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**Population Ageing and the Labour Force:
2000-2015 and 2015-2030.**

Abstract

Objective: To examine the role of variations in mature age labour force participation on labour force outcomes over Australia’s recent past (2000-2015) and immediate future (to 2030).

Methods: To estimate the impact of rises in mature age participation on observed labour supply, we utilise demographic decomposition techniques. To examine future labour supply (to 2030), we simulate scenarios utilising a cohort component projection model.

Results: Observed increases in mature age participation between 2000 and 2015 added approximately 786,000 mature age workers to the Australian labour force. Over the proceeding 15 years (2015 – 2030), conservative changes to prevailing mature age participation would add 304,000 additional workers. The speed of ageing is projected to increase and labour supply growth decrease in the next 15 years relative to that observed from 2000 – 2015.

Conclusion: In order to benefit from increased mature age labour force participation, the barriers to mature age participation must be addressed.

Keywords: Ageing, Economic Models, Population Dynamics

Impact Statement

Increases to mature age participation have played an important role in labour supply growth as the baby boomer generation moved through the labour market. Conservative estimates suggest further growth in mature age participation. However, to yield potential benefits, the multi-faceted barriers to mature age participation require urgent attention.

Population Ageing and the Labour Force: 2000-2015 and 2015-2030.

Introduction

A considerable body of evidence has emerged on the labour force behaviour of older Australians. Within *AJA*, studies have considered the determinants, barriers and enablers of mature age employment, as well as the role of workplaces and the efficiency of government policy in enabling participation [1-7]. These studies make a valuable contribution to our understanding of mature age workers interaction with the labour market at the *individual ageing* level.

In contrast, there has been far less evidence on the intersection of ageing and the labour market at the *population ageing*, or macro level. One obvious exception is the regular Intergenerational Reports (IGR) which are the Government's primary tool to track the demographic and economic issues associated with the continued ageing of Australia's population [8-11]. A further example is the Productivity Commission's irregular reports on population ageing [12-13]. Although both agencies take different views on the outcomes of their findings, taken together these studies find that population ageing reduces aggregate labour force participation and slows labour supply growth. In tandem with relatively low labour productivity, this in turn reduces Gross Domestic Product (GDP) over the long term. Both agencies take a long-term view (40+ years) of population ageing and economic outcomes.

Although in demographic terms, population ageing is a slow moving phenomenon, there are a number of reasons to examine ageing and labour supply outcomes in the next 15 years. First, it is the immediate future that governments and businesses must plan for with respect to labour needs, investment and expenditures associated with mature age persons' labour market decisions. Second, focusing only on the longer term is speculative. Estimates of fertility and international migration are particularly worrisome beyond a 15-year time frame, and both have strong impacts on *long-run* labour supply, with migration also having significant *short-run* effects [14-15]. Indeed, this uncertainty regarding longer-run demographic assumptions has resulted in very different population and labour force projections between successive IGRs [14,16].

In this paper, we examine the recent past (2000 – 2015) and the near future (to 2030) of mature age labour supply in Australia. Specifically, in the first, time period, we examine the contribution of the observed increase in mature age participation to labour supply between 2000 and 2015. In the second, time period (to 2030), we examine the role of alternative scenarios of mature age participation and migration on labour supply. This provides a complementary view to previous studies, underscores the importance of mature age workers to the Australian labour market, and points to changes and opportunities on the short-term horizon.

Methods

To estimate the role of changing mature age labour force participation on labour supply from 2000 – 2015, we compare two simulations. The first estimates the labour supply with the observed levels of labour market participation –by multiplying the observed levels of age-sex specific labour force participation at each year by the estimated

resident population at each year. The second simulates the labour force size on the assumption that mature age participation for men and women had remained at 2000 levels. That is, multiplying the estimated resident population at each age by the age-sex specific labour force participation rates that existed in the year 2000. The difference between the two scenarios provides a decomposition of the impact of rises in mature age participation on observed labour supply over this 15 year period.

For the projections from 2015 to 2030, we utilise a cohort-component model to simulate the population and labour supply futures. The basis of this model is to project the population forward each year, accounting for deaths, migration and survival. At each point in time, labour force participation projections are applied to the estimated populations to calculate the size of the labour supply. A full statement of this model is available elsewhere [17]. Using this model, we investigate several hypothetical scenarios relating to underlying demography and labour force participation.

