relationship exists between the individual and the network. An example of unity within a formal context is when governments are inclusive of citizens in decision making, creating a sense of mutual ownership of the task and a two-way relationship between the institution and individuals. *Reciprocity* concerns the exchanges that take place within a network. Individuals are likely to offer assistance to others if they believe that in the future the assistance will be reciprocated. Volunteering is a good example of reciprocity within a formal context where an individual may feel that he or she is ‘giving something back’ to the community.

For the *normative* dimension, a high level of social capital is indicated by *particularised* trust, *generalised* trust, *unity* and *reciprocity*. High levels of social capital are associated with high levels of trust, unity and reciprocity in informal networks, such as family and friendship networks, and in formal networks such as the community at large, local groups and associations and institutions. The standard aspects which support this normative structure are initially the presence of networks, such as size and capacity. Also present will be the ability to *intermix* networks through open-minded, diverse and overlapping interactions with other networks (Coleman 1985; Granovetter 1973; Gluckman 1967).

Both *normative* and *structural* aspects of social capital tap into what are termed *bonds*, *bridges* and *links*. *Bonds* refer to the internal dynamics of a network (measured by size, capacity, homogeneity and openness), and as well they focus on normative aspects such as trust, unity and reciprocity, particularly within informal networks. *Bridges* equate to the density of networks, and the capacity of people within one particular network to draw on other networks, both informal and formal. Bridges are characterised by heterogeneity of membership that entails ties that cut across characteristics of social groups such as gender, wealth, religion and so forth (Krishna and Shrader 1999; Putnam 1998; Narayan 1999; Woolcock and Narayan 2000). *Links* are merely a special case of *bridges*, and are measures of the *bridges people have with authoritative organisations* (Black and Hughes 2001; Putnam 2000; Putnam et al. 1993).

4.2 Approaches to measurement: qualitative assessment

An exploratory approach, using focus group techniques and informant interviewing, to assess social capital, was used to provide background to the more structured survey techniques on which computation of systematic measures could be based. The *focus groups* in each of the case study communities addressed: (a) awareness of community events; (b) perceptions of the community (what it is like to live there, assessing strengths and weaknesses); (c) community activities (opportunities to help others), civic activity and participation, attitudes to formal institutions); and (d) perceptions of what residents want/do not want in their community.

Consultations (through telephone interviews) were also conducted with representatives of key *community organisations*, including service clubs, parents and citizens associations, chambers of commerce, local councils, and community development officers. A semi-structured schedule of questions was used. An objective was to gain information on assessments of the working of the community and participation in and contribution to community activities.

These two mechanisms provided useful *qualitative assessment* of community performance, strengths and weaknesses and on the roles of community organisations. These consultative processes provided results that support the codification proposed by Gauntlett et al. (2001) that strong and health communities will: (a) provide a clean and safe physical environment; (b) meet the basic needs of residents; (c) comprise residents that respect and support each other; (d) involve the community in local government; (e) promote and celebrate its historical and cultural heritage; (f) provide easily accessible health services; (g) possess a diverse, innovative economy; and (h) rest on a sustainable ecosystem.

The case study communities in general tended to provide through these processes a positive picture of the contribution that organisations make to community strength, what might be expected and could represent a bias in this qualitative methodology, not the least because of the incomplete representation of all interests and groups across the community. However, not surprisingly the information gained from that qualitative approach was to prove useful in helping identify topics and frame questions for the structured survey approach discussed below.

4.3 Approaches to measurement: a structured survey approach

The development of a *structured approach to measure* a Social and Institutional Capital Domain sought to develop explicit measures of community strength with respect to the four marginal elements of Figure 1—which may be thought of as comprising the *four conceptual cells* of social capital:

- *Informal Structures* represent the extent of *networks* people have with family, friends and neighbours, and can be assessed by measuring the size of a given network on the basis of the number of people that belong to it, the geographical dispersion of the networks, and assessing people's capacity to draw on networks for help.
- *Formal Structures* represent the same kind of *network* measures but with respect to more *formalised groups*, such as community groups, associations, businesses, and institutions such as schools, police and the various levels of government, and even the community as a whole.
- *Informal Norms* are the norms that govern *Informal Structures* and generally concern levels of *trust* that exist *between network members*, *reciprocity*, and *feelings of belonging or unity* within the network.
- *Formal Norms* represent the *qualities* associated with *Formal Structures*, and again involve *trust*, *reciprocity* and *unity* although not necessarily with individuals only but more generally with institutions as a whole.

Information gained from the qualitative consultations discussed above, along with the consideration of the survey instruments and their question contents developed by other researchers investigating social capital, led to the development of specific questions for a *survey instrument* which were grouped into the *four primary scales* named after the cells of the theoretical notion of social capital (as per Figure 1). Smaller clusters of questions, or sub-scales, that tapped specific micro-concepts relevant to the primary scales were also considered. (For example, subscales of 'openness to diversity' and 'place attachment' were conceived as components of the primary scale of formal norms.) A *questionnaire* with a total of 95 questions was thus compiled as a survey instrument. In addition, four *outcome measures* were developed as part of the questionnaire. These were: (a) Anomie¹; (b)

¹ A measure of normlessness experienced by disenchanted individuals

Perceived Quality of Life and Well Being; (c) Perceived Natural and Human Capital; and (d) Perceived Economic Capital.

