

**DIRECT MEASUREMENT OF LIVING STANDARDS:
THE NEW ZEALAND ELSI SCALE**

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CHAPTER 1 – INTRODUCTION

This research report describes the construction of a New Zealand scale of living standards (the Economic Living Standard Index). In attempting to develop a measure suitable for the whole population, the research differs from much of the earlier research in this area; overseas research from which this study draws on in part has tended to focus on measuring deprivation and poverty. By contrast, the research presented here seeks to develop a scale suitable not only for capturing deprivation, but also to enable a description of living standards across the entire range.

This section provides an account of the rationale for constructing such a broad spectrum scale. Before doing so, however, the term living standards needs to be defined. In this report, living standards is used in a relatively narrow sense, referring to the material aspect of well-being that is reflected in a person's consumption and personal possessions – that is to say, their household durables, clothing, recreations, access to medical services, and so on. In the economic and sociological literature there is no single conventional usage, but many writers use the term with a variety of rather broader meanings. These sometimes overlap with related notions of quality of life, well-being, welfare (in its original sense of doing well) and happiness. Some examples of these broader usages are provided by Sen (1982), who has developed the notion of 'functionings' and various Nordic authors who refer to welfare in the wider sense (e.g., Johansson, 2001). To signal that a more constrained meaning is intended in the present report, the term 'economic living standard' is sometimes used and gives rise to the name of the scale that has been produced.

Background

Over the past twenty years there has been continuing social and political debate in New Zealand about the economic position of the country and the development path it should take. Dissenting positions have been taken by political parties and social commentators about the effectiveness and fairness of the economic and welfare reforms that have occurred. Most of this debate (directly or by implication) has touched upon or made claims about past and present living standards, and the ways in which they have been affected by the policies that governments have pursued.

Several themes can be distinguished from the public debates. Prominent amongst these themes is *poverty* – its causes, effects, prevalence and the extent to which it has been worsened or ameliorated by changing economic conditions and government policies. This theme is reflected in the accounts of some people having to rely on food banks and charitable assistance to meet basic needs and sometimes falling into ill-health because they have been unable to do so. It raised questions of the extent to which children experience poverty, and the long-term consequences of low incomes on children later in life. Such questions raise fundamental issues of social justice (are the human rights of disadvantaged people being safeguarded by the state?) and fiscal efficiency (will the deteriorating living conditions of some people create future social costs in the form of crime or ill-health?).

A second theme concerns *inequality*: How wide is the disparity in living standards between rich and poor, between disadvantaged people and the rest of New Zealand society? These questions raise issues of social cohesion, social equity and the degree of egalitarianism that New Zealand society desires and is achieving.

A third theme concerns changes in living standards. Have they been rising or falling? Has the level of inequality in living standards been increasing or decreasing?

A fourth theme concerns the living standards of a number of sub-populations. Do some groups in society have lower living standards than others? How do the living standards of, say, Māori differ from non-Māori? Have disparities been increasing or decreasing?

There are two broad measurement approaches that have been used to address these questions. The first approach focuses on the resources or inputs that people have and is usually based on income measures; the second approach examines the living standards outcomes that people have achieved. Where the latter is the focus of research, then income can be used to specify proxy or indirect measures of living standards in contrast with more direct outcome measures. The most commonly used such proxy measure is equivalised income.

However, one of the well established findings in the literature over the last decade or so is that the relationship between current income and outcome measures of living standards is often not particularly strong with typical correlations between .25 and .40 (e.g., Layte, Maître, Nolan and Whelan, 2001; Mayer and Jencks, 1989; Nolan and Whelan, 1996). Although income is clearly associated with standard of living, it is only one factor that influences current standard of living. Other factors that influence living standards include use of savings, borrowing, stock of consumer durables, goods and services received as gifts and assistance, health, local cost of living, and so on. Current income does not account for the capacity of individuals and households to manage their resources to achieve an adequate standard of living. Furthermore, not all current income contributes towards standard of living (e.g., contributions to savings, debt repayment, gifts, charity, etc.). Thus although income has an important influence on living standards, the relationship is mediated by a number of other factors.

