The Impacts of Ageing on Industry

Submission to Productivity Commission Research Study
Economic Implications of an Ageing Australia

Department of Industry, Tourism and Resources
October 2004

Contents

Executive Summary

The future challenges posed by the ageing of the Australian population were first brought to prominence in the Intergenerational Report published by the Treasury Department as 2002-03 Budget Paper No. 5. Since that time the issues raised in that report have been broadened and have been receiving a good deal more attention.

The Productivity Commission research study into "The Economic Implications of an Ageing Australia" provides the Department of Industry, Tourism and Resources (ITR) with an opportunity to highlight some of the key issues and possible implications of an ageing Australia for those industries of particular interest to the ITR portfolio. In making this submission, ITR recognises that at this stage it is able to do little more than initiate a brief exploratory investigation of some of the potential industry specific challenges that could be expected to arise in this area, but in so doing hopes to identify key areas for further work.

The submission highlights the importance of considering both the future demand for labour by industry as well as the supply available, and the demographic characteristics and skills issues associated with that supply. The key findings in this submission are:

- Age profiles vary considerably across industries with agriculture and manufacturing exhibiting more significant ageing, while retail trade and accommodation, cafes and restaurants exhibit the least.

- The growth in the share of employees aged 45 years and older is also highest in agriculture and manufacturing.

- The characteristics on which key differences between industries turn are measures of labour intensity, that is, hours worked per unit of value added, and the share of the industry in total value added. These two characteristics taken together suggest that manufacturing, retail trade and construction have the propensity to be most affected by an ageing workforce.

- Employment projections suggest that construction; retail; accommodation, cafes and restaurants; and cultural and recreational services can be expected to be labour hungry growth industries.

- Moreover, the accommodation, cafes and restaurants, and the cultural and recreational industries exhibit low labour productivity growth, suggesting the potential of some special challenges in a tightening labour market environment.

- However, these labour hungry industries also display relatively high levels of part-time and female employment, two characteristics which may indicate a potential to raise labour input through lifting average hours worked by existing employees.

- The potential to increase hours worked by this segment of the workforce will be determined in part by the extent of any disincentives arising from the interaction between the welfare and tax systems, as well as by the level and range of employer sanctioned workplace flexibility.

- Most industries will, regardless of the challenges of ageing, be seeking out more highly skilled workers to maintain their competitive positions. However, as the ageing of the population puts increasing pressure on the need for still higher labour productivity, education and skills will become a still more important means of complementing the declining growth in the numbers in the workforce.

- In summary, the data available indicate that industries will face a number of challenges if they are to adjust to the reduction in labour force growth caused by the ageing of the labour force. Of course, much more detailed analysis is needed before firm assessments of industry impacts can be reached. The analysis does, however, suggest that consideration of different industry impacts of ageing population may be relevant to the assessment of the implications of changing demographics.

Introduction

This submission explores some of the key challenges facing Australian industries as a result of the ageing of the population and the consequent reduction in the rate of growth of the labour force. The industry coverage extends across the four main sectors of the economy, namely agriculture, mining, manufacturing and services, but the key focus is on the latter three. For services there is a particular focus on those industries related to the ITR portfolio, namely: Electricity, gas and water; Construction, Retail trade, Accommodation, cafes and restaurants and Cultural and recreational services.

This submission looks at the impact an ageing workforce could have on industries, attempts to identify issues that industry might face in the coming decades and assesses, in very broad terms, the potential capacities of different industries to deal with these issues. It does not prescribe policy solutions but rather raises issues that need to be taken into account when the impending labour supply problem is being considered.

The submission has three main parts. The first provides an overview of the issues and outlines the current demographic profiles of the major Australian industries. These profiles differ between industries, sometimes significantly, which suggests that responses and the timing of these responses to ageing, which might be appropriate for one industry might well not be so for other industries. While Section 1 looks at the present situation, Section 2 explores the growth challenges that might be faced by particular industries as a result of the prospective impact of ageing. A growth accounting framework is employed to aid systematic consideration of the issues. In Section 3 the information in Section 2 is combined with the industry demographic information in Section 1 to draw some broad conclusions about which industries are likely to face the greatest challenges from ageing of the workforce and what sort of challenges these might be.

1. Ageing in Australia and Australian Industry

It is well known that the workforce as a whole is ageing and that this will lead to a reduction in the rate of growth of the labour force. The Treasury's Intergenerational Report (Commonwealth of Australia, 2002) and subsequent reports drew attention to the need for policy changes to maintain economic growth in the face of the ageing population by increasing labour force participation and productivity. These reports, and the accompanying debate, concentrated on the fiscal impacts of demographic change. While the fiscal impacts are important, there are also impacts on the labour supply, with associated implications for economic growth.

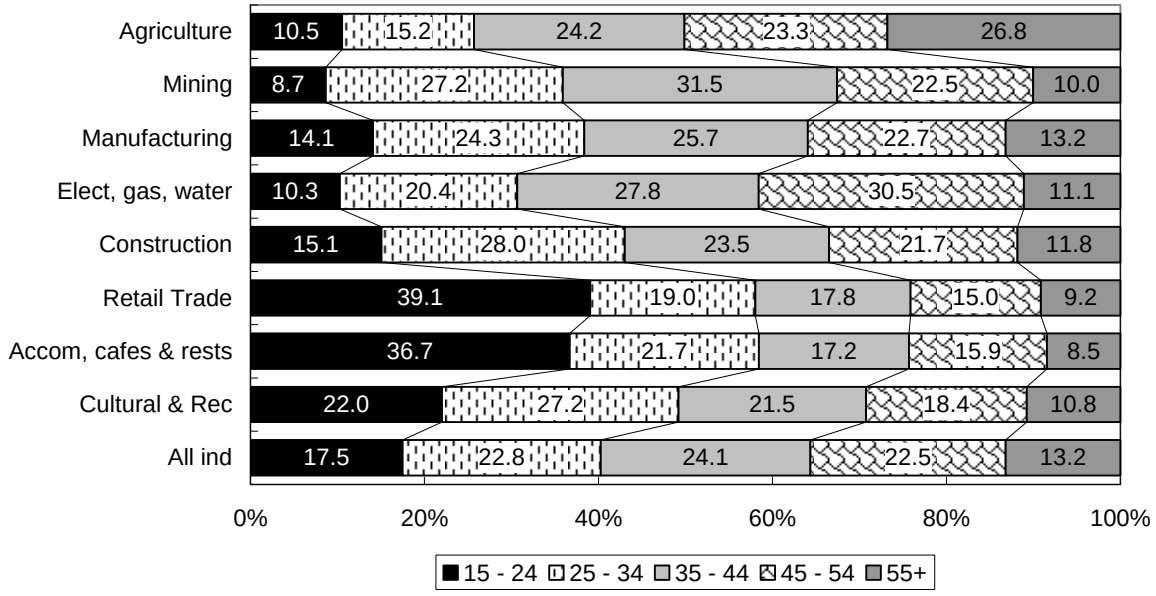
Approaches industry might take to deal with the predicted reduction in labour force growth range from encouraging older workers to participate more fully in the workforce through such measures as more flexible working hours or increased training, to those that raise the productivity of the existing workforce through, for example, increased use of skilled labour and capital equipment. Also important is the ability of employers to attract new, younger employees to replace older workers as they retire. The most appropriate approach will depend on the demographic and other characteristics of the industry concerned.