In the first phase of measurement development, the *exploratory analysis*, the instrument was tested in a survey of a random sample of 100 adult individuals in three of the case study communities (Boonah, Eaglehawk and Zillmere) with interviews conducted through a CATI mode. The data relating to community strength measures were subjected to a *principal components analysis* followed by a *scale reliability analysis* based on the *Cronbach's Alpha procedure*. The second phase of measure development, the *confirmatory analysis*, involved administering the modified questionnaire to a sample of 100 adult individuals in the Auburn and Richmond case study communities. The Cronbach's Alpha was used to validate results from the confirmatory phase, and further principal components analysis was undertaken to clarify some outstanding issues.

4.4 Exploratory phase of scale construction

The *exploratory* procedures used in developing measures of social capital using *principal components analysis* of the data derived from 95 questions relating to social capital identified *five factors* for further examination. The extent to which those factors resembled measures constructed by other researchers (Christakopoulou et al. 2001; Stone and Hughes 2001; Onyx and Bullen 2000; Stewart-Weeks and Richardson 2001) was examined. Scales and subscales from the five factors were identified, and the Cronbach's Alpha as a measure of scale reliability was calculated for each. The scales and subscales were then assigned to the appropriate cells in the conceptual framework of social capital set out in Figure 1. Through this process the initial set of 95 questions was reduced to 61.

The five factors identified explained 33.6 per cent of the total variance, of which the first factor accounted for 11.6 per cent, with the remaining four factors accounting for between 6.5 and 4.2 per cent of that variance.

- *Factor 1* was described as *formal growth structures and normative considerations*. From a conceptual point of view some of the questions relating to this factor originated in the Formal Structures cell of the theoretical matrix, while others came from the Formal Norms cell. It comprises questions concerning people's participation in the local community,

friends and institutional links. As well it comprises questions relating to trust of links and a generalised trust and unity within the community, as well as relating to issues of personal safety.

- *Factor 2* is described as *reciprocity in a formal context*, and comprises questions relating to benefits of participation or exchange in a given formal network and fell into the Formal Norms cell of the theoretical matrix. Those questions tap some of the rationale between people's involvement in community groups and associations and the benefits thus gained.
- *Factor 3* is described as *trust and reciprocity amongst informal groups*, and coincides with the Informal Norms cell of the theoretical matrix. It comprises questions relating to particularised trust and informal reciprocity, combined with questions that identify trust and reciprocity in informal networks of family, friends, neighbours and work associates.
- *Factor 4* is described as *informal group dynamics*, which is coextensive with the Informal Structures cell of the theoretical matrix. It comprises questions assessing negative aspects of social capital relating to intergroup dynamics and friction caused by homogenous group structures that can lead to community divisions and questions which measure individual agency in informal settings, referring to a person's capacity to plan and initiate action.
- *Factor 5* is described as *trust of authority* and adds to the Formal Norms cell of the theoretical matrix. It comprises questions we (SERC 2002) had developed to measure peoples' trust of links based upon the focus group data, and which are indicators of generalised trust of formal initiatives, particularly with respect to various levels of government.

It thus became evident that particular groupings of the questions in the identified factors fall into one or other of the four cells in the theoretical matrix in Figure 1. For each of those four categories—a Cronbach's Alpha was calculated for all the questions. This is set out in Table 5 (note that Factor 1 has been split between the Formal Norms and the Formal Structures categories in that analysis).

The *structural* cells were conceptualised as mapping the structure of networks and the types of capacities drawn from those networks. The *Informal Structure* cell is informed by Krishna and Shrader's (1999) exclusion items or 'community divisions', which measures potential conflict between groups as a result of differences created by bonding structures of overly

