

Implications of Labour Market Change for Retirement Income Policy

Prepared for the Ministry of Social Policy by
Paul Callister and Dennis Rose, 2001

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Paul Callister and Dennis Rose

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Executive summary

Changes in labour market outcomes can affect the future affordability of superannuation. Since most people finance their savings out of labour market incomes, future patterns of employment and earnings help determine people's wealth at retirement and therefore their ability to support themselves.

At any point of time the incomes of persons in retirement represent a claim against the current level of economic output.

International employment trends

Different authors hold widely divergent views about recent and future trends in work. One strand suggests that work is "disappearing" in industrialised countries, that the number of "core" jobs in the economy is declining and that the "contingent" workforce is rapidly increasing.

Other writers are more optimistic with some suggesting that economies such as the US are creating large numbers of secure, well paid, high-quality jobs and will soon be facing a shortage of workers. At the same time concerns are expressed about the outlook for low-skilled workers.

Other scenarios are based on major societal responses to changes in work. In some, technology is seen as assisting to create higher levels of societal income at the same time as it destroys jobs. This higher income can then be potentially re-distributed throughout society by the state.

Studies of long-term employment growth from 1960 through to 1995 do not support the view that, overall, employment is rapidly disappearing. But for the last 25 years unemployment has been a serious and persistent problem.

"Non-standard" work, such as any combination of part-time, self-employed, temporary or multiple job holding appears to be increasing in most OECD countries. Whilst more flexible, "non-standard" work arrangements can create problems for some workers they can also assist life stage transitions into or out of full-time work.

For a large proportion of the population in industrialised countries paid work remains relatively secure. At the same time, work has become insecure for some groups of people, including a significant number of low-skilled men in manual or trade occupations. This contrasts with a trend for a significant number of well educated women to gain more security in paid work.

New Zealand employment trends

Employment rates for men aged 15-64 fell through the 1950s, 1960s and 1970s whilst those for females rose. Employment trends were particularly volatile between the mid 1980s and the mid 1990s. Overall, total employment rates for those aged 15-64 did not change substantially in the 42 years from 1956 to 1998 with around 60 percent of this group in paid work.

There was a decline of full-time work per head of population from the 1970s to early 1990s but this reversed in the 1990s. The data do not support the idea of a strong ongoing loss (or gain) of full-time work for either men or women aged 15-64 in the late 1990s.

Neither do the data support media reports that full-time work has been rapidly "disappearing" for people aged 45 and over. Household Labour Force Survey (HLFS) data show that the proportion of people aged 45-64 who worked full-time increased over the 1990s.

For some groups in society the growth in part-time work has been positive as it allows a balancing of work and family life or a transition into retirement. However, for other people part-time work is an insecure and low-paid work option.

In addition, underlying these broad labour market changes for men and women are issues of ethnicity and education. Maori and Pacific Islands workers and, strongly connected with this, people with no formal qualifications, were over-represented amongst those who had lost their jobs through restructuring. By the mid 1990s, in all age groups, people with little formal education were far less likely to be in paid work than people with formal qualifications.

Drivers of change

In the last 50 years, many factors have influenced changes in paid work. These include globalisation, technology, economic and social policy, changing consumer preferences, demographics, changing aspirations and opportunities for women and men, changes in unpaid work, and changes in family and household type.

As a small country New Zealand will always be affected by international trends. The new international division of labour means that low-skilled work in routine-production jobs tends to be transferred to low-income countries.

Technological change destroys and creates jobs. As new technologies are introduced demand shifts from established to new occupations. The information revolution is reducing demand for manual skills but expanding demand for people with high levels of cognitive ability and also for people with strong interpersonal skills.

Consumer preferences impact on labour demand and supply. The weight a society places on leisure impacts on labour supply. For high-productivity societies, the historical reduction of working hours has often been seen as a positive trend. In contrast, the involuntary loss of work amongst some groups over the last couple of decades has had a negative impact.

Changing demographics alter the age-composition of consumers and of the workforce. Declining fertility in the late 1960s and early 1970s reflected a number of factors including the introduction and widespread uptake of the “pill”. Fertility rates are now below replacement levels.

From the 1970s to the late 1990s there have been marked variations in migration flows, with two periods of net outflow associated with slow economic growth.

Female participation in paid work has increased in all industrialised countries. Changing female aspirations coincided with other factors, including strong growth of demand in many service industries. Lower fertility rates and the availability of childcare have influenced participation patterns. A major “push” factor has been the increasing female participation in tertiary education.

Much of the decline in employment of prime-working-age men, particularly from the mid 1980s to the early 1990s, has been due to job loss. Men without formal qualifications, including many Maori and Pacific Islands men, faced major difficulties. Some men have exited full-time paid work to either work part-time or assume other responsibilities including childcare.

The behaviour of men in traditional “retirement” age groups has also been changing. Since 1991 there has been an increase in participation rates, probably reflecting the rise in the age of eligibility for superannuation.

Professionalisation of work previously undertaken within households has been an element in the growth of paid work. This acts to create service employment.

Changes in household patterns influence labour supply. Recent trends include growth in sole parent families, a decrease in early couple formation, a parallel delay in childbearing and an increase in the number of people living alone.

In New Zealand, as in most industrialised countries, there has been a shift towards two extremes of work arrangement within couples. One is where both partners are in paid work, and the other where neither has a paid job. Only about a quarter of couples have only one partner in paid work.

Trends in the level and distribution of income, both individual and household, importantly affect the ability of people to support themselves and their families and to make provision for retirement. Many recent studies have reported increasing income inequality in New Zealand.

New Zealand research suggests that, given current patterns of earnings and savings, over 85 percent of 15-19 year olds in 1996 are unlikely, by the time they retire, to have accumulated wealth (excluding housing) equal to the present value of New Zealand Superannuation.

From 1951 to 1971 the proportion of people aged 15-64 ranged around 60 percent of the total population. This is about the same level as is projected to prevail in 2051. In the early period, New

Zealand society was coping with a baby boom. In 2051 we will be adapting to a significant proportion of the population being 65 and over.

Maori and Pacific Island peoples are projected to be an increasing proportion of the population, and particularly those under 25, over the next half-century. This combined group is projected to comprise just under 40 percent of those people aged 15-64 in 2051.

Overseas predictions of labour force change

International Labour Organisation (ILO) 1996 labour force projections for women in Western Europe and North America suggest much higher rates of participation in traditional childrearing ages than are suggested in current New Zealand projections. However, New Zealand women are projected to enter the workforce much earlier. In addition, projected New Zealand participation rates for older women are significantly higher than for Western European women and slightly higher than for women in North America.

New Zealand men are also projected by Statistics New Zealand to enter the labour force earlier than men in Western Europe and North America, to have significantly lower participation in the prime-working ages, and then to continue working longer at older age groups.

These projections show that patterns of work, particularly for women, differ markedly between countries. They also provide some idea of possible changes in New Zealand should there be some major shifts in our economy and in social norms.

The implications of demographic and labour market change in New Zealand

The age composition of the population is projected to change over the next 50 years. Using a central reference scenario, assuming medium fertility, medium mortality, medium labour force participation and 5,000 net immigration, persons aged 0-14 are projected to fall from 22.3 percent of the population in 2001 to 15.5 percent in 2051. Those aged 15-64 are projected to fall from 66 to 59 percent over the same period.

On the same scenario persons aged 65+ are projected to increase from 11.7 percent of the population in 2001 to 25.5 percent in 2051.

Reductions in the proportion of persons within the normal working age span and an increase in the proportion of people aged 65 and over carry major implications for retirement income. The incomes of the retired, from both public pensions and from their own independent sources, are ultimately funded from within current production, possibly supplemented by, but in New Zealand's contemporary experience diminished by, net flows of international investment income.

We explore the implications of changing demographic patterns by modelling possible income patterns in future years, with particular emphasis on 2051. These pictures are built up by applying to projected future population distributions, age and gender specific patterns of income flows based on 1997 tax data.

Our projections initially assume stable income relativities by age, gender and income type. Whilst income relativities, can be expected to vary, it is difficult to sensibly forecast detailed patterns of change. For most of the projections, we use a stable framework of income relativities to assess the likely scale of the impact of demographic change.

We use the aggregate market income of persons as a reference point. Income flows stated below are all expressed as percentages of the market incomes of persons at the stated dates.

In our central scenario, total payments of New Zealand Superannuation are projected to rise from the 2001 level, equal to 8.5 percent of the market income of persons, to 14.1 percent in 2026 and to 18.4 percent in 2051. In contrast projected personal tax payments remain stable at around 22 percent. Income-tested benefits fall from 6.9 to 6.0 percent between 2001 and 2051.

Changes in fertility assumptions have a quite marked impact on the projected proportion of persons within the normal working age span in 2051 and therefore on the relative importance of salary and

wage incomes. By lifting aggregate market incomes this reduces the apparent cost of New Zealand Superannuation.

Changes in migration also have quite strong effects within the projections.

In other scenarios we model the effect of later retirement, lower levels of unemployment and further increases in female participation rates.

Although some of these variations in labour market behaviour are quite strong acting, none returns the balance between taxes on personal incomes and transfer payments (including superannuation and income-tested benefits) to anything like the position prevailing in 1996.

Future productivity improvements, by increasing real incomes, can be expected to make it easier for future generations to finance transfer payments but it will not obviate their need to tax themselves to do so.

If the proportion of the population in receipt of transfers rises substantially, and if relativities between average market incomes and average transfer incomes are preserved, a significant rise in the proportion of incomes taken through taxes follows, almost automatically, regardless of the rate of productivity change. The politically difficult alternatives are to lower the level of pensions or to restrict pension entitlements.

Future trends

The penultimate section of our report identifies areas likely to shape labour market developments over the next 50 years.

The balance between market and non-market work and leisure is likely to be significantly affected by the demands of population aging, although there are some offsetting factors, such as a relative decline in the number of children. Female participation rates seem likely to rise, as do those of older persons. The long-term historical decline in male participation seems unlikely to continue over the next 50 years. Overall, participation in paid work by persons aged 25-70 will tend to increase.

Major technological waves will continue to cause major disturbances to the existing pattern of jobs and frequently cause high rates of job loss. On the contentious issue of trends in skill requirements we judge it likely that there will be continued demand for upskilling.

Maori and Pacific Island peoples will continue to be an increasing proportion of the labour force in coming decades.

Competitive pressure from overseas will continue. Integration with Australia is likely to continue apace with the trans-Tasman labour market becoming more unified.

Globalisation will maintain pressure on all routine, wage-sensitive operations, thus amplifying the pressure on low-skilled manual jobs that flows from technological change. However, the modern economy demands fulfilment of a very wide range of basic tasks to ensure its daily functioning and this sustains an underlying demand for labour.

We foresee continuing strong growth for persons with symbolic and analytic skills and/or for interpersonal skills. Demand for these skills has been and seems likely to continue to be an important driver of increased female participation and of increased learning and training.

If labour shortages emerge, particularly amongst younger workers, it is likely that consideration will be given to encouraging higher levels of inward migration. This will depend partly on the skills required and on attitudes towards increased flows from newer sources of migration, particularly Asia.

Policy implications

Finally, we review the policy implications of our analysis in three areas: workforce development and employment policy; policies towards New Zealand Superannuation; and policies relating to savings.

The economy's performance depends upon the quality of its institutions, the quality of its commercial and public investments and the quality of its labour force. Our analysis of future labour market

change emphasises the continuing importance of policies directed to workforce development and to the promotion of full employment.

The need for upskilling and for increased labour force participation acts to reinforce the frequently acknowledged need to strengthen policies which assist disadvantaged groups, including Maori and Pacific Island peoples, to improve their skills and enhance their opportunities in the labour market.

The extent of changes in participation by older age groups is likely to be conditional upon attitudinal, institutional, and policy changes that would make it easier for older people to prolong their active working life.

The size of the future labour force and the ratio of working age to retired persons will be conditioned by future trends in fertility and migration. While fertility is primarily a social phenomenon, areas of social policy, such as parental leave or childcare support, may have some influence. Historic swings in fertility rates provide a reminder of the potential importance of future changes. Migration policy is determined within a wide framework of considerations. The potential impact of migration on dependency ratios needs to be recognised within this framework.

The Periodic Report Group's 1997 interim report explored three policy options in relation to New Zealand Superannuation: raising the age of eligibility; lowering pension rates relative to the average wage; and the targeting of the entitlement. Whilst our modelling and analysis tend to highlight the factors that constrain movement in these directions, each remains alive as a future policy option and, as the Periodic Report Group suggests, needs to be kept under review as a possible response to emergent fiscal pressures.

It is common ground to most discussions of retirement policy that increased savings will help increase the transition to an older population age structure. Increased levels of private saving have the potential to increase the asset base of households at time of retirement and thus increase the income, savings and dissaving options open to them at that time. Also, it is prudent for government, as the provider of public pensions, to plan ahead and adjust its own net asset/debt position in anticipation of future fiscal pressures.

The surest sign of an improvement in national savings behaviour would be an improvement in the balance of payments and a reduction in New Zealand's level of net international liabilities.

History shows that societies find ways of adapting to major demographic shocks. The changing age structure will create pressures for adaptive responses at many points and in many different ways. Society will doubtless adapt to the projected demographic changes but continued monitoring and discussion will enhance this process.

Introduction

There is much debate about retirement income policy. Several studies have examined savings behaviour and the future affordability of New Zealand Superannuation (e.g. Periodic Report Group 1997, Investment Savings and Insurance Association of New Zealand 1998). In contrast little attention has been paid to possible future changes in labour market behaviour or the implications of such change for retirement income policy.

Labour market changes could substantially affect the future affordability of superannuation. Since most people finance their savings out of labour market income, future employment patterns are important determinants of people's wealth at retirement, and hence of pressures on public superannuation. Future patterns of weekly and hourly earnings are also important because they help determine the ability of future populations to support people in retirement.

Forecasting future work patterns in a time of rapid social and technological change inevitably involves a high margin of error. However, assuming that changes in work are going to be evolutionary rather than revolutionary, the past provides some guide to likely future changes.

The report opens by examining changes in the amount of paid work available in New Zealand and in some other industrialised countries over the past 50 years. This includes an assessment of whether work has been disappearing. We explore the forces that have driven change over the past half-century in New Zealand and in other industrialised countries, including some that are further down the path of an aging population and economic development than is New Zealand. This part of the report also includes a brief discussion on changes in income distribution.

The next section explores official New Zealand projections of population and labour force and briefly reports some labour force projections for other industrialised countries.

We then explore alternative labour force scenarios in the period out to 2051. These scenarios are anchored around demographic projections prepared by Statistics New Zealand and enable assessment of the likely impact of possible changes in fertility, labour force participation and migration. We also move beyond this set of official projections and consider other possibilities, including higher rates of female participation, delayed retirement and a significant reduction in unemployment.

The next section revisits the forces driving changes in work. Complementing the previous quantitative section, it explores qualitatively the major forces likely to shape labour market developments over the next 50 years and foreshadows some of the likely directions of change.

Finally, we explore some policy implications of our scenarios, including some options put forward by the 1997 Periodic Report Group, policies directed to increasing private and public savings and some other matters relating to the future workforce.

As with all extrapolations of trends it is necessary to recall that unforeseen events such as war, major pandemics or natural disasters could drastically change economic, social and demographic conditions. Equally, the labour market implications of information technology may be more revolutionary than we have allowed in our analysis.

HISTORICAL TRENDS

Changes in patterns of paid work - divergent theories

There is a substantial, and diverse, literature examining historical, current and predicted changes in patterns of paid work within industrialised countries.¹ This literature focuses on both the forces driving change and the actual changes in work. It also discusses the distribution of work and income across various groups in society. The very wide range of viewpoints about changes in work is influenced not only by the data (and, sometimes, a lack of it) and research methodologies, but also by the starting point of the analysis, the country analysed, the timing of economic cycles, the researcher's optimism or pessimism and the forecast time horizon. Most forecasters do not attempt to make labour market projections for periods as long as 50 years, which is the time horizon of this study, but focus instead on changes over the next decade.

In describing recent history but with a forward-looking perspective, one strand of writing suggests that in industrialised countries work is "disappearing", that the number of "core" jobs in the economy is declining, that the "contingent" workforce is rapidly increasing, that the growth of a 24-hour, seven day a week "service" economy means "typical" work schedules are rapidly becoming less evident, and that through "downsizing" of management there is potential for growth in unemployment or underemployment even amongst the middle classes (for example Aronowitz and DiFazio 1994, Head 1996, Rifkin 1995, Sherman 1995, Thomson 1999). Block (1990) has suggested that increasingly few jobs can be seen as lifelong careers for either men or women. Handy (1995) predicted that by the turn of the century over half the workforce would not have "permanent" jobs. These writers often view the growth of self-employment as a negative trend. Many of these writers base their views primarily on trends in the US economy in the late 1980s and early 1990s, a time in which the US economy passed through a recession. A group of European analysts has also been concerned about the possible disappearance of work and the increasing insecurity of many of those who remain in paid work. For instance, in Britain Hewitt (1993:1) has argued that the "48 hours for 48 weeks for 48 years" model of paid work has been disappearing. More recently, Forrester (1999), a French writer, has presented a scenario of major continuing loss of work within the market sector of developed economies. Yet at the same time as concerns are expressed about unemployment and underemployment, other studies have suggested that some groups in society, particularly within US society, are now "overworked" (Schor 1991, *The Economist* 1994).

In contrast to the more gloomy scenarios, other writers in the early 1990s suggested emerging high levels of employment and workplaces full of technology and well paid, occupations. This is the world presented by writers such as Naisbitt and Aburdene (1990) and, to a lesser degree, Toffler (1990). Some more recent US analyses have been based on employment trends in a period of very strong economic growth. The more upbeat of these suggest that the US will be soon facing a shortage of workers, that most jobs are not insecure, and that the US economy is creating a substantial number of well paid, high-quality jobs (Employment Policy Foundation 2000). In this type of analysis much of the shift to more flexible employment arrangements, such as short or alternatively long hours of work, is seen as reflecting individual workers' preferences. For example, short hours of work reflect a desire to balance work and family life or, for others, are a transition into retirement (*Newsweek* 2000). Based on a similar view of recent employment trends Judy and D'Amico (1997) provide a generally optimistic outlook on employment trends in the US for the next two decades, whilst expressing concerns about the outlook for low-skilled workers.

Some future-looking scenarios offer gloomy overall forecasts combined with good job prospects for a small group based on technology. For example, an 80/20 concept has been put forward. This has 20 percent of adults in relatively permanent and well paid full-time work, but 80 percent in low-paid, casualised or short-term jobs. Those in the 20 percent are highly skilled, often live in separate suburbs and are alienated from the other 80 percent. Older workers, as well as those with a low level of skills, are seen as a particular casualty in this type of scenario.

Other scenarios are based on some quite major societal responses to changes in work. In some, technology is seen as assisting to create higher levels of societal income at the same time as it destroys jobs. However, the higher societal income can potentially be re-distributed. An example would be through a Universal Basic Income (UBI) which would allow some people more leisure but for others would support unpaid community work.² Other ways would be direct taxpayer support for activities such as full-time parenting or perhaps support for “civil society” (third sector) workers.

An underlying question in much theorising about the future is the workplace change that is associated with computerisation, information technology and the internet. Will these come to be seen as being as revolutionary in their implications for typical work patterns as were the technological changes of the industrial revolution?

Given the claims and counter-claims made in the media and in popular books about the disappearance of work, as well as increasing insecurity with those left in employment, a number of empirical studies have sought to test these ideas. In 1998 the ILO addressed many of them. The first issue analysed was whether technology is destroying jobs. The ILO suggests that many dire predictions about the “end of work” derived from job losses in large US corporations since the early 1980s. It notes (p. 17-18):

The credibility of such sensational predictions is very limited since they are based on an invalid double generalization. On one hand, the case of particularly large corporations is proposed as representative of the whole economy; on the other, the direct labour-saving impact in production processes is proposed as the only consequence of technical change. Yet, the labour-saving reorganizations in large manufacturing firms do not tell the entire story: small firms and the other sectors of production have to be taken into account as well. Similarly the analyses make no allowance for the indirect effects of technical change and the jobs that can be created by the growth of new products and industries.

The ILO tested whether work had been disappearing by examining trends in total weekly hours worked in a range of countries from 1960 through to the early 1990s. In Canada, Japan and the US total hours have increased, while several European countries (including France, Italy and Sweden) show either stable or decreasing trends. The ILO suggests that after the Second World War “the compensation effects of technology have been more than fully effective in North America and Japan while in Europe there is a slow tendency towards the saving of labour” (p. 19). This issue of technology and job creation/destruction is discussed in a later section.

The ILO then examined long-term employment growth in a range of industrialised countries. It reports steady growth in employment from 1960 through to 1995 and suggests that this “does not support the view that jobs are inexorably disappearing” (p. 21). Yet at the same time unemployment also increased. This issue of how employment and unemployment can simultaneously increase is explored in other sections.

Finally, in terms of the disappearance of work, the ILO tested whether the long-term relationship between GDP growth and employment growth has changed significantly. In particular, there has been concern expressed that GDP can now increase but without employment growth. Again, based on long-term evidence across a range of countries it suggests this concern is not warranted.

The ILO then assesses whether jobs have become less secure. On the basis of a range of studies and measures it concludes that despite some important changes in the nature of work “the data tend to indicate that there is hardly any universal trend towards increased instability among major industrialized economies” (p. 30). This issue of job stability and security is discussed further in the section on labour market flexibility.

¹ This discussion, along with subsequent sections outlining the historical changes in patterns of paid work, draws heavily on the doctoral research of Paul Callister.

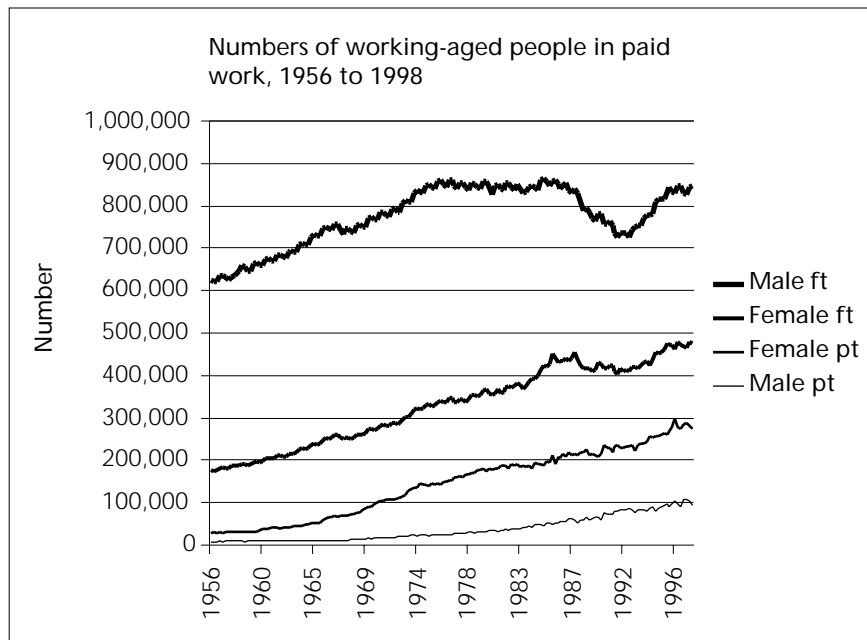
² Some of the costs and benefits of a Universal Basic Income in New Zealand have been debated by Rankin (1997) and Preston (1998).

Changes in employment in New Zealand since the 1950s

There have been many detailed analyses of long-term changes in patterns of paid work in New Zealand. These include those published by organisations such as Statistics New Zealand and the New Zealand Planning Council, as well as by individual researchers (e.g. Haines 1989, Morrison 1991, Chapple 1994, Easton 1997, Thomson 1999). A common limitation of these studies, as of our own, is their heavy reliance on cross-sectional rather than longitudinal datasets. For retirement saving, work patterns over a lifetime are critical. In addition, there are problems with long-term employment series drawn from the census. There have been changes between censuses in the location, length and nature of employment questions.³ Despite these problems the census remains a key source of long-term employment data.

Employment and non-employment are influenced by the number of jobs being created, changes in population and the number of people wanting or needing paid work. The Department of Statistics (1993) notes that in the first 30 years following World War II employment growth was similar to labour force growth. Between 1951 and 1976 employment growth varied between 8 percent and 14 percent in each intercensal period.⁴ In contrast, there was only a 2 percent growth in employment between 1976 and 1981. Employment growth then rose to around 8 percent to 1986. In the subsequent five-year period total employment fell for the first time since World War II, but growth resumed in the next intercensal period. Figure 1 (based on Chapple 1994, 1999) shows trends in employment growth by gender and hours of work for people aged 15-64.⁵ Full-time male workers were by far the largest group of employees throughout the whole period. However, in the 1970s to late 1980s male full-time employment stalled, and then declined rapidly in the late 1980s and first years of the 1990s.⁶ These changes, along with a smaller decline in the number of female employees, had a major impact on total employment growth.

Figure 1



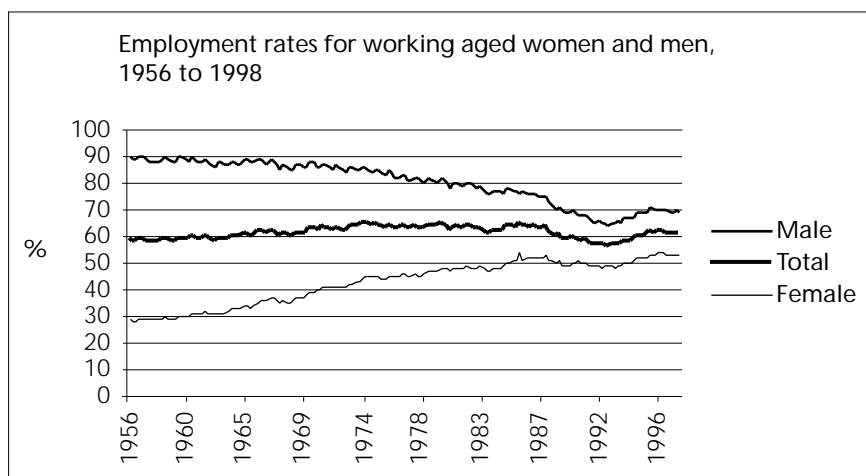
Source: Derived from Chapple (1994, 1999)

Note: The series on the graph are in the same order as in the legend. The top line is male full-time employment, the next down full-time female workers and the bottom the number of male part-time workers.