The potential for the impact of ageing on Australian industry to vary among industries is shown in the changing age profiles of Australian industries outlined below.

1.1 Age profiles of employees

Figure 1 shows the age profile of selected industries, based on August 2004 quarterly data from the ABS Labour Force Survey. The most striking feature to emerge from these graphs is the relatively high proportion of young workers in Retail trade; Accommodation, cafes and restaurants; and Cultural and recreational services industries, especially compared with Agriculture, and Electricity gas and water.

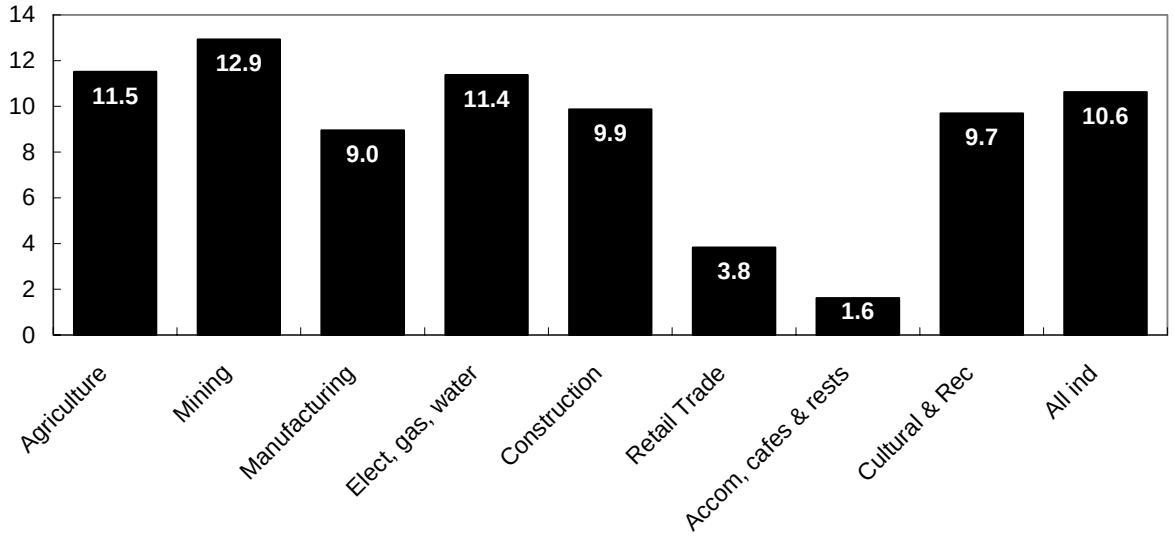
Figure 1: Age profile of selected industries (% of industry), Aug 04



Source: ABS Labour Force Survey Cat No: 6291.0.55.001

Figure 2 shows the change in the share of employees, aged 45 years and older, for selected industry sectors over the period 1985-2004. It indicates that the workforce in Mining (12.9 percentage points), Agriculture (11.5 percentage points) and Electricity, gas and water (11.4 percentage points) has been ageing at relatively faster rates than All industries on average (10.6 percentage points). In contrast, the increase in the shares of mature age workers in Accommodation, cafes and restaurants (1.6 percentage points) and Retail trade (3.8 percentage points) has been significantly slower than for All industries on average.

Figure 2: Change in share of employees (percentage point), aged 45 years and older, selected industry sectors: Aug 85 – Aug 04



Source: ABS Labour Force Survey Cat No: 6291.0.55.001

1.2 Supporting labour input growth

The ageing of the population and the workforce means that a key issue facing industry in coming decades is the prospect of a reduction in the rate of growth of labour services. Variations in the future supply of labour can be considered under two headings: variations in the supply of domestic labour services, and variations in the quality and productivity of labour. These two dimensions lead to a number of factors that will influence the types of adjustments that will need to be made by industry as growth of the labour force declines. These factors are considered in turn.

1.2.1 The quantity of labour in Australia

Anticipated declines in the rate of growth of the labour force might be offset to some extent by attempts to increase the intensity of use of the labour supply in Australia. There are two broad areas where this might occur.

Participation rates

Increases in the labour supply could be achieved through increasing participation in the labour force by a greater proportion of the population. This notion has two dimensions. Firstly, the number of people participating in the labour force could be increased. Secondly, the number of hours worked by those already in the labour force could be increased.

Those who are not presently in the labour force but who could potentially be induced to join includes people on welfare, parents who choose to remain at home to care for their children, and retired people. While many of these people, such as those with a chronic disability or who are caring for young children or the elderly, are outside the workforce for good reasons there would seem to be scope to encourage some back into the workforce, at least on a part-time basis.

For those already in the labour force, increasing hours worked could be accomplished by a fall in the level of unemployment. It might also be accomplished by allowing those who wish to work more hours to do so and by encouraging those who at present do not wish to work longer hours to consider doing so. ABS (2004) data indicate that about 26 per cent of part time employees would

prefer to work for more hours. Many people with a marginal attachment to the workforce are also receiving income support from the government. A question that arises here is the extent to which the interaction of the tax system and the welfare system is influencing the decisions of these people to remain only marginally attached.