Table 5: Factors grouped according to the conceptual matrix

Informal Structures Alpha .8073				
Source & concept	Subscale	Question		Factor loading
Krishna & Shrader (Exclusion) Alpha .8561	Factor 4 alpha .7823 “Community divisions”	6a	Importance of differences between men and women in dividing the community	.586
		6b	Importance of differences between younger and older generations in dividing the community	.596
		6c	Importance of differences in religious beliefs in dividing the community	.552
		6d	Importance of differences in ethnic background in dividing the community	.680
		6e	Importance of differences in education in dividing the community	.658
		6f	Importance of differences in political party affiliations in dividing the community	.635
		6g	Importance of differences between long term residents and new arrivals in dividing the community	.591
		6h	Importance of differences in income in dividing the community	.494
Onyx & Bullen (Factor B: Social agency) Alpha .6087	“Particularised social agency”	20b	Often go outside local community to visit family	.361
		20d	If had a dispute with neighbour would be willing to seek mediation	.307
		20e	At work frequently take the initiative to what needs to be done	.371
		20f	At work frequently help workmates even though not in job description	.327
Formal Structures Alpha .5755				
Onyx & Bullen (Factor A: Participation in the local community) Alpha .8183	Factor 1 (Structural aspects) Alpha .5755 “Participation in the local community”	7a	How often help out a local group as a volunteer	-.521
		7b	Number of local community events attended in the past 6 months	-.552
		7c	Number of local organisations or clubs an active member of	-.432
		7d	Number of local organisations or clubs on which on a management committee or organising committee	-.366
		7e	Number of times in the past 3 years in which have joined a local community project or working bee	-.372
		7f	Number of times have been part of a project toorganise a new service in your local community	-.632
Stone & Hughes (Friends: institutional networks) Alpha .7577	“Friends in institutional networks”	9c	Personally know someone in the media	.532
		9d	Personally know someone in the state government	.391
		9e	Personally know someone in the local government	.554
		9f	Personally know someone in political parties	.497
Informal Norms Alpha .7349				
Stone & Hughes (Particularised trust) Alpha .6654	Factor 3 Alpha .7349 “Particularised trust”	10a	To what extent would you trust close family and other relatives with whom you don’t live	.520
		10b	To what extent would you trust your friends	.449
		10c	To what extent would you trust your neighbours	.283
		10d	To what extent would you trust your workmates or associates	.327
Stone & Hughes (Friends: Health & related services, informal reciprocity) Alpha .6169	“Informal reciprocity and exchange”	11a	How often do you and your close family and other relatives with whom you don’t live exchange practical help or advice	.593
		11b	How often do you and your friends exchange practical help or advice	.543
		11c	How often do you and your neighbours exchange practical help or advice	.485
		11d	How often do you and your current work mates or associates exchange practical help or advice	.420

Note: Negative loadings due to reverse scaling of items.

Table 5: Factors grouped according to the conceptual matrix (continued)

Formal Norms Alpha .8428				
Source & concept	Subscale	Question		Factor loading
Onyx & Bullen (Factor C: Feelings of trust and safety) & Christakopoulou <i>et al.</i> (Personal safety) Alpha .8081 Stone & Hughes Civic networks and participation: Confidence in institutions) Alpha .7407 Stone & Hughes (Civic networks and participation) Alpha .7577 Christakopoulou <i>et al.</i> (Place attachment) Alpha .8075	Factor 1 (Normative aspects) Alpha .8950	14a	Feel safe walking down street after dark	.481
		14b	Most people can be trusted	.439
		14c	Someone's car breaks down outside house, generally would invite them into home to use the phone	.554
		14d	Local community has a reputation for being a safe place	.545
		15a	Feel safe being at home alone during the day	.339
		15b	Feel safe walking alone in the street during the day	.413
	"Feelings of safety and generalised trust"	17a	Confidence in churches	.332
		17b	Confidence in schools	.343
		17c	Confidence in police force	.396
		17d	Confidence in local media	.356
		17e	Confidence in government	.429
		17f	Confidence in local council	.307
	"Confidence in links"	19a	People around here really willing to help each other out	.523
		19b	People around here share the same values	.387
		19c	Feel a strong sense of identity with local community	.664
		19d	Well informed about local affairs	.579
	"Community spirit"	21a	Feel emotionally attached to the local community	.701
		21b	Feel that belong to the local community	.650
		21c	Would like to be living in the local community in 3 years time	.464
		21d	Proud to live in the local community	.571
Stewart-Weeks & Richardson (Benefits of participation or exchange in a given network) Alpha .9111	Factor 2 Alpha .9111	18b	Because I enjoy the activity	.525
		18c	Wanted to give something back to the group/community	.641
		18d	To meet people and make friends	.663
	"Formal reciprocity"	18e	A series of coincidences and unexpected connections	.695
		18f	Forced to do it	.688
		18g	Friends were involved	.677
SERC (Trust of links) Alpha .8541	Factor 5 Alpha .8101	16a	In a local major development extent believed that the local federal member of parliament would take local people's views into account	.385
		16b	In a local major development extent believed that the local state member of parliament would take local people's views into account	.423
		16c	In a local major development extent believed that the local council would take local people's views into account	.333
		16d	In a local major development extent believed that the government department running the development would take local people's views into account	+
		16e	In a local major development extent believed that the developer would take local people's views into account	+

+ Factor loadings low but question included on the basis of Cronbach's Alpha analysis

homogenous groups. Onyx and Bullen's (2000) 'particularised social agency', which examines individual proactivity amongst family, neighbours and workmates. The Cronbach's Alphas for the two components are .8501 and .6087 respectively. When the scales are combined, the internal consistency remains robust at .8073. Conversely, the *Formal*

in institutional networks' a low number indicates connectedness to formal structures and a high number indicates lack of connectedness.