Long-term growth in employment needs to be set against changes in population. Figure 2 illustrates broad employment trends by showing the percentage of working-aged men and women (15-64) who were in paid work from 1951 to 1996. Male employment rates tend to fall whilst those for females rise through the 1950s, 1960s and 1970s. In this period, total employment rates (male plus female) rose slowly. However, employment trends for both men and women were particularly volatile in the period

between the mid 1980s and the mid 1990s. Yet overall, Figure 2 shows that total employment rates did not change substantially in the 42 years from 1956 to 1998. In contrast, the distribution of paid work between women and men changed dramatically.

Figure 2



Source: Derived from Chapple (1994, 1999)

Long-term growth in employment is more uneven when age and gender are considered. Data on full-time participation rates for men, in the age groups 15-24 and 25-54, show long-term declines through to the mid 1980s (Department of Statistics, 1993).⁷ For the younger age group the decline began in the mid 1940s, due to higher participation in education. Participation rates for the older age group declined from the mid 1970s, and more strongly from the mid 1980s. For men aged 60-64 there was a steady increase in participation from the early 1950s to the late 1960s. Participation rates then fell, following a reduction in the age of eligibility for retirement income. However, the participation rate of men aged 60-64 increased once again with the rise in age of eligibility for New Zealand Superannuation during the 1990s.

Participation rates for women, in contrast, increased strongly from the early 1960s through to 1986. This was particularly so for partnered mothers with young children. Only 25 percent of women were in the workforce in 1951 but by 1986 this proportion had risen to 45 percent.⁸ During the next five years this long-standing rise in female participation rates stalled but then resumed again in the next five years. Based on the percentage of women working for one hour or more a week or actively looking for work, the participation rate rose from 53.3 percent in 1986 to 57.9 percent in 1996 (Table 1).

Table 1 – Labour force participation rates by gender, 1961-1996

	1961	1966	1971	1976	1981	1986	1991	1996
Male	83.8	83.6	82.1	80.7	79.3	77.5	70.2	73.5
Female	29.6	33.9	38.7	42.8	47.2	53.3	51.1	57.9
Total	56.6	58.6	59.7	61.5	63.0	65.2	60.4	65.4

Source: Statistics New Zealand (1998)

In the 1950s women under 20 had the highest participation rate, but this rate has declined with increasing educational participation. As women's overall participation increased a bimodal (M-shaped) curve developed with the highest participation amongst those in the 20-24 age group, and again in the 40-49 age group. The trough in the middle reflects childrearing by women. In more recent years this curve started to flatten.

The time demands of childrearing need to be borne in mind when assessing trends in female employment. Focusing on a high level of part-time work or non-labour-force participation in a particular age group may lead to an incorrect conclusion that most of these women will not be full-time workers for much of their lives. Census data shows that women's employment patterns change

significantly over their childrearing years, as the youngest child grows older. For example, in 1996 only a third of women with a child under one were in paid work and of those 61 percent worked part-time. However, for women with children aged 13-17 the proportion had risen to nearly three quarters in paid work with only a third of these women working part-time.

As indicated in Figures 1 and 2, there were some major changes in employment in the decade between the mid 1980s and the mid 1990s. An initial period of major job loss, associated with economic restructuring, was followed by a period of strong job growth. The net changes between the 1986 and 1996 census were:

- a significant loss of full-time jobs held by men aged 20-59
- a loss of jobs held by 15-19 year olds and a major switch from full- to part-time working
- a small gain in part-time employment by men in all age groups over 20
- a gain in employment, both part-time and full-time, by women in their mid 40s to their early 60s
- a gain in full-time employment by women aged 25-34.

The changes contained significant ethnic and educational dimensions. For example, Herzog (1996), controlling for various factors including qualifications, age, and industry performance, found that Maori and Pacific Islands workers were still over-represented amongst those who had lost their jobs in the reform process. In 1996, Maori and Pacific Islands men in the 20-59 age groups were also more likely to work part-time than Pakeha men. Statistics New Zealand (1998) shows that in 1996 the labour force participation rates of Maori and non-Maori women were both 58 percent, a change from ten years earlier when Maori women were more likely to participate in the labour force.

Tables 2 and 3 illustrate the changing impact of education and employment for prime-working-age people during this decade. While some age cohort effects underlie these tables (with, for example, fewer older people holding formal qualifications), the decline in male employment was particularly strong, in all age groups, for those having no formal qualifications.⁹

Table 2 – Participation in paid work by men aged 25-59 by highest education between 1986 and 1996

	1986	1996	Change in % 86-96
No formal qualifications	89	75	-14
School	94	86	-8
Other tertiary	96	89	-7
University qualifications	96	91	-5
Total	92	81	-11

Source: Data derived from the Census of Population and Dwellings, Statistics New Zealand

Table 3 – Participation in paid work by women aged 25-59 by highest education between 1986 and 1996

	1986	1996	Change in % 86-96
No formal qualifications	54	55	+1
School	61	70	+9
Other tertiary	70	71	+1
University qualifications	76	81	+5
Total	61	66	+5

Source: Data derived from the Census of Population and Dwellings, Statistics New Zealand

Table 4 illustrates the impact of education, gender and ethnicity on participation in paid work for prime-working-age people. For women, but particularly for those with no formal qualification, three other variables underpin participation. These are presence of dependent children, age of youngest child and whether they are a sole parent.

Table 4 – Participation in paid work by gender, ethnicity and highest educational qualification in 1996 for people aged 25-59

	Degree or higher		Other tertiary/school qualifications		No formal qualifications	
	Male	Female	Male	Female	Male	Female
European only	94	84	90	75	80	60
NZ Maori ethnic group	91	82	79	63	61	42
Pacific Island ethnic group	81	78	76	61	63	43

Source: Data derived from the Census of Population and Dwellings, Statistics New Zealand

Table 5 shows that education remains a very important influence on participation in paid work by those aged 60 and over.¹⁰ People with high levels of formal education are also more likely to have had long-term work prior to age 60 and above-average incomes.

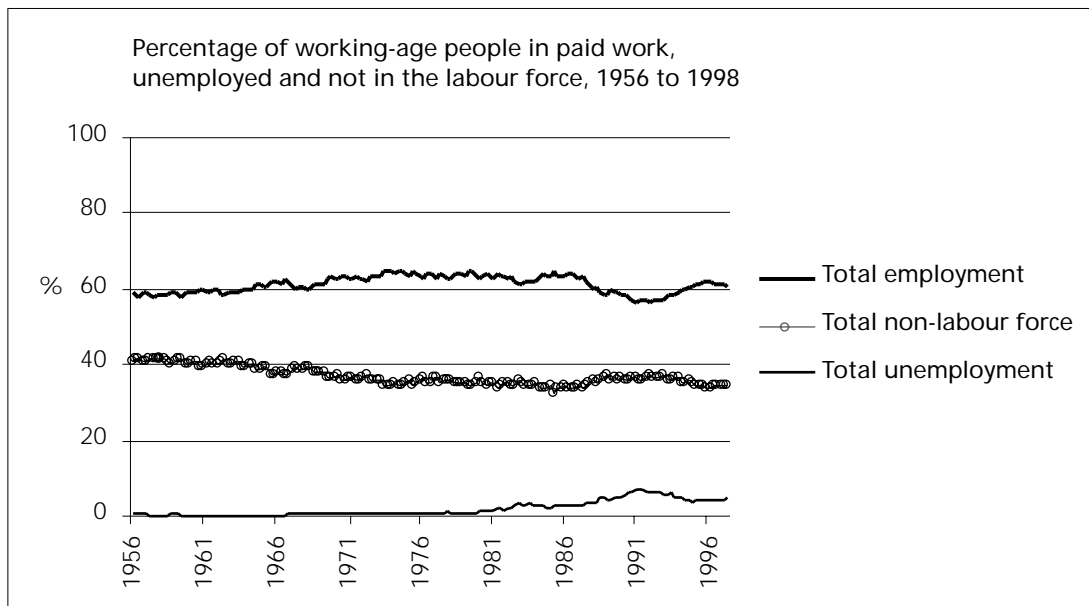
Table 5 – Participation in paid work by gender and highest qualification in 1996 for those aged 60-74

		Male	Female
60-64	No formal qualifications	42	20
	School	51	29
	Other tertiary	51	36
	University qualifications	65	44
65-69	No formal qualifications	18	7
	School	24	10
	Other tertiary	24	18
	University qualifications	37	17
70-74	No formal qualifications	8	2
	School	10	3
	Other tertiary	12	11
	University qualifications	17	6

Source: Data derived from the Census of Population and Dwellings, Statistics New Zealand

One of the more important features of labour markets during the period under review has been the evolution of unemployment. In assessing overall employment trends we need a measure of those people who wanted to be in paid work but could not find a suitable job. Figure 3 shows the percentage of working-age people employed and unemployed from 1956 to 1998.

Figure 3



Source: Derived from Chapple (1994, 1999)

Figure 3 shows that unemployment was very low through to the mid 1970s with a strong rise in the late 1970s. A second large rise in unemployment occurred in the late 1980s and although the unemployment rate then fell back, in the mid 1990s, it was still considerably higher than in the period from the 1950s to the early 1970s. Note, however, that the percentage of working-age people employed at the end of the 1990s was also higher than in the 1950s, suggesting that a higher proportion of the population wanted paid work, or needed paid work, from the 1970s onwards.

There have also been major changes in the hours of work and the type of jobs in recent decades. At the turn of the century New Zealand primary industries, including farming, mining and timber-milling, provided nearly 40 percent of employment. In many of these industries people worked long hours. Most of the work was manual and much was seasonal and insecure. In the early 1900s the service sector was the smallest employer, providing only about one-third of employment. But by the mid 1930s services provided about half of employment, and by the mid 1980s this had grown to nearly two-thirds. From the 1970s to the mid 1980s there was particularly strong growth in finance and real estate, and business services sectors (Department of Statistics 1993).

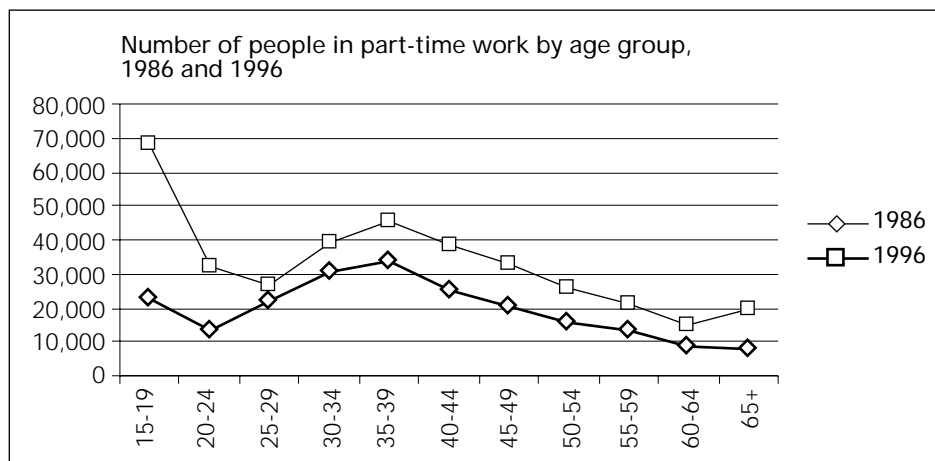
The growth of the service industry is sometimes portrayed as a negative trend, on the grounds that mainly low-paid, low-skilled jobs are being created. Trends in occupations provide some challenge to this idea. Haines (1989) has shown that since World War II there has been a shift away from occupations based on physical effort to occupations that can be seen as primarily involving non-manual work. The Department of Statistics (1993) notes that since the 1950s there have been two major occupational groups that declined in two distinct periods. Agricultural and other primary occupations decreased between 1951 and 1971 and then remained relatively stable. A reduction in manufacturing- and production-based occupations started in the 1970s but this decline accelerated between 1986 and 1991.

In contrast, since World War II there has been strong growth in professional, technical and related occupations. In the period 1971 to 1991 the Department of Statistics (1993) notes particularly strong growth in the occupations of economists and other social scientists, systems analysts, jurists and accountants. In this period there was also strong growth in administrative and managerial occupations.

During the 30 years from 1961 to 1991 the average number of hours worked per week fell. This was caused by an increase in part-time work, along with decreasing average hours for those working part-time. In the period 1966 to 1981 the proportion of people working part-time increased from 5 to 14 percent. This increased to 15 percent in 1986, 18 percent in 1991 and 23 percent in 1996. In 1981,

3.7 percent of men worked part-time but this had risen to 14.6 percent in 1996. For women, 45 percent worked part-time in 1981 and this rose to 56 percent in 1996. While traditionally it has been women with young children who have worked part-time, a wider range of people now do so. However, the growth has been particularly strong amongst people under 25 (Figure 4). Surveys show that a significant number of people working part-time would like to work longer hours. However, some people not in paid work would like to work part-time and some full-time workers would prefer shorter hours.

Figure 4



Source: Data derived from the Census of Population and Dwellings, Statistics New Zealand

At the same time, Table 6 shows that a group of full-time workers have recently been increasing their hours of work. This shift to longer hours reflects a wide range of “push” and “pull” factors. For example, older people in professional and managerial occupations have traditionally worked longer hours than most other occupational groups (a major exception being agriculture and fisheries workers where young employees also work long hours) so growth in these occupational groups and population aging tend to push up average hours.

Table 6 – Hours of paid work for women and men aged 25-59

	% working under 10 hours*	% working under 30 hours*	% working 40 or more hours*	% working 50 or more hours*	% working 60 or more hours*	% working 70 or more hours*
Women						
1986	7	34	44	10	5	3
1991	7	33	47	12	6	3
1996	8	34	48	14	6	3
Men						
1986	1	3	88	32	15	6
1991	1	5	87	35	17	7
1996	2	6	88	40	19	7

* This is a percentage of those gainfully employed and who specified their hours of work
 Source: Data derived from the Census of Population and Dwellings, Statistics New Zealand

Not all workers are employees, with self-employment an important way of working. In the 1950s around a fifth of the workforce was classified as self-employed. This proportion declined steadily to the early 1970s then increased rapidly in the 1980s to the 1950s level. Again, there is a range of “push” and “pull” factors in this growth, and a wide range of income-earning potential from such jobs (Bururu et al 1998).¹¹ However, Bururu et al suggest that in New Zealand it has been “pull” factors rather than workers being unwillingly “pushed” out of being employees that has been the main contributor to growth. In addition, as self-employment is more common amongst older workers, aging of the population tends to raise levels of self-employment.

Finally, the “aging” of the population is itself a driver of changes in employment. Assuming that there is not a substantial preference by employers for younger workers, the changing age structure of the population automatically implies a higher proportion of older workers in the average workplace. This pattern is evident in data for recent decades. For example, HLFS data show that in March 1986 workers 45 and older represented 27 percent of those employed; by March 1996 this had risen to 31 percent and by September 1999 was 34 percent. If only those working 20 hours or more per week are considered, the figure for 1996 was 27 percent rising to 35 percent in September 1999.

³ For example, the location of questions on employment as well as having a very full questionnaire contributed to the low response rate for employment issues in the 1996 census.

⁴ In order to develop a continuous series the Department of Statistics only considered those working 20 or more hours per week.

⁵ The data from the mid 1980s are based on data from the HLFS. The earlier data are derived from a variety of sources including census data.

⁶ Some of the reasons for the decline in male employment are laid out in Dixon (1996, 1999) and Callister (1999).

⁷ Again using the above definition for full-time work. These labour force participation rates include people unemployed and seeking work.

⁸ This includes those employed for 20 or more hours per week or unemployed and seeking work as a percentage of the population aged 15 and over.

⁹ For example, between 1986 and 1996 there was a 16 percent decline in employment amongst men aged 30-34 with no formal qualifications and a 7 percent decline for those with university qualifications. For men aged 50-59 the figures were 13 percent and 3 percent respectively.

¹⁰ There is likely to be a range of reasons for this relationship. For example, Freedman and Martin (1999) show that education is strongly related to functioning (e.g. walking) in later life. They found that the relationship had not changed much in recent years, so suggest that as the group who are well educated is growing the benefits will spread more widely across an aging population.

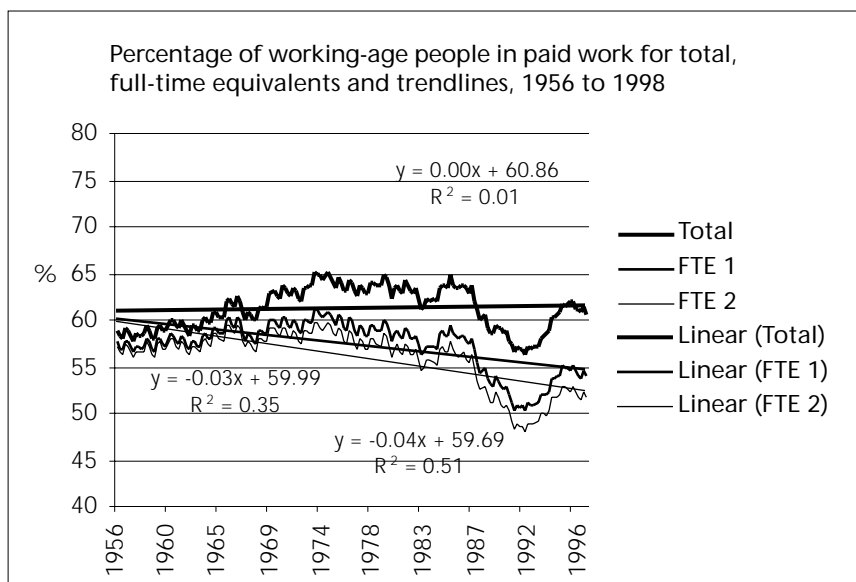
¹¹ Parallel to growth in self-employment is an increase in the proportion of employees who are classified as unpaid family workers. These are family members working in family businesses.

Did paid work start to disappear between the 1950s and 1990s?

The growth of unemployment, job loss amongst prime-working-age men, and increasing part-time work suggest to some that paid work has been disappearing in New Zealand. But the relatively stable overall participation rates of men and women combined, between the mid-1950s and the late 1990s, as shown in Figures 1 and 2, do not support this idea.

Figure 5 provides some further ways of assessing whether work has been disappearing. It shows three ways of calculating employment rates. The first (total) is simply the total number of working-age people in paid work divided by the total working-age population. The second (FTE 1) treats part-time jobs as half a full-time job, while the third treats a part-time job as being worth a third of a full-time job (FTE 2).¹² However, such a calculation takes no account of potential increases in hours worked within the full-time category. Linear trendlines are fitted to each series. While none of the trendlines is of a particularly good fit, they do show that quite different interpretations could be drawn about the amount of work available in society. The total trendline suggests that work has not been disappearing on a per capita basis, whereas the other two suggest that the amount of work per capita has been decreasing over the long term.

Figure 5



Note that truncation of the vertical axis in Figure 5 exaggerates the scale of change. In calculating the regressions time is measured in quarters.

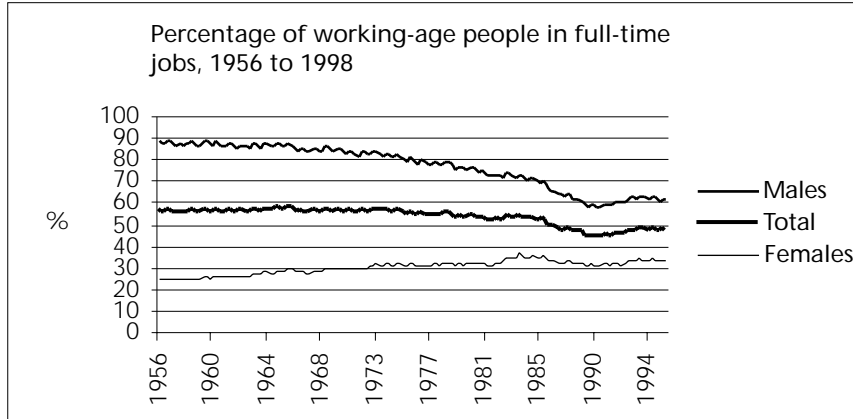
Source: Derived from Chapple (1994, 1999)

Clearly, much depends on the time period chosen for analysis. For instance, if the late 1960s/early 1970s is seen as the starting point then the view that work has been disappearing has much more support. During the early restructuring period work was rapidly disappearing, but this was followed by a period of strong growth in paid employment. Indeed this growth in the mid 1990s was sufficiently strong to encourage some to talk of paradigm shifts in economic activity and of paybacks for the pain of restructuring.

Thomson (1999) argues, however, that it is important to focus on full-time jobs.¹³ He suggests that from full-time jobs people are better able to save, pay taxes and support dependent family members.¹⁴ Using census data and age cohorts, he reports a steady decline in full-time employment for men from the early 1950s to the mid 1990s. Thomson also shows a steady increase in female employment over the same period, but argues that this has now come to a halt and is declining in some age groups. Thomson's research has been reported as suggesting that work is rapidly disappearing for those aged 45 and over (Ansley 2000, Patterson 1999, Stirling 2000).¹⁵ Given this prediction in relation to our forecasts, his original study warrants closer scrutiny. A brief critique is therefore set out in Appendix 1.

Figure 6 shows long-term trends in full-time employment (30 or more hours per week) from 1956 to 1998. While these data do show that there had been a decline of full-time work per head of population from the 1970s to early 1990s, they do not support any idea of a strong ongoing loss (or gain) of full-time jobs, for either men or women aged 15-64 in the late 1990s.

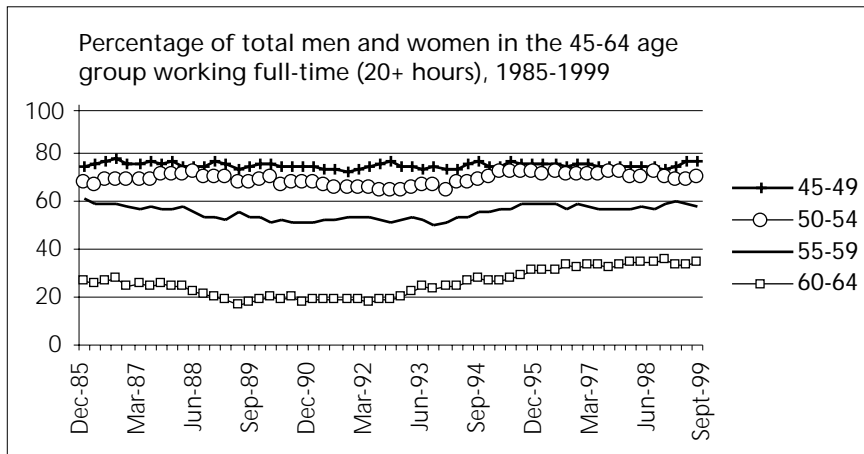
Figure 6



Source: Derived from Chapple (1994, 1999)

Figure 7 focuses specifically on older workers. It shows little support for the idea that full-time work (20 hours or more) has been “vanishing” for older workers (see Appendix 1 for a more detailed breakdown of these data).¹⁶ Unless there are major changes in employer and employee behaviour over the next decade it is difficult to see how full-time work for older workers will substantially decline.

Figure 7



Source: Statistics New Zealand, Household Labour Force Survey

In Appendix 2 we display a series of gender- and age-specific charts of HLFS data for the same time period as covered in Figure 7 above.

The charts for women do not suggest that the long-term increase in participation rates has reached a critical turning point. The data show that in the 20-24 age group for women there have been recent small declines in employment rates. In many of the other age groups participation rates have tended to plateau in the 1990s. However, employment rates have continued to rise in most of the older age groups over the latter part of the 1990s.

For men, the HLFS data to September 1999 show there was a slight rise in participation in the age group 20-39 from 1992 to the mid 1990s, then a small decline. For men aged 45-59 there was a plateauing of participation rates in the 1990s, while there was a small rise in the 60-64 age group. These data also do not support the idea that work continued to disappear for older men in the 1990s.

A final way of assessing whether work is disappearing is to examine total hours worked across the

economy. The fact that hours worked by any one group are trending up or down carries no necessary implication about what is happening to work overall and may simply reflect a re-distribution of work. Census data show that between 1986 and 1991 total hours in paid work in New Zealand decreased from just over 63 million to just over 56 million.¹⁷ However, total hours then increased to just under 70 million hours in 1996. Overall, total hours worked by people 15 or over increased between 1986 and 1996. Tables 7 and 8 show total hours worked divided by the population aged 15 or more. It should be noted that, with respect to 1996 data, it is generally assumed that people who did not record their hours, in fact worked zero hours. An additional column shows the effect of excluding these people from the analysis. Overall, the data do not suggest a wholesale disappearance of work between 1986 and 1996, particularly when we note the rise in average hours between 1991 and 1996. In addition, of relevance to an aging population, the average hours worked per person for people aged 60 or more increased. However, Table 8 does show once again that the gender distribution of work has been changing.

Table 7 – Total hours and averaged hours of paid work per total number of people in each age group, 1986-1996

Age group	Total hours (millions)			Averaged hours per person			
	1986	1991	1996	1986	1991	1996	1996*
15-24	15.1	10.0	11.6	25.9	18.0	21.7	23.5
25-59	45.9	44.4	54.3	32.7	29.3	32.0	34.3
60+	2.3	2.0	3.7	4.8	3.8	6.5	6.7
15+	63.3	56.4	69.5	25.7	21.8	25.0	26.5

* Excludes those unidentified and not specified in calculation

Source: Data derived from the Census of Population and Dwellings, Statistics New Zealand

Table 8 – Total hours and averaged hours of paid work per total number of people aged 15 or more by gender, 1986-1996

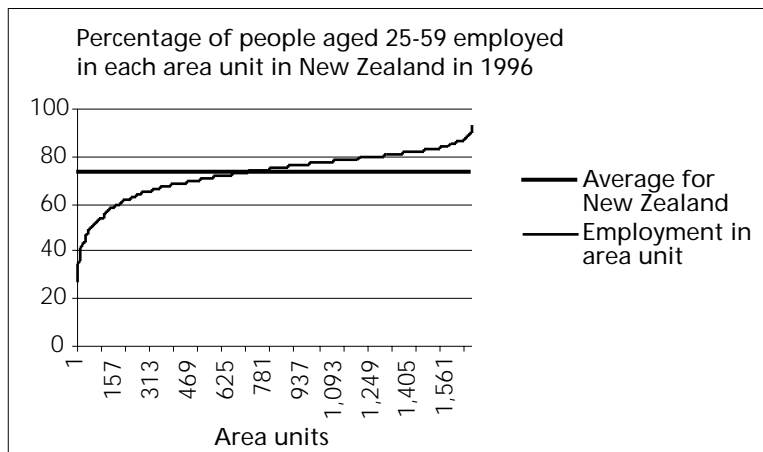
	Total hours (millions)			Averaged hours per person		
	1986	1991	1996	1986	1991	1996
Male	41.3	35.7	42.2	34.1	28.3	31.2
Female	22.0	20.7	27.4	17.5	15.6	19.1

Source: Data derived from the Census of Population and Dwellings, Statistics New Zealand

The changing distribution of work by gender can, however, lead to a disappearance of work in particular households accompanied by an increase in work in other households. There is international evidence of the growth of both work-rich and work-poor households over the last couple of decades. This tendency is mirrored in New Zealand (Callister 1998 a and b). Not only are well educated people more likely to form couples, they are also highly likely to have a similarly qualified partner. So, while inequality in the distribution of work within households has been declining, inequality across households has been increasing.

