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### 3 The nature of changes in part time employment

Social commentators and market researchers point to long term generational changes by identifying how the characteristics and behaviours of (say) the ‘baby boom’ generation are different from those of other generations (say) those of ‘generation X’ or the ‘depression generation’. It is pertinent to see how the rising level of part time employment identified in Chapter 1 reflects the changing behaviours of successive generations. This provides not only a historical view of the forces underlying the change in part time employment, but also provides a start in ascertaining whether or not this trend is likely to persist in the future.

Popular discussion of the differences between generations often mixes up a number of relevant factors. Simple comparisons of the characteristics and behaviours of groups at a point in time can provide misleading views of social change. These comparisons mix up what demographers and other social researchers call year, age and cohort (or ‘generational’) effects.

The aggregate growth in part time employment over the past four decades reflects a mix of these three effects. These are:

- the short term annual variations in part time employment affecting all demographic groups (called year effects);
- different age groups experience different levels of part time employment. Therefore, changes in the population distribution among demographic groups can affect aggregate levels of part time employment (called age effects); and
- longer term changes in the levels of part time employment for groups who were born at a given time (called cohort effects) will affect aggregate part time employment levels.

It is necessary to disentangle these effects as a first step to understanding the factors behind the increase in part time work.

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### 3.1 Model of year, age and cohort effects

There is a well developed methodology in the social sciences to isolate and investigate the range of factors affecting social behaviour by decomposing the overall changes into these year, age and cohort effects.

More specifically, the year effect captures the impact of factors occurring commonly across all cohorts and age groups in a given year. The main year related effect with respect to changes in part time employment is the change in the economic environment, particularly the labour market. Other factors which affect the decision or ability to work part time across all age groups and cohorts in the short term can also be considered as part of the year effect.

The age effect captures the recurring pattern of individuals' participation in part time employment as they move through the work life cycle. For example, as noted above, part time employment rates for both genders are currently at their highest during the teenage years. The age effect influences the overall level of part time participation as population cohorts are of different size. For example, an ageing population would be expected to lower part time population rates as the share of teenagers in the population falls, other things remaining unchanged. Whether or not the aggregate part time participation rate changes over time also depends on the interaction of the age effect with the cohort effect.

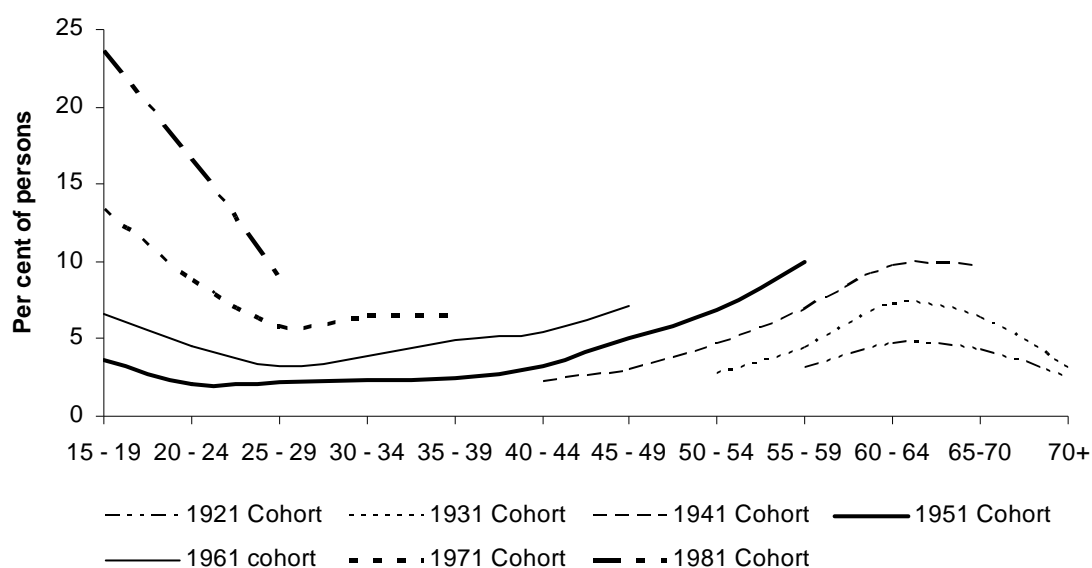
The cohort effect arises from the common cultural and economic environment and similar experiences of individuals born around the same time. These common environments and experiences are different from those of other individuals born at different times and can produce different group behaviour. For example, in general women in younger age cohorts are better educated and have lower fertility rates than older cohorts. This, in turn, may affect their participation in part time employment. This will have an effect on aggregate part time employment as these groups enter and leave the workforce over time.