The *normative* cells concern the qualities of networks, which are also thought to differ between informal and formal groups. The Stone and Hughes (2000) items that formed Factor 3 represent the *Informal Norm* cells. These tap 'particularised trust' of family, friends, neighbours and workmates, as well as 'reciprocity' amongst the same groups. The Cronbach's Alpha for each group of items is acceptably high at .6654 and .6169 respectively, but when combined reliability increases to .7349. The *Formal Norms* cell is defined by the largest set of questions which provide a strong Cronbach's Alpha of .8428. The cell is represented by a portion of Factor 1 and the whole of Factors 2 and 5, with Cronbach's Alphas of .8950, .9111 and .8101 respectively. Factor 1 questions which contribute to this cell include: the Onyx and Bullen (2000) 'feelings of trust and safety', and the Christakopoulou et al. (2001) 'personal safety' questions, which together form the subscale 'feelings of safety and generalised trust' (Cronbach's Alpha .8051); Christakopoulou et al (2001) 'place attachment' (.8075); and the Stone and Hughes (2001) 'confidence in links' (.7577) and 'community spirit' (.8075). Factor 2 and Factor 5 questions, which are included in this cell, are respectively the Stewart-Weeks and Richardson (1998) 'formal reciprocity' (.9111) and the SERC's (2002) 'trust of links' (.7577) scales.

The exploratory analysis thus led to the development of four measures of social capital: (a) the first concerned the Informal Structures component of social networks; (b) the second concerned the Formal Structures component; (c) the third concerned the Informal Norms component; and (d) the fourth concerned the Formal Norms component.

4.5 Confirmatory phase of scale construction

Confirmatory analysis was then pursued to determine the extent to which the above measures could be reproduced in the analysis of the surveys of residents in the remaining two communities—Auburn and Richmond. The procedure was first to calculate *measures of scale reliability* (the Cronbach's Alpha) for each of the primary scales and the subscales contributing to them, and then second to undertake a *principal components* analysis to clarify any outstanding issues.

The results of the Cronbach's Alpha analysis for the primary scales is shown in Table 6. It is evident that the Alpha values for both the *exploratory* and *confirmatory* analyses are encouragingly similar. For *Informal Structures* the exploratory analysis had a high Cronbach's Alpha of .8073 than it did in the confirmatory analysis where the Alpha was .7566. *Formal Structures* has a slightly higher Alpha in the exploratory analysis at .5755 compared with the confirmatory analysis results of .4466. Reliability is marginally increased between the two analysis for *Informal Norms* (from .7349 to .7713) and remains virtually the same for formal norms (.8428 for exploratory and .8525 for confirmatory analysis).

Table 6: Cronbach's Alpha for theoretical indexes over two phases

	Exploratory phase three communities	Confirmatory phase two communities
Informal Structures	.8073	.7566
Formal Structures	.5755	.4466
Informal Norms	.7349	.7713
Formal Norms	.8428	.8525

However, to achieve these results the deletion of certain questions from particular scales was found to be necessary (see SERC 2002:67–69 for a discussion). The results are given in Table 7.

4.6 Finalised measures of social capital

From the results of the above analysis it was possible to construct *four primary scales* and *15 subscales*. But for those scales to be used in determining the relative levels of social capital of different communities, a method of constructing scale scores had to be developed.

Table 7: Social capital measure: questions and subscales grouped according to the conceptual matrix

Informal Structures Alpha .7566		
Source & Subscale	Question	
Krishna & Shrader “Community divisions” Alpha .8368	6a	Importance of differences between men and women in dividing the community
	6b	Importance of differences between younger and older generations in dividing the community
	6c	Importance of differences in religious beliefs in dividing the community
	6d	Importance of differences in ethnic background in dividing the community
	6e	Importance of differences in education in dividing the community
	6f	Importance of differences in political party affiliations in dividing the community
	6g	Importance of differences between long term residents and new arrivals in dividing the community
Onyx & Bullen “Particularised social agency” Alpha .4746	20b	Often go outside local community to visit family
	20d	If had a dispute with neighbour would be willing to seek mediation
	20e	At work frequently take the initiative to what needs to be done
	20f	At work frequently help workmates even though not in job description
Formal Structures Alpha .4466		
Onyx & Bullen “Participation in the local community” Alpha .7265	7a	How often help out a local group as a volunteer
	7b	Number of local community events attended in the past 6 months
	7c	Number of local organisations or clubs an active member of
	7d	Number of local organisations or clubs on which on a management committee or organising committee
	7e	Number of times in the past 3 years in which have joined a local community project or working bee
	7f	Number of times have been part of a project to organise a new service in your local community
Stone & Hughes: “Generalised agency” Alpha .7212	8a	Signed a petition
	8b	Contacted the media regarding a problem
	8c	Contacted a government official regarding a problem
	8d	Attended a public meeting
	8e	Joined with people to resolve a local or neighbourhood problem
	8f	Taken steps to improve the environment in addition to household recycling
Stone & Hughes: “Friends in institutional networks” Alpha .7310	9c	Personally know someone in the media
	9d	Personally know someone in the state government
	9e	Personally know someone in the local government
	9f	Personally know someone in political parties
Informal Norms Alpha .7713		
Stone & Hughes: “Particularised trust” Alpha .6610	10a	To what extent would you trust close family and other relatives with whom you don’t live
	10b	To what extent would you trust your friends
	10c	To what extent would you trust your neighbours
	10d	To what extent would you trust your workmates or associates
Stone & Hughes: “Informal reciprocity and exchange” Alpha .6441	11a	How often do you and your close family and other relatives with whom you don’t live exchange practical help or advice
	11b	How often do you and your friends exchange practical help or advice
	11c	How often do you and your neighbours exchange practical help or advice
	11d	How often do you and your current work mates or associates exchange practical help or advice