In addition, while work may not be disappearing from the economy as a whole it may be disappearing from particular regions. There is evidence for the existence of work-rich and work-poor geographic areas in New Zealand. The following chart shows census area units ranked by the percentage of prime-working-age people (25-59) who were employed in 1996. The extremities of the chart suggest that there are significant numbers of work-poor and work-rich areas in New Zealand. Even in some of the more optimistic job scenarios some areas of New Zealand may still be facing a long-term disappearance of work.

Figure 8



Source: Data derived from the Census of Population and Dwellings, Statistics New Zealand

The data shown in this section do not suggest the rapid disappearance of work across the whole economy over the ten-year period of major economic and social change between 1986 and 1996. However, the distribution of work has changed in terms of gender, household type and geographic area. While household and local development issues are clearly important in terms of wider income policies, in terms of this project the critical issues calling for judgement are whether male participation rates, and particularly participation in full-time work, will continue on a long-term historical downward trend or whether a turning point has now been reached. Secondly, have women reached some peak of participation or is further change, upward or downward, likely? Given the volatility in employment in the last decade in New Zealand it is useful to assess longer-term underlying forces driving changes in paid work.

¹² In this graph, the highest equation refers to the total trendline, the next equation refers to the FTE 1 trendline, while the bottom equation is for the FTE 2 trendline.

¹³ In his study Thomson uses 20 hours per week as the cut-off point for full-time work.

¹⁴ While this is generally correct, changes over time may challenge this view. If through productivity gains real incomes keep increasing then the amount of working time can theoretically decrease to fewer than 20 hours without reducing the tax base, the ability to support dependents and the ability to save. In addition, currently in a couple or extended family household a part-time job of one family member alongside other people working full-time (or even part-time) may allow that part-time income to support family dependants or to create a stream of savings. Such household savings may not be possible without the part-time job. There are, therefore, some dangers in only focusing on full-time work.

¹⁵ Patterson reports that over the next decade a third of New Zealand men will have permanently exited the labour force by their later 40s and half by the mid 50s. Ansley quotes Thomson as predicting "within the next 10 years a third of men and even more women will be without substantial paid work as they reach their later 40s. Full-time work is vanishing and being replaced by casual, low paid work" (p. 18). These are major forecast declines in work participation relative to current data.

¹⁶ While HLFS data exclude non-private dwellings this should not have a major impact on the trends as census data indicate relatively few people in these age groups live in non-private dwellings.

¹⁷ In each of these censuses respondents were asked to report their total hours of paid work to the nearest hour. In 1986 and 1991 the question asked for hours worked in the last week but if the person was absent from work then usual hours were requested. In 1996 the question changed slightly and the usual hours worked were requested. Given evidence from the HLFS where both usual and actual hours are recorded this change will have slightly raised reported hours in 1996.

What forces have been driving the change in work?

In this section we explore ten broad, interconnected drivers of changes in paid work. While the primary focus is on New Zealand, most of these drivers are international in nature. The ten drivers are:

1. globalisation
2. technology and skill use
3. flexibility in labour markets
4. economic and social policy
5. changing consumer preferences
6. changing demographics
7. changing aspirations and opportunities for women
8. changing aspirations and opportunities for men
9. changes in unpaid work
10. changing family and household types.

Globalisation

Over the last 200 years the New Zealand economy has undergone a number of changes. These have been stylised by Rose (1990) as:

1. the original self-sufficient Maori economy
2. the extractive/early settler/Maori economy
3. the period of pastoral dominance
4. import-substituting industrialisation
5. the move to an open, internationally competitive economy.

From the time of European settlement international trade has been important to New Zealand, but now the international process of globalisation is having a major impact on trade. As a small country New Zealand has, and always will be, highly affected by trends occurring outside its physical boundaries (e.g. Easton 1997). Therefore, predictions about future employment patterns depend heavily on future trends in the world economy.

Throughout the OECD there has been a widespread, but not universal, acceptance by governments of the argument that the relatively free movement of goods and services, including investment, is beneficial for countries. Although trade restrictions and industry support are still widespread, the view that free trade is beneficial has led, in most countries, to policy changes that assist freer trade. There has, however, been more ambivalence, and even resistance, to freeing up the flow of people between countries, particularly long-term migrants. This last restriction has implications for demographic projections and superannuation debates.

There is still much debate about the impact of globalisation. For example, Wood (1994) analysed the impact of trade on employment and inequality between 1960 and 1990 in the US. Wood suggests that skilled workers in industrialised countries benefited from the increase in world trade for two reasons. Firstly, the increase in trade led to higher economic growth. Secondly, the new international division of labour gave their firms, and ultimately themselves, a comparative advantage in the high-value end of the market. But low-skilled work, in routine-production type jobs, transferred to low-income countries. As a result, overall demand for low-skilled routine-production workers significantly reduced in industrialised countries.

Reich (1993) developed the idea that a group of jobs can be classified as routine-production, and easily relocated to low-wage countries. He suggests there are three main types of jobs in modern industrialised economies. These are routine-production, in-person services, and symbolic-analytic occupations. The routine-production jobs entail repetitive tasks, often rely heavily on manual skills, and generally require little formal education. As the name suggests, in-person services jobs require the provider of a good or service to be physically present. An example is a nurse aide looking after the

elderly. The in-person services work can also entail repetitive and simple tasks or be relatively skilled work.

Reich's last category, symbolic-analytic jobs, involves trade in the manipulation of data, words, oral and visual representations. Such jobs usually require a high level of formal education. Reich's classification of work will be referred to a number of times as it is helpful in understanding past and future changes in paid work.

Reich's analysis, including the impact of globalisation, can be summarised as in the Table 9.

Table 9 – Some characteristics of Reich's work classifications

	Routine-production	In-person services	Symbolic-analytic
<i>Mobility of operation</i>	Most manufacturing internationally mobile	Generally not internationally mobile, except in terms of tourism where the consumer is mobile	Highly mobile, but question of whether it needs to be attached to some geographic cluster
<i>Mobility of labour in these industries</i>	Generally immigration laws limit mobility	Some parts mobile, e.g. domestic workers to Arab countries	Highly mobile
<i>How earnings are set</i>	In global marketplace but including minimum wage legislation	By internal economy, including minimum wage legislation	In global marketplace
<i>Relative earnings</i>	Low	Low if economy is in poor shape, high if economy is strong and tight migration laws exist	Potentially high
<i>Level of education required</i>	Basic formal education	Mix of basic and high skill	High skill
<i>Types of occupations</i>	Factory process worker, data entry operator	Waiter, bank teller, bus driver	Designer, engineer, investment banker, economist
<i>Types of industries</i>	Most factory operations: e.g. clothing and footwear, car assembly, steel production	Retail banking, restaurants, hotels	Advertising, research institutes, computer programming

Source: Based on Callister and Rose (1996)

The process of globalisation has tended to drive low-skilled routine-production jobs to low-wage countries. With changes in technology some former in-person services jobs can also become routine-production jobs and therefore potentially relocatable. An example is a bank teller, who can be replaced by a call centre operator whose job can then be eventually transferred overseas. Symbolic-analytic jobs are also at risk of transfer, although generally to other industrialised countries. Key factors in global decisions about the location of symbolic-analytic jobs are issues such as levels of skill of the workforce, political and economic stability and the state of the infrastructure such as telecommunications. The proportion, and income, of in-person services workers depend on a range of factors. However, a key one is the level of per-capita income in a country. A nurse aide in a low-income country will generally be paid substantially less than a nurse aide in a wealthy country even if they are undertaking the same tasks. Of relevance to this project, if barriers to migration were lower many of these workers would move to high-income countries, particularly if there were a shortage of such workers in the high-income country. An example of this is the migration of Philippine domestic workers to Saudi Arabia.

Technology and skill use

There are two highly inter-related aspects of technological change. The first is whether technology creates or destroys jobs and the second is whether the adoption of new technology requires an upskilling of the workforce.

Throughout history technological advances, such as the ability to refine and work metals, the domestication of wild plants and animals, the introduction of the printing press, and the technological advances of the industrial revolution have had major impacts on work. For example, in New Zealand, the introduction of refrigeration created the opportunity to develop a meat export industry. Some commentators view the introduction and rapid improvement of computer technology (including the internet), along with other recent advances in science and medicine, particularly biotechnology (including genetic engineering), as potentially having an impact as great as the industrial revolution.

1. Technology and the creation and destruction of jobs

In a commercial environment characterised by continuing innovation firms face ongoing pressure to reduce direct and indirect costs and to develop new product lines. Technological change is constantly acting to reduce the labour content of current production. At the same time new technologies create new demands for labour. Yet, in an ongoing process, technological advances will also often destroy jobs that an earlier technological innovation created. For example, technological change first created the job of lift operator and then further advances destroyed it. However, with the newer technology new occupations emerge. The driving force of technology comes from the fact that it increases output per person and thus has the potential to raise real incomes and thereby total consumption. But higher productivity, by reducing the labour necessary to secure a given standard of living, also creates the possibility of increased leisure. How these all balance out cannot be determined in the abstract, but post-war stability in the proportion of the New Zealand workforce in paid employment over a period when output per head increased suggests that there is no necessary long-term increase in unemployment because of technological change.

2. Technology and skill requirements

Closely linked to changes in technology are changes in skill requirements. At the economy-wide level, most evidence suggests that labour demand in advanced industrialised economies, including New Zealand, has been shifting towards occupations that require higher levels of cognitive skill (Adler 1992, Castells 1996, Gottschalk and Smeeding 1997). In particular, there has been strong growth in skilled symbolic-analytic type, managerial, professional and technical occupations across most industries. This includes manufacturing where new technology has removed many routine-production jobs. For those jobs that remain, mental rather than manual skills are increasingly required. Of importance to future patterns of work, unlike jobs that require manual skills and often highly developed physical ability, people working in symbolic-analytic jobs are not so restricted by the loss of physical strength as they age. They are also more likely to be working in occupations they enjoy. Assuming they retain their mental abilities, and are increasingly assisted by new technologies such as voice-recognition computers, many of these older people will be able to and will wish to continue working, often on a part-time basis, well past traditional retirement ages.

As already discussed, there has also been strong growth in in-person services occupations in industrial economies. These occupations can be either skilled or relatively unskilled. Examples of skilled occupations include nurses, travel agents and wine waiters. Relatively unskilled jobs include kitchen hands and cleaners. Both the skilled and unskilled in-person services jobs are to be found predominantly in the retailing, hospitality, business and financial services, and community and personal services sections of the service sector. Many of the less skilled jobs in these industries are also part-time. While many of the lower-skilled service occupations require few formal qualifications they still usually require a good level of “soft skills” as well as a base level of literacy and numeracy. According to Bullard et al (1995) hard skills are “observable psychomotor and cognitive skills”. These are the skills that tend to be measured by formal education. Soft skills are “those process, cognitive and affective skills that are becoming more important in the new paradigm” (p. 14). Reich (1993) suggests that in-person services workers must “smile and exude confidence, and good cheer, even when they feel morose” (p. 176). He goes on to note that “[a]bove all, they must make others feel happy and at ease”. Reich argues that it should be no surprise that, currently, most in-person services workers are women. Again, for many of the in-person services jobs, which rely heavily on interpersonal skills rather than physical skills, aging may not be so much of a barrier to work.

Occupational changes in the US between 1986 and 1996, as well as projected changes through to

2006, are shown in Table 10. The table shows the historical and predicted growth in symbolic and technical analytic jobs (managerial, professional and technical categories). There was also growth in in-person services type occupations (sales and service) as a proportion of total jobs. But the generally routine-production type jobs in areas such as administration, agriculture and labouring have been and are forecast to continue declining as a proportion of total workers.

Table 10 – Employment by major occupational group in the U.S. 1986, 1996, and projected 2006 (numbers in thousands of jobs)

Occupational group	Employment					
	Number			Percent distribution		
	1986	1996	2006	1986	1996	2006
Executive, administrative, and managerial	10,568	13,542	15,866	9.5	10.2	10.5
Professional specialty	13,589	18,173	22,998	12.2	13.7	15.2
Technicians and related support	3,724	4,618	5,558	3.3	3.5	3.7
Marketing and sales	11,496	14,633	16,897	10.3	11.1	11.2
Administrative support, including clerical	20,871	24,019	25,825	18.7	18.1	17.1
Service	17,427	21,294	25,147	15.6	16.1	16.7
Agriculture, forestry, fishing, and related occupations	3,661	3,785	3,823	3.3	2.9	2.5
Precision production, craft, and repair	13,832	14,446	15,448	12.4	10.9	10.2
Operators, fabricators, and labourers	16,206	17,843	19,365	14.6	13.5	12.8

Source: Department of Labour (1999)

The US trends suggest a polarisation of labour demand in terms of requirement for cognitive skills. There are forecast increases in symbolic-analytic jobs (requiring high level of cognitive skills) along with increases in technical-analytic jobs (requiring slightly lesser conceptual skills but needing technical skills). There are also strong gains in in-person services jobs. Some require a high level of cognitive power but many do not. However, most of these in-person services jobs require a relatively high level of interpersonal skills. While there are clearly some major differences between the US, and New Zealand economies, broadly similar occupational changes have been taking place in New Zealand (Haines 1989, Jackson 1997).

In terms of specific cognitive skills of literacy and numeracy, there is evidence that a small, but significant, group of people in industrialised countries now have insufficient skills to enter the labour market or to function adequately in many areas of an increasingly complex world (e.g. Jencks 1993). In New Zealand, a 1996 adult literacy survey showed that there was a strong link between literacy skills and labour force status (Ministry of Education 1996).

Finally, the higher demand for well educated people is also indicated by the higher earning ability of this group within industrialised countries (for example in New Zealand, Maani 1995, Statistics New Zealand 1999 a).

Overall, the research literature on industrialised countries suggests that while technology does destroy jobs it is also a key factor in job creation. The literature also suggests that as new technology is introduced demand shifts away from low-skilled manual occupations. Instead there is strong demand for well educated people with a high level of cognitive ability to work in symbolic-analytic type jobs as well as continuing demand for people with strong interpersonal soft skills, particularly in in-person services occupations. In addition, technology is one factor creating a more complex society. A baseline of numeracy and literacy skills is needed in order to participate in paid work, and both women and men falling under this baseline will face major difficulties in the labour market.

Flexibility in labour markets

Globalisation and changes in technology have created a more intense level of competition for enterprises in domestic markets and internationally. In order to compete, direct and indirect labour costs often need to be reduced. Labour costs can be reduced either by lowering wage rates and labour overheads or by increasing productivity through innovation and through more flexible work practices, or by some combination of these factors. More flexible work practices can include short-term work contracts, part-time work, and outsourcing of work.

In most industrialised countries, including New Zealand, there has been a major push by government, most employers and, in some situations, by employees towards developing more flexible labour markets. The primary objective is increased productivity and, potentially, increased incomes. Just whose income increases is, of course, a potential cause of dispute.

Some techniques to improve productivity, such as the introduction of casual work, or reducing hours of work can have a major impact on an employee's ability to earn an adequate income. However, some employees want greater flexibility in work to balance work and other commitments. For example, part-time work can help many women (and some men) remain attached to the labour force during their early childrearing years, particularly if there is inadequate social support for out-of-family childcare. Part-time work is customarily sought by many whilst studying and also enables older people to continue working at a reduced scale in retirement. But for many prime-working-age people part-time work can represent a low-paid dead-end form of work.

Some forms of flexible work, such as self-employment, may offer employees more control over their working lives and the potential for longer working hours and higher earnings. But for others self-employment can represent job insecurity, underemployment and low incomes. Self-employment, and the associated growth of small firms, has also tended to be associated with less secure job tenure. If people wish to be promoted in small enterprises they will often have to change employer rather than work through internal promotions within large companies. Finally, self-employment can encourage nepotistic hiring practices. This can be a factor in the creation of work-rich and work-poor families.

The ILO (1998) notes that most OECD countries have experienced an increase in at least one form of non-standard employment. However, it also suggests that patterns and trends vary widely. While growth in part-time work has been universal, there has been a decline in self-employment or temporary work in some countries. The reviews of Callister (1997) and the ILO found that predictions and perceptions of very rapid growth of temporary and casual work have been exaggerated. In industrialised countries there is not strong evidence of growth in "casual" work, where people are employed on an insecure, "on-call" basis. However, in some countries growth in temporary and fixed-term work has been significant. These countries include Australia, the UK, New Zealand and the US. In the US growth has been particularly evident in "agency work". In some other countries, including Belgium and Greece, temporary work appears to have declined. There has, however, been a strong increase in temporary work amongst young people in all OECD countries. In all countries women are more likely than men to be in temporary work arrangements. This often relates to women's more frequent participation in childcare and other caring work.

There has been considerable interest in job tenure in the US and surveys go back to the 1970s. On the basis of a range of studies, using a variety of analytical approaches, it appears that there has been very little decline in average job tenure in the last couple of decades (Callister 1997). However, the distribution of long-term jobs across the population changed in two ways. Firstly, some people, particularly men with little formal education, are substantially less likely to be in long-term jobs. Secondly, women with at least a high school education are substantially more likely to be in long-term jobs than they were 20 years ago. Despite these changes, men on average still have longer spells of job tenure than women. However, reinforcing these changes in the US it appears the cost of losing a job, in terms of prospects for future work and earnings, is substantial.

In contrast, researchers in the UK found that over a 20 year period from 1975 to 1995 median job tenure appears to have declined, with the distribution of job tenures shifted towards shorter-term jobs (Gregg and Wadsworth 1995). Twenty percent of the workforce in 1995 had been in a job for less than one year, compared with 15 percent in 1975. However, the bulk of these changes occurred prior to 1985 and since then tenure had moved counter-cyclically. In addition, in this 20-year period there had been a significant increase in average tenure for women. There were also group variations, with the most dramatic decline amongst men aged 50 and above. As in the US, average tenure for women was still significantly less than for men.

The literature on countries with data on tenure suggests that low-tenure, high-turnover jobs co-exist with long-term jobs. It is also clear that in industrialised countries changes in paid work patterns of women, particularly well educated women with young children, have had a major impact on tenure.

Overall, women are becoming more attached to the labour force, with many taking short breaks from paid work only around the birth of children, at times facilitated by parental leave legislation. However, women generally remain less attached to the labour force than men. This is discussed further in the section on female participation in paid work.

Job turnover rates provide another measure of job security.¹⁸ The OECD (1996) has attempted to track trends in job turnover since the late 1970s through to the early 1990s for a range of countries. Such comparisons present the OECD with the usual methodological problems. For example, in New Zealand data have only been available since 1987. Overall the data show relatively high job turnover rates in most countries, ranging from a peak of 35 percent in New Zealand to 15 percent in Belgium, the Netherlands and the UK.¹⁹ According to the OECD the high turnover rate for New Zealand was driven by both a very high rate of job loss in the period measured and relatively high levels of job creation.

The long-term series indicate little upward trend in job turnover in most nations. The exceptions were Canada, particularly amongst small firms, Norway (in manufacturing), and one US dataset (which the OECD suggests should be treated with caution).

The OECD discusses the idea that relatively constant job turnover rates may hide increasingly unstable employment in small establishments, which counterbalances increasing stability in large ones. But a comparison of trends in job turnover for different size classes of establishment in Canada, Denmark, Norway and the US does not support that view. In addition, many studies indicate that high rates of turnover are concentrated amongst young people, particularly those in low-paid jobs.

In a more recent New Zealand study of mobility, O'Dea (2000) tracked entries and exits to and from employment using HLFS data. He found there was no significant increase in employment mobility in the period from 1985 through to 1990.

Lifecycle analysis indicates that short tenure of employment is often not a problem, and may in fact be beneficial when people are first moving into the labour force. In addition, changes in employment initiated by employees will often be for positive reasons, such as wage growth or career progression. The literature also suggests that a high incidence of separations does not necessarily result in greater unemployment. In countries with more fluid labour markets, a larger proportion of the labour force is exposed to unemployment, but reintegrating people who have lost jobs back into employment may be easier. A number of researchers make the point that the issue of voluntary versus involuntary change is central in thinking about tenure, turnover and work scheduling data.

Finally, in analysing trends over time the 1970s are often seen as an important reference period. This may be problematic as some longer-term studies indicate that the 1970s were unusual in that they were a period with particularly high stability of paid work, including extremely high job security and historically low self-employment rates.

Economic and social policy

The last 50 years have seen major changes in the accepted role of the state in relation to the functioning of the labour market. In 1950, in the aftermath of the Great Depression of the 1930s and of extensive government direction of the wartime economy, the promotion of full employment stood as a prime policy objective. Key policies seen as contributing to that goal included active counter-cyclical fiscal and monetary policies, extensive frontier protection by way of import licensing, foreign exchange controls and tariffs, government investment in infrastructure, the system of industrial conciliation and arbitration, centralised wage bargaining and price controls.

By century's end all this had changed. Counter-cyclical policies were seen as ineffective and as more likely to de-stabilise than to stabilise. Import licensing and exchange controls had long since gone and tariffs were in the final stages of phase out. Government investment in infrastructure was much reduced through privatisation and corporatisation. The Employment Contracts Act set the legal framework for decentralised employment bargaining. And price control had been replaced with light-handed commercial regulation.

These changes are not peculiar to New Zealand but reflect a worldwide pattern of change in the aftermath of strong growth in the role of the state during the period from 1950 to 1980 or so. In recent years most OECD countries have sought to reduce the size of their government sectors (Esping-Andersen 1996). The motivations for this are various and build in part on widespread perceptions of dysfunction in parts of the enlarged state sector. They also reflect an emergent awareness of the limitations that an increasingly global economy places in the way of individual governments, particularly those of small countries such as New Zealand.

Despite these changes governments remain as important players in the labour market. As detailed below, government actions impinge on the demand for labour and on labour supply in many ways. In addition, when looking to the future, we need to be aware that perceptions of what governments can and should do remain volatile. The reductions of state activities characteristic of the Thatcher/Major and Reagan/Bush administrations, and of New Zealand in the 1980s and early 1990s have been followed by periods of re-appraisal. The coming decades are likely to see a further re-definition and re-balancing of the role of the state, as governments seek to promote important collective goals in ways that do not unnecessarily inhibit the creative potential of the market economy.

Many government policies impact on the occupational pattern of labour demand. Historically, high levels of frontier protection helped create demand for a wide range of manual skills in industries such as car assembly, clothing and footwear. Recent reductions in protection, coupled with ongoing technical change have led to much job loss in some of these industries that constituted core areas of demand for male and female manual labour. Infrastructural development by the state was and, on a lesser scale, continues to be a key element in demand for a wide range of skills, from advanced engineering to basic manual skills. State-operated or -funded institutions in education and health sustain demand for a wide range of skills. Investing in early childhood services will tend to create jobs filled by women while investing in tertiary education has tended to create a higher proportion of jobs filled by men. In addition, Jacoby and Sharma (1992) argue that the growth of large-scale bureaucracies, including those operated by the state, helped develop a stable, core labour market.

The relationship between macro-economic policies and employment outcomes has long been a contentious core issue within the economics profession. In the last 50 years the focus has shifted from an active counter-cyclical policy focused on the full employment objective, to a medium-term focus with particular emphasis on price stability and maintaining balance in the government's own accounts. The debate on this issue (see, for example, Easton 1997) is certain to continue. An important underlying point is that although the debate is usually focused on short-term outcomes its importance stems from the contention that unsuccessful short-term policies undermine longer-term growth.

The tax system influences the labour market in important ways. Tax collection imposes compliance costs on small businesses and thus tends to reduce profitability. The "deadweight" or incentive effects of taxation can be important, particularly for people with a more marginal attachment to the labour market. Econometric research shows large differences in responsiveness between different groups. For some an increase in tax rates will lead to an increase in hours worked in an attempt to maintain after-tax income levels. Others, less attached to the labour market, including some secondary earners such as married women working part-time, may reduce hours. Tax policies may increase the cost of labour (e.g. payroll taxes), and thereby discourage employment. Other measures such as tax concessions designed to encourage research and development or the introduction of new technology may act to increase demand for labour in the longer run. Proposed new taxes, such as a carbon tax, may also impact on labour demand. Finally the tax system can also be used to boost the wages of low-income workers through tax credits or other tax incentives. This may encourage more people to move into paid work.

There is also considerable debate about the impact of micro-economic policies on the economy, and specifically on employment. The thrust of these policies has been to remove barriers to competition, to design new structures, including regulatory and legal frameworks, that promote competition in the expectation that this will lead to faster growth in output and employment. These changes have affected every industrial sector of the economy in one way or another.

The government can also influence female workforce participation, and possibly fertility rates, by implementing particular family support programmes. Examples of support include paid parental leave, childcare subsidies and subsidies for after-school care. In New Zealand, there has been a very rapid expansion of the availability of childcare in the last decade and, linked to this, an increasing number of mothers with young children have been participating in paid work. Governments have in the past had some influence on fertility by placing restrictions on the availability of contraception and making legal abortions difficult to obtain. However, in general, industrialised countries, including New Zealand, have moved towards a more liberal approach in terms of contraception and abortion.