The demographic scenarios pertain to variations in levels of Net Overseas Migration (NOM) over the period 2015 – 2030. These consist of a baseline (NOM = 200,000 per annum), high (300,000) and low scenario (100,000). The baseline assumption is consistent with the three- and five-year average of NOM in Australia [18]. In the 15-year time period of the projection horizon, feasible variations in the level of fertility or life expectancy will have a negligible impact on labour supply and ageing over this period. Fertility is assumed to remain constant at current levels (Total Fertility Rate = 1.8) and male and female life expectancy rises steadily.

The second set of scenarios relates to variation in labour force participation rates by age. These include:

- * A ‘baseline’ assumption - Productivity Commission projections are adjusted to benchmark recent trends in labour force participation. This adjustment is made throughout the projection period, resulting in a conservative increase to mature age participation by 2030.

- *A ‘constant’ assumption - fixes labour force participation at 2015 levels.

- * A ‘low’ assumption - fixes mature age participation at the low observed in 2000.

- * A ‘high’ assumption - forces mature age labour force participation rates to converge to that of New Zealand, which are considerably above present Australian levels. The New Zealand rates are averages from observed rates for the years, 2015 to 2017. Due to considerable differences in the retirement incomes policies and economies of New Zealand and Australia, we do not contend that the factors driving participation are comparable across the two countries. Rather, we use this scenario to show that regardless of the health constraints or other employment barriers associated with ageing, increases to participation are plausible and observed in many other countries around the world, and not just in New Zealand.

All scenarios have the same labour force participation assumption for those aged under 50, which is the adjusted Productivity Commission projection. To minimise the impact of top-coding of age-based labour force variables, we estimate the labour force size for those aged 15 to 80 years. Input data for the projections are from ABS estimates of demographic parameters and labour force, as well labour force participation data from the Productivity Commission and Statistics New Zealand [13, 18-22]. Australian labour

force participation rates are annualised from monthly data for each financial year to account for seasonal variation.

Results

Population Ageing

Before turning to the analysis of labour supply outcomes, we present findings on the contribution of the underlying demography to labour supply growth. Table 1 presents estimates of total population, population aged 65 and over and the working age population from 2000 to 2015 (observed) and 2015 to 2030 (projected). For the projected timeframe, outcomes are provided based on the three assumptions for international migration described above.

From 2000 to 2015, the population aged 65 and over increased by 50%, adding an additional 1.19 million people to the population in this age group. This resulted in an increase in the percentage of this group in the population from approximately 12.4% in 2000 to 14.9% in 2015. In the second period (2015 – 2030), over 2 million people are projected to be added to the population aged 65 years and over. Under the baseline assumption (NOM = 200,000), the total population is projected to grow by 22.7% (to 29.3 million from 23.9 million in 2015) whereas the population age 65 and over is projected to grow by 57.2%.

Varying migration, the percentage of the population aged 65 and over, 19.1% under the baseline assumption, becomes 18.2% with high migration and 20.1% with low

migration, indicating how migration lowers the extent of population ageing. Although migration affects the proportion of the population aged over 65, it does very little to alter the number of older Australians because Australia's migration program gives preference to younger, skilled workers and restricts immigration at older ages.

[TABLE 1]

The working age population (those aged 15-64) is shown to have decreased as a proportion of the population from 66.9% in 2000 to 66.2% in 2015. It then falls to between 63.3% (low) and 64.5% (high) in 2030. Under the baseline scenario for NOM, the working age population increases by about 16.6% from 2015 to 2030, compared to the 24% increase observed over the 2000–2015, time period. In summary, the demographic contribution to the percentage in the labour force ages was negative between 2000 and 2015 and becomes increasingly negative between 2015 and 2030. Correspondingly, there will be an increasing proportion and number of the population aged 65 and over in the second, time period (2015-2030) relative to the first (2000-2015).

Labour Force Participation

Combined with changes in labour force participation, these demographic factors impact upon the age structure and growth of the labour supply itself. From 2000 to 2015, there was a significant increase in mature age participation for both males and females. Figure 1 displays the labour force participation scenarios considered for the projections to 2030. Comparing the Low '2000' scenario with the Constant '2015' scenario, it can be seen that every age group aged over 50 had higher labour force participation in 2015,

than in 2000 – with the growth being particularly significant for women. For example, in 2000, the labour force participation rate for women aged 60-64 was 19.9% compared with 41.8% in 2010 and 45.8% in 2015. For men in the same age group, in 2000, 46.4% were in the labour market, compared with 60.3% in 2010 and 63.8% in 2015. Across all age groups, much of the increase in mature age participation occurred during the period 2000 to 2010, with the growth slowing considerably thereafter especially for men.