The econometric model used to disentangle the roles played by the year, age and cohort effects on part time employment is based upon an approach developed by Beaudry and Lemieux (1999) in their work using Canadian labour market data. Details of the model specification can be found in Appendix B.

## Decomposing the movement in part time participation

Figure 3.1 shows the changes in the part time employment to population ratio for men over the 1966–2006 period for selected cohorts whose members were born between 1917–21 (the 1921 cohort) and 1977–81 (the 1981 cohort). These selected cohorts graphically capture the changes that have occurred over the last forty years.

Figure 3.1 **Part time employment to population ratio for men, 1966–2006**  
For selected cohorts

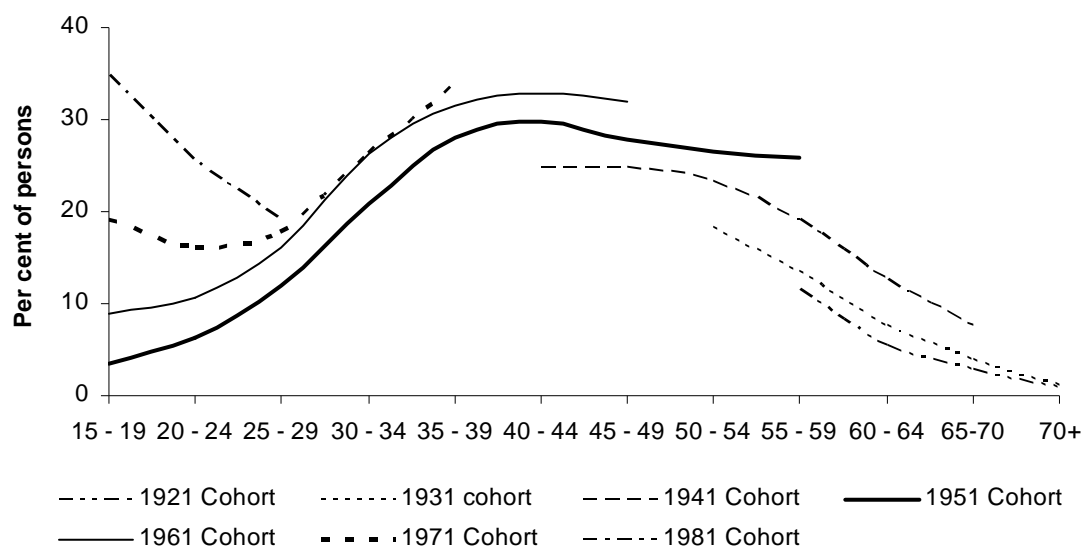


Data sources: ABS (*Labour Force, Australia detailed — electronic delivery*, Cat. no. 6291.0.55.001, table LM8); ABS (*Labour Force Historical Timeseries, Australia 1966–84*, Cat. no. 6204.0.55.001, table 4).

The figure shows both the relationship between age and part time employment as well as how the cohort effects have operated over the period. These are reflected in the generally higher part time employment ratios for successively more recent cohorts. The figure also indicates that the life cycle or age association with part time employment has varied between cohorts throughout the period. For example, the rate of part time employment for successive cohorts has grown fastest for teenagers.

Figure 3.2 shows the age associated levels of the part time employment to population ratio among women. For earlier cohorts, the ratio of part time employment to population rose consistently from the teenage years until peaking around 35–45 years. In later cohorts there has been a marked increase in part time employment among teenagers.