Table 7: Social Capital Measure: Questions and Subscales Grouped According to the Conceptual Matrix (continued)

Formal Norms Alpha .8525		
Source & Subscale	Question	
SERC and Onyx & Bullen “Openness and tolerance of diversity” Alpha .6713	12a	Our community should welcome ideas from outside cultures
	12b	Rather than staying separate it’s better if all groups adapt and blend in to our community
	12c	We should be cautious about accepting certain groups into our community
	13a	Multiculturalism makes life in my local community better
	13b	I enjoy living amongst people of different lifestyles
Onyx & Bullen and Christakopoulou <i>et al.</i> “Feelings of safety & generalised” Alpha .7603	14a	Feel safe walking down street after dark
	14b	Most people can be trusted
	14c	Someone’s car breaks down outside house, generally would invite them into home to use the phone
	14d	Local community has a reputation for being a safe place
	15a	Feel safe being at home alone during the day
	15b	Feel safe walking alone in the street during the day
Stone & Hughes “Confidence in links” Alpha .7328	17a	Confidence in churches
	17b	Confidence in schools
	17c	Confidence in police force
	17d	Confidence in local media
	17e	Confidence in government
	17f	Confidence in local council
Stone & Hughes “Community spirit” Alpha .7107	19a	People around here really willing to help each other out
	19b	People around here share the same values
	19c	Feel a strong sense of identity with local community
	19d	Well informed about local affairs
Christakopoulou <i>et al.</i> “Place attachment” Alpha .8672	21a	Feel emotionally attached to the local community
	21b	Feel that belong to the local community
	21c	Would like to be living in the local community in 3 years time
	21d	Proud to live in the local community
Stewart-Weeks & Richardson “Formal reciprocity” Alpha .9478	18c	Wanted to give something back to the group/community
	18d	To meet people and make friends
	18e	A series of coincidences and unexpected connections
	18f	Forced to do it
	18g	Friends were involved
SERC “Trust of links” Alpha .7944	16a	In a local major development extent believed that the local federal member of parliament would take local people’s views into account
	16b	In a local major development extent believed that the local state member of parliament would take local people’s views into account
	16c	In a local major development extent believed that the local council would take local people’s views into account
	16d	In a local major development extent believed that the government department running the development would take local people’s views into account
	16e	In a local major development extent believed that the developer would take local people’s views into account

To do so a relatively simple procedure was followed. Each of the questions in each subscale was rated on a four-point rating scale, or in the case of two subscales a two-point rating scale, with one extreme indicating an important contribution to social capital while the other extreme indicated no important contribution to social capital. By simply summing the ratings of each question comprising a scale, scale scores could be obtained. The ratings can vary from a minimum when none of the questions in the scale is judged as contributing to social capital or where they are judged as having a negative effect, to a maximum when all are judged as contributing to social capital. Thus with the *Informal Structures* scale with 11 questions, scores could range from 11 to 44, while for the *Formal Norms* scale with 35 questions, scores could range from 35 to 140. To facilitate comparisons, once those initial scales were determined, scores were re-scaled on a ten-point scale (1 to 10) where 10 indicates a highly significant contribution to social capital and 1 indicates little or no contribution. The means and standard deviations for each of the four primary scales are given in Table 8, while the same statistics for the subscales are shown in Table 9.

Table 8: Primary scale means for five communities

Primary scale	Mean	Standard deviation
Informal Structures	7.3455	1.6030
Formal Structures	3.7511	1.9621
Informal Norms	6.9592	1.4954
Formal Norms	6.3076	1.0864

Table 10 shows that while intercorrelations between the primary scales were generally significant, the correlations are not high, which suggests that while the four primary measures of social capital are to a degree related, high scores on any one of these is not likely to predict strongly a high score on others.

Table 9: Subscale means grouped by primary scale for five communities

Subscale	Mean	Standard Deviation
Informal Structures subscales		
Community divisions	6.9825	2.3470
Particularised social agency	8.0271	1.3662
Formal Structures subscales		
Participation in the local community	3.6180	2.2067
Generalised agency	3.6534	2.3780
Friends in institutional networks	4.4370	3.2848
Informal Norms subscales		
Particularised trust	7.5276	1.7676
Informal reciprocity and exchange	6.3574	1.7219
Formal Norms subscales		
Openness to diversity*	6.8073	1.5982
Tolerance of diversity	7.1616	1.9402
Feelings of safety and generalised trust	6.7838	1.7176
Confidence in links	6.7349	1.6827
Community spirit	6.5844	2.0908
Place attachment	6.9923	2.1395
Formal reciprocity	4.8846	1.5421
Trust of links	6.1525	2.2338

*Based on confirmatory sample of Auburn and Richmond.