There is also much debate about the impact of welfare payments on paid work patterns. There is general acceptance of the need to financially support people who, because of lack of marketable skills, illness, childcaring responsibilities, or age cannot undertake paid work. But some argue that welfare payments, by destroying the “work ethic”, are a major factor in creating unemployment and other social problems (Murray 1984). Decisions about how welfare is delivered can also have an impact on whether people move into paid work. For example, government schemes that create subsidised jobs will tend to increase the number of people in paid work, although almost inevitably some of the “new jobs” will be created at the expense of displacing other workers. Restrictions on the time a person can be on a benefit may also mean that many people do not stay out of work for long, unbroken, spells. However, it may also mean they move in and out of paid work on a regular basis.

One important area of economic and social policy on which government has, and will continue to have, a major influence is inward migration. While migration (both in and out) is affected by a range of factors, in particular the state of the economy, various policies that set quotas or require specialist skills or financial assets have restricted inward migration flows in New Zealand. Migration has historically had an impact on both employment patterns and the racial mix of the community. In the past, a rapid increase in a particular ethnic group has often led to calls for restrictions to slow the flow. If, in the future, there is a shortage of lower-skilled, in-person services personnel, attracting people is unlikely to be a problem. For high income countries this generally requires no more than a loosening of criteria for intending migrants. However, it may be more difficult to attract highly educated young people to fill symbolic-analytic jobs from countries, such as many in Europe, that are also likely to be experiencing a shortage of labour due to their own aging (and declining) populations. In fact, those countries may also be seeking to boost their skilled labour supply through immigration.

Changing consumer preferences

A range of factors related to consumer preferences has, historically, impacted on both labour demand and labour supply. For example, an emphasis on saving rather than spending may reduce employment in the short term. In addition, the weight a society places on spiritual wellbeing or leisure rather than on material wellbeing impacts on labour demand and supply.²⁰ For high-productivity societies that highly value leisure, the historical “disappearance” of work has often been seen as a positive trend. For example, the decline of the average working hours for male employees in the US from 62 hours per week in 1890 to 36 in 1977 is generally seen as a positive change (Rose 1990). Yet, in the same societies the involuntary loss of work through unemployment is not a positive trend.

Differing preferences for work and leisure can be illustrated in a cross-country comparison. ILO data show that US workers work the longest hours per year in industrialised nations (ILO 1999). In 1997 they worked on average nearly 2,000 hours, almost two weeks more than their counterparts in Japan, where hours worked per year have been gradually declining since 1980.²¹ The ILO shows that the US pattern of increasing annual hours worked per person (which totalled 1,966 in 1997 versus 1,883 in 1980, an increase of nearly 4 percent) is contrary to a worldwide trend in industrialised countries that has seen hours at work remaining steady or declining in recent years. The long working hours of US (and Japanese workers) contrasts strongly with Europe, where workers work progressively fewer hours. In particular, Scandinavian countries such as Norway and Sweden have much shorter hours. In 1997 hours worked in these countries were, respectively, 1,399 and 1,552.

Finally, Franklin (1997) argues that increasingly it is consumers rather than producers who actually determine the range and type of goods and services and leisure that are produced and consumed.

Therefore, changing consumer preferences will have a major impact on future labour demand. For example, a preference for eating out rather than producing meals at home creates new jobs.

Changing demographics

Changing consumer demands affect employment, but changing demographics also alter the composition of consumers in a society and the makeup of the workforce. Demographic change is influenced by shifts in fertility, changes in survivorship and migration.

In projections of dependency ratios the total fertility rate (TFR) is seen as a key variable. Table 11 shows changes in the TFR in New Zealand between 1960 and mid 1990.

Table 11 – Total fertility rate in New Zealand, 1962-1996

Year	1962	1966	1971	1976	1982	1986	1992	1996
Total fertility rate	4.19	3.41	3.18	2.27	1.95	1.96	2.06	1.96

Source: Statistics New Zealand (1999 b)

The very rapid decline in fertility in the late 1960s and early 1970s reflects a number of factors including the introduction and widespread uptake of the “pill”.

Table 12 shows recent New Zealand fertility trends in relation to selected industrialised countries. It shows that TFRs are below replacement levels in almost all countries and even in times of “baby blips”, when fertility rates increased, they are still historically low. Of particular interest is Sweden, a country with a high level of “pro-maternalist” policies such as paid parental leave and subsidised childcare, but also a high participation of women in paid work.

Table 12 – Total fertility rate in New Zealand and selected industrialised countries, 1986-1996

Country	1986	1991	1996
Australia	1.87	1.86	1.80
Canada	1.60	1.70	1.64*
Denmark	1.48	1.68	1.75
France	1.83	1.77	1.72
Japan	1.72	1.53	1.43
Netherlands	1.55	1.61	1.53
New Zealand	1.96	2.09	1.96
Norway	1.71	1.92	1.89
Sweden	1.79	2.12	1.61
US	1.84	2.07	2.00

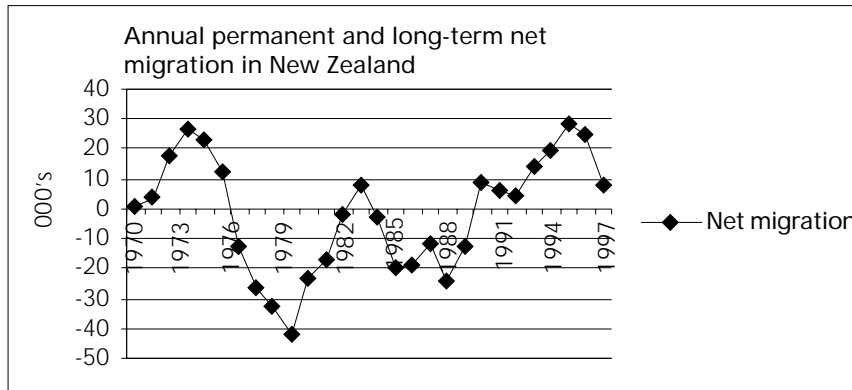
* 1995 data

Source: Statistics New Zealand (1998)

Demographic change impacts on paid work patterns in a variety of ways. For example, the “baby blip” of the 1990s has created a demand for new infrastructure in areas such as primary schools, as well as an increased demand for teachers. As another example, the aging of the population increases demand for particular types of healthcare. This occurs both at the high end of skill requirements, such as people undertaking hip replacement operations, and at the lower end, such as nurse aides in retirement homes.

Figure 9 shows net permanent and long-term migration flows in New Zealand from 1970 to 1997. It shows marked variation in flows, with two of the strongest periods of net outflow associated with periods of slow economic growth. On average, over the whole period, there was a small yearly outflow. Of relevance to our projections, in the recent past there have been no sustained spells of large-scale net inward migration.

Figure 9



Source: Statistics New Zealand (1999 b)

Changing aspirations and opportunities for women

The strong move into paid work by New Zealand women since the 1950s has been shown in Figures 1 and 2. Over this time, the strongest increase in participation was amongst women with dependent children. This is very much in line with international trends. Whether the long-term increase has now plateaued in New Zealand and is possibly about to decline is critical to superannuation debates. In determining this, the experience of the US is worth noting. In the early 1990s there was no increase in women's labour force participation rates and many people suggested that a peak had been reached. However, with the return of strong economic growth women's participation rates started to rise, albeit at a slower rate (Hayghe 1997).

Table 13 shows labour force participation rates for women in selected industrialised countries in 1990. A number of patterns show up. First, Sweden stands out for its very high participation rates, not only in traditional childrearing ages but also in the older age groups.

Table 13 – Labour force participation rates for women in selected industrialised countries – 1990

	Sweden	Australia	New Zealand	US	Canada	UK
15-19	41	59	53	42	55	58
20-24	80	79	70	71	76	75
25-29	87	65	62	74	78	68
30-34	90	66	62	73	76	64
35-39	92	71	72	75	77	70
40-44	94	73	79	77	79	75
45-49	93	65	77	75	73	74
50-54	89	56	69	67	63	67
55-59	79	34	46	55	46	53
60-64	53	16	16	35	24	22
65+	3	2	3	8	4	3

Source: International Labour Organisation (1996)

There are some other important country differences. For example, in the US there has been a particularly strong movement of women into full-time paid work, while in Britain there is a much higher proportion of part-time work amongst women (Callister et al 1995). The differences in women's labour market patterns are often closely linked to attitudes and supports in childrearing. For

example, in the US many women are now moving back to full-time paid work very rapidly after having children. In contrast, in Sweden a high proportion of women take a year of parental leave, and then work part-time, yet have an overall higher participation rate than women in the US.

US data show rapid growth in labour force participation by women aged 25-44 in the 1970s and 1980s, but with growth slowing in the 1990s.²² In 1975, the participation rate was 55 percent, rising to 71 percent in 1985 and 76 percent in 1996. For women aged 45-54 the increase was from 55 percent in 1975, to 66 percent in 1985, and to 75 percent in 1996. Table 14 shows US data for 1996 and compares it with census participation data in the same year. It also shows Statistics New Zealand projections of participation rates in 2011 and ILO projections for the year 2010.

Table 14 – Female labour force participation rates 1996, 2010 and 2011

	U.S. 1996	NZ 1996	US ILO 2010	NZ medium 2011
25-44	76	72	85	74
45-54	75	77	80	81

Sources: Hayghe (1997), ILO (1996), Statistics New Zealand (2000)

There are many inter-related reasons for the strong movement of women into paid work. While the second wave of feminism is likely to have had an impact on attitudes, other factors were also at work. Historically these included the strong growth, in the 1960s and 1970s, of labour demand in many service industries. The declining demand for manual strength in jobs, as well as the increasing demand for cognitive and soft skills have assisted many women moving into paid work. Demographic changes such as lower fertility rates and, as discussed, an increase in availability of childcare have also influenced participation patterns and have themselves been influenced by women's working patterns. A major "push" factor has been increasing female participation in tertiary education. While "market" driven factors have a major influence on women's participation in paid work, social policies including taxation regimes and welfare support all have some impact on participation rates.

Table 15 shows changes in the use of early childhood education and care in New Zealand between 1991 and 1996. While there have been strong gains in participation for younger children there is still much potential for growth, particularly for under three year olds. Any increased use of childcare could further lift the employment rates of women with young children. For example, in 1996 55 percent of US women with a child under one year of age were participating in the labour force against 37 percent of New Zealand mothers with a child under one (Hayghe 1997, Statistics New Zealand 1998). In part this is due to higher rates of employment of sole mothers that, in turn, partly reflect lower levels of welfare support for such families. An increase in after-school care and holiday programmes could also assist a further increase in female participation. However, declining fertility also can lift female participation.

Table 15 – Early childhood education – apparent participation rates, percentage of the age group population

Age	1991	1996
Under 1 year	10	13
1-2 years	19	30
2-3 years	35	49
3-4 years	72	83
4-5 years	92	93
Total	45	54

Source: Davey (1998)

In terms of education as a “push” factor for women, while both men and women have been increasing their participation in tertiary education, women’s rate of increase has been faster (although from a lower base). Table 16 illustrates some of the changes that have taken place for women relative to men using two educational categories. These are “no post-school qualifications” (so they may have a school qualification such as university entrance or school certificate) and those with a degree or higher qualification. Table 16 shows that in 1996 a lower proportion of women had tertiary educational qualifications or degrees than men, in most age groups. But in the 20-24 age group this ratio reverses for persons with degrees. This historically unique situation is likely to have a major ongoing impact in the future including participation in the labour market.

Table 16 – Percentage of men and women with no tertiary qualifications and with a bachelor’s degree or higher, 1996

Age groups	No post-school qualifications		Bachelor’s degree or higher	
	Male	Female	Male	Female
20-24	66.6	62.1	9.3	11.6
25-29	56.7	62.0	13.3	12.6
30-34	54.9	62.4	13.2	11.4
35-39	52.6	60.7	13.4	10.4
40-44	53.1	61.5	13.4	9.8
45-49	55.0	64.6	12.8	7.9
50-54	58.3	68.7	10.5	5.8
55-59	60.7	72.0	8.2	4.3

Source: Data derived from the Census of Population and Dwellings, Statistics New Zealand

In addition, not all the growth in female participation has been in part-time work and in female-dominated occupations. For example, while occupational segregation for prime-working-age women and men remains strong, such segregation reduced between 1991 and 1996. At a three-digit level (97 occupations), the index of dissimilarity stood at 0.53 in 1991, but had reduced to 0.50 in 1996. This is in line with a long-term trend, with a slow but steady decline in the index since the 1970s (Haines 1989).

Changing aspirations and opportunities for men

In the early 1990s Rose (1990) developed a vision of a “fully-employed, high-income society”. While this primarily depended on economic growth creating more jobs, it also suggested that men’s patterns of paid work would continue to change. More men would work part-time because they wanted to better balance their work and non-work lives and more men would take time out of paid work for further study or to share in childcare. Such changes would be assisted by a continuing improvement in women’s position in the labour market. The “gap” between men and women would continue to close by changes in both men’s and women’s labour market participation.

Figure 2 clearly shows a long-term decline in employment of men. As already discussed, much of this change for men in their prime working ages, particularly from the mid 1980s to the early 1990s, was due to job loss rather than choice. In this period men with no formal qualifications, and linked to this Maori and Pacific Island men especially, faced major employment difficulties. However, there is also evidence that some other men have exited full-time paid work to either work part-time or to not be in paid work for other reasons. This shift away from full-time work can be for a short period or long term. The reasons include studying, looking after children, and undertaking voluntary work (Callister 1999). In particular, men under 25 were far more likely to be studying in the late 1990s than they were in the early 1980s. Research also shows a small, but steady increase in the number and proportion of men not in the labour force and looking after children. In the group of men looking after children sole fathers are over-represented, showing that changing family types also impacts on labour force participation rates.

As discussed earlier, the behaviour of men in traditional “retirement” age groups has also been changing in response to changing norms and economic incentives including changes in eligibility for superannuation. It is likely that other changes in eligibility would bring on further labour market responses amongst older men.

Changes in unpaid work

Professionalisation of work undertaken within a household has throughout history been an important source of the growth of paid work. Ruthven (1997 cited in Bittman 1999) suggests there have been three main stages to this professionalisation or outsourcing:

- we outsourced the *growing* of things to create the agrarian age industries
- we outsourced the *making* of things to create the industrial age of industries
- we are now outsourcing the *doing* of things (services) to create the infotronics age.

Ironmonger (1996) notes there is still more unpaid work carried out than paid work in industrialised economies. Table 17 shows estimates of total hours of unpaid and paid work by activity, industry and by gender in Australia in 1992. It shows a number of important patterns that could influence future patterns of paid work. First, in the early 1990s women undertook more unpaid work than men but men worked more hours of paid work. Second, a considerable number of hours are worked in areas such as meal preparation as well as laundry and cleaning. These are areas with a particular potential for further professionalisation. Third, women work more hours in paid community services. This is the “third” sector of the economy that is seen by some researchers as a potential area of employment growth in the future.

Table 17 – Hours worked: household and market based industries, Australia, 1992 (million hours per week)

Industry	Men	Women	Adults
Meal preparation	18.0	55.5	73.5
Laundry and cleaning	10.1	59.6	69.6
Shopping	26.4	42.9	69.3
Childcare	10.6	38.3	48.8
Gardening	23.1	17.5	40.6
Repairs and maintenance	15.5	3.3	18.9
Other household chores	10.3	9.7	20.1
Voluntary community work	19.3	20.5	39.8
Total unpaid work	133.3	247.2	380.5
.			
Industry	Men	Women	Adults
Wholesale and retail trade	35.1	20.2	55.2
Community services	18.9	28.4	47.3
Manufacturing	32.5	9.5	42.1
Finance and business services	18.1	13.4	31.5
Entertainment, recreation	10.9	9.6	20.5
Construction	17.3	1.3	18.6
Agriculture	13.8	3.2	17.0
Transport and storage	12.6	2.5	15.2
Mining	3.4	0.3	3.7
Other industries	14.8	5.8	20.6
Total paid work	177.4	94.2	271.6

Source: Ironmonger (1996)

Unpaid household work has historically reduced through a variety of means. These include new technology, declining fertility, professionalisation of household work, and possibly even changing attitudes towards standards for household work. A reduction in unpaid work can provide more time for leisure or for paid work. Based on a review of time use surveys Gershuny and Robinson (1988) argued that in both the US and UK women in the 1980s did substantially less housework than those in equivalent circumstances in the 1960s, and that men did a little more, although still much less than women. Table 17 indicates there is the potential for a further reduction of household work should additional unpaid work be professionalised. Equally, if the balance between men's and women's unpaid work becomes more even, and the total amount of unpaid work does not decrease, then there would be a further decrease in male paid working hours over a lifetime and an increase in female hours.

As an example of professionalisation of unpaid work, Table 18 shows direct employment in the industry group "restaurants, cafes and other eating and drinking places" in New Zealand. This group comprised 3.4 percent of total jobs in New Zealand in 1996. This compares with a 1991 figure of 4.9 percent for the US (Castells 1996). This inter-country comparison would suggest that there is potential for further growth in New Zealand in this area of employment. Table 18 also shows that young people are over-represented in this industry group. With an aging population more of this work will need to be undertaken by older people, or overseas labour imported to undertake such tasks.

Table 18 – Number and percentage of people employed in the industry group "restaurants, cafes and other eating and drinking places", 1996

	Male			Female			Total
	15-24	25-59	60+	15-24	25-59	60+	
Number	8,892	11,988	687	14,808	18,417	507	55,299
% of all jobs in each age group	5.6	1.8	1.2	10.2	3.3	1.7	3.4

Source: Data derived from the Census of Population and Dwellings, Statistics New Zealand

Changing family and household types

Changes in both paid and unpaid work can influence family/household patterns, while changes in family/household patterns influence patterns of labour supply. Trends that have some impact on the supply of labour in New Zealand over the last couple of decades have included the growth in sole parent (particularly sole mother) families, a decrease in early couple formation, a parallel delay in childbearing, and the loss of full-time jobs and/or declining real income for men. Each of these trends has had a slightly different impact. Traditionally, in New Zealand, sole motherhood has been associated with relatively low employment rates, whereas a delay in couple formation and delayed childbearing within couples usually lifts women's participation in full-time work. Declining income for men has been associated with lower levels of couple formation (or increased dissolution). However, if the decline in income is taking place within intact couples this has historically led to increased female participation (the added worker effect). More recently, in New Zealand as in most industrialised countries, there has been a shift towards two extremes of work arrangement within couples. One is where both partners are in paid work, and the other where neither has a paid job (Callister 1998 b). Clearly, where these work arrangements are long term, this has an impact on the ability of both partners to save for retirement. Equally, if sole parents are not in full-time work for much of their working life then their ability to save is adversely affected. However, within these various patterns of family and households, education has had an increasing impact on labour market behaviour. Table 19 shows the percentage of prime-working-age men and women in full-time work by two extremes of educational qualification. Table 19 shows that sole fathers are overall more likely to be in full-time work than sole mothers, a sole mother with a degree or higher is more likely to be in paid work than a sole father with no formal qualification and not much less likely than a male living alone with no qualifications. A male with no qualifications living in a couple-only family had, in 1996, the same likelihood of being in full-time work as a woman in a couple-only family who had a degree or higher qualification.

The long-term data also show an increasing number of prime-working-age people living alone. Again the impact of this living arrangement on the ability to save depends on a range of factors including qualifications and gender.

Table 19 – Percent of men and women aged 25-59 who were in full-time paid work in each household type by educational qualification, 1996

	Male no qualification	Female no qualification	“Gap”	Male degree or higher	Female degree or higher	“Gap”
Couple-only family	77	44	33	87	77	10
Couple with children	76	35	41	88	43	45
Sole parent	42	17	25	77	54	25
Living alone	59	42	17	84	81	3

Source: Data derived from Census of Population and Dwellings, Statistics New Zealand.

¹⁸ The OECD (1996) notes that there are two related measures of turnover. Job turnover refers to the net change in employment over time. On an economy-wide basis the job turnover rate is the absolute sum of net employment changes across all establishments or firms. Labour turnover is a wider measure and includes the movement of workers into and out of ongoing jobs.

¹⁹ The estimates for New Zealand were derived from the Business Demography Database compiled by Statistics New Zealand.

²⁰ Although the provision of opportunities for spiritual wellbeing can be a major industry in itself.

²¹ Although the Japanese hours may be misleading because of many salary workers working unrecorded hours.

²² The labour force includes those unemployed and actively seeking work.

Income inequality

Trends in the level and distribution of income, both individual and household, importantly affect the ability of people to support themselves and their families and to make provision for retirement. These trends also affect people's capacity to pay the taxes necessary to provide government services, including income support to retired persons.

In a series of studies, undertaken at BERL and Infometrics, Stroombergen and others (Infometrics 1998, Stroombergen 1995) have used dynamic microsimulation models to project the accumulation of savings over time. The microsimulation models use census, Household Economic Survey and Inland Revenue data to model age, gender and ethnic savings rates by income deciles. By accumulating these savings flows over the lifetimes of different age cohorts, the authors are able to generate estimates of the distribution of wealth at particular ages. A central measure in each of these reports has been an estimate of the proportion of people at age 64 who would have accumulated wealth less than the net present value of New Zealand Superannuation. Table 20 reproduces estimates from the 1998 Investment Savings and Insurance Association (ISI) Report on Retirement Savings (Infometrics 1998).

Table 20 – Proportion of persons aged 64 with wealth below net present value of New Zealand Superannuation. Projections for cohort aged 15-19 in 1996

	Including housing	Excluding housing
All males	18.4	77.8
All females	46.4	92.9
Maori males	27.7	82.7
Maori females	54.7	97.1

Source: Infometrics (1998)

The Infometrics modelling suggests that, given then current patterns of earnings, over 85 percent of 15-19 year olds in 1996 were unlikely, by the time they retired, to have accumulated savings (excluding housing wealth) equal to the present value of New Zealand Superannuation (Infometrics 1998). The table also shows significant gender differences. Ethnic differences are less marked.

Table 20 above implies that only about 22 percent of males and 7 percent of females, aged 15-19 in 1996, could, given the current patterns of income distribution, savings and inheritances, expect to accumulate by age 64, sufficient wealth in addition to housing to provide them with an independent income equal to New Zealand Superannuation.

The above results are driven by the pattern of economic relationships prevailing in the 1990s. In an alternative model run, Infometrics shows that higher lifetime savings rates would lead to significant increases in wealth at retirement. It would be interesting to use the models to explore the wealth implications of possible changes in a range of labour market and related variables, such as rates of male and female labour force participation, changes in the distribution of market income, changes in savings behaviour, changes in pension relativities and the impact of reduced family size on the average value of inheritances.

Many recent studies have reported increasing income inequality in New Zealand. In a review of New Zealand research on income inequality, O'Dea (2000) cites the long-term work of Martin (1998). Using census data for the post-war period, Martin shows that real incomes tended to increase, and inequality to reduce, up until the early or mid 1970s. Income inequality then fluctuated from 1976 to 1986, since when it has risen sharply. Using a variety of data sources O'Dea confirms that income inequality rose in the 1980s and 1990s. He finds this to be so regardless of how income was measured: individual or household incomes, before or after tax, and after adjusting for changes in household size and composition. O'Dea notes that income inequality rose most substantially in the late 1980s and more slowly during the 1990s. O'Dea notes that income inequality did not fall in the 1990s, as might have been expected following the recovery from the late 1980s' recession, suggesting that the growth in inequality was not a purely cyclical phenomenon.

Whilst acknowledging the difficulty of international comparisons, Statistics New Zealand (1999 a) notes that in the period 1982 to 1996 “the increase in inequality (in New Zealand) appears to have been as large as, or even larger, than that in other countries for which similar data is available” (p. 95). In a table of selected OECD countries, Statistics New Zealand shows that in the 1990s only the US and Italy had higher levels of inequality as measured by Gini coefficients.

In New Zealand wages and salaries contributed approximately 80 percent of market income throughout the 1980s and 1990s. Statistics New Zealand shows a strong increase in wage and salary inequality for men, mainly in the 1986 to 1991 period. The increase for women in that period was much smaller. Over this period, women’s wages and salaries rose steadily relative to men’s. However, women’s average earnings were still significantly less than men’s, reflecting both hours worked and income levels. Average personal market income (in \$NZ1996) for women increased from \$11,300 in 1986 to \$12,600 in 1996, while the income for men declined from \$28,200 to \$27,900. Wages and salaries, and market income fell for Maori and the “Other” ethnic groups relative to the European group. Reflecting an increasing demand for skilled workers, income also fell for those with no, or low, educational qualifications. However, when analysed by both age and sex, the largest drop in market income from 1982 to 1996 was experienced by the young, and particularly by young males. This partly reflects a strong shift to part-time work in this age group.

In his review, O’Dea uses some additional data sources but comes to broadly similar conclusions. He notes a number of points in relation to individuals and households (pp. 10-11). These include:

- the average incomes of those in the top tenth of households rose significantly in real terms between 1982 and 1996. Average incomes of those in the lower- and middle-income groups fell
- there was a significant reduction in the real incomes of those in the bottom 10 percent of households, by about 5 percent on average. Nonetheless, the decline seems to have been less than for those groups further up the distribution. Certain household types - particularly sole parent families - make up a larger proportion of the “lowest income” group than formerly; whereas the elderly have on the whole improved their position
- the mid 1980s represent a historical break in real income growth, especially for men. Up until the 1980s, a person at a given age could expect to earn on average a higher real income than a person older than he or her had earned at the same age. This ceased to hold, for men in particular, from 1981, because of a substantial fall in labour force participation by males, which has yet to be fully recovered.

Focusing on changes in income inequality amongst those in employment O’Dea reports that shifts in labour force composition and widening income differentials by occupation, education, industry and age account for about 60 percent of the change in income inequality between 1986 and 1996. The remaining 40 percent is unexplained.

Another important measure of income inequality has been the “wage gap” between women and men. This is important in terms of both short-term earnings as well as life-long patterns of income. In the late 1960s the average female weekly wage rate stood at 70.2 percent of the average male rate (Rose 1970). Despite some recent improvement, there remains a gap between men and women in terms of hourly earnings. Dixon (1998) shows the ratio of women’s to men’s median hourly earnings was 0.79 in 1984. This rose to 0.83 in 1990 before rising to 0.87 in 1994. Cook and Briggs (1997) analyse an alternative data source using average hourly wages and over a slightly different time period. In 1987 their ratio was 0.79, rising to 0.81 in 1994, then declining to 0.80 in 1996.