Some authors have suggested that if a more comprehensive income measure were used, then the association with living standards could be expected to be higher. A comprehensive income measure would include cash and near-cash income from employment, public and private transfers, along with a valuation of the in-kind publicly provided services, such as subsidised health care, housing, and transport. It would also consider a monetary valuation of the annual benefit received from physical assets (e.g., household goods, home equity, and productive time). Finally, it would include capital gains (or loss) resulting from the appreciation (or depreciation) of financial assets. Such a comprehensive measure, known as full income, is often not attempted (Travers and

Richardson, 1993). Instead, the measure commonly used is current income (weekly or annual earnings), which is generally limited to cash incomes (wages, interest on bank deposits, share dividends, etc.). However, current cash income represents only one source of spending power, and fails to account for the ways in which asset accumulation and erosion over a long period of time influence current living standards (Nolan and Whelan, 1996).

With regard to outcome measures, a range of methods have been used to measure living standards (e.g., endorsement rates for ownership of various items, participation in social activities, etc.). The most well developed approach to outcome measurement is the use of non-monetary deprivation indicators as a measure of poverty (e.g., Townsend, 1979; Mack and Lansley, 1985; Halleröd, 1994; Nolan and Whelan, 1996; Gordon et al., 2000). As noted previously, the present research draws on, and extends this approach to develop a broad spectrum measure of living standards.

The remainder of this chapter is organised as follows: First, a brief outline of the overseas outcome-based research is presented. This is followed by a brief outline of the New Zealand research on poverty and deprivation, including an account of the broad spectrum work that the current research draws on – the 1974 Survey of the Aged (Fergusson, Jensen, Fougère, Suckling, and Harding, 1974), and the 2001 Living Standards of Older New Zealanders (Fergusson, Hong, Horwood, Jensen, and Travers, 2001). Third, the challenges in developing a broad spectrum scale are presented along with some discussion on how the 2001 survey sought to address these challenges. Finally, the objectives of the current research are presented.

Outcome-based Measures

Outcome measures have typically attempted to assess poverty on the basis of deprivation of things regarded as necessities by society. This approach is broadly based on non-monetary indicators of deprivation and poverty.

Although it is difficult to find examples of outcome-based studies that have examined broad spectrum living standards, there is a large body of work that has focused on measuring low living standards (e.g., Townsend, 1979, Mack and Lansley, 1985, Nolan and Whelan, 1996). These studies have tended to focus on understanding poverty rather than the full continuum of living standards. However, this research provides a useful conceptual and methodological background to draw upon, and is briefly reviewed here.

The traditional formulation of poverty, as employed by such early writers as Rowntree (1901) and Booth (1903) begins with a broad definition of poverty that focuses on the consequences of restricted financial resources, describing hardship in terms of its various manifestations and reporting on the extent to which people are unable to meet their basic needs. There is a tradition of

such empirical research in England that extends from Rowntree to Townsend (1979) to Mack and Lansley (1985) to Gordon et al. (1999).

One of the first major studies to use such an approach to measuring deprivation was conducted by Townsend in the 1970s (Townsend, 1979). Indicators of objective deprivation were developed, where deprivation referred to a lack of an amenity that most of the population have, or non-participation in types of activity that most of the population participate in. Twelve sub-categories of deprivation were distinguished (dietary, clothing, fuel and light, household facilities, housing conditions, work conditions, health, education, environment, family activities, recreational, and social relations). Deprivation information was gathered on 60 items, and from this a subset of 12 items were identified to cover the major aspects of deprivation. The items included having a refrigerator, an indoor toilet, an evening out in the last fortnight, a week's holiday away from home in the last year, fresh meat at least four days a week, and a cooked breakfast most days. A score of 5 or 6 or more on this index was regarded by Townsend as highly suggestive of deprivation. However, the scores were not directly used to identify the poor; rather an income threshold was identified representing the point below which deprivation scores increased disproportionately. Those whose income fell below the threshold were classified as poor, without reference to their deprivation scores.

Building on this work, Mack and Lansley (1985) refined the deprivation indicator approach in two key ways. First, they selected items for the measure on the basis that they were 'socially perceived necessities' (based on the views of their sample), and second, items were specified in terms of an 'enforced lack' – items that people lacked *and* would like but could not afford. If a respondent indicated that they could not afford a given item, then this was regarded by Mack and Lansley as showing that the enforced lack was due to constraint and not choice. This innovation provided a way of addressing the issue of personal preference in consumption. Mack and Lansley constructed a deprivation index based on 22 items commonly regarded as necessary for an acceptable standard of living. Those who indicated that they wanted, but could not afford three or more items from the deprivation index were regarded as poor. This reflected their focus on estimating the number of people unable to attain the minimum way of life acceptable in a contemporary British society.