Table 10: Intercorrelations between the four primary factors of social capital

	Informal structures	Formal structures	Informal norms	Formal norms
Informal structures	1			
Formal structures	.103	1		
Informal norms	.164**	.256**	1	
Formal norms	.244*	.130	.090	1

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

A final *factor analysis* of the scores on the subscales was conducted (principal components analysis with varimax rotation). It was found that the subscales measuring Formal Norms all had high factor loadings on factors 1 and 2. The subscales measuring Formal Structures loaded equally highly on factor 3. One of the scales measuring Informal Structures had a high loading on factor 4, whereas the other subscales loaded highly on factor 2. The subscales for Informal Norms all had high factor loadings on factor 5. As a result of this factor analysis the question is raised concerning the possibility of using a ‘scaled down’ measure—a selection of subscales from one or two of the primary measures of which they are components—for use across a range of communities where shortened measures may be derived. Appropriate candidates for such an

approach include: (a) ‘community divisions’, a subscale of Informal Structures; (b) ‘generalised agency’, part of Formal Structures; (c) ‘particularised trust’ and ‘informal reciprocity and exchange’, subscales of Informal Norms; and (d) ‘formal reciprocity, a subscale of Formal Norms.

However, as a result of the exploratory and confirmatory analyses discussed above, we were able to propose the four primary scales and the associated 14 subscales as measures of social capital as set out in Table 11.

Table 11: Primary scales and corresponding subscales

Informal Structures	Formal Structure	Informal Norms	Formal Norms
<ul style="list-style-type: none"> ◆ Community divisions^{*†} ◆ Particularised social agency 	<ul style="list-style-type: none"> ◆ Participation in the local community ◆ Generalised agency ^{*†} ◆ Friends in institutional networks 	<ul style="list-style-type: none"> ◆ Particularised trust^{*†} ◆ Informal reciprocity and exchange[*] 	<ul style="list-style-type: none"> ◆ Openness to and Tolerance of diversity[*] ◆ Formal reciprocity ◆ Feelings of safety and generalised trust ◆ Community spirit ◆ Place attachment^{*†} ◆ Confidence in links ◆ Trust of links

^{*}If reduced measure of five subscales is selected use this subscale to represent the primary scale.

[†]If reduced measure of four subscales is selected use this subscale to represent the primary scale.

Ideally, a comprehensive assessment of Domain (4) should be based on the four primary scales. But if time and cost constraints mitigate against the use of the comprehensive measures, then two alternatives might be considered:

- The first alternative involves selecting five stipulated sub-scales from the primary scales, including the following: (a) Informal Structures – ‘community divisions’; (b) Formal Structures – ‘generalised agency’; (c) Informal Norms – ‘particularised trust’; and (d) Formal Norms – ‘openness and tolerance of diversity’, and ‘place attachment’.
- The second alternative involves the selection of just one subscale from each primary scale as follows: (a) Informal Structures – ‘community divisions’; (b) Formal Structures – ‘generalised agency’; (c) Informal Norms – ‘particularised trust’; and (d) Formal Norms – ‘place attachment’.

4.7 Measuring outcomes and correlates of social capital

So far the discussion relating to Domain (4) as a measure of community strength has focused on addressing the framework proposed by Black and Hughes (2001). However, differences in community strength are also likely to be related to other aspects of social life. Thus it was decided as well to explore through the surveys how community strength may be related to: (a) *Anomie*; (b) *Perceived Quality of Life and Well-Being*; (c) *Perceived Natural and Human Capital*; and (d) *Perceived Economic Capital*. Measures were taken from existing studies (Health Development Agency 2001; Western et al. 1999).

In the *exploratory* phase of the analysis, a total of 32 items were used to measure these five factors, and factor analysis of those items resulted in six factors explaining 59 per cent of the total variance being identified for further analysis. Next, the degree to which those factors reflected the outcome measures was explored. Finally, Cronbach's Alphas were calculated for each of the scales constructed.

The factors identified were:

- *Factor 1* (22 per cent of the total variance), which reproduces the Anomie measure totally.
- *Factor 2* (12 per cent) which comprises the majority of Perceived Quality of Life and Well-being measures with the exception of two dealing with economic well-being which appear together in Factor 5.
- *Factor 3* (10 per cent) which is less clearly defined, and includes one overall measure of Perceived Quality of Life and Well-being and three dealing with Perceived Natural and Human Capital.
- *Factor 4* (6 per cent), which is more clear cut, including all of the Perceived Natural Capital items with the exception of those found in Factor 3.
- *Factor 5* (4 per cent), which deals with Perceived Economic Capital.
- *Factor 6* (4 per cent), which is defined by three items dealing with Perceived Economic Capital but relating specifically to quality of services.