**Figure 3.2 Part time employment to population ratio for women, 1966–2006**  
For selected cohorts



Data sources: ABS (*Labour Force, Australia Detailed — Electronic Delivery*, Cat. no. 6291.0.55.001, table LM8); ABS (*Labour Force Historical Timeseries, Australia 1966–84*, Cat. no. 6204.0.55.001, table 4).

### Importance of year, age and cohort effects

A number of alternative model specifications were tested to ascertain the importance of the year, age and cohort effects. They produced broadly consistent findings for both men and women and can be found at Appendix B. The estimated coefficients do not change substantially under most model specifications.

The results indicate that the age and cohort effects explain around 90 per cent of the variation of part time employment among individual age/cohorts over the past four decades. Other model specifications are presented to show the independent effects of the year, age and cohort effects.

Figure B.1 in Appendix B describes the estimated aggregate part time employment to population ratios over the 1981–2006 period for men and women based upon the estimated relationship as described in the preferred models. The figure demonstrates that longer term upward movement in the level of part time employment for men and women can be almost entirely explained by the age and cohort effects.

The year (or macroeconomic) effect had little impact on this long term upward trend in part time employment. This is unsurprising as macroeconomic conditions (as measured by the unemployment rate for prime age men in this analysis) have varied widely over the period, though with no sustained trend towards tighter or weaker

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labour markets. Macroeconomic conditions were found, however, to affect short term movements in the part time employment level for men. The specification of the model is unlikely to capture all the macroeconomic effects. Indeed, it cannot capture whether the economy affected cohorts and age groups differently. The impact of the broader economy on part time employment is investigated more fully in Chapter 4.

The results of the model confirm that for men the cohort effect results in increases in the part time employment ratios for all age groups. For ease of understanding, the results are presented graphically, rather than as a discussion of the estimated equations (as in Appendix B). Figure 3.3 below presents the cohort effect for men at three age groups in the life cycle — 20–24 years, 35–39 years and 50–54 years. No cohort can be tracked throughout its working life — the length of a 40 year data base is clearly too short to capture any cohort’s entire working life. The darker sections of the curves represent the estimates for the cohorts for whom there are data for the age groups being considered. The lighter sections of the curves represent the model’s estimate of the part time employment rate for cohorts for whom data were not available for the ages represented. For example, there were no data available for the 50–54 years age group for cohorts born before 1931 and those cohorts born after 1956 are still to reach that age.

The part time employment rate for 20–24 year olds increased by around 11 percentage points between the 1946 cohort and the 1981 cohort. The cohort effects were broadly similar for older age groups, 50–54 years and 35–39 years. The model estimates that, based on historical patterns, part time employment will continue to grow in the future as younger cohorts who already have higher rates of part time employment enter these older age groups. As this modelling approach essentially represents an extrapolation of past trends, this upward trend is not, of course, assured.

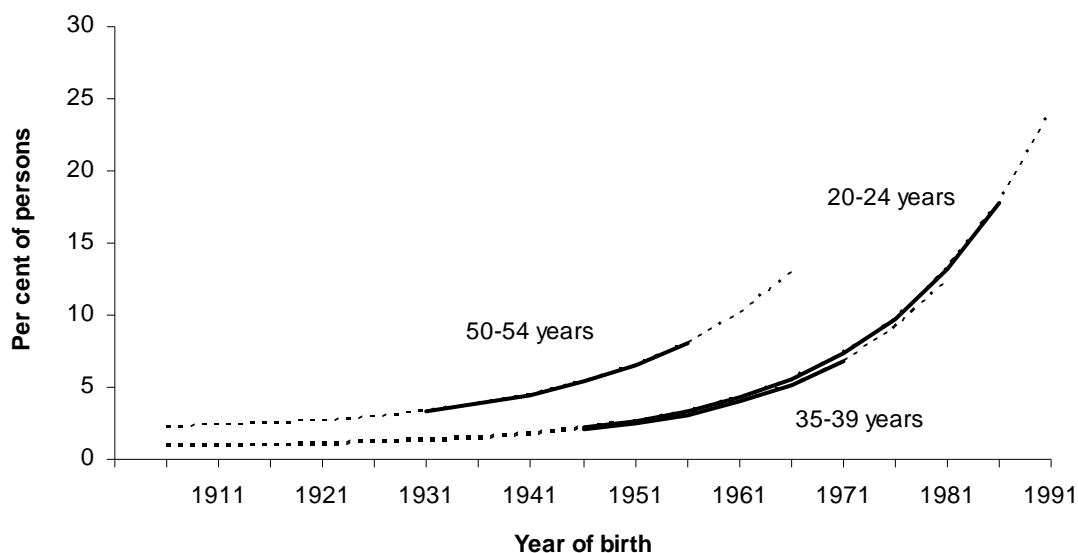
The age effect through the life cycle of three male cohorts is shown in figure 3.4. These cohorts include the 1936 cohort, the 1956 cohort and the 1976 cohort. Again as with the previous figure, the darker section of the curves represent the estimated relationship between age and part time employment for age groups that these cohorts can be actually tracked through, given the database only covers the period 1966–2006.<sup>1</sup>