Finally, O’Dea (2000) reports some international literature that seeks to explain long-term changes in income inequality. These theories may provide some guide as to how income inequality may change over the next 50 years. First, there is the hypothesis of Kuznets (1955). This suggests that inequality will increase during periods of industrialisation or “modernisation”, but will eventually fall when industrialisation has been completed and will eventually stabilise. O’Dea notes that this fits New Zealand experience up until the mid 1970s but does not hold true since. However, with new information technologies such as the internet, we may now be in the midst of a new period of modernisation. More recently Aghion et al (1999) suggest that for countries with imperfect capital

markets, redistribution to the less well off can lead to faster economic growth. However, they suggest that technical change, particularly “general purpose technologies” such as computerisation affecting the whole economic system, helps explain the recent upsurge in wage inequality in a number of developed economies, including New Zealand. If this development and uptake of new technology continue at the same pace as in the 1980s and 1990s then it might be expected that income inequality will not reduce substantially in the near future.

POSSIBLE FUTURE TRENDS

Official projections of population, ethnic composition and labour force in New Zealand

Predicted population change

As is well known, demographic projections suggest that the age composition of the population will change quite dramatically over future decades. Projections prepared by Statistics New Zealand, using its medium fertility, medium mortality and 5,000 net annual migration assumptions (the most commonly used reference scenario), suggest that the percentage of the total population that is aged over 65 will increase from 12 percent in 1996 to 20 percent in 2026 and to 25 percent in 2051. This rise will be associated with falls in the percentages of children and persons aged 15-65. The percentage of children in the total population is projected to fall from 23 percent in 1996 to 17 percent in 2026 and to 16 percent in 2051.

The proportion of the population lying within the normal working age span, 15-64, remains fairly steady out until 2021 (and indeed is expected to rise during the first decade of the century). Thereafter the proportion is expected to fall, from 65 percent in 2026 to 59 percent in 2051. These trends are illustrated in Table 21, which also casts a view back to 1951. From 1951 to 1971 the working-age proportion ranged around 60 percent, about the same level as is projected to prevail in 2051. This provides a reminder that ratios that focus on retirement population alone do not provide an adequate indicator of overall dependency ratios.

However, dependency ratios are not solely a function of age and are influenced by a range of government policies (Preston 1996). For example, in terms of income transfer policies, a “Dutch scenario” could see a greater number of working-age people supported by the state. This would occur as marginal workers migrated onto invalid and disability benefits with further increases in state dependency. Conversely, either a US or Swedish style “workfare scenario” could see transfers to working-age people decline, particularly in the face of demographically induced labour shortages. The differences between such outcomes would have major fiscal consequences. While such policy scenarios are not directly analysed in this report, our labour force projections contain some underlying assumptions about prime-working-age dependency ratios.

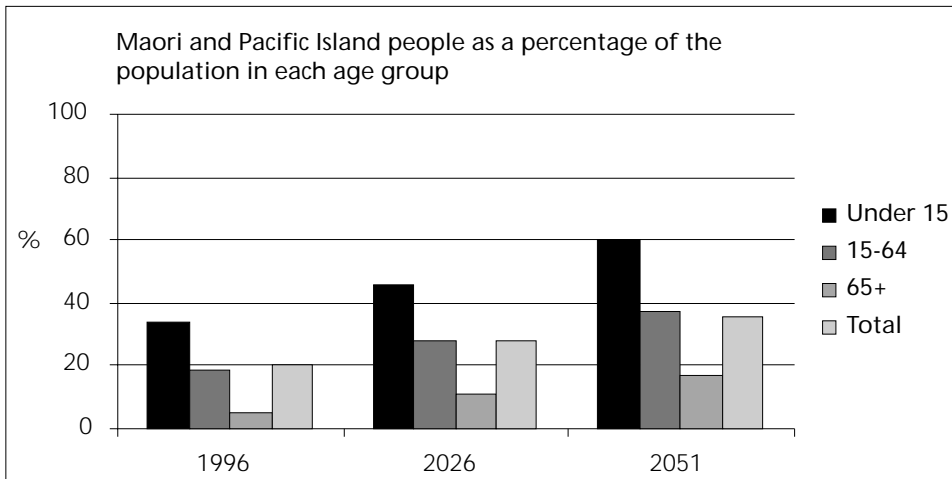
Table 21 – Past and future age composition of the New Zealand population

	1951	1961	1971	1981	1991	1996	2001	2011	2021	2026	2031	2041	2051
Age	%	%	%	%	%	%	%	%	%	%	%	%	%
0-14	29.4	33.1	31.8	26.7	22.8	22.8	22.3	19.5	17.5	17.3	17.0	16.1	15.5
15-64	61.4	58.3	59.7	63.3	65.9	65.6	66.0	67.3	65.3	63.2	61.2	59.2	59.0
65+	9.2	8.6	8.5	10.0	11.2	11.6	11.7	13.3	17.2	19.6	21.8	24.8	25.5
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Statistics New Zealand (2000)

Based on the medium Statistics New Zealand projections, Figure 10 shows that Maori and Pacific Island peoples are projected to become an increasing proportion of the population, and particularly the population under 25, over the next half-century. In 2026 this combined group is projected to comprise over a quarter of the prime-working-age population, rising to just under 40 percent in 2051. Clearly, in this scenario Maori and Pacific Island people will be a very significant part of the working-age population and if high labour force participation rates are to be expected amongst the prime-working-age population in 2026 and 2051 then the rates need to be also high within the Maori and Pacific Island communities. Appendix 3 briefly summarises the factors contributing to the projected rise in the proportion of Maori within the total population.

Figure 10

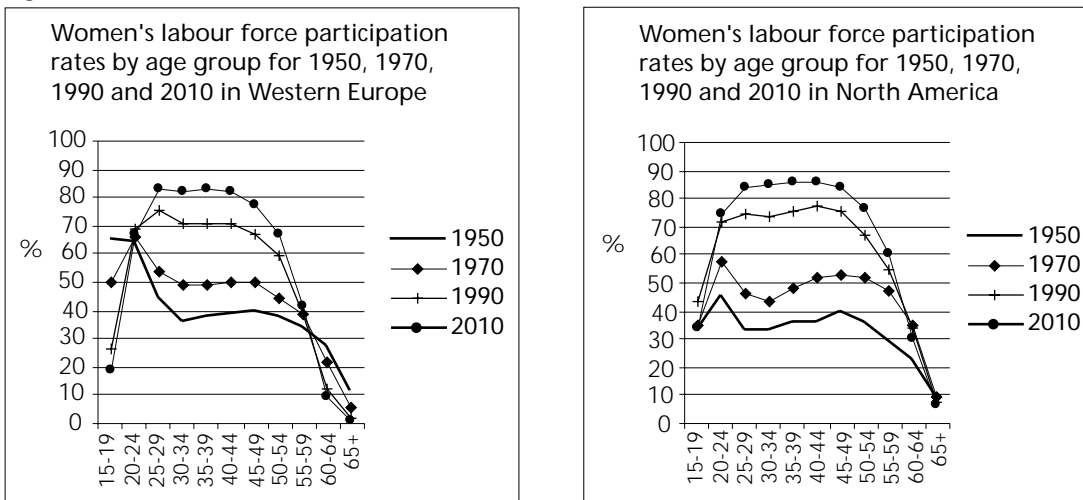


Source: Statistics New Zealand (2000)

Projected labour force change

In order to set New Zealand projections in an international context, Figure 11 shows historical patterns of labour force participation for women in Western Europe and North America, as well as projected patterns in 2010.²³ While they both show increasing participation rates between 1950 and 1990, the initial shapes of the “M” curves indicate significant differences between regions. However, the charts show that in both regions there had already, by the early 1990s, been a marked shift away from the “M” shaped participation curves still seen in New Zealand. The 1990 data, and particularly the projected 2010 data, suggest a pattern more closely aligned to traditional male patterns marked by high entry rates in the 20s and high participation over the 30s and 40s. However, participation rates for older women in North America are projected to be higher than for women in Western Europe.

Figure 11



Source: ILO (1996)

Figure 12 compares New Zealand medium projections from Statistics New Zealand for women and men with those from the ILO for Western Europe and North America. For women, they show that New Zealand is expected to keep its much lower rates of participation in traditional childrearing ages. However, in New Zealand women are expected to enter the workforce much earlier. In addition, the projected New Zealand participation rates for older women are significantly higher than for Western European women and slightly higher than for women in North America.

New Zealand men are also projected by Statistics New Zealand to enter the labour force earlier than men in Western Europe and North America, have significantly lower participation in the prime working ages, and then continue working longer at older age groups.

Figure 12



Source: ILO (1996), Statistics New Zealand (2000)

Differences in projections for women are even stronger when some individual countries are selected. For example, Table 22 shows the low participation rate of women in the 15-19 age group, in Sweden when compared with New Zealand, but the very high rate in the 30-54 age group. In the 25-49 age group New Zealand participation rates for women are projected to be lower than the four other industrialised countries shown.

Table 22 – Projected female participation rates in selected countries in 2010 and in New Zealand in 2011

	Sweden	US	Canada	UK	New Zealand medium
15-19	30	33	40	36	64
20-24	79	74	78	76	74
25-29	89	84	88	82	74
30-34	93	84	87	79	72
35-39	94	85	89	83	73
40-44	95	86	89	87	77
45-49	95	84	86	84	81
50-54	91	76	78	74	80
55-59	81	62	51	50	65
60-64	51	31	22	20	43
65+	2	7	3	2	5

Source: ILO (1996), Statistics New Zealand 2000

The overseas projections for female participation show the Statistics New Zealand projections to 2011 to be relatively conservative.²⁴

Forecasting what proportion of the Maori and Pacific Island population is likely to be in the labour force at particular time periods, and then forecasting likely earning patterns, is more complex and depends on a wide range of interconnected factors. Based on recent history, the future labour market participation rates for Maori and Pacific Island people will be lower than for the Pakeha population. However, a number of factors, some of which could change substantially, will influence this. While these include factors such as the proportion of sole parent families or extended families and the provision of childcare in communities with a high proportion of Maori or Pacific Island people, a critical factor will be changing patterns of educational attainment. If the educational “gaps” for young

Maori and Pacific Island people relative to the rest of the population can be substantially reduced (or even closed) over the coming decades this will have a major impact on the level of participation in paid work.

Ministry of Education data show that while Maori participation rates increased over the period 1986-1996, the “gap” in retention rates between Maori and non-Maori declined very little. Table 23 also shows that some of the traditional hierarchies of achievement, such as between men and women, have been blurring. For example, while over 90 percent of 16 year old non-Maori females were still in the education system in 1996, only 64 percent of Maori men in the same age group were still at school.

Table 23 – Retention rates of 16 year olds in 1986 and 1996 by gender and Maori/non-Maori

	1986	1996	Change in % points
Non-Maori female	73.3	90.4	17.1
Non-Maori male	70.4	85.8	15.4
Maori female	48.4	67.3	18.9
Maori male	46.0	64.1	18.1

Source: Ministry of Education (1996)

The level of formal certificated attainment is of particular importance as it is a critical factor in whether people then proceed to further education and training and the ethnic differences show up in these data.

Table 24 – School leavers by highest level of attainment by ethnicity, 1996

	Maori	Pacific Island	Asian	Pakeha	Other	Total
Seventh form awards	15	25	63	44	40	39
Sixth form awards	21	28	17	24	19	23
School certificate	23	19	8	17	14	17
No qualifications	41	28	12	15	27	21
Total (%)	100	100	100	100	100	100

Source: Davey (1998)

Table 24 shows the qualifications at one point in time. However, Chapple (2000) uses data from the HLFs to show that there has been a slow progressive decline in the differences between the population shares of Maori and non-Maori without qualifications between 1985 and 1998. He notes that more sophisticated measures of the education gap between the two populations show a very similar pattern of slow convergence.

Another factor that is likely to change the characteristics of “Maori” in the next 50 years is a continuance of the past high level of inter-racial marriage and cohabitation in New Zealand (Callister 1998 a). This will also tend to reduce “gaps” in employment and income earning. As Chapple and Rea (1998) have shown, there are some significant differences between Maori who state sole Maori ethnicity and those who identify one of more other ethnic groups. In the 1990s the mixed Maori group were younger, were better educated and tended to live in different areas from those of the sole Maori ethnic group. For example, about half of sole Maori held no formal educational qualifications while this declined to a third for the mixed ethnic group. Sole Maori were also more likely to live in economically depressed rural areas.

²³ Western European countries are Austria, Belgium, France, Germany, Luxembourg, Netherlands and Switzerland. North America covers the US and Canada.

²⁴ It should be noted that the 1996 ILO labour force projections for New Zealand women in 2010 are lower than those projected by Statistics New Zealand (for 2011) in the 15-19, 25-29 and the 50 and over age groups, but higher for the 20-24 and 30-49 age groups. For men, the ILO projections are lower in the 15-19 and 55 and over age groups, but higher in the 20-54 age span.

Labour supply and population aging

The projected rise in the proportion of old people in the population suggests that in future society may find it more difficult to maintain relative income standards of older people. This fear has led to active, but to date, divisive debate on superannuation policy, to the raising of the entitlement age for New Zealand Superannuation to 65 and to Treasury advocacy of sharply reduced levels of public debt levels, all this in anticipation of demographic pressures, which as yet, have hardly begun to bite.

In this section we assess the possible scale of the economic and social challenges presented by the societal goal of ensuring that the incomes of older people are maintained in some reasonable relativity to those of the economically active. Because we cannot know just how things will develop any set of projections is inevitably approximate. We have therefore eschewed detailed forecasting and have opted for a broad-brush exercise in comparative statics, designed to highlight the main implications of the emergent situation and to position us to explore the implications of particular changes in assumptions one by one.

Having established a framework, we explore the sensitivity of our findings to changes in a range of factors. If the projected increase in the proportion of aged people creates significant economic problems society will respond in some way. Our review of the past 50 years has emphasised the scale of changes in labour force participation in response to new economic and technological circumstances and to changing societal views on matters such as female labour force participation and the value of tertiary education.

Looking ahead there is a need to assess possible responses in several areas. The income needs of older people may lead to increases in labour force participation by people within prime-working-age and older age groups. Because the age composition of migrant populations differs from those of the locally born, variations in net migration influence the age distribution of the total population, including the balance between prime-working-age and older people. Changes in fertility may also be important. In pre-modern societies larger families were often seen as an important means of ensuring security in old age. Historically, birth rates have often risen in the aftermath of periods of war or devastation. It is conceivable that they could rise in anticipation of an emergent population imbalance. Finally it seems likely that the demands of an increasingly old population, for both services and commodities, will impact on the demand for labour and thus contribute to a further lowering of the unemployment rate.

Our approach to this issue is predicated on the realistic assumption that the living standards of those in retirement will, at any point in time, be dependent, in one way or another, on flows of real resources from current output within New Zealand, supplemented by income accruing from assets held beyond New Zealand. This is self evident in the case of tax-funded incomes, such as New Zealand Superannuation and interest paid on public debt, but it is also true of interest and dividend earnings on New Zealand held assets. Such earnings constitute a claim on the flow of added-value generated within the company or enterprise paying the dividends or interest and thus stands in competition with other factor income flows, including, principally, salaries and wages, profits to be reinvested within the enterprise, and taxation.

In passing, note that whilst income from the current stream of New Zealand production can be complemented, for many individuals, by income arising from overseas assets held overseas, this does not offer much comfort in aggregate. At this point in time New Zealand has a higher level of net international liabilities to GDP than any other country for which the International Monetary Fund publishes comprehensive data. This implies that in all probability the need to service net international liabilities will continue to constitute a net claim on current output, rather than act as a supplement to current output, throughout the projection period. The pre-conditions of a change on this point are a substantial and prolonged improvement in the balance of external payments and sustained increases in the level and rate of national savings.

Data sources

Our empirical work is based on two main sources.

First, Statistics New Zealand has prepared special tables derived from a sample of all individuals for whom tax information was available, either from a tax return or from a tax deduction certificate, for the 1996/97 tax year. This provided information on five categories of income:

- salaries and wages (we have included shareholder salaries)
- business income (including self-employed, non-salary incomes and partnership incomes)
- other market income (including investment and other income)
- income tested benefits
- New Zealand Superannuation (including veterans pensions).

In addition, information was provided on:

- tax payable.

For each of these categories information on aggregate income and the number of people receiving income from that source was disaggregated by gender and by five-yearly age groups. This enabled derivation of an age by gender matrix of average income received by persons in receipt of income from each source. This information is displayed, for males, in Table 25, and for females in Table 26. Note that zero entries for some older, 80+, age groups mean that sample numbers were insufficient to yield a reliable estimate. Even where numbers do appear within these age groups sample numbers suggest caution.

Table 25 – Males: average income per person receiving income from source

Age	Salary and wages	Business income	Other market income	Income tested benefits	New Zealand Super	Total income	Tax payable
	\$	\$	\$	\$	\$	\$	\$
15-19	6,259	2,800	1,627	3,366	0	6,951	1,299
20-24	16,706	8,519	1,484	3,906	0	17,247	3,600
25-29	25,690	11,917	1,400	5,150	0	25,325	5,705
30-34	32,288	14,088	1,574	5,731	0	30,755	7,300
35-39	37,599	17,183	2,423	6,241	0	36,066	8,645
40-44	40,825	16,780	3,312	6,286	0	38,612	9,402
45-49	42,045	18,504	5,003	6,359	0	40,780	9,853
50-54	41,235	16,242	5,356	6,469	0	39,229	9,030
55-59	39,160	14,912	6,273	6,837	7,713	35,509	7,452
60-64	29,923	14,955	8,458	6,608	8,608	26,916	4,921
65-69	15,626	8,544	7,528	5,263	9,870	18,049	2,598
70-74	12,283	6,043	6,947	6,866	9,926	15,746	1,764
75-79	9,583	5,827	7,615	5,413	9,831	15,194	1,099
80-84	7,596	10,163	9,270	0	10,186	16,854	622
85-89	0	0	9,120	0	9,714	16,161	509
90-94	0	0	9,820	0	9,647	15,310	-257
95-99	0	0	0	0	9,740	20,636	2,353
Not specified	20,928	18,092	6,828	6,794	9,418	23,379	5,391
Total	29,155	15,182	4,572	5,395	9,743	27,535	6,051

Table 26 – Females: average income per person receiving income from source

Age	Salary and wages	Business income	Other market income	Income tested benefits	New Zealand Super	Total income	Tax payable
	\$	\$	\$	\$	\$	\$	\$
15-19	5,224	1,695	1,532	3,887	0	6,182	1,073
20-24	14,525	4,361	1,309	5,684	0	15,118	2,905
25-29	19,489	6,942	1,340	8,328	0	19,372	3,685
30-34	18,734	8,031	1,633	8,695	0	18,616	3,149
35-39	19,089	8,147	2,231	8,828	0	19,453	3,139
40-44	21,412	9,332	2,667	8,473	0	22,151	3,861
45-49	22,638	8,199	3,703	7,471	0	23,230	4,193
50-54	22,375	8,549	4,473	7,244	0	22,350	3,689
55-59	21,020	7,849	5,733	7,264	7,980	19,905	2,644
60-64	16,788	7,060	7,207	7,362	9,183	16,664	1,693
65-69	8,150	5,429	6,389	6,420	10,407	14,893	1,511
70-74	5,872	5,925	6,261	4,576	10,728	14,573	1,314
75-79	5,276	7,058	7,243	0	11,088	15,525	1,048
80-84	4,205	8,591	8,932	0	11,333	17,334	518
85-89	0	0	8,980	0	11,103	16,438	630
90-94	0	0	11,385	0	10,208	16,883	650
95-99	0	0	0	0	9,730	16,373	-85
Not specified	13,614	9,867	6,616	7,566	9,899	15,874	2,645
Total	17,542	8,187	4,235	7,345	10,471	17,777	2,781

The pattern of income revealed in the two tables needs little comment. Average earned incomes tend to rise to a peak around age 50 and to decline thereafter. Male earned incomes are typically higher than those for females. One noteworthy feature of particular relevance to this study is the way in which “Other market income”, which is principally investment income, tends to increase at higher ages. This no doubt reflects asset accumulation over the individuals’ life spans.

Our second data source is a series of population and labour force projections prepared for us by Statistics New Zealand and already quoted in Table 21. Most of these projections correspond to published series, but we have added variants exploring the implications of varying key assumptions on migration and rates of labour force participation. The projections are disaggregated by gender and age so as to correspond with the income data discussed above. Projections are available for 2001, 2011, 2021, 2026, 2031, 2041 and 2051, but note that the assumed labour force participation rates do not change from 2011 forward.

Our approach

Our modelling approach is to accept the 1997, age by gender by income type pattern of average incomes as fixed, and, implicitly, as representative of the way in which incomes change in response to changes in life experience, to the accumulation of human and financial capital, to decisions to enter or leave self-employment and to changes in life circumstances that determine entitlement to income support or publicly funded retirement income.

Given this fixed matrix of average incomes, by age, by gender and by income type, we then ask, successively, what would have been the overall pattern of aggregate incomes had the underlying population and labour force corresponded to that projected for a particular future year for one or other of our demographic scenarios.

We then compare the resulting pattern of aggregate incomes with that prevailing in the base period. Given the significant increases projected in the proportion of older people within the total population we would expect our procedure to show an increase in the relative size of incomes derived from New Zealand Superannuation. Similarly, the procedure enables us to estimate the likely scale of demographic influences on aggregate market incomes, personal income tax payments and payments of income-tested benefits.

Three of these flows, personal income tax payments, New Zealand Superannuation and payments of income tested benefits, are of immediate interest and provide an abbreviated picture of the potential fiscal impact of future demographic changes. Table 27 summarises our findings with reference to demographic projections assuming medium fertility, medium mortality, medium labour force participation and 5,000 net immigration (in this scenario MM5M).

Table 27 – Projected income flows, 2051

Income flows measured as percent of market income of persons

Income flow	1996	2051
	%	%
Tax payable	22.1	21.3
Income-tested benefits	6.9	6.0
New Zealand Superannuation	8.5	18.4
Taxes less transfers	6.6	-3.1

Our projections suggest that changes in the age composition of the population mean that by the year 2051 there will be a small fall in tax payments as a percent of market income, a fall in income-tested benefits and a more than doubling in the level of New Zealand Superannuation payments expressed as a percent of total market incomes of persons. Combining these three flows we see that the balance between taxes and transfer payments deteriorates from a plus of 6.6 percent to a deficit equal to 3.1 percent on total market incomes of persons.

Limitations and strengths of our modelling approach

The picture that we have drawn is clearly partial. Three points deserve emphasis: our treatment of productivity change, our limited coverage of income flows and fiscal transactions, and our use of comparative statics rather than more comprehensive modelling.

Productivity change

Because our primary interest is in income relativities between retired and economically active persons, we have abstracted from productivity change for most of our analysis.

At first sight this may seem odd. Productivity change is, for good reason, an important element in most economic projections. Changes in productivity through time are the primary source of societal-wide increases in real incomes. Further, over the longer haul, productivity improvements create opportunities for individuals and communities to choose between increased material consumption and increased leisure. Seen from this perspective, supporting a larger proportion of the population in retirement is a form of leisure choice by the community as a whole. Finally, differences in rates of productivity change in different types of economic activity are important drivers of shifts in factor income relativities, in relative prices, in the industrial composition of output and in the final allocation of resources.

However, for our purposes productivity change is not central. The incomes of the retired, whether derived from public entitlements or from private savings, are judged adequate or otherwise with reference to the income standards prevailing amongst the economically active. We can confidently assume that improvements in productivity will act to increase future average market incomes but equally these increases are likely to be echoed, more or less automatically, in the incomes of retired people.

Relativities between market and retirement incomes do of course vary. In New Zealand, New Zealand Superannuation relativities have, in recent years, been variously adjusted with reference to changes in wage rates (which implicitly mirrors changes in productivity) and to changes in consumer prices (which implicitly makes no allowance for productivity) and over quite widely specified bands. Despite these variations and the political passions that they arouse there is an underlying agreement that the reference point against which the adequacy of public pensions must be judged is the average level of income prevailing in the community as a whole.

In the case of private provision for retirement, productivity change enters more directly into the equation through the profitability of investments. Returns on private savings are of course highly variable but in the aggregate returns to investment are ultimately dependent on aggregate profitability and that in turn is influenced by productivity.

In short, when we discuss the adequacy of retirement incomes we are effectively judging this against the standards prevailing at a point in time. Our concern is with the distribution of national income rather than its size. This being so, productivity growth is not central to our analysis. We therefore treat it as a second order effect and initially assume it away in the following analysis.

This is not to argue that productivity change is irrelevant to superannuation. Clearly a stronger economy better positions society to maintain adequate incomes for the elderly, than does a stagnant economy. Therefore, as a final element in our quantitative analysis we explore the implications of productivity change and estimate what increase in the average rate of taxation on personal incomes would be needed to restore the balance between taxes paid on personal incomes and transfer payments to the ratio prevailing in 1996.

Finally, on the issue of productivity, it is the case, as already noted, that changes in productivity are important drivers of shifts in factor income relativities, in relative prices, in the industrial composition of output and in the final allocation of resources. Comprehensive modelling that took account of the influence of productivity change in areas such as these would yield useful insights, but that is a major exercise quite beyond the scale of this project and would require detailed and inherently arbitrary assumptions about rates of productivity change in many different areas of activity.

Aggregate incomes and fiscal position

It is important to emphasise the partial nature of our picture of aggregate incomes and fiscal flows. Our income picture is incomplete in that it makes no allowance for corporate incomes, or for trading income accruing to government. Our fiscal position is even more partial in that it includes only taxes on individual incomes and transfer payments by government. It contains no information on taxes paid by corporations, indirect taxes or final consumption and investment expenditures by government including spending on health and education. These are substantial exclusions but their inclusion would have required a scale of modelling quite beyond the scope of this project.

We have taken the opportunity to compare results for one of our scenarios with those generated in a parallel run of the New Zealand Treasury's Long Term Fiscal Model which uses demographic projections as major drivers of projected trends in public expenditures in areas such as education, health and social welfare payments, including New Zealand Superannuation. The Treasury model is however limited in its modelling of the New Zealand economy and the labour market, and its projections of labour market incomes make no allowance for age-specific rates. The Treasury model also embodies a more limited range of demographic scenarios than used by us.

Taken as a whole the results yielded in this study are broadly in line with those generated in the Treasury model, using similar exogenous assumptions. The comparison serves to underpin the methodology that we have used to explore variations in the balance between tax revenues from individuals and transfer payments, that might be expected to arise from variations in migration, fertility, labour force participation and unemployment rates.