The increase in part-time and casual jobs available in some industries provides a means by which increased participation for all these groups might be achieved. However, the availability of part-time and casual work is likely to vary between industries. In some, such as retailing, flexible working arrangements might be more feasible than in certain of the more traditional manufacturing industries where fixed hours of work are the norm. The question remains whether the industries that appear to be at greatest risk from the pressures of an ageing workforce will be the same industries that can best accommodate the flexible working arrangements that might be sought by those who wish to join or increase their participation in the labour force.

Deferred retirement

Encouraging employees to defer retirement is another means of decreasing the reduction in labour force growth. Figures showing the age profile of Australian industries demonstrate that the proportion of older employees and the growth in that proportion differ markedly between industries. An older workforce need not be a problem if these workers can be readily replaced as they retire. For some industries this could well be the case but for others where, for example, the older workers have specialised skills, where the employment is located away from a ready source of replacement labour, or where working conditions are relatively unattractive or wages are low, finding replacements for retiring employees could prove difficult without changes being made by employers and/or through some targeted public policy initiatives. Examples of possible areas where changes might occur include encouraging retired employees to work part-time and increasing the training of the remaining employees

In addition, immigration allows labour inputs to be increased through an increase in the labour supply. The present immigration program provides a relatively small addition to the total labour force but its emphasis on migrants with skills in short supply means that it is focussed on areas under most pressure.

1.2.2 The quality and productivity of the workforce

A second way the declining growth of the labour force might be offset is by an increase in the quality of the existing supply of labour in Australia. There are several avenues through which this might occur.

Education and skills

Education and training can affect both participation in the workforce and the productivity of the workforce. In general, more highly skilled employees find it easier to find employment and to adapt to changing working conditions than those without skills. Increased training of older workers might be a means for industries facing impending labour shortages to encourage their employees to remain in the workforce beyond the normal retirement age. Increased training might also allow younger employees to more easily take over the work of retiring employees.

This generalisation is not always equally true. Some skills and some employees might be so specialised that they are less likely to be able to adjust to change. Again, the situation is likely to vary between industries.

Production technologies

Advances in ICT have provided great scope for labour productivity increases in the past. Pressure arising from reductions in labour force growth can be expected to encourage firms to explore how ICT can continue to be used to improve productivity. These productivity increases have occurred not only with the greater use of ICT equipment such as desk top computers. Advances in ICT have allowed all aspects of the operations of many firms to be changed in ways that have enhanced labour productivity. Management processes, production processes and layout of factories, inventory control and relationships with customers and suppliers have all benefited from the use of ICT. Continued improvement can be expected in all these areas, although the rate of improvement will, as it has in the past, vary between industries and between firms within the same industry.

Innovation and technological change unrelated to ICT can also be expected to occur as labour becomes relatively more expensive. So too will greater investment in capital equipment where firms seek to substitute capital for labour.

All these issues will affect different industries in different ways. The next section explores some possible future impacts of ageing on different industries by looking at the growth challenges that might be faced by particular industries of interest to the ITR portfolio.

2. Industry Employment and Aggregate Economic Growth

2.1 A growth accounting framework

This section seeks to identify some of the key industry-based impacts in relation to the impact of an ageing population on economic growth.

The rate of growth in aggregate value added of the industries of interest can be expressed as the share-weighted-sum of the rates of growth of value added for each of the industries making up that aggregate. In turn, the rate of growth of value added in each industry can be expressed as the weighted average of growth in labour and capital services inputs plus multifactor productivity growth:

$$TVA^* = SUM \{SVA(i)[SK(i)K(i)^* + SL(i)L(i)^* + MFP^*]\}$$

where TVA is aggregate value added, SVA is share of value added, SK is capital cost share and SL is labour cost share, K and L are capital and labour inputs respectively, MFP is multifactor productivity, and * indicates growth rate. The SUM is taken over all relevant industries, ‘i’.

This formulation of aggregate growth aids systematic industry-based consideration of the factors of importance to growth arising from a prospective tightening of supply in labour markets, as well as alternative sources of economic growth such as MFP. First, it is clear that those industries contributing relatively large shares of aggregate value added are potentially of importance to the aggregate. Second, but in combination with the preceding, are those industries which other indicators suggest may suffer a relatively large labour supply shortage, and the more so the more labour intensive the production technology of such industries (ie the larger the labour cost share).

Thus, to identify industries through which ageing might be more likely to have a direct significant impact on aggregate growth we need first to consider those for which the product of their value added share and their labour cost share is relatively large. We need then to investigate the extent to

which other demographic evidence suggests that ageing is likely to impact upon the growth in labour services input for these industries.

Our considerations in this regard should focus on the likely position of different industries in respect of the indicator characteristics in years to come rather than simply on their past or present positions. In this regard we endeavour where possible to use simple trends as a guide to the expected position of industries in years to come.

It needs to be explicitly recognised here that there are also other potential impacts of ageing that work on aggregate growth in possibly less direct ways. For example, as the national demographic profile moves towards a greater proportion of retirees, there may be a reduction in the rate of national savings; a phenomenon which might be expected to manifest itself in other similarly affected economies. Changes in the demand and supply characteristics of the labour market could also have an impact on the cost of labour through variations in wages. However, this submission focuses on the indicative direct impacts of ageing and other key demographic developments on different industries in Australia.

2.2 Industry growth implications of the direct influence of ageing on the supply of labour

Table 1 below provides some indicators of labour usage and intensity by industry. The product of hours worked per unit of value added (an index of labour intensity) and the share of aggregate value added for these industries provides a first indication of the potential importance of the various industries in the aggregate impact of prospective labour supply pressures. This product is shown in the rightmost column of the table. On this basis, the highest propensity industries are Manufacturing, Retail and Construction. The lowest are Electricity gas and water, and Mining.

However, as indicated earlier, it is the prospective rather than current position of these industries that will matter. Accurate employment projections for individual industries are extremely difficult to calculate and ITR is unaware of any industry employment projections covering the next 10 to 20 years. The Department of Employment and Workplace Relations (DEWR) has recently published projections for industry job growth to 2010-11 (DEWR 2004). On the basis that the growth rates used by DEWR carry on for another ten years we can conclude that employment growth among the industries we are interested in will be greatest in the service industries of Accommodation, cafes and restaurants, Cultural and recreational services and Retail trade. The projected employment growth for each industry is shown in Table 2.