While Townsend (1979) and Mack and Lansley (1985) have focused on identifying a broad range of indicators of deprivation, Mayer and Jencks (1989) drew a distinction between indicators comprising things everyone should have for a minimum standard of living (e.g., adequate food, housing, and medical care) and those items that are a private responsibility (e.g., a television, alcohol). They argued that it was access to the former items that was of primary concern to policy makers and the public. Their eight-item measure of hardship included only indicators that could be considered to represent this more limited scope of living standards. A second key difference between this study and those of Townsend (1979) and Mack and Lansley (1985) was the absence

of a poverty threshold for their analysis. Instead, their analysis treated their hardship measure as a continuous variable and used mean scores for the particular sub-groups under investigation.

The use of deprivation indicators has become more widespread in recent years, and a number of national statistical agencies now routinely collect data of this type. In the United States, the US Census Bureau collects information on access by families to consumer durables; physical living conditions (in particular the quality of the household's dwelling and of their neighbourhood); and the capacity of the household to meet their basic needs (for instance, whether households have been able to pay bills and are able to afford food and medical attention) (US Department of Commerce, 1995, 1999). The statistical agency of the European Union, Eurostat, gathers information from a series of questions that relate to deprivation. These questions relate to whether there are items the household would like but cannot afford. The questions comprise both basic items (e.g., heating, food, and clothing) as well as some 'luxury' items such as access to a dishwasher or a video camera. Housing and neighbourhood quality are also assessed. In the United Kingdom, data from the Poverty and Social Exclusion Survey conducted by the Office of National Statistics, along with additional data from the General Household Survey and Omnibus Survey has been used to underpin a major research project undertaken by the Joseph Rowntree Foundation (Gordon et al., 2000). The surveys include over 54 possible items of deprivation in addition to information on emerging items such as mobile phones and access to the internet. Ireland has adopted a deprivation component for their measure of consistently poor (Nolan and Whelan, 1996) as part of the National Anti-Poverty Strategy (Nolan, 2001).

New Zealand Research

In New Zealand there have been three streams of research relating to poverty and living standards. These are income-based research, outcome-based deprivation research, and broad spectrum research.

Income-based Research

As with overseas research using income-based indicators, income and expenditure data has been collected in New Zealand. Statistics New Zealand regularly conducts the Household Economic Survey (HES) (annually before 1998 and triennially from 1998) which collects information on the current income and expenditure patterns of New Zealand households. Income data – restricted to cash income – are collected in the HES for all respondents, that is, all adult household members aged 15 years and over. The sample for the HES each year is different, providing a rich source of cross-sectional data for monitoring trends in income and expenditure. This however, does not provide a source of data for the monitoring of longitudinal income trends. Data from the HES has been the primary data source for the monitoring of trends in poverty and inequality based on income and expenditure proxy measures of living standards in New Zealand (e.g., Saunders, Hobbes, and Stott, 1988; Waldegrave and Frater, 1991). The results from the HES have also been

used to investigate poverty thresholds (e.g., Easton, 1996; Krishnan, 1995, Mowbray, 2001, Statistics New Zealand, 1998) sometimes complemented with additional data, such as information provided by focus groups (e.g., Waldegrave, Frater and Stephens, 1997).

Outcome-based Deprivation Research

A second stream of work in New Zealand has focused on the use of non-monetary deprivation indicators. Fergusson, Horwood and Beautrais (1981) used factor analysis to identify two components of material well-being: ownership and economising. Rochford (1987) used an outcome-based measure to survey the living standards of people in receipt of the Domestic Purposes Benefit and the Unemployment Benefit. This measure was based on items indicative of deprivation (e.g., fresh fruit, two pairs of shoes, use of heaters) but also included some subjective indicators (e.g., satisfaction with standard of living). Likewise, Crothers (1993) measured economic hardship using information on problems that people had with the cost of health care, housing, children's, food, and transport, as well as subjective indicators of standard of living. More recently, Waldegrave, King and Stuart (1999) sampled the low income population to gather information using a number of deprivation indicators to describe their standard of living. Amongst the indicators used were items relating to restrictions on consumption of basic foods, foregoing meals, being unable to afford medical and dental treatment, being unable to pay for pharmaceuticals, being inadequately clothed, and being unable to pay household bills.

