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Ageing and Population Policy (Draft Only)

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Introduction

Demographers once described population ageing as "one of the truest measures of progress" (Cowgill) and "a great triumph of civilization" (Notestein). Presumably, this was mainly because the increase in the percentages in older ages resulted from humankind's ability to control unsustainable high birth rates (it had little to do with lower death rates).

However, interpreting population ageing as a measure of progress assumes that the demographic transition reaches the supposed end point where near-stationary population numbers are characteristic. This appears to be almost universally untrue, since post-transition populations have failed to reach a supposed end stage of demographic equilibrium. Population decline, or prospective decline, are now typical in countries with low birth rates.

Previously unforeseen has been the emergence of below-replacement fertility, sustained for decades. This development creates a previously unexpected form of population ageing, one that is more a symptom of demographic decline than a sign of demographic progress.

Over coming decades, Australia will be adapting to the transition to an old age structure - one of the most far-reaching changes in its demographic history. The future course of population ageing is an important consideration for population policy, given that the purpose of such a policy is to intervene in demographic trends to avert unwanted developments.

A population policy does not have to be a highly detailed prescription of what is desirable demographically. It might consist of a set of broad goals, quantitatively defined, such as minimising population ageing (e.g. no more than 25 per cent 65 and over), minimising fertility decline and ultimately achieving zero growth.

To address the question of ageing and population policy, this paper first considers the limitations of the present theoretical context for the discussion of population policy. It then discusses the outlook for population ageing in Australia and some of the consequences arising.

Population Analysis for Policy Development

Perceptions of what is most important in population policy, such as the environment, or most relevant, such as immigration levels, inevitably determine theoretical approaches and the scope of current "policy settings" to address population concerns.

The Environmental Focus

Demography lacks a theoretical framework for consideration of population policy in more developed countries. The predominant theoretical approach to population policy has been the 'environmental impact formula', which summarises human impact on the environment as a product of population, affluence and technology. This formula, or variations on it, was used as a foundation for the discussion of population policy in the National Population Council's Report (1991), as well as in the report on population policy from the House of Representatives Standing Committee on Long Term Strategies (1994).

Analysis of the interaction of diverse influences affecting environmental outcomes requires multi-disciplinary effort. This raises three problems for demographers:

1. First, human impact formulas ask questions which demographers themselves cannot answer, namely: what range of factors have an impact on the environment, how do they interact and what is their relative importance?
2. Second, the emphasis on the environment in population policy diverts attention away from the point that population changes have implications for the society and the economy, as well as the environment. Population is relevant to population policy in relation to all of these.
3. Third, population is relevant not just in relation to growth rates and the numbers of people. Important also are population distribution, composition and all three components of growth – fertility, mortality and migration, rather than just the latter. Population ageing is one of the main aspects of change in contemporary population composition, and it is an aspect which all three components of population change affect.

The Immigration Focus

Whereas the environmental focus emphasises the 'problem' of the environment, the immigration focus emphasises immigration policies as the solution to demographic problems. However, focussing on immigration inevitably accords relatively little weight to a wider range of population concerns. Also, immigration is a particular responsibility of one government department, while other aspects of population change, such as the family and population distribution, are of concern to different government organisations at State and Federal levels. Without some co-ordination through a population policy, effective interventions to manage certain features of population change are less likely (e.g. supporting higher fertility).

The Population Focus

A true population policy requires a focus on population, rather than the environment or immigration. A population focus would more clearly place the discussion of population policy in Australia within mainstream demography, rather than in an area of specialisation on the environment and population, where few demographers are qualified to undertake analytical research.

The population approach might be summarised in terms of a "population impact matrix" (Slide 1). The matrix outlines the aims and scope of demographic inquiry that is relevant to population policy. The Slide presents examples of the impacts of population:

- For the environment, population size has multiplier effects on resource use and environmental change. Lower population growth rates increase the likelihood that environmental impacts will be better monitored and controlled. The distribution and redistribution of population affect the extent of crowding and congestion in urban areas, as well as the extent to which human settlement and land uses invade native plant and animal habitats. The composition of the population, in terms of lifestyles and material living standards, affect the consumption of resources and the uses of environmental amenities.
- In relation to the society, population size may affect a nation's international standing, influence and security, while rapid growth may diminish social cohesion and increase the likelihood of strains and disorder, especially if migration is also high. Population distribution influences lifestyles, and the accessibility of services and the extent of integration of regions into a unified society. The composition of the population in relation

to education, employment and income is the basis of prosperity, as well as social inequality and differences in life chances. Other aspects of composition include birthplace composition, which affects community relations and perceptions of the nature of the society, and age structure, which is the basis of intergenerational relations and inter-dependency.