Table 1: Employment numbers, labour intensity and share of value added by industry

Industry	Employment [a] (2002-03)	Hours worked[a] per unit of gross value added (2002-03) (A)	Share of total gross value-added[c] (2002-03) (B)	Hrs worked per value added x share of value added (A) x (B)
	000	Index[b]	%	
Agriculture, forestry and fishing	377	135	8.2	1 107
Mining	88	21	13.0	273
Manufacturing	1 114	100	30.0	3 000
Electricity, gas and water	72	31	6.2	192
Construction	718	110	17.5	1 925
Retail trade	1 439	208	14.4	2 995
Accommodation, cafes and restaurants	453	171	5.8	992
Cultural and recreational services	241	111	4.8	533

Notes: [a]Employment and hours worked figures are aggregations of August, November, February and May quarterly labour force surveys for each fiscal year. Industry data uses actual hours worked;. [b]Index base equals 100 for manufacturing. [c]Shares of value added relate to the aggregate of the listed industries, not to economy wide value added
Sources: ABS Labour Force Survey Cat No 6291.0.55.001 (Table 11) and ABS National Accounts 5206.0 (Table 14)

Table 2 also shows that these industries have relatively low labour productivity, particularly Accommodation cafes and restaurants, and Cultural and recreational services – indeed, it is this very characteristic that appears in part to be driving the employment growth projections in the table.

Within a prospective environment of tightening labour supply, an economy that exhibits a systematic shift towards labour intensive industries that display low labour productivity growth would seem to be a cause for concern in respect of future aggregate economic growth. It is therefore worth looking a little closer at the components of labour productivity in these industries.

Table 2: Employment growth projections and labour productivity

Industry	Employment in 2002-03	DEWR's projected employment growth to 2010-11	Estimates of recent labour force productivity growth
	('000)	%	%
Agriculture, forestry and fishing	377	0.5	2.4
Mining	88	-0.5	3.2
Manufacturing	1 114	-0.4	3.1
Electricity, Gas and Water	72	-1.1	1.5
Construction	718	1.6	1.7
Retail trade	1 439	2.0	1.3
Accommodation, cafes and restaurants	453	2.4	-0.2
Cultural and recreational services	241	2.2	-0.8
All industries	9 378		

Sources: DEWR (2004, p3), Productivity estimates are based on PC, industry productivity estimates data accessed from http://www.pc.gov.au/work/productivity/performance/industry.html on 24 September 2004

2.3 Some labour productivity issues

Labour productivity can be expressed as the sum of capital deepening (essentially the rate of growth in the capital to labour ratio) and multifactor productivity (MFP) growth. Thus improvements in labour productivity within an industry can arise in two distinct ways. First, innovations (MFP growth) in upstream capital design and producing industries which allow for labour saving increases in the capital to labour ratio in the downstream industry result in capital deepening and hence labour productivity growth. Alternatively, improvements in labour productivity can arise from innovations within the focus industry itself – that is, from the focus industry's own MFP growth.

Table 3 provides a breakdown of labour productivity into these two components (capital deepening and MFP growth). The table shows that to date at least, capital deepening has been a strong contributor to labour productivity in Cultural and recreational services industries (averaging 1.7% per year) but very much less so some other industries, where it has contributed at only around one third that rate. This is not surprising in particular for the Retail and the Accommodation cafes and restaurants industries where Table 1 shows very high relative labour intensity, which suggests not much scope for enhancing labour productivity through capital-based embodied technological change. Should this trend continue, capital deepening would appear to be an unlikely source of labour productivity improvements for these two industries.

Table 1 also shows the Construction and the Agriculture forestry and fishing industries to have quite high relative labour intensity though significantly less than that for the Accommodation cafes and restaurants and the Retail industries. On the basis of historical trends these two industries also appear to offer little prospective scope for capital deepening to significantly lift labour productivity growth.

Table 3: Capital deepening, multifactor and labour productivity growth by industry (average annual growth, per cent)[a]

	MFP Growth	Capital Deepening	LP Growth
Primary			
Agriculture, forestry & fishing	1.9	0.5	2.4
Mining	0.5	2.6	3.1
Manufacturing	1.6	1.5	3.1
Services			
Infrastructure industries			
Electricity, gas & water[b]	na	na	1.5
Construction	1.0	0.7	1.7
Retail	0.6	0.7	1.3
Other service industries			
Accommodation, cafes & restaurants	-0.8	0.6	-0.2
Cultural & recreational services	-2.5	1.7	-0.8

Notes: **a**Data are non-trended. Variability would be lower with trended data. **b**Consistent components of labour productivity growth for electricity, gas and water not available due to revised labour productivity growth.
Source: Cobbold and Kulys (2003) and Productivity Commission productivity data

On the basis of historical trends Agriculture forestry and fishing, and to a lesser extent Construction do seem however to offer some scope for MFP growth to enhance labour productivity growth. Indeed in certain areas of the Agriculture forestry and fishing industries Australia has a good track

record of successful innovation, in addition to having certain other obvious comparative advantages based on natural endowments.

In the Construction and Retail industries MFP growth has made a positive contribution to labour productivity growth. In the former this has probably arisen through improved management and other systems within the working environment. In the latter the significant incorporation of ICT within the retail (and wholesale) industries has offered scope for MFP growth through new innovative applications of these technologies. Certainly in respect of ICT there may well be ongoing scope for still further gains.

Accommodation cafes and restaurants, and Cultural and recreational services on the other hand have registered negative MFP growth. Such sustained negative rates of MFP growth are difficult to explain in the absence of external constraints that might force diseconomies from such phenomena as diminishing returns to scale or scope, and as such should be treated with caution. Nevertheless, the evidence is not supportive of any scope for MFP growth to support improved labour productivity in any significant way.

3. Impact of Ageing on Australia's Industries

In this section we use the information shown in the previous section to look more closely at the demographic issues outlined in Section 1. In this way we will attempt to identify more clearly the challenges facing particular industries as a result of the ageing workforce.

In section 1 the key issues for industry were grouped under two headings: the quantity and quality of labour in Australia. These two groupings are used in this section to allow us to look more closely at some of the prospective challenges facing different industries.

3.1 The quantity of labour in Australia

3.1.1 Labour force participation rates

One of the key issues for consideration in addressing labour market shortages associated with the ageing of the population is labour force participation. Participation rates can vary significantly across industries, depending on the gender, employment status, family type and welfare dependency of their employees. These variations are likely to affect, in turn, the capacity of different industries to respond to the changing labour market requirements of an ageing population. In this section, we present data detailing the nature and extent of the differences in participation rates across industries and discuss the potential implications for the capacity of different industries to respond to the labour market constraints that may emerge with the ageing of the population.