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<sup>1</sup> Data for all age groups are not available between the years 1966–1981.

**Figure 3.3 Changes in male part time employment ratios across different cohorts, 1906–1991**

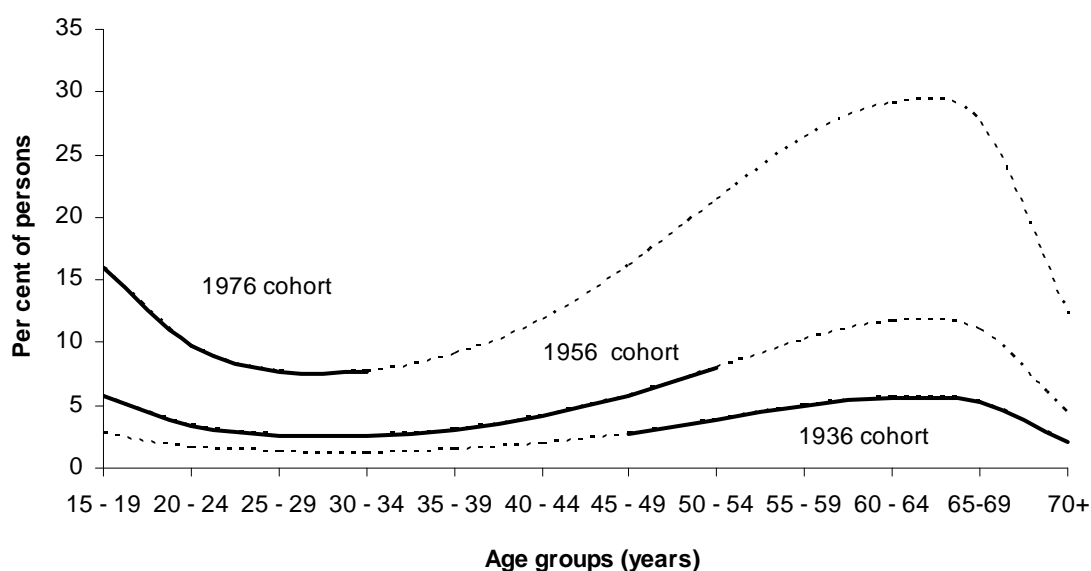
For selected age groups



Data sources: ABS (*Labour Force, Australia detailed — electronic delivery*, Cat. no. 6291.0.55.001, table LM8); ABS (*Labour Force Historical Timeseries, Australia 1966–84*, Cat. no. 6204.0.55.001, table 4).