Despite these significant changes, mature age participation in Australia remains well below our nearest neighbour, New Zealand. Results in Figure 1 also present the age-sex specific participation rates for mature age New Zealanders, for the period 2015 – 2017, labelled the ‘High scenario’. Across all ages, mature age New Zealanders had considerably higher levels of participation. For example, in the 60-64 year old age group, New Zealand men have a labour force participation rate of 80.6%, relative to 63.8% of Australians in this group. Similarly, 67.2% of 60-64 year old New Zealand women were in the labour force, compared with about 46% of Australian females.

[FIGURE 1]

Nonetheless, the growth in Australian participation between 2000 and 2015 was significant. To illustrate the full effect of this increase in mature age participation on the labour supply, results in Figure 2 display the additional mature age workers (50 – 80) added to labour supply from 2000 – 2015 due to this change. After just 5 years, in 2005, an additional 213,000 mature age people were in the labour force and, after 10 years, this figure increased to nearly 600,000. By 2015, increased participation resulted

in an additional 786,000 persons aged 50-80 in the labour force, with about 500,000 of the increase due to increased female labour force participation at older ages.

[FIGURE 2]

Labour Supply

Clearly, improved mature age labour force participation has played an important role in driving labour force growth since 2000. However, much of this increase, particularly in female labour force participation is cohort driven – particularly pertaining to cultural and social changes related to gender roles and levels of educational attainment in the baby boom generation [17, 23]. There is also some evidence that increases to the Age Pension eligibility age in the 1990s-increased mature age labour force participation [24]. As female labour force participation rose, several studies have noted that this subsequently increased the likelihood of their male partner’s employment propensities [25-26]. Noting these historical differences, how can we expect labour supply to change over the proceeding 15 years to 2030?

Table 2 displays the observed and projected labour supply by age and associated growth rates under three NOM assumptions and four labour force participation scenarios. In the 15 years to 2015, labour force grew by approximately 32%. Assuming migration of 200,000 per annum, under the current or baseline participation scenarios, labour supply growth is projected to be two thirds this level (20.1% and 17.7% respectively). If the low mature age participation rates from 2000 persisted, labour supply growth would be just 10% for the 2015-2030 period. More specifically, comparing the constant scenario (2015 mature age rates) with the low scenario (2000 mature age rates), shows a

difference in labour supply of about 960,000 by 2030. Even the hypothetical scenario of moving mature age participation to New Zealand levels shows labour supply growth for Australia at around 25% over the period 2015 – 2030, seven percentage points short of the actual growth achieved in the 2000 – 2015 period.

Comparing across the demographic scenarios, it is clear that international migration has a strong impact on labour supply growth. For the ‘baseline’ labour force participation model, a low NOM of 100,000 yields a labour supply growth of just 11.7% over the 15-year period – about one third of the labour supply growth observed in the 2000 – 2015 period. The high NOM assumption (300,000) yields labour supply growth of just under 29%, roughly equivalent to the labour supply achieved in the 2000 – 2015 era.

[TABLE 2]

Discussion

2000 - 2015

In the past 15 years, increases in mature age participation have provided a significant boost to Australian labour supply. The observed change increased the size of the labour force by 786,000 people in 2015. Of a total labour market of about 12.5 million people, this difference is considerable. These changes to labour force participation in this period occurred during a time of considerable labour demand, driven by a period of continuous economic growth and the boom and later stagnation of the mining industry. Cohort differences with the increased labour force participation and increased population of the baby-boom generation led to the very large addition to the mature age work force between 2000 and 2015, especially for women. Such large increases in the number of

mature age workers will not be part of Australia's future labour market as the baby-boom generation moves out of the labour force.

2015 - 2030

In the subsequent 15 years to 2030, we project a hastening in the rate of population ageing, declines in the proportion of the population in 'working ages' and a reduction in labour supply growth. Under conservative assumptions about the increase in mature age labour force participation, an additional 304,000 mature age workers are added to the labour force by 2030 when compared with the 2015 level. In a hypothetical world of mature age participation increasing to New Zealand levels, an additional 900,000 mature age workers could be added to the labour supply. Although hypothetical, these estimates show the significant impact of increases in mature age participation on labour supply.

