LONGITUDINAL SURVEY OF INCOME, EMPLOYMENT AND FAMILY DYNAMICS

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Abstract

Statistics New Zealand has completed the feasibility study for a Longitudinal Survey of Income, Employment and Family Dynamics, and is now in the process of implementing the recommended methodology for this survey. Data collection begins in April 2002. The survey will provide information about changes over time in the economic well-being of individuals, and factors influencing that change such as labour market behaviour and changes in family structure. From an initial panel of households the individuals selected will be interviewed and re-interviewed once every 12 months for 8 years. The paper describes the information to be collected, output variables and types of analysis possible with longitudinal data. Policy uses of the data are briefly discussed, with selected examples of overseas analysis using longitudinal survey information.

Keywords: *Dynamics, earnings, income, unemployment, labour force participation*

In recent years we have seen the publication of official reports and working papers on the subjects of income distribution, employment opportunities and disparities between different social groups. These, and the responses to them from other researchers and academics in those fields, have sometimes produced a lively debate and interesting headlines

It is not intended here to review or comment on this and other work in the area (see Callister, 2000; Chapple, 2000; O'Dea, 2000; Podder, 1998; Statistics New Zealand, 1999; Wilson, 1999 and others). The aim of this paper is to describe a forthcoming source of data expected to inform and enrich such debates and provide opportunities for further exploration of the issues raised.

This year Statistics New Zealand completed the feasibility study for a Longitudinal Survey of Income, Employment and Family Dynamics (LSIEFD). We are now in the process of implementing the recommended methodology for this survey, which will begin data collection in April 2002.

The Longitudinal Survey

Longitudinal surveys are surveys involving repeated observations across time following the same selected individual over a specified period, as opposed to 'one-off' cross-sectional surveys. In this respect the Household Labour Force Survey, which selects private household addresses and collects quarterly information from residents at that address for two years, is not a longitudinal survey, although by virtue of its rotating panel design it is capable of providing limited longitudinal data.

Longitudinal surveys fall into several types, including cohort studies, indefinite life panel surveys and rotating panel surveys. Cohort studies select a cohort of individuals distinguished by some common statistical characteristic e.g. the 'Class of '81' or babies born within a specified period as in the Christchurch Health and Development Study and the Dunedin Child Development Study. Panel surveys on the other hand select a 'panel' of individuals with the aim of achieving a sample that is representative of the whole population. Indefinite life panel surveys such as the British Household Panel Study and the US Panel Study of Income Dynamics in general use a single panel and follow those individuals for an indeterminate period (effectively until death, emigration or attrition). Rotating panel surveys are also known as multiple overlapping fixed life panel surveys, following the individuals in each panel for a set period, with consecutive and overlapping panels ensuring continuity. The US Survey of Income and Program Participation and the Canadian Survey of Labour and Income Dynamics are examples of this type of panel survey. (For further information about longitudinal survey designs and their application to New Zealand see Buck et al. 1995)

The Longitudinal Survey of Income, Employment and Family Dynamics, as currently planned, consists of a single fixed-life panel of 8 years duration. It has the potential to become a rotating panel survey. Whether or not that happens will depend on the use made of the data and the demand for a continuing source of longitudinal data.

Advantages of Longitudinal Data

Longitudinal data gives us the ability to look at patterns of change over time and to investigate the factors associated with change. It can show the direction and size of change, including gross flows and net change at the aggregate level. Statistics produced from longitudinal data are often estimates of the durations spent in different states, such as income levels, labour market activities, benefit receipt, family or household types. Longitudinal data holds a record of transitions between states. This can be output as the number of transitions in a specified period e.g. between different income levels or labour market activities, the frequency with which certain states are experienced and the spacing between states. Such data is commonly used to estimate transition probabilities for different groups e.g. the probability of staying in, exiting and entering low-income states. It is also used to describe predictors of change, like labour market behaviour, educational attainment and changes in family structure, if not the causal processes associated with change.

Longitudinal data has particular advantages in the analysis of income dynamics. Cohort studies are restricted to the experiences of a single age group and can only track the impact of social changes on that group. Retrospective surveys cannot provide accurate data because of difficulties in recalling income levels and changes. Census-based record linkage panels are limited by the long interval between observations and the lack of 'connecting' explanatory variables. Repeated cross-sectional surveys are unable to show which people are subject to income mobility or explain what is responsible for people moving in and out of low-income states.

With longitudinal data it should be possible to say whether 'the rich' who appear to be getting richer are still the same people or whether some of them have recently graduated from the 'shrinking middle class'. If there are groups of individuals and their families staying at a fixed point in the income distribution e.g. who are persistently 'poor', and others for whom 'poverty' is a transitory state, longitudinal data will show this along with the defining characteristics of such groups. And along with establishing whether 'gaps' between Maori and Pakeha are closing or widening, longitudinal data which monitors ethnic group affiliation will allow investigation into whether the identification with a particular ethnic group also changes over time and with changing circumstances (Chapple, 2000).