Comparative statics

Which takes us to our third noted issue, the use of comparative statics rather than more comprehensive modelling. The difficulties are twofold. Available models are too restricted in their treatment of labour market variables to be of much use for our purposes. Secondly, comprehensive modelling over long timespans requires model users to make assumptions on a wide range of exogenous assumptions. All such assumptions are uncertain and the compounding characteristics inherent in almost all modelling systems mean that some of these may turn out to be critical in the longer haul. Despite these problems there would be merit in more comprehensive modelling of the issues raised by our exercise in comparative statics, but this pre-supposes substantial model development, a host organisation prepared to fund that, and a longer time frame than was available for this project.

The strength of our methodology is that it focuses on the variables of primary interest: the projected changes in the age composition of the population; and the age and gender distributions of different types of personal incomes, which provide a convenient summary of labour market outcomes. By combining these two datasets we gain a first impression of the possible scale of future changes in the relative importance of different income flows and provide a measure, albeit approximate, of the possible scale of emergent imbalances. This provides a background against which we can assess the possible direction and scale of future labour market changes in response to these pressures.

Before presenting our detailed results, one further preliminary comment is necessary. Because our approach depends on a comparison of different demographic scenarios, we have recalculated our base period matrix of average incomes so that it corresponds to our June 1996 base period demographics. To do this we have divided aggregate incomes as per our tax source, for each age by gender by income type cell, by the numbers of persons contained within a corresponding cell within an augmented version of the 1996 demographic base. This augmented demographic base includes, in addition to population and labour force numbers, numbers of persons employed calculated by multiplying the elements within the labour force matrix by corresponding 1996 census employment to labour force ratios. Average incomes from salaries and wages and from business income are calculated using numbers employed as the denominator. Averages for other market incomes, income-tested benefits and New Zealand Superannuation, are calculated using population as the denominator. The resulting matrices appear in the first quadrant of Appendix 3, which also exemplifies our method.

The results of our model runs

Table 28, below, summarises the income patterns resulting from application of our technique, over all available years, to one central set of demographic projections. This corresponds to the Statistics New Zealand projection series 4, which is driven by its medium vectors of fertility, mortality, and labour force participation rates combined with the assumption of an annual net migration inflow of 5,000. The Super 2000 Taskforce used this series as a central reference series.

Table 28 – Time profile of income projections

Demographic assumptions: medium fertility, medium mortality, net migration 5,000

\$ millions	Medium labour force participation							
	1996	2001	2011	2021	2026	2031	2041	2051
Salaries and wages	45,316	48,675	52,515	53,555	53,064	52,340	51,315	50,362
Business income	6,232	6,888	7,705	8,001	8,029	8,015	7,917	7,795
Other market income	5,731	6,325	7,611	8,810	9,344	9,825	10,515	10,822
Market income of persons	57,279	61,888	67,832	70,366	70,437	70,180	69,747	68,979
Income-tested benefits	3,947	4,107	4,344	4,460	4,422	4,328	4,169	4,134
New Zealand Superannuation	4,886	5,252	6,499	8,684	9,917	11,028	12,356	12,695
Total personal income	66,111	71,247	78,675	83,510	84,776	85,537	86,272	85,808
Tax payable	12,635	13,556	14,702	15,232	15,249	15,184	15,016	14,723
Taxes less transfers	3,803	4,197	3,859	2,087	910	-172	-1509	-2106
	Income flows as percent of market income of persons							
Salaries and wages	79.1	78.6	77.4	76.1	75.3	74.6	73.6	73.0
Business income	10.9	11.1	11.4	11.4	11.4	11.4	11.4	11.3
Other market income	10.0	10.2	11.2	12.5	13.3	14.0	15.1	15.7
Market income of persons	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Income-tested benefits	6.9	6.6	6.4	6.3	6.3	6.2	6.0	6.0
New Zealand Superannuation	8.5	8.5	9.6	12.3	14.1	15.7	17.7	18.4
Total personal income	115.4	115.1	116.0	118.7	120.4	121.9	123.7	124.4
Tax payable	22.1	21.9	21.7	21.6	21.6	21.6	21.5	21.3
Taxes less transfers	6.6	6.8	5.7	3.0	1.3	-0.2	-2.2	-3.1

Table 28 contains a lot of information, albeit conditional on the assumption of stable inter-temporal age by gender income relativities. Given stability in those relativities, the changing age distribution implies significant shifts in the proportions of aggregate incomes arising from different sources. The easiest way of assessing these is to look at the bottom half of Table 28, which expresses income flows, in each year, as a percentage of total market income of persons. In passing note that total market income increases by some 20 percent over the period, reflecting the underlying growth in population and employment. Also recall that our analysis abstracts away from productivity change, but, as a later section will show, our results are invariant to that assumption.

The salient points are:

1. A decline in the relative importance of income from salaries and wages within total market incomes, from 79 to 73 percent. This is the counterpart of an increase in the relative importance of other types of market income, which are more important for older age groups.
2. A sharp rise in the relative importance of other market income, principally investment income. This increases from 10 percent of total market incomes in 1996, to 16 percent in 2051.

3. A slight falling tendency in income-tested benefits as a percentage of market income. This reflects a fall in the relative size of the younger age groups.
4. A very strong rise in the relative importance of New Zealand Superannuation payments, which rises more than twofold, from 8.5 to 18.5 percent of market income, between 1996 and 2051.
5. Most dramatically, the net balance between taxes payable on individual incomes and outgoings on income-tested benefits and New Zealand Superannuation swings from a positive 6.6 percent of market income in 1996 to a negative 3.1 percent of market income in 2051.
6. Finally, the change in this balance begins to become evident in the first decade of the century and then becomes much more strongly acting during the 2010s, 2020s and 2030s. There is a suggestion of slackening thereafter.

To this point our experiment suggests that population aging and labour force change, on the scale explicit in current demographic projections will, given stability in age by gender income relativities, lead to significant changes in the relative importance of aggregate income flows. Moreover those income shifts seem likely to occur on a scale that carries serious fiscal implications. In particular the experiment suggests that the ratio of New Zealand Superannuation payments to the sum of market incomes accruing to individuals from all sources, will rise from 8.5 percent in 1996 to around 18 percent in 2051. The same experiment suggests that the balance of taxes on individual incomes less transfer payments, expressed as a percentage of market incomes accruing to individuals, will switch from a surplus of 6.6 percent in 1996, to a deficit of 3.1 percent in 2051.

Behavioural change

We cannot predict the future with certainty. Change is the order of the day. But we can be certain that stresses on the scale implicit in the income and fiscal imbalances noted above will lead to behavioural change. We adopt three approaches in exploring their likely scale:

1. We use alternative demographic projections, prepared by Statistics New Zealand, to explore the possible scale of changes resulting from changes in fertility, net migration and labour force participation.
2. We then extend this analysis to test the possible effects of more radical shifts in labour force participation rates than are embodied in the Statistics New Zealand standard set of projections. In addition we explore the implications of unemployment levels lower than those prevailing in the base year.
3. Then, in the following chapter, we essay a qualitative assessment of the major forces likely to determine labour market developments over the next 50 years. This third exercise stands in its own right but we also use it to test the plausibility of the numeric exercises reported below.

Varying demographic assumptions within the standard Statistics New Zealand projections

The demographic projections published by Statistics New Zealand embody alternative age vectors for fertility, mortality, net migration and labour force participation rates. For the purpose of this project we have obtained from Statistics New Zealand projection data prepared on the basis of nine alternative sets of assumptions, as set out in Table 29. Note again, that the assumed labour force participation rates embody no changes in the period from 2011 forward.

Table 29 – Alternative demographic projection assumptions

Projection	Fertility	Mortality	Migration	Labour force participation rate	Projected labour force 2051 (000)
LM5M	Low	Medium	5,000	Medium	1,902
MM5M	Medium	Medium	5,000	Medium	2,108
HM5M	High	Medium	5,000	Medium	2,323
MM5L	Medium	Medium	5,000	Low	2,108
MM5H	Medium	Medium	5,000	High	2,150
MM20M	Medium	Medium	20,000	Medium	2,691
HM20M	High	Medium	20,000	Medium	2,915
HM20H	High	Medium	20,000	High	2,973
LMZeroL	Low	Medium	Zero	Low	1,708

In Table 30 we set out alternative projections for the year 2051, for each of these scenarios, in the format previously adopted.

Table 30 – Alternative income projections for 2051

	Demographic assumptions									
	1996 base	LM5M	MM5M	HM5M	MM5L	MM5H	MM20M	HM20M	HM20H	LMZeroL
Income summary		2051	2051	2051	2051	2051	2051	2051	2051	2051
Salaries and wages	45,316	45,658	50,362	55,200	49,360	51,378	64,426	69,410	70,797	40,977
Business income	6,232	7,253	7,795	8,346	7,639	7,951	9,832	10,373	10,580	6,551
Other market income	5,731	10,567	10,822	11,080	10,822	10,822	12,800	13,080	13,080	9,970
Market income of persons	57,279	63,478	68,979	74,626	67,821	70,151	87,059	92,863	94,457	57,498
Income-tested benefits	3,947	3,709	4,134	4,576	4,134	4,134	5,308	5,800	5,800	3,353
New Zealand Superannuation	4,886	12,693	12,695	12,696	12,695	12,695	14,481	14,483	14,483	12,171
Total personal income	66,111	79,880	85,808	91,899	84,650	86,980	106,847	113,146	114,740	73,022
Tax payable	12,635	13,490	14,723	15,989	14,491	14,958	1,8672	19,985	20,307	12,201
Taxes less transfers	3,803	-2,912	-2,106	-1,284	-2,338	-1,871	-1,116	-298	24	-3,323
Income flows as percent of market income of persons										
Salaries and wages	79.1	71.9	73.0	74.0	72.8	73.2	74.0	74.7	75.0	71.3
Business income	10.9	11.4	11.3	11.2	11.3	11.3	11.3	11.2	11.2	11.4
Other market income	10.0	16.6	15.7	14.8	16.0	15.4	14.7	14.1	13.8	17.3
Market income of persons	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Income-tested benefits	6.9	5.8	6.0	6.1	6.1	5.9	6.1	6.2	6.1	5.8
New Zealand Superannuation	8.5	20.0	18.4	17.0	18.7	18.1	16.6	15.6	15.3	21.2
Total personal income	115.4	125.8	124.4	123.1	124.8	124.0	122.7	121.8	121.5	127.0
Tax payable	22.1	21.3	21.3	21.4	21.4	21.3	21.4	21.5	21.5	21.2
Taxes less transfers	6.6	-4.6	-3.1	-1.7	-3.4	-2.7	-1.3	-0.3	0.0	-5.8

Table 30 is complex, and we limit ourselves to drawing a number of major inferences. Note first that the first and third data columns, those for the 1996 base and the medium fertility, medium mortality, 5,000 net migration and medium labour force participation, correspond to the first and final columns of Table 28. Recall that, with reference to the last line of the table, we saw the difference between taxes and transfers as a useful summary of the impact of demographic change on the pattern of incomes.

Table 30 supports the following inferences:

1. Under all variants the 2051 balance between taxes and transfers, expressed as a percent of personal market incomes, is radically different from that in 1996. In contrast to the 1996 surplus of 6.6 percent, the 2051 balance is negative under all scenarios but one, and even then the balance is no better than zero.
2. Changes in assumptions about fertility levels over the projection period have a quite marked impact on the proportion of persons within the normal working age span in 2051 and therefore on the relative importance of salary and wage incomes within total market incomes. The scale of this effect is such that taxes less transfers rise from a negative 4.6 percent of market income under the low fertility assumption (LM5M) to a negative 1.7 percent under the high fertility assumption (HM5M). Note that the alternative Statistics New Zealand fertility assumptions embody substantial changes. The assumed total fertility rate, prevailing over the period from 2011 forward, rises from 1.60 under the low fertility assumption, to 1.85 under the medium assumption and to 2.10 under the high fertility assumption.
3. Changes in assumptions about migration also act strongly. Assuming medium fertility, mortality and labour force participation rates, taxes less transfers rise from a negative 3.1 percent of market income on the assumption of net annual immigration of 5,000 (MM5M) to a negative 1.3 percent on the assumption of net annual immigration of 20,000 (MM20M). This is a strong assumption inasmuch as since 1880 there has been only one five-year period, 1970-75, in which total annual arrivals exceeded departures by as many as 20,000 on average. It is also the case that in this same period net movement of persons intending permanent migration was less than 16,000 annually on average.
4. Changes in labour force participation rates on the scale embodied in the alternative Statistics New Zealand projection sets do not act strongly on the balance of taxes and transfers. Focusing on the three sets embodying medium fertility, medium mortality and 5,000 net annual immigration it can be seen that the balance of taxes and transfers rises from a negative 3.4 percent of market income under the low labour force participation assumption (MM5L) to a negative 2.7 percent under the high labour force participation assumption (MM5H). In the next section we explore the implications of some more radical changes in participation assumptions.
5. The changes described above are essentially additive. Increases in assumptions of fertility, net immigration and of labour force participation all work in the same direction. The combined effect of adopting high assumptions can be seen by comparing scenarios MM5M, MM20M, HM20M and HM20H. The shift from our medium, medium, 5,000, medium reference scenario, to a scenario embodying 20,000 net immigration, changes taxes less transfers from a negative 3.1 percent of market income (MM5M) to a negative 1.3 percent (MM20M). Add in high fertility and the balance shifts to negative 0.3 percent. Add in, on top of this, high labour force participation and the balance improves to zero.
6. Finally, in scenario LMZeroL we explore the opposite hypothesis of low fertility, zero net migration and low labour force participation. Under this scenario the balance of taxes over transfers deteriorates from a negative 3.1 percent of market income under our reference scenario (MM5M) to a negative 5.8 percent under scenario LMZeroL.

Allowing for possible increases in labour force participation and for lower unemployment

Increases in dependency ratios, such as the projected increase in the ratio of older people to those in the customary working-age span, create the likelihood of shifts in participation rates. If older people are to maintain reasonable relativity in income standards this will require some combination of: later retirement; greater reliance on investment income, the real value of which will depend on current output; or an increased aggregate flow of transfers through public pensions. These pressures suggest the likelihood of increases in participation rates. In this section we report three scenarios embodying changes in participation rates beyond those built into the Statistics New Zealand demographic projections and one embodying lower rates of unemployment.

As already observed, the labour force participation rates used by Statistics New Zealand include changes in participation rates up to the year 2011 and then hold rates stable over the projection period. Moreover, neither the projected changes, nor the variations between the three scenarios, are very large. In an earlier section we compared projected New Zealand 2011 participation rates with those for Western Europe and North America and saw them to be lower during the prime-working-age span but higher at older age groups. The scale of the variations between alternative New Zealand participation rate scenarios can be summarised with reference to the alternative projected 2051 labour forces under common medium fertility, medium mortality and 5,000 net immigration assumptions. Under the low, medium and high labour force participation assumptions the projected 2051 labour force ranges from 2,066,000, to 2,108,000 to 2,150,000. Moving either way from the medium projection adds or subtracts less than half a percent from the total.

The four alternative scenarios are:

1. **Low unemployment (Low Unem).** We substitute new vectors for age-specific unemployment, giving a reduction in the overall unemployment rate from 7 to 3 percent. In the base period unemployment rates fall monotonically with increasing age, from 18 and 21 percent for males and females aged 15-19, to 2 percent in the upper age ranges. We substitute vectors, which fall from 5 percent at 15-19 to 2 percent in the upper ranges. In addition we reduce income-tested benefits by the product of the numbers who move from unemployment to employment and the average payment of unemployment benefit per person in receipt of benefit at 30 June 1996.
2. **Swedish participation rates (Sweden).** We substitute projected Swedish 2010 participation rates. As discussed earlier Swedish participation rates, particularly those for females, are significantly higher than in New Zealand.
3. **Swedish participation rates with increases at higher age groups (Sweden plus).** Using the projected Swedish 2010 participation rates as a base we then lift participation rates in the age groups 60-64 and 65-69, to test for the effect of delayed retirement. There are two steps in this. The projected Swedish participation rates for those aged 60-64 are a little more than 50 percent and for those aged 65-69 less than 10 percent. We have shifted these rates up one five-year age span so that most people are working up until age 65, about one-half continue to work until age 70, with very low participation after that. In addition we assume substantial abatement of state pensions and arbitrarily scale pension payments in the 65-69 age group by a factor of 0.75.
4. **Gender equality (Gender=).** Finally we introduce one run in which we equalise male and female age-specific average salary and wage and business incomes (at the actual, male plus female, means) and set age-specific female participation rates at the same rates as those projected for males.

The results of these runs are summarised in Table 31 along with reference scenarios for the 1996 base year and the medium fertility, medium mortality, 5,000 net immigration and medium labour force participation scenario for 2051.

Table 31 – Some alternative scenarios

Scenarios	MM5M	Low unem	Sweden	Sweden plus	Gender=	
	1996 base	2051	2051	2051	2051	
Income summary						
Salaries and wages	45,316	50,362	52,137	54,105	57,116	54,848
Business income	6,232	7,795	7,995	8,021	9,194	8,760
Other market income	5,731	10,822	10,822	10,822	10,822	11,875
Market income of persons	57,279	68,979	70,954	72,947	77,132	75,484
Income-tested benefits	3,947	4,134	3,327	4,134	4,134	4,134
New Zealand Superannuation	4,886	12,695	12,695	12,695	12,107	12,695
Total personal income	66,111	85,808	86,976	89,776	93,373	92,313
Tax payable	12,635	14,723	14,965	15,514	16,020	15,251
Taxes less transfers	3,803	-2,106	-1,057	-1,315	-221	-1,578
Income flows as percent of market income of persons						
Salaries and wages	79.1	73.0	73.5	74.2	74.0	72.7
Business income	10.9	11.3	11.3	11.0	11.9	11.6
Other market income	10.0	15.7	15.3	14.8	14.0	15.7
Market income of persons	100.0	100.0	100.0	100.0	100.0	100.0
Income-tested benefits	6.9	6.0	4.7	5.7	5.4	5.5
New Zealand Superannuation	8.5	18.4	17.9	17.4	15.7	16.8
Total personal income	115.4	124.4	122.6	123.1	121.1	122.3
Tax payable	22.1	21.3	21.1	21.3	20.8	20.2
Taxes less transfers	6.6	-3.1	-1.5	-1.8	-0.3	-2.1

Each of the scenarios recorded in Table 31 embodies significant change. In each case the net balance of taxes less transfers reduces, but always remains negative. The more important changes for each scenario are summarised below.

1. **Low unemployment.** The reduction in unemployment from an average of 7 to 3 percent has a quite dramatic effect. Market incomes rise by \$2 billion (a probable overstatement because we are assuming payment at the average age-specific wage), income-tested benefits fall by \$0.8 billion and individual income taxes yield an additional \$0.2 billion. There is no change in New Zealand Superannuation payments, but the balance of transfers less taxes rises from a negative 3.1, to a negative 1.5 percent of market income of persons.
2. **Swedish participation rates.** Substituting Swedish participation rates for those prevailing in New Zealand raises market incomes by about \$4.0 billion, leading to a rise in taxes of around \$0.8 billion. In consequence the balance of taxes less transfers improves from a negative 3.1 percent of market income under the MM5M scenario, to a negative 1.8 percent.
3. **Swedish participation rates with increases at higher age groups (Sweden plus).** Our assumptions of later retirement, with most people working to age 65, about a half continuing to work to age 70, and partial abatement of New Zealand Superannuation to the latter group, cause significant change. Market incomes increase by \$4.2 billion on the Swedish scenario, an increase of nearly 6 percent, New Zealand Superannuation payments fall by about \$0.6 billion, and taxes increase by a further \$0.5 billion. In consequence the balance of taxes less transfers improves to a negative 0.3 percent of market income.
4. **Gender equality.** Equalising male and female age-specific earnings and participation rates raises market incomes by around \$6.5 billion but has little effect on the overall balance of taxes less transfers.

The implications of modelling productivity

Because our primary interest is in distributional issues related to retirement income we have, to this point, abstracted from productivity change. However, as discussed in an earlier section, productivity improvements do act powerfully over the longer term to increase community living standards. Just as our living standards are higher than those of New Zealanders 50 years ago so it is likely that the incomes of New Zealanders in 2051 will be significantly higher than ours.

Table 32, which follows, explores the consequences of assuming an average rate of productivity change of 1 percent per annum, affecting all incomes (i.e. age, gender and income type), and compounding over the 55 years from 1996 to 2051. The effect of this is to scale all incomes equally by the factor 1.7285. In Table 32 the first four lines reproduce data from Table 28, for our 1996 base period and for our benchmark projection (medium mortality, medium fertility, net immigration of 5,000 and medium labour force participation). The third column scales all of the 2051 income flows by the factor 1.7285 (equals 1.01 to the power of 55) and so includes allowance for an annual 1 percent productivity change affecting all income flows, including transfer incomes which thus maintain their relativity to market incomes.

Table 32 – Allowing for productivity change

		1996 base	2051	2051
			MM5M	MM5M
			zero	1% pa
			productivity	productivity
Total personal income	\$m	66,111	85,808	148,321
Tax payable	\$m	12,635	14,723	25,449
Income-tested benefits	\$m	3,947	4,134	7,146
New Zealand Superannuation	\$m	4,886	12,695	21,943
Taxes less transfers	\$m	3,802	-2,106	-3,640
Ratio of taxes to transfer payments		1.43	0.87	0.87

In the bottom line of Table 32 we add a new measure, the ratio of taxes payable on personal incomes to the sum of New Zealand Superannuation and income-tested benefits. In the base period this ratio stood at 1.43. In 2051 it falls to 0.87 and as our earlier analysis suggested is invariant to any rate of productivity change that impacts in equal proportion on all income flows. Productivity change that affected different incomes differently would of course lead to different results.

Restoring the balance between taxes and transfers

At this point it is natural to ask, given all the assumptions that we have made, what level of taxes on personal incomes would be necessary to provide, in 2051, a balance of taxes less transfer payments that bears the same ratio to total personal incomes, as did the corresponding balance in 1996. This implies that a fixed percentage of personal incomes is applied to fund government expenditures other than transfer payments. The answers to this question, which vary according to scenario, are provided in Table 33.

Table 33 – Restoring the balance between taxes and transfers in 2051

	Taxes less transfers (as per Table 30)	Ratio of personal taxes to transfer incomes	Average personal tax rate required	Employed as percent of total population
1996 base	3,803	1.43	19.1	46.8
LM5M	-2,912	0.82	25.8	43.7
MM5M	-2,106	0.87	24.9	43.7
HM5M	-1,284	0.93	24.2	43.5
MM5L	-2,338	0.86	25.2	42.8
MM5H	-1,871	0.89	24.7	44.6
MM20M	-1,116	0.94	23.9	44.7
HM20M	-298	0.99	23.4	44.1
HM20H	24	1.00	23.1	45.0
LMZeroL	-3,323	0.79	26.5	42.7

The first data column replicates the final row of Table 30, which summarised our main projections. The second column expresses taxes as a ratio of transfer incomes. As discussed above these ratios are invariant to the rate of productivity change. As can be seen the tax to transfer ratios range from a low of 0.79, in our low fertility, medium mortality, zero migration, low labour force participation scenario; to 0.87 in our reference scenario; to a high of 1.00 in our high fertility, medium mortality, 20,000 net immigration, high labour force participation scenario. All, however, are noticeably less than in the base period. The third column records the rate of tax on personal incomes that would be necessary in 2051, to restore the balance between taxes and transfer payments, expressed as a percentage of total personal incomes, to the same level as in the 1996 base period. These rates range between 23.1 and 26.5 percent as compared with 19.1 percent in 1996.

Once again we emphasise the limited nature of our fiscal summary. It contains no information on other taxes, such as indirect taxes and those paid by companies. It contains no information on government spending, other than transfers. In particular, it excludes some demographically sensitive areas such as health and education. Falls in the proportion of younger people within the population will lead to some savings in these areas but in some, such as health, population aging will add to fiscal costs. More comprehensive modelling and analysis would be required to generate a comprehensive picture of the fiscal and economic implications of population aging. Such modelling lies beyond our brief.

The final column of Table 33 summarises the demographic component of our 2051 scenarios by expressing the number of persons in employment as a percentage of the total projected population. This shows that, as compared with a 1996 ratio of 46.8, the ratio of employed persons to the total population varies between 42.7 and 45.0 percent in 2051, according to scenario. The projected ratios exhibit a smaller, but still substantial, proportionate shift from the 1996 base, than do our modelling results, which focus more narrowly on retirement-related income flows.

Overall, on the issue of productivity, future productivity improvements, by increasing real incomes, can be expected to make it easier for future generations to finance transfer payments but it will not obviate their need to tax themselves to do so. If the proportion of the population in receipt of transfers rises substantially, and if relativities between average market incomes and average transfer incomes are preserved, a significant rise in the proportion of incomes taken through taxes follows, almost automatically, regardless of the rate of productivity change.

Future trends

Introduction

Population aging will create significant pressures, which can be expected to affect labour market behaviour as society attempts to maintain and improve living standards and to ensure a socially acceptable balance between the living standards of different social groups. Our objective here is to assess, qualitatively, the forces likely to shape labour market developments over the next 50 years and foreshadow some of the likely directions of change. Our earlier review and the experiments reported above suggest seven key areas:

1. The balance between market-work, non-market work and leisure
2. Technological change
3. Globalisation
4. The changing skills balance
5. Changes in age and ethnic structures
6. Welfare to work
7. Market activities by older people.

The first four items on this list are ongoing social, economic and technical influences affecting labour supply and labour demand, which will play their part whatever the age structure of the future economy. They help set the scene within which New Zealand's emerging demographic transformation will be played out. The last three items relate directly to the implications of population aging.

In each area our interest is to assess the likelihood of significant behavioural responses. This approach seems natural enough with respect to most items on our list but some might question its applicability with respect to technological change and globalisation. But the influence of these worldwide phenomena will be conditioned by domestic responses, by the successes and failures of domestic companies, by the choices of individuals as they develop their skills and exploit the opportunities offered both nationally and internationally, and by the choices of policy makers.

The balance between market-work, non-market work and leisure

The proportion of the population aged 15-64 in paid work has been remarkably stable over the post-war decades, although with a marked temporary downward trend during the period of restructuring in the mid 1980s to early 1990s. When only full-time work is considered, there has been a decline per head of population from the 1970s to early 1990s. However, recent data do not support the idea of ongoing loss (or gain) of full-time jobs for either men or women in the late 1990s. This recent stability in paid-work participation contrasts with international experience of substantial reductions between the 19th and 20th centuries in annual hours worked by male workers as ongoing productivity helped raise living standards.