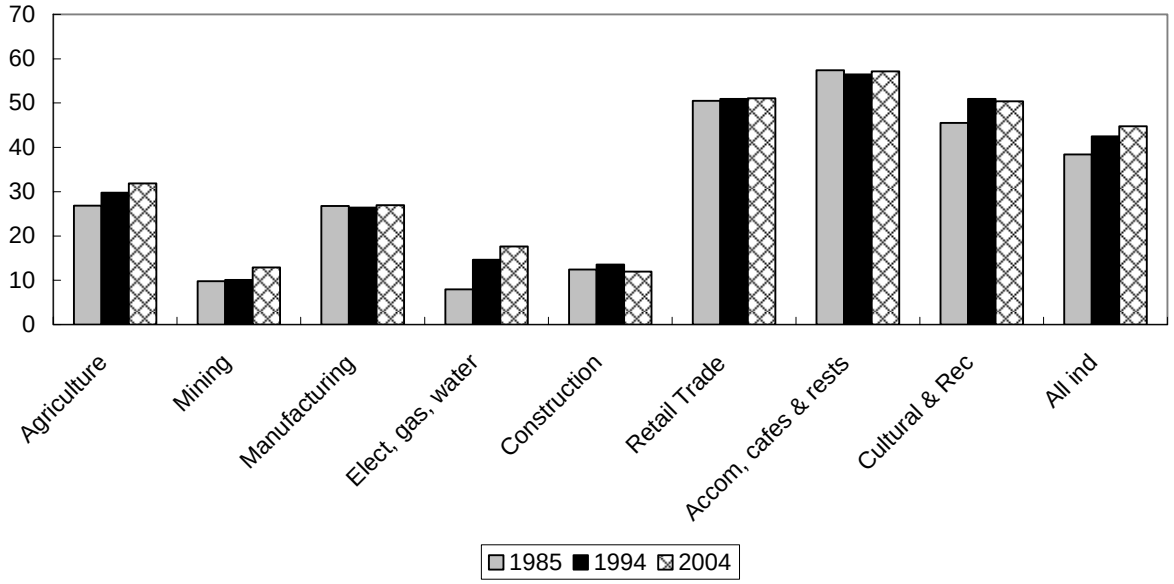
Female employees

One of the key variations in participation rates across industries is the gender of employees. As is widely recognised, the labour force participation rate of females is increasing. Data from the ABS Labour Force Survey indicates, for example, that between 1985 and 2004 the proportion of females employed across all industries increased from 38 to 45 per cent. Despite this overall increase, however, comparisons with OECD data suggest that there is scope for participation to rise further.

As Figure 3 demonstrates, the extent of female participation differs markedly across industries. It shows, in particular, that females are far less likely to be employed in the traditional industries of Mining, Construction, Electricity gas and water and Manufacturing. On the contrary, females are

far more likely to be employed in service industries, namely Retail trade; Accommodation, cafes and restaurants; and Cultural and recreational services, where they generally represent around half of all employees. As detailed previously, it is these service industries that have comparatively high levels of labour intensity, particularly Retail trade, and which are likely to experience relatively stronger rates of employment growth. The higher levels of female participation in these industries may indicate that these industries are better placed to adapt to the changing requirements of an ageing population than other industries, and may also indicate that these industries could provide an example of workplace flexibility that other industries can learn from.

Figure 3: Female employees by selected industries (% of industry) Aug 85-Aug 04

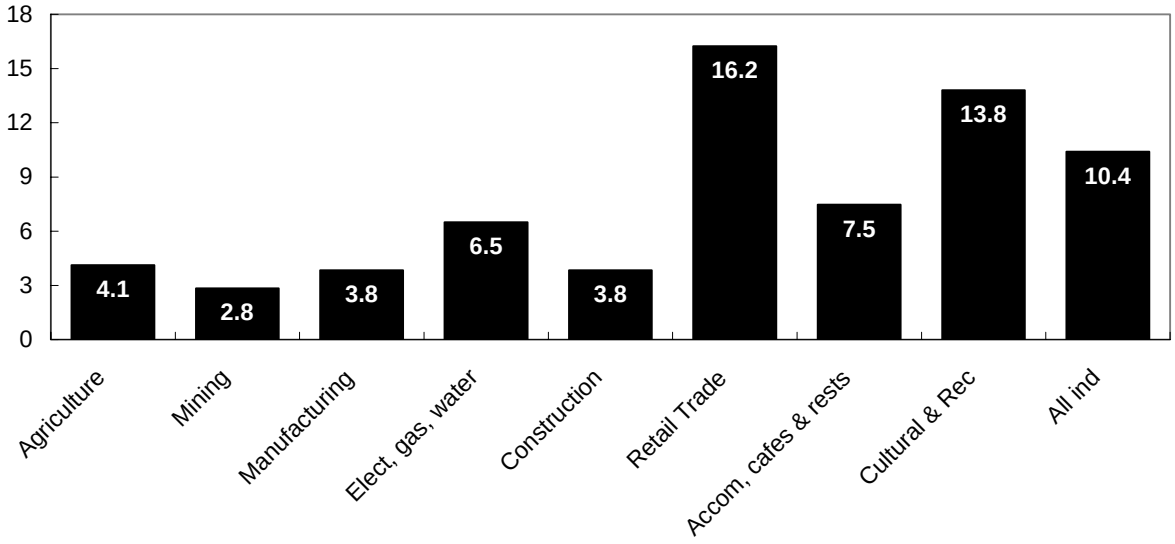


Source: ABS Labour Force Survey Cat No: 6291.0.55.001

Part-time employees

Another key labour market trend that is having different impacts on industry sectors is the rising proportion of part-time employees. Figure 4 shows, for example, that between 1985 and 2004 the proportion of all employees that were part-time increased by 10.4 percentage points across All industries. Yet in Retail trade and Cultural and recreational services the increase was somewhat higher at 16.2 and 13.8 percentage points respectively, while in Mining (2.8 percentage points), Manufacturing (3.8 percentage points), Construction (3.8 percentage points) and Agriculture (4.1 percentage points) it was significantly lower.