Full Spectrum Research

The third stream of New Zealand research is based on the notion of building a full spectrum measure of living standards, in part using indicators of deprivation but also including indicators that measure living standards above this point. The context in which this work has been conducted was that its prime purpose was to fulfil policy needs rather than research needs. That is, the research has been conducted as part of a government agenda to improve well-being.

One study that focused on the broad spectrum of living standards was the 1974 *Survey of Persons Aged 65 Years and Over* undertaken jointly by the then Department of Statistics and the Department of Social Welfare (Department of Social Welfare, 1975). The aim of the 1974 study was to investigate the extent to which rates of social security benefits for older people were consistent with the goal of enabling beneficiaries to live in 'dignity and comfort' (Fergusson, et al., 1974). Many of the items were derived from the item pool developed by Townsend (1979)¹, but other new items were formulated to produce an item set that would have discrimination power across a wide range of living standards. The items covered economising behaviours, social participation activities, possession of consumer durables, and indicators of housing condition and quality. Preliminary analysis led to the selection 138 items as potential indicators of standard of living. The main analysis tool used was exploratory factor analysis. The largest factor was

¹ Townsend collected his data in 1969.

dominated by economising behaviours (with high loadings found on items relating to food, clothing medical care, home heating and social activities). However, there was another major factor that was dominated by accommodation items. The two factors were correlated but distinct. A cluster analysis, undertaken to supplement the factor analysis, produced results that also indicated that the housing items formed a distinct group. Only the first factor was used in the policy analysis of the adequacy of pension rates. That factor – which was described as measuring the dimension of material well-being – was chosen because it was the one that most strongly reflected current income. The findings of this study were used in the development of a new additional benefit programme that provided supplementary assistance to recipients of income-tested benefits and war pensions and gave explicit recognition to accommodation costs.

The 1974 survey provided the conceptual and methodological basis for a more recent survey of living standards in New Zealand – *The Living Standards of Older New Zealanders* (Fergusson et al., 2001). This research was commissioned by the Super 2000 Taskforce (a group established by the government to advise it on aspects of the New Zealand pension programme) who sought to obtain research on the living standards of older people as well as other related information (their incomes, assets, and living circumstances).

Although the 2001 study was largely an evolution of the 1974 Survey of the Aged, there were four important modifications to the research. First, the concept of enforced lack, developed by Mack and Lansley (1985), was adopted and applied to the items that measured ownership restrictions and social participation restrictions. Second, the items on economising behaviours were framed as three-point ratings (rather than yes/no items) increasing their sensitivity. Third, global self-ratings were used as part of the scale (rather than as scale validation as had been done previously). The inclusion of the self-ratings was seen as a way of increasing scale sensitivity in the upper part of the scale, and taking account of differences tastes and preferences. Fourth, confirmatory factor analytic techniques were used to specify the procedure for combining these different types of items into a single scale. Based on the 1974 results, and similar results from some overseas studies (Nolan and Whelan, 1996; Whelan, Layte, Maître, and Nolan, 2001), housing items were not included in the scaling analysis as it was thought they would probably preclude a unidimensional fit from being achieved.

Data was gathered from 3060 participants aged 65 and over, and, for the purposes of comparison, 3682 working-age people. Using the responses provided by the sample of older people, a broad spectrum measure was constructed and evaluated against psychometric criteria. The results showed that a unidimensional scale comprising ownership restrictions, social participation restrictions, economising behaviour, serious financial problems, and self-assessments of standard of living and adequacy of income to meet day-to-day needs, could be constructed. This scale was titled the Material Well-being Scale (MWS). Thus, the scale developed from the 2001 study of older New Zealanders represents an attempt to develop a broad spectrum scale for a specific

population – older New Zealanders. Gathering the data, however, enabled the possibility of extending this work by testing the suitability of the MWS to measure living standards in the whole population. That is, can the MWS, and the data collected from that survey, be used to develop a full spectrum measure of living standards applicable for the total population? The present report investigates that question.