- For the economy, population size has a bearing on the diversity of the economy, adaptability and economies of scale. The rate of growth of the population is a determinant of the demand for investment in infrastructure growth versus investment in innovation, efficiency and specialisation. Population distribution, in turn, is a determinant of market dispersal and concentration, market accessibility and the economic viability of communities. Finally, population composition affects the diversity and competitiveness of the labour force, the nature and diversity of the domestic market and the extent of market segmentation.

A political dimension could similarly be added to the matrix, since population changes also affect such matters as the size and composition of the electorate, the distribution of voters, and the political importance of particular issues. The content of the population impact matrix is not new but, if we emphasise only the environment, we shall lose sight of the wide range of issues arising from demographic trends.

The Changing Outlook for Population Ageing

Population ageing is an important part of the changes in population composition that have varied implications. This section discusses prospects for population ageing with reference to illustrative projections. Our accounts of population ageing are founded largely on the demographic transition, but the picture is changing. Just as present trends in fertility and mortality in more developed countries go well beyond expectations from the demographic transition, so too does the present and future of population ageing.

The first projection refers to the demographic transition model as a base for comparison. Others describe future outcomes in terms of a continuation of present demographic trends in Australia and shifts towards the demographic trends of other countries. We cannot accept the Australian present as a reliable guide to the future.

Classical Ageing (TFR 2.07, ANM zero)

Classical ageing simply assumes that the demographic transition results in a stationary state, as described in "classical" transition theory (Slide 2). Classical ageing is the benchmark with which to compare other prospective futures.

The classical ageing model projects Australia's population with zero migration and replacement level fertility (TFR 2.07) from the base year, 1996. Mortality is consistent with the trend assumed in the latest projections from the ABS (ABS 2000: 52). Population numbers begin to stabilise around mid-century, although mortality decline sustains moderate growth for several more decades. The proportions aged 65 years and over stabilise at around 24 per cent, and population numbers stabilise around 23 million. Adding net immigration to the classical model results in continuing growth.

Outcomes of classical ageing are favourable in that the proportions in the older ages do not rise to unusually high levels. The conditions for classical ageing, however, are not present in Australia: fertility is too low and there is a strong commitment to immigration.

Australian Ageing (TFR 1.75, ANM 110,000)

What we might call the Australian ageing scenario arises from a continuation of present demographic processes, entailing low fertility and relatively high net migration (Slide 3). This extrapolates present levels of fertility, mortality and migration, and is similar to the ABS Series 1 projection, (ABS 2000, pp. 43 & 69), having a constant TFR of 1.75 and net migration of 110,000. As far as the level of population ageing is concerned, this scenario has a similar long-run outcome to classical ageing – the proportion in the older ages remains just under 25 per cent in 2096. The presence of new immigrants and their offspring counter some of the effects on population ageing of low fertility, helping to maintain the proportions in the younger ages. There are many possible variations on this scenario, depending on the level of migration, as discussed in recent papers by McDonald and Kippen.

Italian Ageing (TFR 1.2, ANM 110,000)

The third ageing scenario – Italian ageing, includes very low fertility (Slide 4). If Australia experienced Italy's present birth rate (TFR 1.2) over the projection period, in conjunction with an ANM of 110,000, Australia would be embarked on a course towards hyper-ageing, where the proportions 65 and over exceed 30 per cent in the second half of the century. A higher level of immigration (ANM 150,000) would make only a small difference to this outcome, while lower immigration would raise the proportions 65 and over to higher levels even earlier (ANM 50,000 results in 35 per cent in the older ages in 2051).

The Italian scenario seems unrealistic for Australia in the near future, but it is a prospect that a population policy should seek to prevent through seeking, sooner rather than later, to check the fall in the birth rate.

Japanese Ageing (TFR 1.2, ANM 110,000, higher life expectancy)

Perhaps the least familiar mechanism in contemporary population ageing is the improvement in the life expectancy of the population. This contradicts the well-known generalisation in demography that improvements in survival make populations younger, because of the improved survival of the young. Yet in long-lived populations with below replacement fertility, this effect is reversed for two reasons:

- First, since there is little latitude left for improvements in the survival of the young, much of the improvement in life expectancy occurs in the adult ages, including old ages.
- Second, if fertility is below replacement, small changes in the survival of children have little effect on their percentage of the total population.

Thus a final relevant scenario is what might be loosely termed Japanese ageing, given that Japan has the highest life expectancy in the world (Slide 5). Although the future of life expectancy is unknown, changes could have a considerable effect on the process of population ageing. Thus the Japanese scenario assumes that life expectancy for both sexes is eight years higher for both sexes at mid-century than in 1996 (ABS female e0 5 years higher, males 8 years higher), and a further four years higher by 2096.