Figure 4: Change in share of part-time employees (percentage point), selected industry sectors: Aug 85 – Aug 04



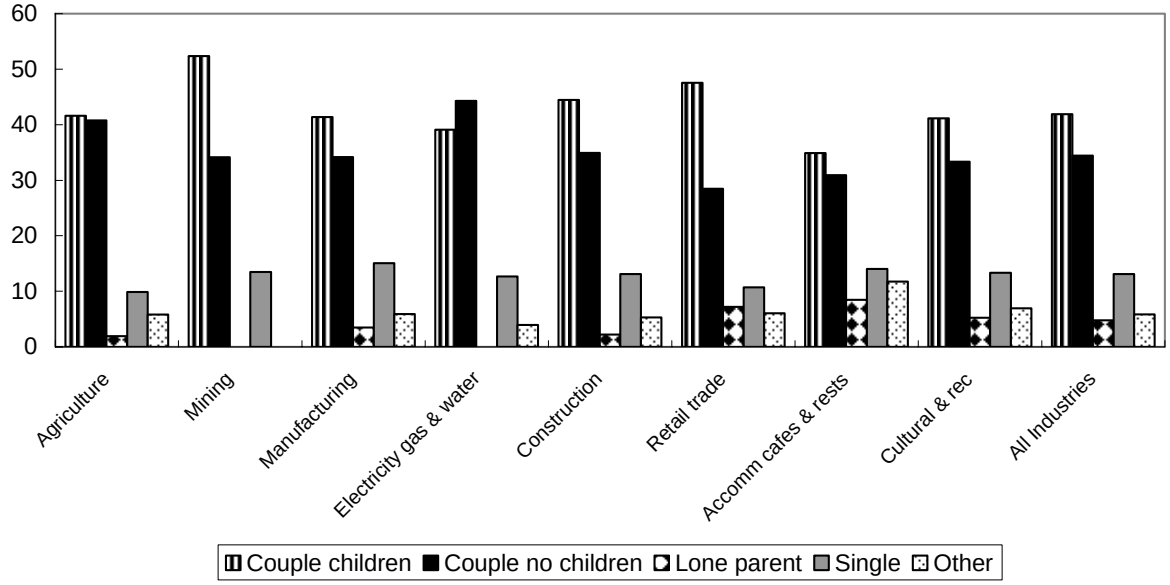
Source: ABS Labour Force Survey Cat No: 6291.0.55.001

Overall, the data in Figure 4 suggest that the pattern of change in part-time employment across industries has similar implications for the capacity of different industries to adjust to the changing labour dynamics of an ageing population as the labour force participation rate of females. The relatively higher rates of increase in the share of part-time employees in Retail trade and Cultural and recreational services, in particular, suggests that these service industries have been quicker at responding to changing labour market trends. This does not mean that other industries could not do the same but our understanding of industry labour markets is not sufficiently detailed to make such an assessment at this time.

Family types and income support

As discussed earlier, Australia's industries have experienced a rising proportion of part-time employees. One reason for the increase in part-time work could be the family situation of employees. Using data from Wave 1 of the Household Income and Labour Dynamics of Australia (HILDA) Survey, conducted in 2001, Figure 5 shows estimates of family types by industry for selected industry sectors. It shows that the proportion of lone parent households, with children less than 15 years of age and/or dependent students, aged 15-24 years, are relatively more common in sectors where female participation and part-time work are more prevalent.

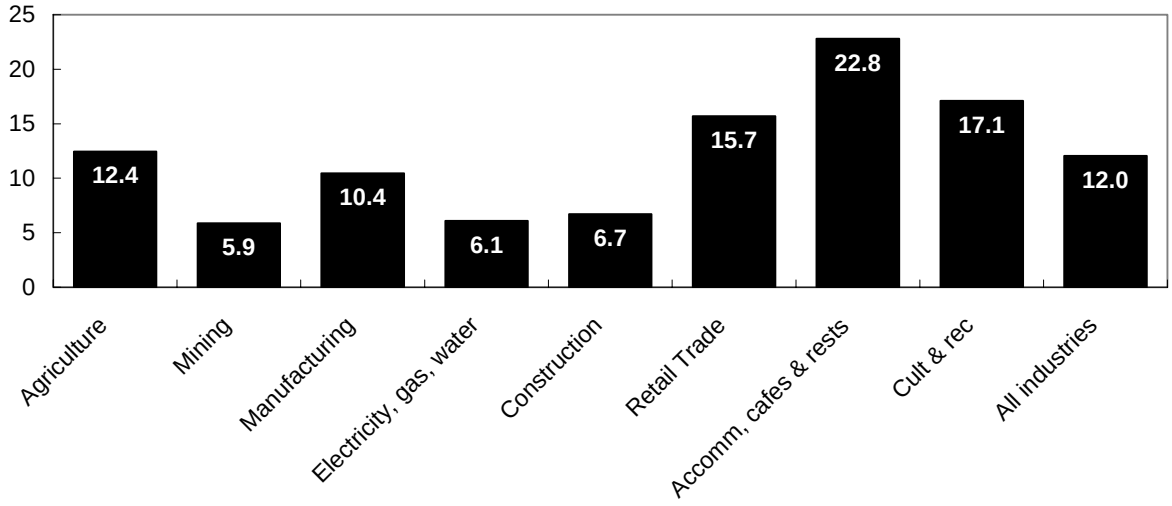
Figure 5: Employees by selected industries by family types[a] (% of industry[b]), 2001



Notes: [a] Couple with children includes only those couples with children less than 15 years of age and dependent students aged 15-24. Couple with no children includes couples who have never had children as well and those with no dependent children or students. Lone parent families include only those sole parents with children less than 15 years of age and dependent students aged 15-24. Single families include lone persons as well as lone parents with no dependent children or students. Other includes non-family member and other related family with no children. [b] Population weighted estimates.
Source: HILDA Wave 1 (2001), Release 2.0 (March 2004)

Moreover, as Figure 6 indicates, employees in these industries also rely more heavily on government pensions and allowances. This raises the prospect that participation disincentives arising from the interaction between the welfare and taxation systems might influence the employment decisions of lone parents, mostly females, in these industries.