Challenges in Constructing a Broad Spectrum Measure of Living Standards

The purpose of this research is to develop a full spectrum, non-monetary measure of living standards; however, there are a number of key challenges that need to be addressed in order to measure the construct. These relate to:

1. measuring higher living standards. Can the use of non-monetary indicators be extended to enable a description of living standards across the entire range? While there is probably broad agreement as to what constitutes necessities, it is likely that such agreement does not exist at the higher end of the spectrum. Not everyone will want to attain the same 'luxuries'. In addition, it is difficult to find ways of comparing items indicative of high living standards. Can we say that an individual who collects fine wine has a comparable living standard to a person who frequently travels overseas for a holiday?
2. accounting for different tastes and preferences. While it is relatively easy to observe whether or not people lack or fail to do particular things, it is more difficult to determine why (Nolan and Whelan, 1996). Some people may choose not to own a particular item, whereas financial restraint may prevent others from owning the same item. Distinguishing choice from constraints is a challenge for the measurement of living standards using non-monetary indicators.
3. false consciousness. Those who are poor may report that they do not want things that it is impossible for them to obtain. This can lead to errors in assessing living standards when using enforced lacks: poor individuals may be assigned an inflated living standard score because they have indicated there are possessions/activities they do not want. However, not wanting something may be a reflection of their low living standards rather than their preferences. Put another way, it could be quite likely that some people genuinely don't want, for example, a holiday home; however, it may also be possible that some people are so far from being able to afford such things that they have never conceived of the possibility of having it, and consequently don't feel deprived.
4. accounting for the different needs of various groups (e.g., cohort effects). Ownership of a particular item or participation in a certain activity may be systematically related to age, ethnicity, the presence of dependent children, or some other factor. Failure to include systematic variation of this type may lead to a distortion in the measurement of the construct.

5. aggregating items into a summary index. How can different types of items (e.g., ownership items versus social activity items) be combined into an index?
6. attributing meaning to indexes scores. When a person or a household is assigned a score to represent their standard of living, what does that say about their standard of living? Is it high, low, or middling when compared to others?

2001 Study's Response to These Challenges

Given these challenges in the measurement of a full spectrum scale, how were they dealt with for the 2001 study of older New Zealanders? Such a review is necessary as the present study's attempt to develop a population measure is based on both the questions and the data gathered from this earlier study. Thus, the decisions that were made in the 2001 study regarding the questionnaire and data collection necessarily apply to the present study.

Measuring Higher Living Standards

The 2001 study attempted to measure higher living standards in three ways. A series of items was developed in order to measure the extent to which people economised on their spending. Some of these items related to low-end living standards (e.g., stayed in bed for warmth; postponed or put off visits to the doctor), however other items related to higher-end living standards (e.g., spent less time on hobbies, bought cheaper cuts of meat). Items of this type went some ways towards measuring higher living standards.

A second approach was to include amongst the ownership and social participation questions some items that measured higher living standards. Examples of this are ownership of a personal computer and regular overseas holiday.

A third approach was to incorporate self-rating items into the scale. These ratings provide people's own assessments using response categories that extend across a wide range. Two such ratings were used: one asked people to rate their standard of living (from low to high); the other asked people rate how well their income met their everyday needs (from 'not enough' to 'more than enough').

Accounting for Different Tastes and Preferences

Townsend (1979) regarded people as deprived if they lacked the types of diet, clothing, housing, household facilities, education, working conditions, social conditions, and facilities which are customary in the societies with which they belong. This view simply regards the lack of a necessity as implying deprivation. The development of the concept of enforced lack by Mack and Lansley (1985) extended this by arguing that deprivation existed where constraint, not choice, prevented

people from ownership or participation. In this vein, the 2001 study attempted to account for differences in tastes and preferences at the low end of the living standards spectrum by using enforced lacks to measure ownership restrictions and social participation restrictions. As noted above, the study attempted to account for tastes and preferences at the higher end of the spectrum using a variety of methods.

False Consciousness

The issue of false consciousness arises predominately in the measurement of 'luxury' items. For basic items, it can be assumed that there are relatively common aspirations amongst people (i.e., most people regard food, clothing and medical care as a necessity). The 2001 study did not attempt to deal with this aspect of measuring the living standards construct.