This scenario ultimately produces 35 per cent aged 65 years and over in 2096 (30 per cent in 2051). A particular feature is the tenfold increase in the numbers aged 85 and over (1996 just over 200,000; 2096 over 2 million). With 50,000 annual net migration, instead of 110,000, the proportion rises to 38 percent. In every scenario with below replacement fertility, lower net migration results in a higher percentage in the older ages. The summary in Slide 6 illustrates the advantages for the age structure of classical and Australian ageing over the Italian and Japanese scenarios.

Effects of Fertility, Mortality and Migration

There are many possible combinations of fertility, mortality and migration, such that it is difficult to gauge their relative impact on ageing from just a few scenarios. Slide 7 therefore summarises the outcomes of a wide range of variations in the components of growth. Each point on the graphs represents the outcome of a hundred year projection of the Australia's 1996 resident population, keeping each component of change constant over that time. The graphs show changes in the percentages 65 years and over for low and high levels of life expectancy (top and bottom charts), different TFRs (horizontal axis) and different levels of net migration (the three lines on the chart).

- Fertility. The most striking feature is the well-known pattern that lower fertility makes populations older.
- Net migration and above replacement fertility. The graphs show that the level of net migration has only a small impact on population ageing when the total fertility rate is at or above replacement level. Net migration of zero and 100,000 both result in much the same percentages aged 65 and over when the TFR is 2 or more. This reflects that when fertility is high, it has the greatest impact on the shape of the age structure through augmenting the youngest cohorts.
- Net migration and below replacement fertility. When fertility is below replacement, migration makes a greater difference to the percentages aged 65 and over. Yet, in Australia, the first 50,000 has a far greater rejuvenating effect than the second 50,000 net migration. (see McDonald and Kippen). Thus when the TFR is low, zero migration leads to high proportions aged 65 and over. Net migration of 50,000 reduces the level of ageing substantially, but 100,000 net migration makes a much smaller difference. The explanation for this is as follows: zero net migration eliminates the overseas-born and their contributions to the younger age groups; 50,000 net migration maintains the migrant presence; 100,000 net migration maintains the migrant presence, but augments the numbers reaching the older ages.
- Mortality. Since the main ABS projections have only one mortality assumption, the effects of mortality change on ageing are not well known. The charts show that a ten-year increase in life expectancy at birth, from 75 years to 85 years, has a substantial impact on ageing in low fertility societies.

The diagrams indicate that, for the same levels of fertility and migration, a ten year increase in life expectancy, in already long-lived populations, increases the percentage in the older ages by between five and ten.

Given the likely impact of mortality shifts on the numbers and percentages in different age groups, it seems advisable to include alternative mortality assumptions in population projections.

Clearly, all of the components of population change interact to produce a wide range of outcomes. None is constant or predictable. The population will not necessarily follow a single projected trend for long. An important point is that the processes of population ageing in low fertility societies contrast greatly with those identified in the theory of the demographic transition. Immigration and mortality change have a much greater influence on population ageing in the context of below replacement fertility.

Impacts of Ageing

Implications arising from the projections of population ageing can be considered in terms of the population impact matrix. This section refers particularly to impacts on society, mentioning others only briefly.

Environment

It is thought that children in more developed countries absorb more resources per capita than the aged, with the result that the first 20 years of life cost more than the total years lived after age 60 (Easterlin, 1996). If this is so, growth of the aged population could be more favourable for the environment generally than growth in other age groups.

Impacts of ageing on the environment are more commonly considered in terms of population distribution, especially when middle-aged and older people participate, or dominate, in population shifts towards scenic and environmentally sensitive locations. Spatial aspects of ageing will be important for population policy development.

Economy

Compared with the impact of ageing on the environment, far more has been written about ageing's impact on the economy, where income maintenance and health have been particular concerns. Avoiding hyper-ageing, and minimising population ageing, would seem to have positive economic effects. Continuing economic growth is likely to be a prerequisite for meeting the needs of greater numbers of older people without compromising living standards and standards of care. Additional responses will be targeting government expenditure on the most needy and encouraging greater self-provision in later life. Such responses are evident in the strategy for ageing populations that the OECD (1999, 100) has formulated.

Society

Finally, there a number of impacts on society evident from the projections. I shall mention two of these, namely negative momentum and prospects for the overseas-born population.

Negative momentum

World population growth is unstoppable because of the inherent positive momentum in the global age structure. Slide 8 shows the trend in momentum over the demographic transition and beyond. The momentum of growth, arising from the movement of larger cohorts into older ages, is zero at the start and end of the demographic transition, but rises to a high level at mid-transition – often implying inherent growth potential of 50 per cent or more.