However, achieving significant increases to mature age participation rests considerably upon reducing the barriers to labour force participation that many older Australians face. Indeed, the barriers are complex and interrelated covering issues of age discrimination, difficulties re-skilling and retraining, availability of flexible work places and practices and barriers due to poor health and caring responsibilities [1-2,4-7]. The solution to these problems is also complex – covering not only labour market policies, but those pertaining to integrating care responsibilities with paid work, improved health care across the life course and removing work disincentives associated with Australia's welfare, tax and superannuation systems. Improvements to work environments conducive to mature age workers needs are also likely to promote mature age labour force participation [27].

Notwithstanding the potential for significant improvements in labour supply through increases in mature age participation, it is not the only lever at the government's disposal to increase labour supply growth. For example, the Productivity Commission points to the relatively low level of participation among working age females in Australia relative to other OECD countries [13]. Moreover, as we illustrate in this paper, levels of international migration play a strong role in the Australian labour market. Independent of the contribution of migration to overall labour supply growth, the migrant workforce already contributes considerably to areas of sectorial unmet demand in the context of ageing, specifically in the residential care services [28].

In interpreting these findings, it is also important to consider the relative role of participation and population on changes in economic growth. As noted in the IGR and PC reports, changes in participation contribute a smaller contribution to economic growth relative to the impacts of increasing labour productivity growth [8-13]. Indeed, small changes to productivity have a very significant impact upon driving economic growth in the medium and long run. Herein, lies a major dilemma for policy makers. Since the early 2000s, multifactor productivity growth (combining labour and capital productivity) has been negative in Australia as it has been in most high-income countries [29-30]. Increasing productivity is a difficult task for government as the drivers are complex. So, although population and participation have a lower impact on GDP than productivity, recent negative trends in productivity mean that there has been greater reliance on population and participation to boost economic growth.

More generally, for any given level of productivity growth, increases in mature age labour force participation have an additional beneficial impact on the economy through meeting potential increases to labour demand and reducing pressure from the expense side of the government balance sheet. There is often a double benefit to government of a person taking work beyond the pension eligibility age; instead of the person receiving a government pension, he or she will be paying tax.

This paper has examined the intersection of population ageing, mature age labour force participation and labour force supply. In interpreting our results, it is important to note this studies limitations. The projections contained herein should not be considered as forecasts. There are a range of exogenous policy changes that could impact upon the labour force assumptions used in this analysis. In particular, there is a need for more nuanced work on changes to the Age Pension eligibility age its impact on labour force participation and labour supply, specifically given increments to the eligibility age underway. Detailed econometric studies have shown that in Australia's past, increases to Age Pension eligibility age reduced the probability of retirement by between 12 and 19 percentage points [24]. However, other authors argue that due to the employment barriers many older workers face, policy makers should look to other solutions, such as preventative health strategies to improve mature age participation [27]. There is a considerable need for detailed modelling of alternative policy specific pathways to improvement mature age participation and how this impacts labour supply and mature age workers themselves.

A further limitation of this study is that our supply estimates take no account of labour demand. Indeed, a pressing question is how does population ageing affect labour

demand? This area of research requires detailed, careful modelling. The ageing population may generate sectoral shifts in labour demand; the most obvious of which being for those in the health and caring sectors [28,1]. The IGR projects an almost doubling of GDP per capita over a 40-year time frame, which in itself will increase demand throughout the economy. Labour demand can also be expected to be strong due to Australia's need to invest heavily in new forms of infrastructure, new forms of energy and to reverse environmental degradation [15]. There will be strong demand for workers in the caring industry through the roll-out of the NDIS and the growth of the more dependent aged population. Working from the opposite direction, with a reduction in labour supply per capita, labour demand may temper at an aggregate level [13]. Further research on the implications of population ageing for labour demand is a key priority.

Noting these limitations and extensions, increases to mature age participation offer one part of the solution to declining labour supply growth in an ageing economy. However, to yield these benefits, the multi-faceted barriers to mature age participation require urgent attention by government. Removing these barriers will increase mature age participation, enable Australian workplaces to benefit from the skills and experience of mature age workers, and allow those who want to work to be able to do so.

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