Accounting for the Different Needs of Various Groups

Different sub-populations have different needs. In the 2001 survey, one salient feature that was thought to influence the measurement of living standards amongst older people was whether they were single or in a couple. In order to account for this, multi-group analysis was conducted using Confirmatory Factor Analysis (CFA) to determine whether the MWS was a suitable measure of living standards in each of these groups. The challenge for the present study is to determine whether the living standards scale can be legitimately used as a measure for of policy interest.

Aggregating Items into a Single Index

The issue of combining information which is measured in different ways was addressed by the 2001 study by using confirmatory factor analysis (CFA) to determine whether the items could be validly combined into a single index. In that study, a living standards was seen as a latent (unobservable) variable which can be examined by studying the links between a number of observable indicators which are postulated to measure the latent variable. This procedure provides a means of testing whether items can be aggregated into a single index.

Attributing Meaning to the Index Scores

In the 2001 study, several approaches were adopted to attribute meaning to MWS scores. Histograms were plotted of the distribution of MWS scores so that individual scores could be compared to the population. To interpret what various scale scores meant in terms of living standards, the restrictions for each of the six indicators were plotted across the score range. Also, a general description and an illustrative vignette were provided for the eight scale categories, giving a profile of the material circumstances of people in each category.

The Present Study

The present study has been carried out by further exploiting a dataset created in part for the purpose of developing a broad spectrum measure of living standards for older people. The further analysis has been undertaken with the goal of developing a broad spectrum measure for the whole population.

The scale for older people (the MWS) had been created using only the data provided by older people, resulting in an instrument that was specific to older people (and thus not able to be validly applied to other parts of the population). This prevented the use of the scale in making comparisons between older people and the rest of the population. The data for the working-age population, which had been collected to provide a source of comparison, was used to make a set of ad hoc comparisons between older people and the whole population using selected variables that were related to living standards. For the present research, the data sets were combined through appropriate weighting to create a single integrated data set capable of producing unbiased estimates of population statistics.

Research Objective

The objective of the research is to construct a scale of economic living standards that:

1. uses non-monetary indicators
2. is unidimensional
3. is continuous
4. discriminates across the full continuum
5. is valid and reliable
6. is an easy-to-use survey tool
7. generates scores that are readily interpretable
8. permits valid comparisons between sub-populations of social policy interest
9. permits monitoring over time.

Some of these points are worth elaborating about the type of measure that is being sought for the present purposes. The requirement that the scale's content should be based on non-monetary indicators arises from the intention to produce a 'direct' measure – one that is based on information about the things that go to make up living standards (the constituent elements) rather than information which is at one remove. The reasons for wishing to produce a direct measure are that it has high face validity, is readily interpretable, can easily be directed at social policy issues (especially ones relating to welfare), and is suitable for use as the dependent variable in research concerned with explaining living standard variation. In relation to the last point, the utility of a direct

measure arises from its being conceptually distinct from income and other factors that are known to be useful as explanatory (independent) variables².

The term direct measure is used here to designate a living standards measure derived from information about the person's possessions and consumption (i.e., their household durables, recreations, clothing, diet, use of services, etc.), including subjective or synoptic information (such as a respondent rating of living standard). A direct measure can be contrasted with one that is based on a variable (such as income) that is not living standards *per se* but rather a factor that influences living standards (and thus can be used to help explain variation in living standards). A living standard measure of the latter type can be called an indirect or proxy measure; the pre-eminent example is equivalised income. This use of direct is more expansive than that of Ringen (1988), in whose writing the term encompasses only objective information on possessions and consumption.

The focus on developing a unidimensional scale reflects several considerations. A single index can provide a parsimonious summary of a wide range of related data without undue loss of information if it meets appropriate tests of unidimensionality. Second, in many contexts, a unidimensional index has the capacity to be more powerful and more useful than a more specific measure. Third, a unidimensional index has the potential to generate better focused policy debate and analysis (without undue risk of oversimplification) than may result from using a variety of measures whose interrelationships are not well understood. Finally, the creation of a well-constructed measure that is relatively broad does not preclude the scale being subdivided into component parts or used in conjunction with more specific measures.