Data Collection

First a brief outline of the methodology for data collection in the Longitudinal Survey of Income, Employment and Family Dynamics. The sample design, using the area-based frame common to other Statistics New Zealand household surveys, involves an initial panel of 10,000 households, with strategic over-sampling to allow estimates for the Maori population. Panel length, or the total time that a respondent is expected to remain in the

survey, will be 8 years; wave length, which is the spacing between interviews, 12 months. Individuals selected in the 10,000 households, following initial interview at Wave 1, will be tracked and re-interviewed as near as possible to 12 months later and asked to recall information over each annual period for 8 years. Interviews will be face-to-face using an electronic questionnaire. This involves question text read from the screen, answers recorded on the laptop and automated systems taking interviewers through the questionnaire, checking and editing responses as they are entered and, when appropriate, retrieving information collected in the previous interview for referral. Interviewing will be continuous over the survey period, with interviews spread evenly throughout the year.

Three basic types of data will be collected in the Longitudinal Survey of Income, Employment and Family Dynamics. These are spell data, annual data and point-in-time data.

Spell data relates to a specific period of time with start and end dates provided by the respondent, for example a spell of being in a sole-parent family, or a spell of benefit receipt.

Annual data is where one value is collected for the respondent's 12-month reference period, for example the amount of annual income from business or investments in the 12 months up to the allocated interview month. It should be noted that because of continuous interviewing and the way respondents will be allocated to reference periods, analysis involving annual data will use 'averages' over the whole survey period, similar to what is done with HES data.

Point-in-time data relates to a single point in time, usually the interview date, for example self-assessed health status and educational qualifications.

Following is an outline of the information to be collected, with the variables distinguished as spell, annual or point in time.

Income information
- Earnings from employment (spell data)
- Dates and reasons for change in earnings during a year-long spell of employment with the same employer (annual data)
- Government income support payments (spell data)
- Private superannuation payments (annual data)
- Interest income (annual data)
- Investment income (annual data)
- Self-employment income (annual data)
- Other regular or non-regular income, e.g. lump sums, inheritance (annual data)

Labour market information
- Periods of working, looking for work, out of labour market (spell data)
- Periods of paid employment, unpaid employment &

as self-employed (spell data)
- Occupation, industry and hours worked for each period of paid employment (spell data)
- Reasons for change in labour market activity (spell data)
- Education participation (spell data, in monthly blocks)

Family and household information
- Family type and family relationships (spell data)
- Social marital status i.e. partnered/non-partnered (spell data)
- Legal marital status (point-in-time data)
- Household type and household composition (point-in-time data)
- Standard of living indicators e.g. dwelling tenure, household amenities (point-in-time data)

Wealth and net worth information (collected at 2-yearly intervals every other wave)
- Ownership and value of different types of assets e.g. residential property, life insurance, investments (point-in-time data)
- Type and value of assets held in trusts (point-in-time data)
- Level and types of liabilities e.g. mortgage, credit card debt, student loan (point-in-time data)

Demographics ('one-off' or point-in-time data)
- Date of birth (collected once only)
- Sex (collected once only)
- Ethnic group (collected each wave)
- Country of birth (collected once only)
- Year of arrival in New Zealand for non-New Zealand-born (collected once only)
- School and post-school qualifications (point-in-time data)
- Self-assessed health status (point-in-time data)

Complete data will be collected for adults (age 15 years and over) in all waves of the survey. For children aged less than 15 years limited demographic data only will be collected on their behalf from a responsible adult. All children and adults in the panel selected at Wave 1 of the survey will be longitudinal respondents (known as Original Sample Members); upon reaching age 15 those children will be interviewed in their own right with the full set of data collected.

After the first wave of the survey all eligible adults living in the same household as an Original Sample Member will also be interviewed. The term 'cohabitants' will be used to describe these members of an Original Sample Member's household who are not themselves longitudinal respondents. There are two reasons for interviewing these 'cohabitants': a) to derive the family and household characteristics of Original Sample Members and b) to improve the accuracy of cross-sectional outputs from the survey. Cohabitants would only be interviewed for as long as they reside with an Original Sample Member, and would not be followed if they subsequently moved to a household that contains no Original Sample Member.

Output and Analysis

Statistics New Zealand intends to produce standard outputs from the Longitudinal Survey of Income, Employment and Family Dynamics. This would involve both longitudinal and cross-sectional datasets. The production of customised tables for data users and access to the datasets for researchers through Statistics New Zealand's Data Laboratory are also envisaged.