When reliability measures on the original conceptual desired scales were calculated, the Cronbach's Alpha range from .9305 for Anomie to .7394 for Perceived Natural and Human

Capital. In the *confirmatory* phase of the analysis, the Cronbach's Alpha for Anomie is lower at .784, but the Alphas are consistent with respect to the other derived scales.

To explore the relationship between the measures of Anomie, Perceived Quality of Life and Well-being, Perceived Natural and Human Capital, and Perceived Economic Capital, a series of *ordinary least squares analysis* (OLS) were conducted in which the four primary social capital scales (discussed previously) are used as predictors. Table 12 summaries the results. The R^2 column in the table shows the amount of variance in the measures explained by the predictors. This technique indicates how good an explanation predictor variables provide in accounting for variability in the outcome and correlate measures. It is evident that the primary scales better explain Anomie ($R^2 = .201$) and Perceived Quality of Life and Well-being ($R^2 = .229$) than they do variability in Perceived Natural and Human Capital ($R^2 = .151$) and Perceived Economic Capital ($R^2 = .156$). The strongest predictor variables were Informal Structures and Informal Norms (significant at better than $p \leq .0001$) for Anomie and Perceived Quality of Life and Well-being. For Perceived Quality of Life and Well-being, Formal Norms were the next strongest predictor (at better than $p \leq .01$). Formal Structures and Informal Norms were significant predictors of Anomie (at better than $p \leq .05$).

Table 12: Significant predictors of the outcomes and correlates of social capital

Outcomes and correlates of social capital	R^2	Significant predictors	B	Standardised beta
Anomie	.201	Informal Structures	.328	.323***
		Formal Structures	.113	.142*
		Informal Norms	.177	.164*
Perceived quality of life and well-being	.229	Informal Norms	.327	.378***
		Formal Norms [†]	.210	.186**
Perceived natural and human capital	.151	-		
Perceived economic capital	.156	-		

***Coefficient is significant at the 0.0001 level (2-tailed). ** Coefficient is significant at the 0.01 level (2-tailed). * Coefficient is significant at the 0.05 level (2-tailed).

[†]Question 12a,b and c "Openness to diversity" excluded from analysis as not used in the exploratory communities.

-No significant predictors.

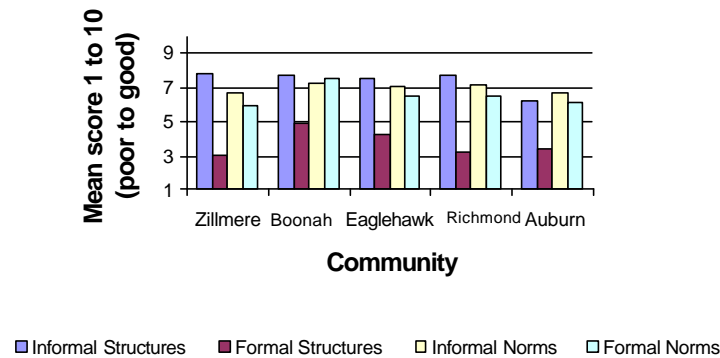
These findings lead us to suggest that, in communities in which Informal Structures and Formal Structures are strong, and in which Informal Norms are strong, then Anomie will be less likely than in communities in which Structures and Norms are not as strong. Similarly, in communities in which both Informal Norms and Formal Norms are strong, then Perceived Quality of Life and Well-being is less likely to be greater than in communities in which Informal Norms and Formal Norms are not strong. But it is perhaps significant that social capital variables are not strong predictors of Perceived Natural and Human Capital and Perceived Economic Capital. Those factors may perhaps be more appropriately seen as additional measures of community strength, and they address some of the issues of Domains (1), (2) and (3).

4.8 Community profiles on Domain (4)

Scores for five of the case study communities, derived from the analysis of survey data as outlined above, were calculated on all four of the primary scales to measure the Social and Institutional Capital Domain. These scores are plotted in Figure 2. The bars in the figure represent the mean scores (1 to 10) for survey respondents on each primary scale for each community. A *one way analysis of variance* (ANOVA) may be used to test for statistically significant differences between the communities on any of the measures. While not included here, additional graphics plotting the scores for communities on the subscales relating to the four primary scales (as listed in Table 11) can readily be produced.

Focusing just on the data presented in Figure 2, it is evident that all five of the case study communities, with the exception of Auburn, had higher scores on Informal Structures than on the three remaining primary scales. All five communities had lower scores on Formal Structures than any of the other scales. Recalling that all measures have been rescaled to provide scales of the same magnitude (1 to 10), the data suggest that all but one of the communities have stronger Informal Structures than Formal Structures, and except for Auburn, all have stronger Informal Structures than either Informal or Formal Norms.