The goal of developing a continuous measure stems from the utility gained over using a categorical measure. A continuous measure (to a reasonable approximation) permits the use of the powerful analysis methods of parametric statistics. While it can be expected that many applications of the measure would involve scores being grouped into score intervals, it was thought desirable that the primary form of the scale should be as a continuous variable.

It was considered that a scale that discriminates across the continuum would have greater versatility and power than a scale that discriminates only in the lower part of the range. An illustration of this can be seen in the research on differential health and education. Early research in these areas focused on the effects of poverty on health and education, tending to assume that improvements above the level of poverty had little influence. However, recent findings on the relationship between social equity and health suggest that inequalities right across the spectrum have negative effects on health. Such a phenomenon cannot be studied by means of a measure that discriminates only in the lower part of the range.

² This is discussed in more detail in Chapter 7.

When Fergusson et al. (2001) constructed the MWS the process used for calculating scale scores from the items did not need to be 'user-friendly', as the purpose was not to produce a tool for regular use. By contrast, the present research seeks to develop an easy-to-use tool that can be used by people who collect and use data, but are not statistical specialists. A complicated procedure was seen as being likely to reduce the amount of use that would be made of the scale. The confirmatory factor analysis used to specify the scale produces a linear equation that gives a regression estimate of the latent variable (assuming a satisfactory fit is attained). Some potential users will not find this particularly user friendly. It was therefore thought important that the scale analysis should have a second stage that would specify a *general use form* of the scale. It was a statistical requirement of the present research that the general use form closely mimic the original form; however, it was an operational requirement that the form provide a simple procedure for producing scores from survey responses.

The objective of developing a scale that creates valid comparisons between sub-populations that are of policy interest is regarded as one of the most important uses for a full spectrum living standard scale. Group comparisons based on a wide range of measures (e.g., current income, educational outcomes, health status, etc.) typically form part of the analysis of social equity issues that are connected with inequality and deprivation. As such, it is important that the developed scale should be constructed in such a way that it provides a valid tool for such comparisons.

A final but related point concerns the objective of developing a scale that permits monitoring over time. The specification of the MWS scale by Fergusson et al. (2001) incorporated a standardisation procedure that produced a sample mean of 100, and a sample variance of 10. This procedure was well suited to the study's purpose, which did not involve comparisons with other samples. However, if the study were to be repeated in another year, the estimated population and variance for that year would necessarily be the same ($M = 100$, $SD = 10$), and thus fail to give an indication of whether living standards had changed over time. A tool that is useful for monitoring living standards requires that the distributions and means *can* change over time, and that a change in the mean score indicates a change in living standards.

Indicators of Standard of Living

The model chosen to initiate the CFA analysis was the model that was successfully fitted to the older person's data (and was the basis of the MSW scale). It contained indicator variables based on enforced lacks (ownership restrictions and social participation restrictions), three-point ratings of economising behaviours (with items aggregated to produce the economising indicator variable), financial problems (with the binary items aggregated to produce the financial problems indicator variable), and respondent's self-ratings (two self-ratings, of standard of living and adequacy of income to meet everyday needs³). These indicators are described in more detail.

³ For reasons explained previously, the model did not include an indicator variable relating to accommodation. Some implications of this decision are discussed in Chapter 7.

Ownership restrictions: Often people fail to own something they want because they cannot afford it. In contrast, it is an indicator of high living standards to have most of the things that one wants. To assess this component of living standards, items were developed by Fergusson et al. (2001) that described situations in which the respondent reported they were unable to own something they wanted because they could not afford it. Items were selected to include a range of ownership restrictions, from those relating to basic necessities (e.g., good shoes) to more luxury items (e.g., dishwasher, waste disposal).

Social participation restrictions: A second important indicator of living standards is a restriction in the social activities that a person wanted to undertake, but could not because they couldn't afford to. In contrast, it is an indicator of high living standards to be free of such a restriction. Fergusson et al. (2001) developed a set of items to assess this facet of living standards. Items were selected to include a range of social participations from basic social activities (e.g., giving presents to family or friends) to more luxury items (e.g., going on an overseas holiday every three years).