The future balance between paid work, unpaid work (including further education and training) and leisure will be driven by a number of factors. Fundamentally, participation in paid work provides the income necessary to support consumption standards and lifestyles for individuals, as well as for those economically dependent on them. It is clear from our scenarios, even assuming a significant increase in labour force participation rates, that it will not be easy for those in paid work to support those in retirement at current income relativities. However, increasing labour force participation, particularly by women and older people, has the potential to assist reduce the dependency burden and there will be increasing pressure from within society for this to occur.

Participation in paid work needs to be supported by access to household services, through either unpaid use of one's own time, unpaid work by a spouse, or purchase of household services. As we have seen, the amount of unpaid work carried out in industrialised societies is still higher than that of paid work. This gives scope for considerable growth in paid work should the balance change. The future balance between paid and unpaid work will be influenced by the rate of change in the techniques of home production, including the mechanisation of home work and the purchase of domestic services and by the comparative rates of growth in domestic and market sector productivity.

Higher productivity in paid work tends to raise real wage rates and so positions workers to choose between increases in income and increases in leisure. Many forms of leisure depend on consumption of marketed goods and services and it seems likely that the price of leisure services has at least been keeping up with increases in average incomes. If so this would suggest relatively stable overall balance between work (both paid and unpaid) and leisure.

In the last 50 years changing economic circumstances, coupled with changes in individual aspirations and social norms and developments in household production technologies, have contributed to increased female participation in paid work, both by freeing women to enter the workforce and by creating new service sector jobs. These changes have been associated with declines in male participation and increases in the proportion of working couples and in the number of people living alone.

It is difficult to foresee what the next 50 years might bring, but it does seem likely that female participation rates will continue to rise. An important indicator is the continuing rise in female educational participation. There is also potential for the balance between men's paid, unpaid and leisure hours to continue to change. While there will be an increasing need for overall increases in participation rates, we foresee that for a group of men there will lower rates of long-term tenure in paid work. Some of this will be due to increases in time spent on parenting or study.

Demographic changes are clearly important. The lower fertility rates now prevailing must impact on labour force decisions but the overall balance is not clear. Shortened childrearing obviously frees up time that can be applied in earning market incomes. It also reduces the need for domestic production. Against this it creates the opportunity for increased leisure and recreation. An aging population may well enhance the role of extended family members as childcarers. With more retired people, grandparents may more frequently look after children whose parents are in paid work.

Ultimately, workforce participation depends on a satisfactory matching of the skill sets of persons seeking work with the emergent pattern of demand for labour. As discussed below we foresee an increasing relative demand for skills. Increasingly, it will be human capital, both in the form of specific occupational skills and work-related social, but also health status, rather than age or gender that determines labour force participation. This carries implications for population groupings with lower average levels of skill.

Our discussion to this point has been driven largely by a consideration and extrapolation of recent trends. Our quantitative explorations of scenarios embodying shifts in participation rates have explored scenarios involving more radical shifts. Even with these shifts our modelling suggests the likelihood of significant fiscal and financial stress, implicitly calling for even higher rates of labour force participation, and increased taxation and income transfers from within current production if the relative incomes of older people are to be maintained. But one cannot simply assume higher participation rates, in a vacuum as it were. For the individual, the allocation of extra time to work has its own costs in terms of reduced opportunities to do other things. If society requires extra productive effort from those in the prime-working-age span then it is likely to have to pay for it. But if such extra effort is induced through the usual mechanism of increased rates of remuneration, the predicated starting point of maintaining the relative incomes of those not actively engaged in paid work is put under pressure.

How all this balances out, time alone will tell, but we conclude that there are likely to be significant pressures for increased labour force participation.

Technological change

Major technological waves continue to cause major disturbance to the existing pattern of jobs and frequently cause high rates of job loss. At the same time new technologies drive the creation of new jobs. The "labour saving potential" of information technology is paradoxically evidenced by large numbers of people spending their days in front of computer terminals and in the vast industries that have grown to produce and service the hardware and software of the information age. Looking back over the longer time span since the industrial revolution, technological change has contributed to a

reduction in average working hours but in terms of rates of employment it can be argued that the job destruction and job creation associated with ongoing technological change has tended to balance out.

Technological change is fundamentally important as a driver of real income levels and via this channel exerts an important influence on work/leisure/consumption choices. The long-term tendency is probably towards an increase in leisure. This judgement needs to be conditioned by an awareness that unequal development of the income distribution means that evolving work/leisure trade-offs are going to look different to persons in different deciles of the income distribution. At the extreme, radical increases in conspicuous consumption, and the leisure to indulge it, by an increasingly affluent top decile or so, may require increased participation rates in lower deciles by those who need the money earned by providing the services to the top 10 percent. A more compressed income distribution could be expected to influence work/leisure choices in quite different ways in different deciles.

The most important implications of technological change are probably those relating to the pattern of work and the required range of skills.

Work patterns will continue to change. Further diffusion of electronic and information technologies will probably reinforce tendencies towards devolved management and administrative structures and increased contracting out and home working. But these trends are unlikely to diminish the attractive power of urban agglomerations, particularly Auckland.

On the contentious issue of trends in skill requirements we judge it likely that there will be continuing demand for upskilling. The demand for conceptual, analytic, organisational, and entrepreneurial skills will keep on increasing. Basic manual skills and routine tasks, in all occupational groups, will continue under threat from mechanisation. This will include areas such as medicine where routine diagnosis is likely to be increasingly computer assisted. At the same time low-level mechanisation is obviously helping an expanding service industry in manual skills areas such as woodcutting and steam cleaning.

The zone that continues under solid pressure is routine manual, clerical and personal service operations that can be automated (or transferred overseas). Nevertheless, New Zealand's remoteness means that there is still some natural protection for manufacturing operations in areas such as food production, wood products and cement. Some of these and other industries will retain competitive advantage because of access to raw materials.

Finally, technology is likely in a variety of ways to assist if, as seems likely, labour shortages emerge through the aging of the population. As an historical example, Herlihy (1997) analysed the responses of Western European countries to the loss of a significant proportion of the population due to the Black Death, which caused rapid movement from a position of labour over-supply to a situation of labour shortages, including shortages in areas of skilled work. Herlihy suggests that labour shortages generated a high level of innovation in terms of labour-saving devices, particularly in agriculture.

Given that all high-income industrialised countries will be facing similar demographic changes, and that in some countries dependency ratios will become problematic earlier than in New Zealand, by the middle of the projection period it is likely that a considerable amount of effort in all industrialised countries will have gone into finding ways to save labour. In addition, as discussed in an earlier section, technology is likely to help older people retain their links to the labour market. Much of the manual component of jobs will be reduced and computers and other technology will help overcome some of the disabilities associated with aging.

Globalisation

Competitive pressures from overseas will continue but the completion of the tariff phase-down will mark the closure of an important transition phase that has magnified the effect of ongoing technical and commercial re-structuring.

A number of trends will be important.

Integration with Australia is likely to continue apace with the trans-Tasman labour market becoming more unified. Australia offers the only significant political and geographic space where New

Zealanders enjoy an automatic right of entry. The Australian economy is under the same competitive pressures as New Zealand but the slower pace of tariff reform, e.g. cars, the advantages of size, and the dictates of distance all suggest a better future for a range of manufacturing operations that will find it hard to survive in New Zealand. Political union, preceded by currency union, could have a significant impact on head office and governmental functions in New Zealand. There has long been a significant degree of commercial and financial integration between the two economies. This has strengthened in recent decades and is likely to continue to do so.

Even in the absence of political union, increasing integration of the two labour markets is likely. Economic and commercial coordination, low airfares and ease of assimilation all encourage such integration. Working against this are inter-country differences in the institutional labour market frameworks. The contracts entered into between employees and employers are nested within a wider framework of laws and institutional entitlements. Entitlements to unemployment benefits, sickness and accident entitlements, and pension rights all depend on or are conditioned by government policies. Existing areas of reciprocity in entitlements are already under some pressure because of the imbalance in migration between the two countries. Developments in the New Zealand labour market will be conditioned by the evolving pattern of trans-Tasman institutional arrangements in these areas.

Globalisation will maintain pressure on all routine, wage-sensitive factory operations, thus amplifying the pressures on manual jobs that flow from technological change. Competition from imports will make it hard for some manufacturing operations to survive.

Globalisation will also continue in service sectors where information technology will create new potential for routine supply of services from a distance. Internationalisation of service provision in areas such as accounting, legal services, and finance will mean that an increasing proportion of the workforce will be working in firms lapping many countries.

New Zealand's success in the global economy will depend among other things on the creation and survival of a number of major New Zealand based corporations trading internationally. Management teams will be international in orientation.

Increased international integration through international commercial and environmental treaties will create demand for people within and outside of government who can mediate between national interests and the emerging body of international law.

Migration policy will influence the degree of international integration and will impact on demographics. The potential scale of this influence is evident from the alternative projections supplied by Statistics New Zealand. On the basis of its medium fertility, medium mortality and medium labour force participation assumptions, the projected labour force in the year 2051 is 2,108,000 on the basis of 5,000 annual net immigration and 2,691,000 assuming 20,000 net annual immigration.

Migration policy can be contentious and developments in this area are heavily conditioned by political and electoral responses. That said, there is a clear trend to the internationalisation of work with many workers spending parts of their careers in different countries. This trend can be expected to continue. In addition changes in age structure raise the possibility of labour shortages amongst younger workers, which may lead to calls for increased immigration. We return to this point below.

The changing skills balance

We have already discussed the issue of skill demand under technological change. We foresee continuing strong growth in demand for symbolic and analytic skills and for in-person services. There is likely to be relatively depressed demand for routine production. But one should not overstate this tendency. The modern economy demands fulfilment of a very wide range of basic tasks to ensure its daily functioning. Demand for these services will continue to expand as the economy grows, albeit at a slow rate. More generally and over time, communities adapt their productive patterns to more nearly match the range of skills available and adopt policies designed to augment and adjust the supply of skills to match the emergent pattern of demand. A skills imbalance should not be viewed as some unalterable given. Rather it stands as a prompt to dynamic adjustment. The significant changes in tertiary participation that have occurred in recent years were predicated on the view that education

has the potential to enable the emergent workforce to equip itself to better meet the challenges of working life. There will be changing emphases in education but that basic thrust seems certain to persist. There is also likely to be increasing emphasis on the importance of lifetime learning, including much learning on the job, and increased provision of within-career training by tertiary institutions. This could put downward pressure on labour force participation rates.

Looking back over the last 50 years it seems clear that an important driver of increased female labour force participation has been an expanding demand for persons with symbolic-analytic and in-person services skills. If the demand for these higher skills continues to increase relatively then it will have to be met from somewhere; through increased learning and training, through further diversion from unpaid work (both male and female), through extensions in working life, through increased part-time working by tertiary students, or through increased immigration.

Changes in age and ethnic structures

The labour force projections prepared by Statistics New Zealand make it clear that there will be significant changes in the age profile of the labour force over the next 50 years. For example the reference scenario MM5M suggests that in the year 2051 there are likely to be as many 55-59 year olds in the labour force as there are persons aged 20-24. In contrast, in 1996, the number in the older age group was only half that of the number of persons aged 20-24. The same projection sees the median age of the labour force increasing from 36.9 years in 1996 to 42.2 years in 2051.

Looking at this change an optimist might claim that the emergent labour force will be more experienced and wiser than that of today. To which the pessimist could respond that it is likely to be more set in its ways, lethargic and lacking in muscle, vigour and intellectual sparkle.

However that might be, it seems that society will have to adapt to a quite significant shift in the age balance of the workforce. We have not been able to research this issue but it may well be that such an investigation would not show much. Societies have time and time again adapted to major demographic shocks which impact on their labour forces. New Zealand's own recent history shows that the transition to significantly lower fertility rates which has led over time to a significant fall in the ratio of new entrants to the labour force, remains largely unremarked and therefore, presumably unproblematic.

The demographic projections prepared by Statistics New Zealand show that there are likely to be significant increases in Maori and in people belonging to the Pacific Island ethnic group in coming decades. Our conclusions about labour market demand for upskilling and the need for increased labour force participation act to reinforce the frequently acknowledged need to strengthen policies which assist these and other disadvantaged groups to improve their skills and enhance their opportunities in the labour market.

As noted in the introduction to this chapter, it is possible that fertility rates will rise in anticipation of an emerging population imbalance. Given the long lags involved, changes in the proportion of persons within the normal working age span presume fertility changes several decades previous. As our examples show, changes in the total fertility rate as small as a move from 1.85 to 2.1 can have quite significant effects. Note that significant increases in fertility at a time of increased female labour force participation would seem to pre-suppose increases in the availability and use of childcare and other supporting services. It is difficult to assess how much effect "pronatalist" tax and transfer policies would have on fertility.²⁵ While the Swedish "family-friendly" model presumably assists parents to balance work and family life, it has not lifted fertility rates above replacement. However, given the effect of even small increases in fertility, the introduction of more "family-friendly" policies constitutes a possible policy response to an aging population.

If there are labour shortages, particularly amongst younger workers, it is likely that consideration will be given to encouraging historically high levels of inward migration. The success of this will depend partly on the skills required and attitudes towards significantly changing the ethnic mix of New Zealand. If the labour shortages are in the area of symbolic or technical analysts, then there may be some difficulties in attracting migrants from traditional sources in Western Europe. Those countries

will also be facing an aging problem and may be seeking to alleviate it through immigration. It is likely that skilled labour would have to be sought from within newer sources of migration, particularly Asia.

Supplies of young persons for relatively unskilled in-person services for work such as nursing home staff, running cafes or working as cleaners, could be met through increased immigration, prompted by a relaxation in immigration rules. Constraints on this include the ability of New Zealand to absorb new migrants, the preparedness of New Zealanders to accept migrants of diverse ethnic and cultural backgrounds and the attractiveness of New Zealand as a potential destination.

Welfare to work

The difficulty of devising programmes that are effective in assisting those in receipt of welfare benefits to make the transition to paid work or other meaningful participation is widely recognised as an important challenge, not least because of the impact of this failure on the life chances of the children of beneficiaries.

A noteworthy feature of our projections is that under every scenario, demographic change suggests that there is likely to be a fall in the level of income-tested benefits in relation to market incomes. Recall however that these projections depend on the assumption of constant age by gender-specific benefit payments. Regardless of how this turns out the issue of benefit dependence is likely to be the focus of continuing attention. The returns to successful policies in terms of reduced budget costs and increased incomes and production seem potentially large.

This inter-relates to a wide range of social issues, including familial roles, childcare, support services for families and so on. Demographic pressures will act to reinforce the likelihood of continuing developments in all these areas.

The Swedish model is interesting in this connection. There are major transfers in areas such as parental leave and childcare. In addition there is some trading of work for leisure through long holidays with the expectation that most people, including sole parents, are in paid work for most of their working lives.

More generally if New Zealand does face emergent labour shortages and demographically driven fiscal problems there will be very strong incentives to draw people off benefits and into paid work. This suggests a continuing need for attention to the development of policies that are effective in prompting and assisting persons to make the transition from benefit dependency to paid work.

Market activities by older people

Paid work participation rates for older people are likely to rise.

The demographic pressures that we have described place the incomes of older people at risk. It is already clear that entitlements to income from the state are subject to political risk. In addition private provision, through the investment of savings, is also subject to the normal range of commercial and institutional risks. These considerations suggest that older people will increasingly seek to protect their income position through maintaining an active connection with the labour market. Age affects capacity and the lottery of life makes its presence felt here as amongst all age groups. These considerations suggest that many who might like to maintain an active working life will find it difficult. Others will be able to do so. Others again will enjoy circumstances which enable them to do other things. But overall there is the likelihood of increased participation. In our augmented Swedish scenario we assumed that most people aged 60-64 would be actively engaged as would about half of those aged 65-69. This seems a plausible scenario. The extent of changes in participation by older age groups is likely to be conditional upon attitudinal and institutional changes that would make it easier for older people to prolong their active working life.

²⁵ We are assuming that governments do not resort to draconian "pro-natalist" policies such as banning contraception or abortion.

POLICY IMPLICATIONS

Implications of labour market change for retirement income policy

Introduction

The most obvious implication of an uncertain future is that policy implications are themselves uncertain. Future “facts” will differ from our foreshadowing of them; future policy makers will operate within evolving understandings of those facts; and demographic change will alter the balance of political forces.

So caution is the order of the day. Nevertheless, having come this far, it is appropriate to sketch what seem to be the more important implications of our analysis. We approach this through a brief examination of policy options in three areas:

1. Policies relating to workforce development, fertility and migration
2. Possible changes affecting entitlements to New Zealand Superannuation, including changing the age of eligibility, altering indexation arrangements and targeting of the benefit
3. Policies intended to increase the level of savings, including encouragement of increased private provision and increased saving by the state. We also look at a possible closer alignment of savings policy with Australia.

In each of these areas our concern is to draw the implications for retirement income policies, of likely future changes in labour markets, as sketched in our preceding analysis. Retirement income policies are complex and it is not part of our brief to sketch possible changes in them or even to second-guess the actions of future policy makers. Rather, our approach mirrors that of the Periodic Report Group (1997): a concern to outline the implications of what is currently known and to underline the importance of ongoing analysis in helping determine future policy responses and their possible timing.

Workforce development, fertility and migration

Our alternative scenarios have shown that possible future changes in labour market participation, fertility and migration have the potential to ease, but not to remove, the fiscal problems associated with an aging population. There is in consequence a need for continued monitoring and development of retirement income policy.

At the same time it is appropriate to emphasise that the performance of the real economy is the ultimate determinant of the community’s ability to support people in retirement.

The economy’s performance depends upon the quality of its institutions, the quality of its commercial and public investments and the quality of its labour force. Our discussions of technological change, globalisation and skilling all point to the importance of ongoing labour force development. The welfare of the future economy, as of that today, depends fundamentally on the technical, cognitive, entrepreneurial, social and interpersonal skills of the workforce and on policies attuned to the promotion of full employment. Demographic pressures thus serve to emphasise the already well recognised case for workforce development and employment policies and the need for continuing policy development and monitoring in these areas.

Policy questions may also arise around issues of fertility, population size and migration.

Fertility is not generally seen as a direct concern of public policy. The demographic pressures that are now pending are themselves the results of socially induced swings in fertility, including the post-war baby boom and the subsequent plateauing of births with the widespread adoption of new forms of contraception. It is not beyond the bounds of possibility that future shifts in fertility will significantly change demographic patterns from those currently projected.

Immigration is a variable that is more obviously open to public policy control. Although visitors and returning New Zealanders make up the major part of the migrant flow of short-term movements, longer-term migration is subject to control. As our projections make clear, the total size of the future labour force is sensitive to assumptions on migration. More particularly, higher levels of net migration act to increase the ratio of persons within the normal working age span and thus have the potential to contribute to a reduction in the ratio of New Zealand Superannuation payments to the market income of persons. The relevance of this consideration needs to be weighed within the range of wider matters that form the framework within which population and migration policy is determined.

Possible changes affecting New Zealand Superannuation

In its July 1997 report the Interim Report Group modelled (pp. 113-124) a range of options relating to New Zealand Superannuation, including increasing the age of eligibility, altering the relativity between New Zealand Superannuation and average wages, and targeting the benefit by introducing some form of claw-back.

The Interim Report Group's calculations, which are built around the Treasury Long-Term Fiscal Model, record New Zealand Superannuation payments as a percentage of GDP (rather than as a percentage of market income of persons, as in this study), use a model routine that calculates the annual average tax rates necessary to maintain a balanced budget throughout the projection period. Although these measures are not directly comparable with those used in this report, and do not take account of possible changes in labour market participation, they show a broadly similar picture.

Raising the age of eligibility

The Periodic Report Group explores the fiscal implications of a phased increase in the age of eligibility for New Zealand Superannuation, from 65 to, alternatively, 67 or 68 years, over a 12-year period commencing in 2015. The Group notes that a fixed eligibility age, coupled with the historic tendency to increased longevity, implies a lengthening in the time that a person will be entitled to benefit. One policy option is to hold that period of entitlement stable by periodically adjusting the age of entitlement.

New Zealand is, however, still completing a transition from a year 60 to a year 65 entitlement and the Periodic Report Group notes that it will not be until 2031 that the expected life expectancy of a 65 year old will approximate the life expectancy of a 60 year old in 1991. In effect the short-term potential of increases in the age of eligibility has already been availed by policy makers and the consequent savings in superannuation payments have been an important element contributing to the fiscal surpluses of recent years. The immediate implication for future retirement income policy lies in the importance of making good use of those savings.

Looking ahead to the possibility of future changes in the age of eligibility, the Periodic Report Group notes that "not everyone has average health status and life expectancy. There are some who are unable to continue supporting themselves financially up to age 60 or 65, and who may have to rely on benefit support. Raising the age of eligibility further would deprive them of the standard of living they currently expect to be guaranteed, through New Zealand Superannuation, at their retirement."

Similar considerations underlay our modelling of higher labour force participation at older age groups where, in our scenario "Sweden plus", we lifted participation rates so that most people continued working until age 65 and about half continued to work until age 70. As with the Periodic Report Group modelling these assumptions led to quite significant changes with New Zealand Superannuation payments falling from 18.4 percent of market income of persons, under our reference scenario, to 15.7 percent under the Sweden plus scenario.

As noted in the previous section we see this as a quite plausible scenario, but this is not to prejudge the form of the necessary institutional adjustments that would make it easier for people to extend their active working life. The uneven impact of aging over the age spans about which we are talking tends to point to the advantages of targeting according to need rather than to across-the-board adjustments of the age of eligibility.

Finally, it is important to note that increased longevity is not the primary cause of the changing dependency ratio. The primary cause of that change is the maturing of a population age structure generated by the near constant annual level of births that has prevailed in the decades since the 1960s. The resulting age “cylinder” contrasts sharply with the pyramidal age structures characteristic of the post-war decades of rapid population growth.

Altering the relativity between New Zealand Superannuation and the average wage

The Periodic Report Group explores the fiscal implications of lowering the wage floor underlying the current system of indexation, from 65 percent of net average earnings to 50 percent from the year 2015, by which time pending superannuation-induced fiscal pressures are again likely to be causing concern. The effect of the modelled change is to drop the rate of average tax revenue necessary to maintain a balanced budget by about 2 percent.

Setting the rate of New Zealand Superannuation in relation to prevailing wage standards is essentially a political question, to which the answer has varied at different times. Agreements such as the “Accord” have sought to entrench benefit/wage relativities within agreed bands by establishing indexation arrangements, which serve to isolate short-term adjustments from ad hoc political decision-making. The success of such agreements in the longer run depends upon the skill of the framers in striking relativity bands that prove sustainable in the face of changing demographic pressures.

The projections used by us and by the Periodic Report Group suggest that demographic pressures on the affordability of New Zealand Superannuation will be felt most strongly in the period from around 2015 to 2040. For example our Table 28 suggests that New Zealand Superannuation payments will rise from 9.6 percent of the market income of persons in 2011 to 17.7 percent in 2041. A shift of this order will certainly create fiscal pressures and can be expected to lead to calls to reduce the relativity between benefits and wages. However, this fiscal pressure will be mirrored in a changing demographic balance within the electorate, which will tend to increase the voice of those who would be adversely affected by such a change. How these pressures balance out, only time will tell.

Our earlier discussion on the relationship between productivity improvements and the affordability of superannuation also bears on this point. If the aged were to judge their standard of living primarily with reference to the standards prevailing in the past, rather than with reference to those currently evolving in the current workaday world, productivity growth could make it possible to sustain the real incomes of the aged at a fixed level: whilst allowing them to drop in relation to growing incomes of those still at work. But the aged live in the contemporary world and their perception of what is an acceptable living standard is conditioned by the experience of their children, their wider families and the community around them and, to a degree, by their perception of standards in other countries such as Australia.

Nothing in our analysis suggests that pensioners living in 2051, or any other future year, will be more prone to judge the acceptability of their living standards with reference to the past than do those of today. Emergent fiscal circumstances may force acceptance of a change, but to be politically stable that change will need to be seen as forced by circumstances and to fall within a framework that is judged fair and equitable in those circumstances.

Targeting New Zealand Superannuation

The Periodic Report Group disagreed with the decision to abolish the New Zealand Superannuitant Surcharge, arguing, in the words of the 1984 Budget that “there were other priorities for welfare expenditure than assisting those superannuitants who already had enough income on which to live comfortably”. Accepting that the change had occurred, the Report Group nevertheless argued that the question of targeting would not go away and suggested that abolition provided “a breathing space in which we can inform and educate the community about the future shape of public provision, and explain why some form of targeting will be needed in future”.

The case for targeting stems directly from unequal distribution of incomes derived from the marketplace. As we have seen the inequality of market incomes has tended to increase and our analysis of the pressures stemming from technological change and from globalisation suggests, if anything, a tendency towards widening inequality in market outcomes.

This suggests that the considerations that led to the introduction of the surcharge are likely to remain alive and to intensify as the perceived fiscal burden of maintaining a universal public pension entitlement increases. The resolution of the underlying problem remains as problematic as ever.

The basic case against targeting through means such as a tax surcharge or through benefit abatement is threefold. First, it contradicts the principle of universality and thus, to a degree, tends to undermine political support for the pension. Secondly any process of claw back creates economic disincentives, whilst attempts to diminish that disincentive tend to reduce the revenue effectiveness of the measure. Thirdly the claw back creates administrative and compliance costs. Against this it is clear that payment of a universal age pension entails significant payment from public funds to a range of persons who, on any objective test, are not in economic need.

Judged purely in terms of its labour market implications the process of claw back has to be seen as providing a disincentive to the income-generating activity that exposes the beneficiary to tax or surcharge. How that disincentive translates into changes in behaviour will depend on circumstances but the overall net effect is likely to be some diminution of effort. These considerations argue for lower, rather than higher rates of claw back and point to the utility of attempting to ensure, over all income ranges, some upper limit to effective tax rates, taking into account the combined effect of basic tax rates (including indirect taxes) and surcharge provisions. The problem is that the lower revenues likely to be associated with such a regime reduce the likely fiscal return.