**Figure 3.4 Changes in male part time employment by age group**

For selected cohorts born between 1936–1940, 1956–1960 and 1976–1980

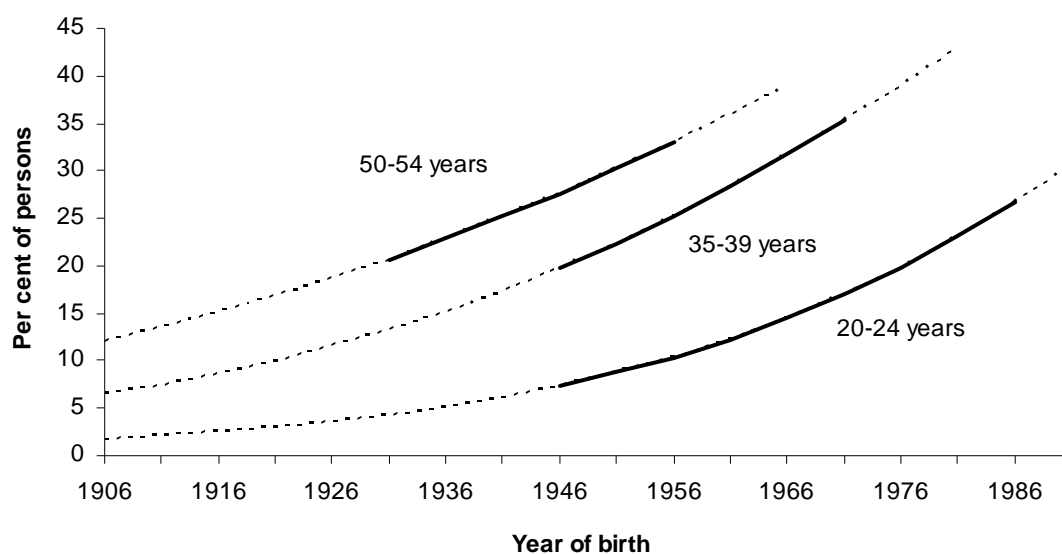


Data sources: ABS (*Labour Force, Australia detailed — electronic delivery*, Cat. no. 6291.0.55.001, table LM8); ABS (*Labour Force Historical Timeseries, Australia 1966–84*, Cat. no. 6204.0.55.001, table 4).

As expected, the curve peaks at the teenage years and the middle 60s for each of these cohorts. The age profile reflects the typical pattern of high initial part time employment, decreasing to middle age, and again increasing in the latter years of working life. These can be characterised as transition periods entering and leaving the labour force. Also the broad pattern of the curve has shifted up for each successive cohort. If past cohort effects are repeated, then future levels of part time employment among older age groups will continue to increase.

The cohort effects for women for three age groups in the life cycle is presented in figure 3.5. Those age groups are 20–24 years, 35–39 years and 50–54 years. Again the cohort effects have operated to increase part time employment ratios across the age groups. The part time employment rate for 20–24 year olds increased by 22 percentage points between the 1946 and 1986 cohorts. The cohort effects were again similar for older age groups.

**Figure 3.5 Changes in female part time employment ratios across different cohorts, 1906–1991**  
For selected age groups