As well as the data outlined earlier, the output datasets will contain a number of derived variables. (Slide 9) These are listed below.

Income
- Total personal income (annual)
- Longitudinal family income (annual)
- Cross-sectional family income (annual)
- Household income (annual)
- Individual income spells
- Family income spells
- Gross usual weekly employment earning as paid employee (spells)
- Main source of personal income (annual)
- Main source of cross-sectional family income (annual)
- Main source of longitudinal family income (annual)
- Main source of household income (annual)

Labour market
- Labour Market Activity (spells)
- Full-time/Part-time indicator in employment (spells)
- Duration as paid employee (spells)
- Number of weeks in paid employment in a year (annual)
- Average duration of 'Out of Labour Market' spells
- Average duration of 'Looking for Work' spells
- Average duration of 'Employment' spells
- Number of employment spells (annual)
- Number of weeks employed in a year
- Number of weeks out of the labour market in a year
- Number of weeks looking for work in a year

Family and household
- Standard Family Type (one point in time)
- Family type of the longitudinal respondent by age categories of children (spells)
- Economic family of the longitudinal respondent by age categories of children (spells)
- Role of the longitudinal respondent in the family nucleus (one point in time)
- Household composition (one point in time)
- Social marital status spells
- Start date of current social marital status spell
- Number of children in the longitudinal respondents family (spells)
- Date of most recent household composition change
- Change in household composition (since one point

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in time)

Assets and liabilities
- Total asset value (individual and family)
- Total liability level (individual and family)
- Net worth (individual and family)
- Debt ratios i.e. total liabilities as a proportion if assets (individual and family)

Demographic
- Ethnic group
- Age at two points in time (one for longitudinal analysis, one for cross-sectional)
- Highest education qualification

The standard outputs will consist of both longitudinal and cross-sectional tables. The following discussion concentrates on some examples of the longitudinal analytical tables proposed.

Analysis of Income Spells
An income spell is a period at a specific level of weekly income. In the case of individual income spells, this is one person's income from employment earnings and/or government income support; for family income spells, it is the combined income of all that person's adult family members from employment earnings and/or government income support. When someone starts or ends paid work or a regular government income support payment, it is the signal for the end of one income spell and beginning of another; with a change in family membership a family income spell also ends. We will be able to look at the type and extent of change in weekly income from spell to spell by, for example, the reason for the end of the in come spell (what kind of labour market change, earnings/benefit payment change or family membership change).

The number of spells below a specific income level, say, 60 percent of median weekly income, can be related to a range of factors such as duration of labour market activity, participation in full-or part-time study, change in usual weekly hours of paid work or change in family type. Taking only completed spells below this income level, we will cross-tabulate average duration of individual income spells with the individual's main source of annual income, and family income spells with the number of changes in family type. And we will produce exit probabilities - for example the probability of escaping an income spell below this 60 percent level by labour market activity, highest educational qualifications, social marital status, and for people in families with dependent children, by the number of dependants and the age of the youngest child.

Analysis of Labour Market Change
This will look at both spell-to-spell changes in labour market activity and annual changes between two points in time. A change in labour market activity (between employed, looking for work and absent from the labour market) defines the end of one labour market spell and beginning of another. Tables produced will cover the types

of change, including the reasons for transitions from employment to seeking work; the number of spells of different labour market activities, and the length of time spent in different labour market activities. Other tables will look more closely at paid employment, including weekly full-time and part-time hours and the number of full- and part-time spells. There will also be some cross-tabulation of change in educational qualifications. These variables will be related to a range of demographics and also to factors such as occupation and industry (in the longest spell of employment), family type, benefit receipt, participation in formal study, health status and standard of living.

Analysis of Family Data
Although family spell data is being collected for periods shorter than 12 months, most of the tables produced will be looking at change over one or more annual periods. These tables will cover change in family status (between couple only, couple with children and one-parent family), and the length of time spent in different family situations with particular focus on time spent by dependent children in a one-parent family, and the probabilities of escaping the one-parent family situations. Tables will also be done for changes in social marital status and household composition change for different family types. These variables will be related to the usual demographics, as well as to average weekly income from earnings and benefits and changes in this, annual family income and how it changes, household amenities, parents' labour market activity, and age of youngest child.