Increasing the level of savings

It is common ground to most discussions of retirement income policy that increased national savings during the early decades of this century will help ease the transition to an older population age structure over ensuing decades. Commentary tends to focus on two points. First, increased levels of private saving have the potential to increase the asset base of households at time of retirement and thus increase the income, saving and dissaving options open to them at that time. Secondly, it is prudent for government, as the provider of public pensions, to plan ahead and adjust its own net debt/net asset position in anticipation of future fiscal pressures.

In the area of private savings New Zealand has consciously framed a policy framework that eschews tax incentives to encourage saving and legislative measures designed to compel private savings. In the words of the Periodic Report Group “The interaction of efficient (savings) product providers and well informed consumers should, over time, provide the strongest voluntary savings environment”, and a major concern of the Periodic Report Group is to review the functioning of finance markets related to personal savings.

Private savings behaviour lies outside the scope of our review of labour market trends but three points deserve comment. First, whilst agreeing with the general desirability of increased private savings, it is important to repeat the finding of Stroombergen and others, as reported in our section on income inequality, that, “given current patterns of earnings, over 85 percent of 15-19 year olds in 1996 were unlikely by the time they retired, to have accumulated savings (excluding housing wealth) equal to the present value of New Zealand Superannuation”. Higher rates of saving could be expected to change this proportion, but one of the consequences of an unequal distribution is that a significant part of the workforce is in receipt of incomes that make it very hard for them to save.

Secondly, because saving behaviour is strongly correlated with stages of the lifecycle, the aging of the population can be expected to impact on savings levels. This is reflected in the time profile of our reference projection (medium fertility, medium mortality, 5,000 net migration, medium labour force participation), where other market income of persons is projected to rise from 10 percent of the market income of persons in 1996, to 13.3 percent in 2025, and 15.7 percent in 2051. This rise reflects the fact that average receipts from other market income, including investment income, rise strongly from ages 30 through to 60, as individuals build up net wealth. The projected rise is driven

purely by changes in age composition and assumes no increase in individual rates of saving. Improvements in saving performance could thus be expected to lead to an even stronger rise.

Thirdly, we note that New Zealand's voluntary private savings regime, whatever its strengths, contrasts sharply with that in Australia where legislation requires all earners to contribute to individual accounts with approved savings institutions. Only time will tell how the Australian initiative will work out, but the development of radically different regimes on the two sides of the Tasman contrasts with the general tendency towards the integration of the two economies and labour markets and seems likely to generate its own stresses as time proceeds and possibly will come to inhibit the free movement of labour across the Tasman.

Pending demographic pressures are frequently cited as reasons for fiscal prudence and in particular as a consideration justifying movements to medium-term fiscal objectives such as lower levels of spending, taxing and public debt. Budget 2000 develops the argument further by pointing to the advantages of building an improved public asset/investment base in anticipation of future pressures.

We will not comment on the detail of the proposal, but make two points.

First, the real incomes of the aged at any point in time depend upon their ability to call upon a share of the current supply of goods and services. In turn, the level of output produced in the contemporary economy, supplemented by imports and reduced by exports, and itself a function of past levels of investment, effectively determines the available supply of goods and services. Leaving aside for the moment the important issue of the net flow available from overseas, this means that the value of any accumulated asset depends ultimately on the extent to which it can be realised as a claim on current output in competition with the claims of workers, employers and entrepreneurs. One cannot pre-judge how this will work out, except to note that the factor in relatively short supply will be persons of working age and that this suggests a relative increase in the rate of return to labour, as opposed to capital.

The second point relates to New Zealand's future ability to draw on overseas resources to supplement local supply. New Zealand currently has, by a wide margin, the highest level of net international liabilities to GDP of any high-income developed economy. This means that we are, as a nation, extremely ill placed to supplement future earnings from overseas. Instead our current high level of net international liabilities entails a transfer of current resources to overseas investors.

Given the underlying accounting identities, the surest sign of an improvement in national savings behaviour would be an improvement in the balance of payments and a reduction in New Zealand's level of net international liabilities.

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Appendix 1

In his census-based research, David Thomson (1999) used 20 or more hours as his definition of full-time work, rather than 30 hours or more, in order to ensure an historically consistent time series from the 1950s to the mid 1990s.²⁶ Although focusing on men and women aged 45 or more, he also provided some analysis of younger people. His analysis graphically highlights not only the loss of full-time jobs for men over the period studied but also the steady upward growth in female participation until the 1990s. He suggests that for women in some of the prime-working-age groups a peak of around 60 percent in full-time work had been reached in the 1991 census and participation rates declined through to 1996. Overall, the paper suggests that there has been a rapid decline in employment for New Zealanders, particularly for full-time workers aged over 45. These conclusions, particularly media interpretations that work is vanishing for those 45 and over, are problematic.

First, Thomson's own data show an increase in participation in full-time work between 1991 and 1996 for those women aged 50-64 and only a slight decline for those women aged 45-49. For men, there were declines in the 45-59 age groups, but a rise between 1991 and 1996 in participation in the 60-64 age group. Second, the way of calculating employment participation rates has an important impact on his trends. To derive these rates Thomson counts the number of people who stated their hours of work and divides this by the total population.²⁷ This means the numerous non-respondents to the hours of work question in the 1996 census are all counted as not being in work.²⁸ For women in the 45-49 age group, removing non-respondents from the total reverses his downward trend from 1991 to 1996. In addition, his strong declines in the 35-44 age groups become much weaker. The data with the not-specified group removed suggest a plateauing of participation of women in the younger age groups and continuing increases in the older age groups in the period 1991 to 1996. For men, removing the not-specified groups significantly reduces the decline in the 45-54 age groups, and turns the 55-64 trend into a slight rise. These changes are also more in line with a plateauing of participation rates.

The trends can be seen more clearly using data from the Household Labour Force Survey. Tables 34 and 35 show the proportion of men and women in each age group whose usual hours of work were 20 or more per week from the December quarter 1985 to December 1999. For men they show a rapid decline in employment in the late 1980s and early 1990s. However, in most age groups this decline halted and in some there was slight growth in employment. The 60-64 age group stands out with a higher percentage of men in this age group in full-time work in the late 1990s than the mid 1980s. For women the pattern is more complex, with some age groups showing no decline over the late 1980s and early 1990s. In some age groups full-time employment rates were higher at the end of the 1990s than in the mid 1980s (25-29, 30-34, 45-64), while in others they were lower or at a similar level (20-24, 35-39, 65+).

When men and women are combined (Table 36) the table shows that there was a large decline in full-time employment rates for those aged 20-24, some decline in many of the other age groups, but slight rises in the 45-49 and 50-54 age groups. However, the rise was stronger in the 60-64 age group. Again, this table does not support the idea that full-time work is rapidly disappearing for older workers.

²⁶ The advantage of the census is that it includes people living in non-private dwellings.

²⁷ Thomson's rationale was that he was interested in how many people could affirm that they did have a full-time job. He assumed that in general those who could not say yes or no were likely not to be in full-time employment (personal communications 2000).

²⁸ In previous censuses the non-response rate was very low so had a negligible effect on calculations. The primary reason for the high non-response rate in 1996 seems not to be changes in work but instead poor questionnaire design.

Table 34 – Percentage of men working 20 or more hours per week, December quarters 1985-1999

	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
1985	83.9	91.4	90.9	92.4	94.1	91.2	87.9	83.5	40.8	11.2
1986	85.4	90.8	92.5	93.5	93.6	92.2	89.6	82.1	34.6	10.3
1987	84.4	89.7	89.7	91.9	94.5	90.2	88.1	78.3	36.5	9.9
1988	76.0	84.5	89.0	89.6	90.2	92.6	87.0	73.2	31.6	7.4
1989	76.3	81.7	86.8	86.8	89.8	89.0	84.7	72.5	29.2	7.3
1990	71.6	83.0	83.6	86.5	86.7	87.2	83.4	69.7	26.9	6.9
1991	63.4	78.0	80.7	84.4	86.9	83.5	81.7	69.8	27.3	7.1
1992	64.6	79.9	81.1	82.9	85.4	87.3	79.2	68.0	28.0	6.2
1993	68.5	80.3	82.2	84.5	85.7	86.0	79.3	69.5	32.1	7.0
1994	69.1	82.6	85.7	83.3	85.6	87.3	82.1	74.0	39.2	6.7
1995	71.5	84.7	87.0	85.0	86.0	86.5	84.2	74.7	41.3	6.8
1996	72.3	82.5	86.2	86.1	86.2	86.5	81.8	73.6	45.5	7.4
1997	68.8	83.8	82.2	85.7	86.0	85.3	83.6	73.3	44.2	6.7
1998	62.5	81.4	83.0	84.7	84.3	85.3	82.6	71.8	47.4	6.1
1999	67.0	83.2	83.2	83.0	84.4	86.7	83.0	73.6	47.9	7.5

Source: Data derived from Household Labour Force Survey, Statistics New Zealand

Table 35 – Percentage of women working 20 or more hours per week, December quarters 1985-1999

	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
1985	66.0	49.6	43.8	55.1	60.6	57.4	46.1	38.2	12.6	3.9
1986	66.7	44.9	44.9	54.9	61.0	59.2	47.9	33.6	14.8	2.2
1987	64.2	49.2	44.4	54.7	64.4	64.0	54.1	35.3	12.0	2.1
1988	57.9	46.1	42.8	49.2	62.2	61.2	52.8	32.5	8.8	2.1
1989	57.5	47.4	42.0	52.9	61.8	61.5	53.5	33.4	8.3	2.0
1990	57.6	45.9	41.5	52.5	61.9	62.6	52.0	31.7	8.8	2.0
1991	54.4	44.7	40.3	51.3	61.6	61.4	49.9	36.2	10.6	1.7
1992	54.8	47.0	41.3	51.7	59.0	66.6	50.3	34.3	9.6	1.2
1993	54.1	50.4	43.4	51.2	58.2	62.3	53.3	31.6	14.6	1.1
1994	55.6	54.4	44.0	48.6	60.0	65.1	56.7	36.3	16.2	1.8
1995	58.5	55.1	44.6	51.3	57.5	65.6	60.8	42.4	17.4	1.6
1996	55.6	56.2	47.9	52.7	58.9	63.0	61.4	41.0	20.4	1.7
1997	53.8	53.7	45.9	49.5	59.1	64.6	60.1	41.1	19.7	1.6
1998	51.0	54.5	45.0	48.7	60.0	63.6	61.3	42.2	21.8	1.6
1999	49.7	56.6	49.4	53.4	61.8	66.8	56.1	42.2	21.5	1.9

Source: Data derived from Household Labour Force Survey, Statistics New Zealand

Table 36 – Percentage of total working 20 or more hours per week, December quarters 1985-1999

	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
1985	74.9	70.2	67.1	73.6	77.3	74.3	67.2	61.3	26.4	7.0
1986	76.1	67.5	68.2	74.0	77.3	75.8	68.9	58.3	24.5	5.7
1987	74.4	69.0	66.6	73.1	79.4	77.1	71.2	57.1	24.2	5.4
1988	67.0	64.8	65.4	69.2	76.1	76.9	70.0	53.0	20.1	4.4
1989	66.9	64.1	63.9	69.6	75.8	75.3	69.2	53.0	18.8	4.3
1990	64.7	63.9	62.0	69.3	74.3	74.9	67.7	50.8	17.9	4.1
1991	58.9	60.8	60.0	67.5	74.2	72.4	65.7	53.0	19.0	4.0
1992	59.7	63.0	60.6	66.9	72.1	77.0	64.7	51.1	18.8	3.4
1993	61.2	65.0	62.3	67.5	71.9	74.1	66.3	50.5	23.4	3.7
1994	62.3	68.1	64.2	65.6	72.7	76.2	69.4	55.0	27.6	4.0
1995	65.0	69.4	65.1	67.8	71.6	76.0	72.5	58.5	29.3	3.9
1996	63.9	68.9	66.5	69.0	72.3	74.8	71.7	57.2	32.9	4.2
1997	61.2	68.3	63.4	67.1	72.3	74.9	71.9	57.1	31.8	3.9
1998	56.7	67.5	63.3	66.2	71.8	74.4	71.9	57.0	34.5	3.6
1999	58.5	69.4	65.5	67.8	72.9	76.6	69.5	57.8	34.5	4.4

Source: Data derived from Household Labour Force Survey, Statistics New Zealand

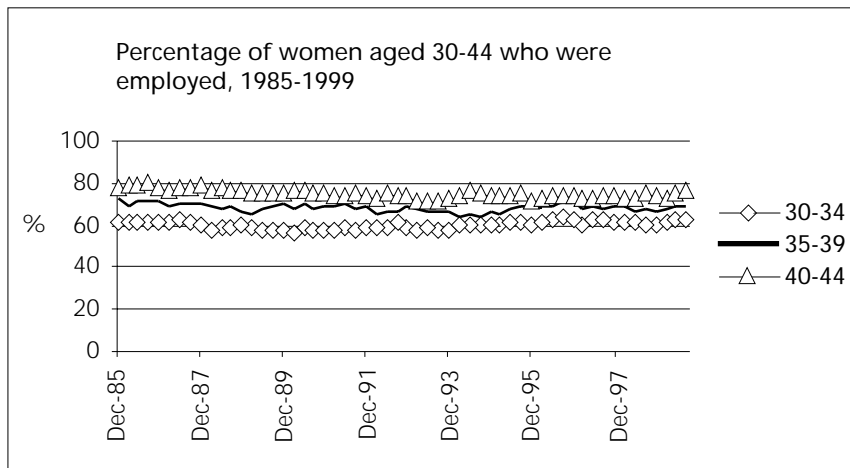
Appendix 2

Figure 13



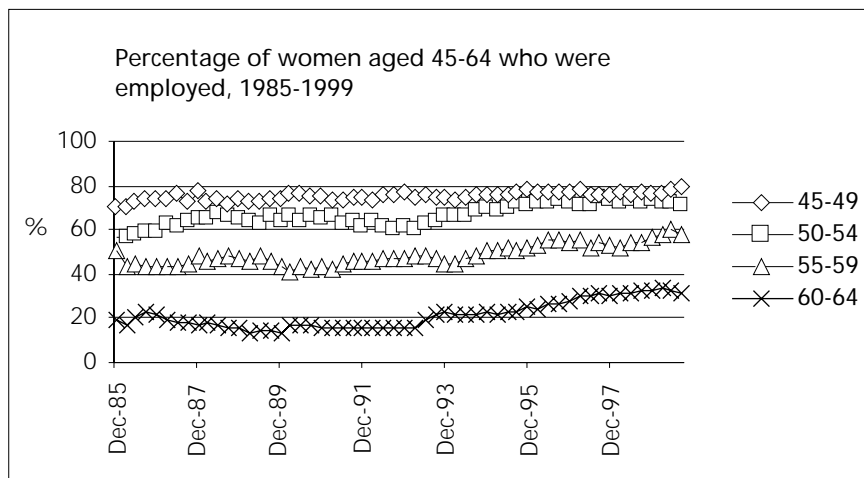
Source: Data derived from Household Labour Force Survey, Statistics New Zealand

Figure 14



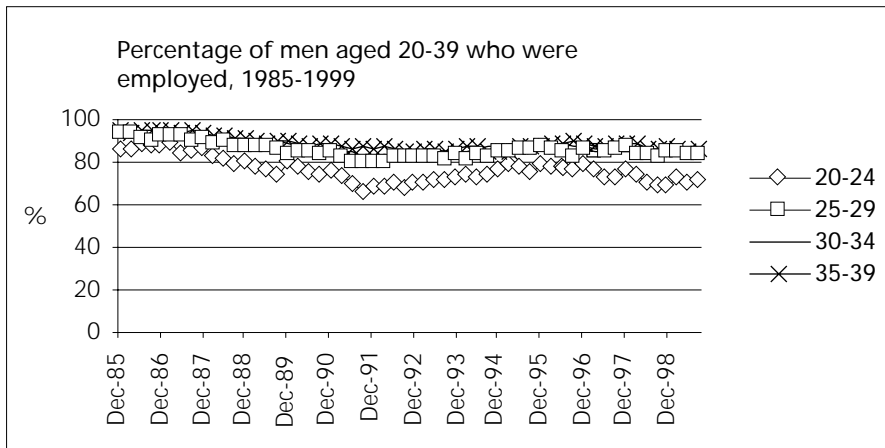
Source: Data derived from Household Labour Force Survey, Statistics New Zealand

Figure 15



Source: Data derived from Household Labour Force Survey, Statistics New Zealand

Figure 16



Source: Data derived from Household Labour Force Survey, Statistics New Zealand

Figure 17



Source: Data derived from Household Labour Force Survey, Statistics New Zealand

Appendix 3

Maori demographic projections

The changing proportion of Maori within the total population is affected by projected differences in birth rates and death rates and by assumptions on inter-ethnic mobility. These complex influences are not easily summarised but the following points can be made, with reference to Statistics New Zealand projections for the year 2051.

The projected birth rate per thousand of population is 18.7 for Maori and 10.0 for the total population. Three elements contribute to this difference. First, projected lifetime births to Maori mothers are somewhat higher than for the total population, 2.1 as compared with 1.85. Secondly, the younger Maori age structure increases the proportion of the population of childbearing age. Thirdly, Maori births include an allowance for births where the mother is non-Maori and the father is Maori. In approximate terms, about 20 percent of the difference in birth rates reflects differences in fertility, about 30 percent stems from differences in age structure and about half flows from the inclusion of births where the mother is non-Maori and the father is Maori.

The projected death rate per thousand of population is 8.3 for Maori and 12.5 for the total population. In this case the Maori rate is below that of the total population because the effect of a lower age structure more than outweighs the effect of lower life expectancy at birth.

The higher projected Maori birth rate and the lower projected Maori death rate each act to increase the proportion of Maori within the total population. This combined effect is projected to be offset to a degree by an assumption that the net effect of persons changing their ethnic group will be to reduce the Maori population by about 3.3 persons per thousand. It should be noted that if this change does not take place the proportion of the population who are classified as Maori will be higher over the next 50 years.

Finally, it is important to note that the Statistics New Zealand projections (assuming medium fertility, medium mortality and long-term net immigration of 5,000 per annum) imply that the total New Zealand population will be declining slightly by the end of the projection period.

Appendix 4

1997 Income data ex Statistics New Zealand

Age	Average income by source per person in age group \$													Demographics	
	Males						Females						2051 MM5M		
	Salary and wages Emp	Business income Emp	Other market income Pop	Income-tested benefits Pop	New Zealand Super Pop	Tax payable and wages Emp	Salary and wages Emp	Business income Emp	Other market income Pop	Income-tested benefits Pop	New Zealand Super Pop	Tax payable Pop	Males Pop	Female Pop	
0-4												115.7	110.1		
5-10												118.4	112.3		
10-14												123.0	116.1		
15-19	8,165	174	292	691	0	7,388	58	282	943	0	0.165	129.3	120.9		
20-24	21,693	1,079	435	1,463	0	19,385	345	358	2,398	0	0.190	127.0	117.7		
25-29	30,619	2,625	565	1,498	0	27,958	1,210	493	3,137	0	0.188	124.2	119.2		
30-34	33,226	4,037	732	1,373	0	23,266	2,377	668	2,800	0	0.166	128.1	124.2		
35-39	36,578	5,968	1,309	1,267	0	21,364	2,804	1,007	2,308	0	0.159	128.5	124.7		
40-44	36,588	6,483	1,893	1,012	0	22,492	3,052	1,322	1,821	0	0.172	132.1	128.3		
45-49	35,825	7,356	2,967	956	0	21,616	2,472	1,970	1,197	54	0.178	139.6	135.5		
50-54	36,182	6,744	3,425	1,081	0	21,933	2,926	2,488	1,437	165	0.163	146.5	142.7		
55-59	32,416	6,562	4,104	1,319	66	20,882	2,847	3,246	1,736	663	0.131	146.9	142.4		
60-64	26,525	7,735	5,141	1,464	2,873	18,275	3,445	3,885	1,384	4,439	0.101	144.5	143.2		
65-69	11,441	7,587	4,660	76	9,164	9,094	4,478	3,605	144	9,790	0.101	123.0	125.0		
70-74	9,862	6,839	4,638	85	10,150	6,137	7,033	3,687	40	10,479	0.090	110.8	119.8		
75-79	8,466	7,504	5,158	97	10,018	4,657	7,152	4,368	0	10,387	0.067	100.7	121.1		
80-84	3,935	8,703	6,569	0	9,999	5,838	5,747	5,714	0	9,974	0.030	81.6	108.0		
85-89	0	0	6,327	0	9,626	0	0	5,569	0	10,400	0.038	55.9	82.7		
90-94	0	0	7,488	0	11,571	-0.017	0	7,588	0	10,429	0.038	29.0	49.0		
95-99	0	0	0	0	15,807	0.113	0	7,555	0	11,190	-0.005	9.9	19.4		
100+												2.7	6.3		
Total												2,217	2,269		

1996 Base Demographics (000s)

	Labour force			Employment		
	Male	Female	Total	Male	Female	Total
15-19	85.2	77.3	162.4	69.9	61.0	130.8
20-24	103.1	87.0	190.1	91.3	76.3	167.6
25-29	109.0	88.6	197.6	100.4	80.4	180.7
30-34	113.6	89.5	203.1	106.1	82.0	188.1
35-39	114.6	90.9	205.5	108.1	84.7	192.8
40-44	118.5	98.5	217.0	112.5	93.2	205.7
45-49	125.0	110.1	235.1	119.3	105.1	224.3
50-54	128.1	114.2	242.3	122.5	109.5	232.0
55-59	123.1	91.8	215.0	116.9	88.1	205.2
60-64	87.6	62.7	150.4	84.2	60.4	144.7
65-69	32.1	14.2	46.3	31.5	13.9	45.4
70-74	15.3	6.1	21.4	15.0	6.0	21.0
75-79	8.6	3.7	12.2	8.4	3.6	12.0
80-84	7.7	2.1	9.8	7.6	2.1	9.6
Total	1,171.0	937.0	2,108.0	1,093.7	866.4	1,959.9

Aggregate incomes by source – 2051 MM\$M

	Aggregate income by source per person in age group													
	Males						Females							
	Salary and wages	Business income	Other market income	Income-tested benefits	New Zealand Super	Total income	Tax payable	Salary and wages	Business income	Other market income	Income-tested benefits	New Zealand Super	Total income	Tax payable
15-19	571	12	38	89	0	710	127	451	4	34	114	0	603	99
20-24	1,982	99	55	186	0	2,321	481	1,478	26	42	282	0	1,829	348
25-29	3,073	263	70	186	0	3,593	801	2,248	97	59	374	0	2,778	523
30-34	3,524	428	94	176	0	4,222	992	1,909	195	83	348	0	2,535	421
35-39	3,954	645	168	163	0	4,930	1,167	1,810	238	126	288	0	2,462	391
40-44	4,116	729	250	134	0	5,229	1,249	2,097	284	170	234	0	2,784	478
45-49	4,272	877	414	134	0	5,697	1,351	2,271	260	267	162	7	2,967	528
50-54	4,432	826	502	158	0	5,918	1,337	2,402	320	355	205	24	3,306	539
55-59	3,791	767	603	194	10	5,365	1,106	1,841	251	462	247	94	2,895	379
60-64	2,233	651	743	212	415	4,254	773	1,105	208	556	198	636	2,703	272
65-69	360	239	573	9	1,127	2,309	331	126	62	451	18	1,224	1,881	191
70-74	148	103	514	9	1,125	1,899	212	37	42	442	5	1,255	1,780	160
75-79	71	63	519	10	1,009	1,673	121	17	26	529	0	1,258	1,830	123
80-84	30	66	536	0	816	1,447	53	12	12	617	0	1,077	1,718	51
85-89	0	0	354	0	538	892	28	0	0	461	0	860	1,321	50
90-94	0	0	217	0	336	553	-9	0	0	372	0	511	883	34
95-99	0	0	0	0	156	156	18	0	0	147	0	217	364	-2
Total	32,558	5,770	5,651	1,660	5,532	51,169	10,137	17,804	2,026	5,171	2475	7,163	34,639	4,586

Aggregate incomes by source – 2051 MM5M

Age	Males and females				S million		
	Salary and wages	Business income	Other market income	Income-tested benefits	New Zealand Super	Total income	Tax payable
0-4							
5-10							
10-14							
15-19	1,022	16	72	203	0	1,313	226
20-24	3,460	125	97	468	0	4,150	829
25-29	5,321	361	129	560	0	6,371	1,324
30-34	5,433	623	177	524	0	6,756	1,412
35-39	5,765	883	294	451	0	7,392	1,557
40-44	6,213	1,014	420	367	0	8,014	1,727
45-49	6,543	1,137	681	296	7	8,664	1,879
50-54	6,834	1,147	857	363	24	9,225	1,876
55-59	5,632	1,018	1,065	441	104	8,260	1,485
60-64	3,338	860	1,299	410	1,051	6,957	1,045
65-69	487	301	1,024	27	2,351	4,190	522
70-74	185	145	956	14	2,380	3,679	372
75-79	88	89	1,048	10	2,267	3,502	244
80-84	42	78	1,153	0	1,893	3,166	105
85-89	0	0	814	0	1,398	2,212	78
90-94	0	0	589	0	847	1,436	25
95-99	0	0	147	0	374	520	16
100+	0	0	0	0	0	0	0
Total	50,362	7,795	10,822	4,134	12,695	85,808	14,723

Note: These totals appear in column 3 in Table 30

Demographic assumptions for 2051 MM5M

Age	Unemployment rate – 2051 (= 1996 default)			Participation rate – 2051 (as per demographic projections)		
	Male	Female	Total	Male	Female	Total
15-19	0.18	0.21	0.19	65.9	63.9	64.9
20-24	0.11	0.12	0.12	81.2	73.9	77.7
25-29	0.08	0.09	0.09	87.8	74.3	81.2
30-34	0.07	0.08	0.07	88.7	72.1	80.5
35-39	0.06	0.07	0.06	89.2	72.9	81.2
40-44	0.05	0.05	0.05	89.7	76.8	83.3
45-49	0.05	0.05	0.05	89.5	81.3	85.5
50-54	0.04	0.04	0.04	87.4	80.0	83.8
55-59	0.05	0.04	0.05	83.8	64.5	74.3
60-64	0.04	0.04	0.04	60.6	43.8	52.3
65-69	0.02	0.02	0.02	26.1	11.4	18.7
70-74	0.02	0.02	0.02	13.8	5.1	9.3
75-79	0.02	0.02	0.02	8.5	3.1	5.5
80-84	0.02	0.02	0.02	9.4	1.9	5.2

Notes