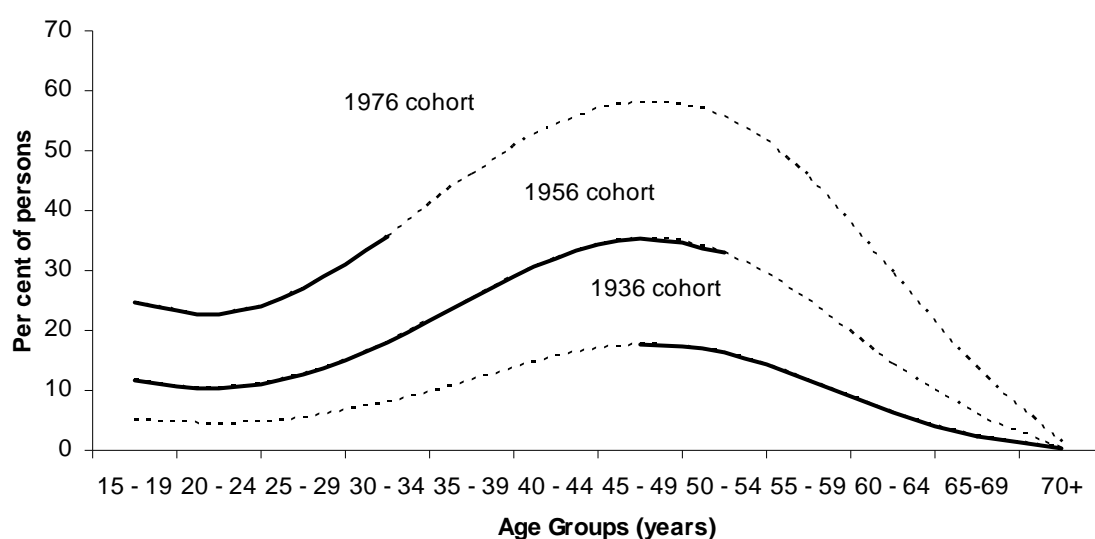


Data sources: ABS (*Labour Force, Australia detailed — electronic delivery*, Cat. no. 6291.0.55.001, table LM8); ABS (*Labour Force Historical Timeseries, Australia 1966–84*, Cat. no. 6204.0.55.001, table 4).

Figure 3.6 shows the age effect through the life cycle of three female cohorts. The curve peaks at the middle years of working life for each cohort. This reflects the combination of work and child raising duties. Also evident is the marked increase in part time employment in the early years of working life and among 45–49 year old women. The decline in part time employment in older age groups tends to be the common experience of women and men and reflects the transition to leaving the labour force.

**Figure 3.6 Changes in female part time employment by age group**

For selected cohorts born between 1936–1940, 1956–1960 and 1976–1980



Data sources: ABS (*Labour Force, Australia detailed — electronic delivery*, Cat. no. 6291.0.55.001, table LM8); ABS (*Labour Force Historical Timeseries, Australia 1966–84*, Cat. no. 6204.0.55.001, table 4).

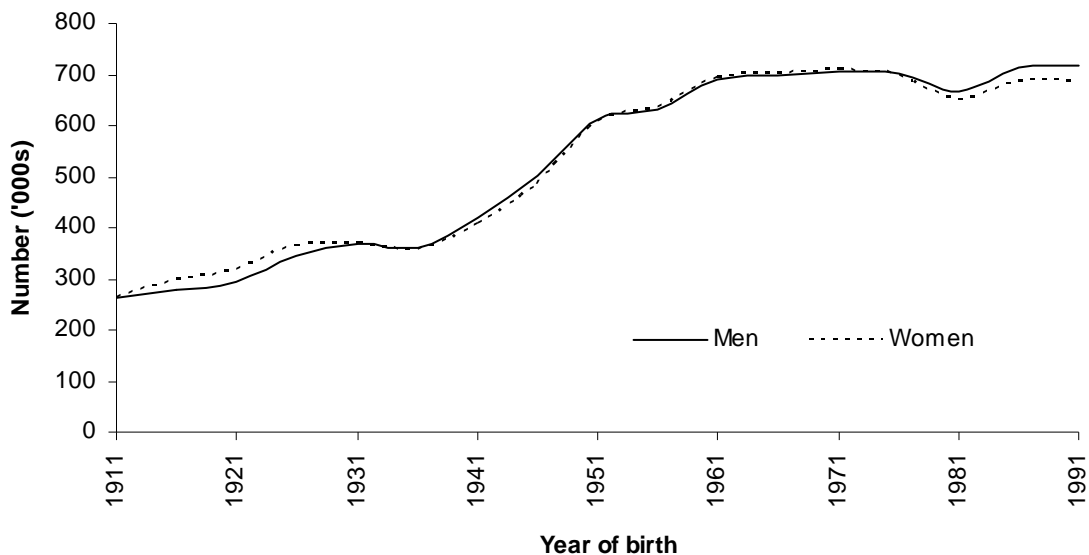
If the working age population was uniformly distributed across all age groups then the age effect would have no impact on the aggregate level of part time employment over time. However, this is not the situation. Figure 3.7 presents the number of men and women by 5 year cohort for the period covered by the data base — 1966–2006. For example, there were on average 265 000 men from the cohort born between 1911–1915.<sup>2</sup> This compares to an average of 720 000 men who were born between 1987–1991.<sup>3</sup>

<sup>2</sup> As a result of deaths and net migration, the number of people from a given cohort will change over time.

<sup>3</sup> The cohort born between 1987 and 1991 is only present in the analysis for the year 2006 — the first year of the analysis where all members of that cohort are aged 15 years or over.