Figure 6: Employees in receipt of government pensions or allowances (% of industry[a]), 2001



Notes: [a]Population weighted estimate
Source: HILDA Wave 1 (2001), Release 2.0 (March 2004)

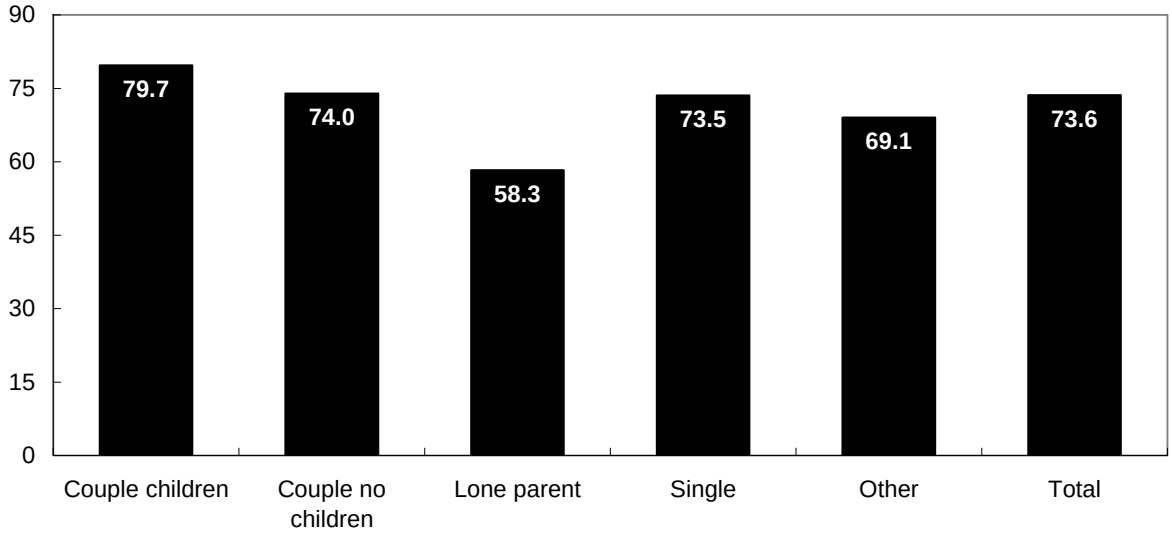
This type of phenomenon is, however, not limited to lone parent families. It is faced by many low income workers, especially families, at some stage of their working life, typically providing an obstacle to increasing hours worked. The high incidence of couple families, with and without

dependent children, in part-time employment across industries suggests, among other factors, a role possibly being played by this 'low income trap' (disincentive to work additional hours for those already in the workforce).

While the prevalence of 'low income traps' discourages working longer hours, available literature points also to the existence of 'poverty traps' – welfare based and other barriers to participation in the workforce at any level which result from further impoverishment of those already living in poverty – (Gallagher et al, 1992) as one of the factors likely to play a role in discouraging labour force participation. The relatively low labour force participation by lone parent families (Figure 7) suggests this might indeed be the case.

Preliminary analysis by ITR indicates that the families with the greatest disincentive to enter the labour force (or to work a few hours in addition to a small number of hours already being worked) are partnered families with children. For lone parent families the initial burden faced is low relative to couple families (both with and without children). However, this burden persists with additional hours of work whereas for couple families the disincentive declines in relative terms.

Figure 7: Labour force participation[a] by selected family types[b], Aug 2004



Notes: [a]Based on working age population, aged 15-64 years not civilian population (15 years and older). [b]Couple children includes husband, wife or partner with children less than 15 years of age and/or dependent students aged 15-24. Couple no children includes husband, wife or partner with no children and/or non-dependent children aged 15 or over. Lone parent families include only those sole parents with children less than 15 years of age and/or dependent students aged 15-24. Single includes lone persons as well as lone parents with no dependent children or students. Other includes dependent student, non-dependent child, other family person, non-family member not living alone, usual resident of household where relationship was not determined, visitors to private dwellings and residents of non-private dwellings. Source: ABS Labour Force Survey Cat No: 6291.0.55.001, FM2: Labour Force Status by Sex, Age, Relationship.

Similar results may well hold for mature age workers ready to retire. In fact, their case is additionally complicated as superannuation policies also contribute to their decision to work or not.

The whole issue of disincentives created by the interaction of the tax and welfare systems needs to be looked at more closely as improvements in this area may provide another avenue through which greater labour force participation could be encouraged.

However, it is recognised that there are other factors in the economy affecting labour force choice. HILDA (Wave 1 Release 2) data indicated that about 20 per cent of the part-time workforce cited caring/family responsibilities as reasons for not working longer hours. In order to encourage them

to put more hours into paid-work, increased flexibility in working arrangements in industries may be considered. The stronger employment growth prospects of industries with relatively higher proportions of younger, female and part-time workers, as indicated in Section 2 underscore the importance of encouraging flexible work arrangements and access to affordable child care.

Flexible working arrangements are also likely to be significant in retaining the older workforce in employment for longer. This is an issue to be considered in industries ageing at a relatively faster rate.

3.1.2 Increased emphasis on skilled net immigration

Net positive skilled immigration can add to the size of the skilled labour force and potentially to increased production and growth. A feature of migration flows in recent years is the increasing number of skilled workers who are moving between countries on a long term, that is, one to five years, temporary basis in response to a growing international demand for skilled workers. While Australia has been relatively successful in attracting skilled workers, this has been moderated to some extent by the increase of skilled workers emigrating from Australia. Moreover, skilled immigration constitutes only a very small proportion of Australia's labour market supply, so its potential to address the increasing labour market requirements associated with the ageing population are likely to be limited.

3.2 The quality of labour in Australia

3.2.1 Skill levels of selected industries by level of educational attainment

One of the key trends to affect the labour market over the last twenty years has been a rise in the demand for more highly skilled workers. The overall skill level of an industry can affect its capacity to adapt to changing labour market conditions, such as the ageing of the population, in various ways. A better educated workforce will generally adapt more readily to new production processes and to other changes in the work environment. There may be instances, however, where the skill set of workers is so specialised that adjustment will be limited. Essentially both a high level of skills and a degree of versatility are required.

Table 4 provides ABS Census data on the educational attainment of employees in selected industries for 1991 and 2001. It shows that the proportion of employees with university qualifications has increased across all the selected sectors while the proportion of employees with only minimal qualifications has declined. Despite these overall trends, there has been significant variation between the sectors. For example, between 1991 and 2001 the most significant increases in the proportion of employees with university qualifications have occurred in Electricity, gas and water (11.1 percentage points) and Cultural and recreational services (8.0 percentage points) – these compare with 7.3 percentage points for the aggregate of all industries considered here. Industries where the rate of increase has been significantly below the average include construction (1.6 percentage points), Accommodation, cafes and restaurants (2.4 percentage points), Retail trade and Agriculture (2.9 percentage points).