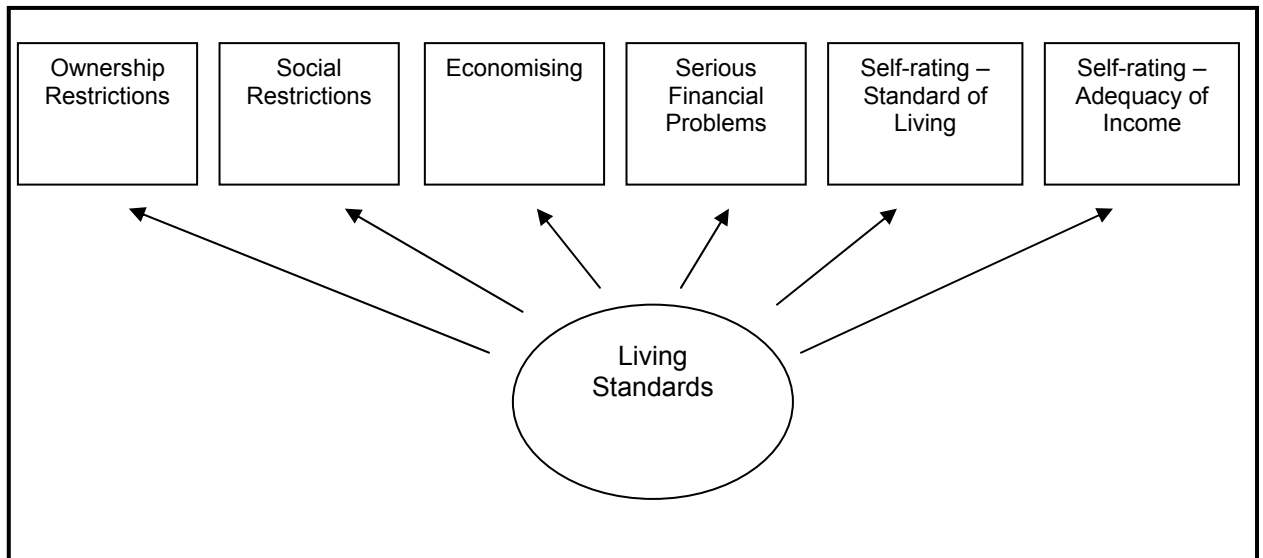
Economising: When people are in a position of financial hardship they will often reduce their spending on items. In contrast, people with high living standards will generally be free from a need to economise. Fergusson et al. (2001) identified a number of domains, and developed items to assess the extent to which people reported undertaking economising in key areas including good clothing, medical care, and home heating.

Serious financial problems: another indicator of living standards is the extent to which a household has recently faced severe financial problems. To assess this construct, Fergusson et al. (2001) developed items that described the extent to which the respondent reported they had faced severe financial problems in the last 12 months. This was measured by the use of food banks, inability to pay for accommodation or utilities, and so on.

Self-ratings: Self-ratings give a person's own perceptions and assessments. Fergusson et al. (2001) developed several items relevant to living standards. Two of these were used in the model specification. They were the respondent's rating of their standard of living, and the adequacy of the respondent's current income to meet their everyday needs.

These elements are presented in Figure 1.1 to show the link between each of these variables. As described more fully in the subsequent chapters, the statistical model for developing a single overarching measure from the directly observed variables is based on the idea of a latent variable. For the purpose of the present research, it was proposed that the observable variables of ownership restrictions, social participation restrictions, economising behaviours, serious financial problems, and self-ratings of standard of living and adequacy of income were indicators of a single latent (unobserved) variable which is described as living standards.

Figure 1.1: Initial CFA model of living standards – taken from Fergusson et al. (2001)



The analysis plan that was developed to meet the objectives of the research is summarised by the flow diagram in Figure 1.2 on the following page.

The remainder of this report is organised as follows: Chapter 2 describes the sources of data used for the analysis and Chapter 3 presents information on the survey respondents' demographic characteristics and material circumstances. In Chapter 4 the statistical methodology employed for the fitting of the living standard CFA model and the specification of the latent variable is described, along with information pertaining to the reliability and validity of the derived measure of living standards. The development of the 'user-friendly' general use form of the scale, called the Economic Living Standard Index (ELSI) is reported in Chapter 5. Chapter 6 provides calibration information to enable the interpretation of scale scores; the interpretive framework that is developed here includes statistical profiles that give a picture of the living standards of people at various points along the scale. Chapter 7 provides some concluding comments about the research, with observations about the nature of the scale, and its potential uses.

Figure 1.2: Analysis plan