Figure 2: Social capital scale scores by community



Auburn is significantly weaker than the other communities with respect to Informal Structures ($p \leq .0001$). With respect to Formal Structures, Boonah and Eaglehawk are stronger than the other three communities (Boonah at $p \leq .0001$ respectively; and Eaglehawk $p \leq .0001$ for Zillmere, $p \leq .01$ for Richmond, and $p \leq .05$ for Auburn). There are no community differences with respect to Informal Norms. But for Formal Norms, Boonah is significantly stronger than all the other communities ($p \leq .0001$), with Eaglehawk and Richmond being significantly stronger than Zillmere ($p \leq .05$).

The data thus show the strongest communities on the primary scales of the Social and Institutional Capital Domain are Boonah and Eaglehawk with respect to Formal Structures, and Boonah with respect to Formal Norms. The weakest communities are Auburn for Informal Structures and Zillmere for Formal Norms.

For a close examination of community differences on both the primary scales and the subscales and with respect to the outcomes of social capital, see the discussion in SERC (2001:104–111). What those extended analyses show is the following:

- Boonah is generally the strongest community on the Social and Institutional Capital Domain. It is strongest on seven subscales—participation in local community; friends in institutional networks; particularised trust; confidence in links; trust of links; community spirit; feelings of

safety and generalised trust—and it is weakest on only one, tolerance of diversity. Boonah is a rural urban community.

- Auburn is weak on five of the subscales—community divisions; particularised social agency; community spirit; place attachment; and feelings of safety and generalised trust. It is an inner to middle suburban community in Australia's largest city.
- Zillmere is not far behind Auburn in showing a lack of community strength on this Domain. It is not strong on any subscale, and is relatively weak on community spirit, place attachment, and feelings of safety and particularised trust. It is an outer industrial area in a large metropolitan area.
- Richmond comes between these extremes. It has highest ratings on the openness to diversity and tolerance of diversity subscales, but it is weak on formal reciprocity. Richmond is an old inner city industrial suburb undergoing transformation with gentrification.
- Eaglehawk is also between the extremes, showing no inherent weaknesses, but it is only strong on one subscale, participation in local community. It is part of a large inland regional city.

The overall results are further supported by the outcome of measures and correlates. Auburn is the weakest of the communities on each of the four subscales of Anomie, Perceived Quality of Life and Well-being, Perceived Natural and Human Capital, and Perceived Economic Capital. No significant differences are evident amongst the remaining communities.

From this case study approach it is not possible to draw definitive conclusions. However, low community strength as measured by the Social and Institutional Capital Domain scales appears to be associated with relatively high levels of Anomie, low levels of Perceived Quality of Life and Well-being, and low levels of Perceived Natural and Human Capital and of Perceived Economic Capital. However, those preliminary indications need further detailed investigation across a much larger number of different types of communities.

5 CONCLUSION

This paper has discussed an approach to development of measures of community strength, developing indicators on three domains—(1) Natural Capital; (2) Produced Economic Capital; (3)

Human Capital—using secondary data analysis, and on a fourth Domain—(4) Social and Institutional Capital—using primary data collection through the design of a survey instrument to collect information and derive measures of community performance on four primary scales and 14 subscales. The study has sought to operationalise the framework proposed by Black and Hughes (2001), and to provide a ‘toolkit’ which communities may use to assess its own strengths and weaknesses, enabling them to perhaps then identify opportunities for community growth and development. The outcomes of the study outlined here may be useful to FaCS to pursue the Commonwealth Government’s agenda of building stronger families and communities.

The study proposes a number of indicators that may readily be derived from secondary data, including census information, to measure performance on the first three Domains. However, as discussed elsewhere (SERC 2002), more robust measures of community performance with respect to Domains (2) and (3) may need to be derived from a global analysis of the performance of SLAs (communities) across all of Australia, using multivariate analytic tools as demonstrated by the work of Baum et al. (1999). Major data deficiencies do exist at the level of the SLA which preclude the developing of effective measures of performance on Domain (1) in the context of the implied intent of that domain as per the proposals by Black and Hughes (2001). The SERC (2002) report proposes a national approach to secondary data analysis and modelling along the lines undertaken by Baum et al. (1999) to rigorously derive benchmarked measures of community performance on aspects of Domain (1) and with respect to Domains (2) and (3), with access to the results being via an Internet website.

Perhaps the most interesting and certainly the most innovative aspect of the work has been the attempt to develop a validated survey instrument to measure community strength vis-à-vis a series of dimensions on Domain (4). The structured analytical measurement and outcomes approach developed and overviewed in the bulk of this paper provides a tested and validated methodology and survey instrument which a community may use to measure its performance on four primary and 14 subscales of the Social and Institutional Capital Domain. It must be stressed that we do not believe that the instrument and methods to derive scales of community performance on that Domain are suitable for application to predominantly indigenous communities, and an alternative approach has been developed and proposed from our work in the Wadeye community (see SERC 2002:89–101). Space does not permit that approach to be discussed here.

The report by SERC (2002) makes a series of recommendations as to how the measurement tools developed in this project might be applied and effectively managed in pursuing the agenda of strengthening communities across Australia.

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