Uses of Longitudinal Survey Information

One of the drivers for getting a longitudinal survey up and running in New Zealand was that the information provided is seen by government agencies as important for designing and evaluating policy in the following areas:
- targeting the delivery of income support to low-income individuals and families
- taxation
- provision for retirement
- assisting people to move from benefit receipt to work
- assisting people to move from positions of labour market disadvantage
- support for families and children
- forecasting government revenue and expenditure

However there are few precedents in New Zealand for analysing longitudinal data and applying the results to policy formation and evaluation (Buck et al., 1995 and Dixon, 1998). Early in the planning stages of the feasibility study we looked at a number of overseas longitudinal surveys for examples of how such data is used, as well as for insights on design and content. The following is a very brief and selective review of some overseas research using data from longitudinal surveys.

From a relatively short panel study (the Australian Survey of Employment and Unemployment Patterns, which

ran for 3 years from 1994 to 1996) an analysis was done comparing transitions of unemployed people directly to permanent work, and indirectly through casual work. It concluded, with certain limitations, that some unemployed people move more quickly into permanent work by taking casual work (Chalmers et al, 2000).

The longest-running source of longitudinal information is the US Panel Study of Income Dynamics, with over 30 years of fixed-panel data. One example of analysis from this looked at the dynamics of 'poverty spells' and in particular the exit rates out of 'poverty'. It found among other things that more than half the people who escaped poverty would return within 5 years, that exit rates were lowest after 4 or more years for people in households where the head of household was a black female, and that the growth rate of real GNP had no significant impact on mobility out of poverty for households headed by blacks (Stevens, 1994).

A Canadian study using a single year's data from the Survey of Labour and Income Dynamics investigated how many low income people in one year escaped poverty by the next, factors triggering a fall in income that pulled someone below the low income line and factors boosting income enough for someone to climb above that line. It estimated that in the year 1993 - 1994 1.2 million Canadians (4.6 percent) dropped below the low-income line while 846,000 climbed above it. Nearly half of those escaping low income were in families where total paid hours worked rose by at least 500 hours (approx. 4 months full-time work). Two-fifths of those dropping into low income had a family change and 34 percent lost at least one family member. Two-thirds of families where a new marriage or partnership occurred climbed out of low income (Noreau et al, 1997).

A Netherlands study of saving and wealth accumulation patterns attempted to separate age, time and cohort effects in 1984 - 1990 income data and 1987 - 1991 wealth data from the Dutch Socio-Economic Panel. Two indicators of the economic conditions under which households accumulate wealth (the aggregate level of GNP per capita when the head of the household entered the labour market, and a summary measure of the changes in Social Security during the head of household's working life) were employed to explain the differences in wealth between groups of the same age born at different times (cohort effects) and differences in the wealth of a cohort as it moves across time (age effect). The study found that productivity growth, in particular wage increases during the 1960's, and the growth in the Social Security system, were able to explain much of the differences in wealth holdings of different cohorts. Cohorts that always had Social Security had less than half the wealth accumulation of cohorts living without Social Security for much of their lives (Kapteyn et al, 1999).

And finally, an example of a cross-national study using data from the three longest-running panel surveys - the US Panel Study of Income Dynamics, the German Socio-Economic Panel and the Dutch Socio-Economic Panel. The aim of this study was to compare the performance of the three countries in terms of achieving their economic and welfare goals, using 10 years of panel data for each, and to discover if there was a trade-off between economic efficiency and the size/generosity of the welfare state. The US was characterised as a 'liberal welfare-capitalist state' which placed highest priority on economic growth and efficiency, Germany as a 'corporatist state' with social stability and social integration as highest priorities, and the Netherlands as 'social democratic' where highest priority was in minimising poverty, inequality and unemployment. The findings were that the Netherlands overall showed the best performance in its welfare goals, and yet at the same time achieved much the same as the US and Germany in terms of economic growth and efficiency, and in social stability (Headey et al, 1999)

Future Research

Data collection begins in April 2002, and the first wave will have data capture completed after March 2003. Cross-sectional and longitudinal outputs from the first wave's data are expected to be available from September 2003, and annually thereafter. As can be seen from the examples of overseas research, the use of data from the Longitudinal Survey of Income, Employment and Family Dynamics need not wait upon having the full 8 years in a longitudinal dataset. Nor should it be limited to the policy uses outlined earlier, although it is likely that some of these areas will provide the greatest impetus for research. Future studies of change in income distribution and mobility will benefit from longitudinal data, as will research which aims to distinguish persistent from transitory states, events or effects in labour market outcomes. Research into savings behaviour and wealth accumulation will be enhanced by benchmark information on net worth to be collected by the Household Savings Survey late in 2001, and subsequently updated by the data collected every second wave of the Longitudinal Survey of Income Dynamics.

The challenge now for the research community is to come up with ideas and specific proposals for research, and by actively using the data to demonstrate the continuing need for such a longitudinal survey. To ensure the data is structured and output in the most useful way Statistics New Zealand looks forward to consulting with researchers about their data needs.

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