It is to be expected that, other things remaining unchanged, the relative sizes of the cohorts will have an effect on the movement in aggregate part time employment over time. As shown in figure 3.7, there was a marked increase in the size of the cohorts after 1941 associated with the ‘post-war baby boom’ which would have considerably rejuvenated the working age population during the 1960s. This would have tended to increase the proportion of the male working age population who worked part time during the 1960s, given younger aged persons have a higher rate of part time employment. Later, as they entered middle age, this would have had a dampening effect on levels of part time employment as part time employment rates are low among the middle age men.

Figure 3.7 **Cohort sizes — men and women, 1966–2006**  
Average size for the period



Data sources: ABS (*Labour Force, Australia detailed — electronic delivery*, Cat. no. 6291.0.55.001, table LM8); ABS (*Labour Force Historical Timeseries, Australia 1966–84*, Cat. no. 6204.0.55.001, table 4).

### 3.2 Decomposing the changes in part time employment

The previous section identified age and cohort effects as the prime reasons underpinning the growth in part time employment over the past four decades. This section decomposes the growth in part time employment into those arising from shifts in the age distribution of the population and those arising from changes in part time employment within age groups. The latter effect represents the influence of the cohort effects identified above.

Table 3.1 presents the aggregate change in the part time employment to population ratios for men and women. This change is decomposed into its two broad components — that arising from the changing age distribution of the working age population (the demographic effect) and that attributed to changes in the part time employment to population ratio within age groups (the within age participation effect).

The estimates show that the changing age distribution has had a negligible effect on the aggregate male and female part time employment to population ratios over the last two and half decades. As noted above, part time employment is unequally distributed across age groups and demographic changes could be expected to have an impact. But changes in demographic shares have largely had offsetting effects on the level of aggregate part time employment. The falling share of the population in the younger age groups who have relatively high part time employment ratios has worked to lower aggregate part time employment ratios. But this has been largely offset by the rising share of the population in older age groups, particularly among men, who also experience relatively high part time employment ratios.

The analysis shows that the strong changes in part time employment ratios within age groups — the cohort effects — have driven the aggregate changes in the part time employment ratio. The table also shows the effect of projected demographic changes up to 2020 on the part time employment population ratio. As indicated, the aggregate demographic effect will maintain a mild depressing effect on aggregate part time employment ratios. This arises largely from the projected decline in the relative size of the younger age groups that currently exhibit high rates of part time employment. Further growth in the level of part time employment will need to rely on the continuation of behavioural changes identified by the cohort analysis.

**Table 3.1 Decomposition of demographic and age part time employment effects on the overall part time employment ratio**

Change in percentage points 1979–2006 and projected 1997–2020

	<i>Men</i>	<i>Women</i>	<i>Total</i>
Demographic effect	-0.6	-0.1	-0.5
Within age participation effect	7.2	11.0	9.3
Total change in part time employment rate	6.5	10.9	8.7
Projected demographic effect 1997-2020	-0.5	-1.8	-1.1

Sources: ABS (*Labour Force, Australia detailed — electronic delivery*, Cat. no. 6291.0.55.001, table LM8); ABS (*Labour Force Historical Timeseries, Australia 1966–84*, Cat. no. 6204.0.55.001, table 4); ABS (*Population Projections By Age and Sex, Australia – Series B*, Cat. no. 3222.0, table B9).

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### 3.3 Summary

Both men and women have experienced major changes in their levels of part time employment over the past forty years. This Chapter has identified and described the major trends underlying the increase in part time employment, particularly the large changes across the age groups and cohorts. While different age groups participate in part time employment to varying extents, the changing demographic structure of the working age population has not been the major force underlying the growing rate of part time employment. Rather, this growth has been driven largely by increases in participation within all age groups.

The effect of the ageing population on part time employment is expected to be largely neutral due to broadly offsetting factors. Firstly, the reduction in the share of younger age groups in the working age population will see decreases in the share of the working age population undertaking part time employment. Offsetting this are the increasing shares of older workers, those aged 50 years or more. These older groups tend to experience relatively higher rates of part time employment. Further growth in part time employment may come from the continuation of the strong cohort effects experienced in the past.