Table 4: Educational attainment by selected industry sectors, 1984, 1994 and 2001

	University		Dip/Adv Cert III/IV		Cert I/II, Yr 10+	
	1991	2001	1991	2001	1991	2001
Agriculture	3.1	6.0	12.7	18.5	61.2	51.7
Mining	9.2	16.6	31.2	34.9	48.0	37.3
Manufacturing	5.2	9.6	25.5	32.4	54.6	44.1
Electricity, gas, water	8.8	19.9	36.8	41.3	44.0	32.0
Construction	2.7	4.4	42.1	48.4	43.5	35.8
Retail trade	3.2	5.8	16.2	19.4	61.4	57.3
Accomm, cafes & rests	4.3	6.7	13.7	20.7	66.7	57.7
Cultural & recreation	11.8	19.9	14.7	20.2	62.5	50.9
All industries	11.3	18.6	21.2	24.7	55.2	45.4

Source: Unpublished ABS 1991 and 2001 Census of Population and Housing (persons enumerated at home) obtained from BTRE Education Database: http://www.btre.gov.au/docs/ip51/index.html

The differences in skill levels across industries highlighted in Table 4 are not necessarily a cause of concern, nor necessarily an indication of different industries' abilities to extract higher labour productivity growth or to exhibit workforce flexibility. Indeed, it is clearly not appropriate to invest equal amounts into education for all prospective sectors of the workforce. For example, a target of a university degree for every worker in the Accommodation, cafes and restaurants industry would (in the context current production technologies) seem quite unreasonable and would entail a level of investment unjustified on any economic grounds.

Nevertheless, the substantial differences between sectors in educational attainment, and the importance to future economic growth of a skilled workforce, suggest that there may be sectoral skills issues that need to be addressed. More research in this area needs to be done before definite conclusions can be reached.

Conclusions

In this submission we have used the limited data available to outline some of the challenges likely to be faced by Australian industries in coming decades as the labour force ages and growth in the labour force declines. We have highlighted the need to look at both the future demand for labour by industry as well as the supply available and the quality of that supply. Thus, expected labour productivity and employment growth in each industry need to be considered alongside the age and skill profiles of the industries and their attractiveness to female and part-time employees. When this analysis is done, the different challenges facing different industries become clearer.

Table 5 provides a summary of our findings that brings out some of the differences between industries and the challenges they face. Characteristics shown in the table that are most significant for particular industries are indicated by an 'X'. In some cases, the characteristic is much more important for an industry than for the industries as a whole, so 'XX' is used.

Table 5: Summary of findings

Industry	Mature labour force	Labour force getting older	Expected growth in labour demand	Expected growth in labour productivity	Female employees as share of total	Growth in part-time employment	Income supplem ented by pensions etc.	Skilled labour force
Agriculture	X	X		X	X		X	
Mining	X	X		X				X
Manufacturing	X	X		X	X			
Electricity, gas and water	X	X		X	X	X		X
Construction	X	X	X	X				X
Retail trade			X	X	X	XX	X	
Accommodation, cafes & restaurants			X		X	X	XX	
Cultural & recreational services		X	X		X	XX	X	

To illustrate the findings flowing from the table, two contrasting examples – mining and the service industries – can be considered. Mining has a mature labour force that is getting older but future growth in mining is expected to come mainly from increased capital investment, which will lift labour productivity, rather than from significantly increased employment. Mining appears, therefore, to be in a relatively good position to meet the challenges of an ageing workforce. This is not, of course, to suggest that the mining sector need do nothing. For example, its need for a skilled labour force means that it might have to increase investment in training to secure the skilled workforce it needs to replace the employees that will retire as they grow older.

The position of the mining industry contrasts with that of service industries such as cultural and recreational services, which are expected to have only small (if any) growth in labour productivity and to have a high demand for labour in coming decades. Cultural and recreational services have a young labour force, and have experienced substantial growth of female and part-time employment. These characteristics suggest that these services are attractive to younger employees and that they might be able to continue to attract the workers they need if they continue to offer the flexibility in working arrangements sought by many part-time and female employees. Many employees in cultural and recreational services also receive supplementary income from the government, suggesting that issues associated with the interaction of the taxation and welfare system could have an impact on the future supply of labour.

Manufacturing appears to be between these two extremes, reflecting the diversity of activities within the sector. The manufacturing work force is generally older than that in the service industries, and growth in labour productivity is expected to offset lower rates of growth in employment.

In summary, the data available indicate that industries will face a number of challenges if they are to adjust to the reduction in labour force growth caused by the ageing of the labour force. Of course, much more detailed analysis is needed before firm assessments of industry impacts can be reached. The analysis does, however, suggest that consideration of different industry impacts of ageing population may be relevant to the assessment of the implications of changing demographics.

References

Australian Bureau of Statistics (ABS) (1991) *Census of Population and Housing*, unpublished data, Canberra.

ABS (1999) *Labour Force Projections 1999 to 2016*, Catalogue no. 6260.0, Canberra.

ABS (2001) *Census of Population and Housing*, unpublished data, Canberra.

ABS (2004) *Labour Force Survey*, Catalogue no. 6291.0.55.001, August, Canberra.

ABS (2004) *Australian National Accounts: National Income, Expenditure and Product: June 2004*, Catalogue no. 5206.0, September.

Bureau of Transport and Regional Economics (BTRE) (2004), Education Database http://www.btre.gov.au/docs/ip51/HUMAN%20CAPITAL%20Education%20Dat.xls, viewed 25 October 2004.

Commonwealth of Australia (2002) *Intergenerational Report 2002-03*, 2002-03 Budget Paper No. 5, 14 May, http://www.budget.gov.au/2002-03/bp5/html/index.html, viewed 25 October 2004.

Department of Employment and Workplace Relations (DEWR) (2004) "DEWR Job Outlook", June, http://www.workplace.gov.au/WP/Content/Files/WP/EmploymentPublications/JOMain2004.pdf, viewed 25 October 2004.

Gallagher, P., M. Gunasekera, and A. McDiarmid (1992) "Poverty Traps: Issues for Review" *Social Security Journal*, Autumn, Canberra.