Populations actually experience "younging" over the first part of the demographic transition, because high birth rates, in conjunction with falling mortality rates among children, increase the relative size of the youngest age groups. Ageing begins when fertility starts to fall, and, over the demographic transition, fertility decline far outweighs all other influences on the process of population ageing. Hyper-ageing emerges when fertility falls below replacement, remains at a low level and gives rise to negative momentum (Slide 8). A later upswing in fertility would mark the beginning of a new stage of population rejuvenation.

Contemporary declining populations have negative momentum in their age structures, because new generations are smaller than their predecessors. Hence cohort flow will reduce the numbers in older age groups. Negative momentum refers to the potential for decline that is built into an age structure at a point in time. More countries are now developing an inherent

momentum of decline, which leads to excessive ageing with the representation of ages 65 and over passing 30 per cent. If left long, negative momentum will be difficult to reverse, because each new cohort is smaller than all others.

- Classical ageing is the only scenario in which zero momentum is achieved – in other words the age structure reaches a stationary state with no inherent momentum for growth or decline (Slide 9). Classical aging has a singular advantage over all of the other scenarios because it prevents the emergence of negative momentum. In the slide, momentum varies as cohorts of different sizes move through the age structure, but momentum is close to zero from the 2030s onwards.
- Australian ageing implies negative momentum, from the 2030s, although the potential for decline stays at a moderate level (Slide 9). Gains to the population from immigration actually offset this decline potential, and the growth rate remains positive throughout the projection period (0.7% 2031, 0.2% 2096).
- The momentum curves for the Italian and Japanese scenarios are very similar, hence only the former is plotted (Slide 9). Low fertility (TFR 1.2 in both scenarios) leads to a rapid fall in momentum. From 2026 it implies that the age structure in each year has an inbuilt negative momentum of 20 to 30 percent of the total population. The long-run, cumulative effect of this is extinction. As elements of Italian and Japanese ageing emerge, the "steady as she goes" approach to Australian population matters will require revision.

The presence of negative momentum is important for societies because it means that reducing population decline is not just a matter of topping up the numbers through immigration at a convenient time – the force of decline can become built into the entire age structure, which tapers downwards. Long-term interventions are required to prevent or reverse this situation.

Prospects for the Overseas-born Population

If immigration is used to address population decline and excessive ageing, other changes ensue. Low fertility, in conjunction with high immigration, might seem, at first sight, to imply a shift in the composition of the population towards a higher representation of the overseas-born. This would certainly be the case in a low fertility country that embarked on a high migration program for the first time.

In the Australian ageing scenario, however, the representation of the overseas-born in the total population changes only slightly (Slides 10 & 11). One reason is that Australia has a long history of immigration, and the overseas-born are spread through the whole age structure. Another reason is that the present age-structure of the overseas-born is quite strongly oriented to decline – there are large numbers in the middle and older ages, and relatively small numbers in the younger ages to replace them in the future.

Much ongoing immigration in Australia is actually absorbed in 'population replacement', offsetting the rising losses from deaths that are inevitable in the old age structure of the overseas-born. This being so, quite high levels of immigration are required to sustain or increase the migrant presence.

An important compositional change within the population of immigrant origins is population ageing itself, which is proceeding at a more rapid pace than in the total (Slide 11). Overall, however, Australia is a "lucky country" in terms of its experience of immigration, which makes it easier to use immigration as a means of addressing population policy issues.

Conclusion

In coming years, Australia will be adapting to further stages of the process of demographic ageing, which will comprise one of the most substantial changes in its demographic history. The future of population ageing is by no means clear cut – changes in fertility, mortality and migration will all affect outcomes by mid-century. Monitoring changes arising from population ageing, and intervening to avoid unwanted consequences, will be basic considerations for population policy.

Population policy becomes important when demographic trends imply changes that are undesirable, yet avoidable with timely interventions. Responses to population ageing are a necessary part of population policy. The Australian ageing scenario is a plausible prospect at the moment, but demographic changes seldom stay on track for long. Elements of the Italian (lower fertility) and Japanese (longer life) scenarios are likely become relevant to Australia's population prospects in time to come.

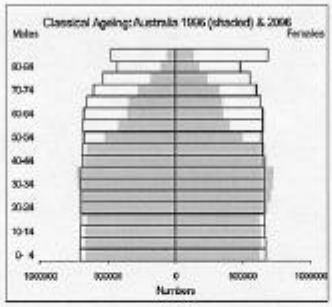
Population impact matrix

Examples of the Impacts of Population

Population	Environment	Society	Economy
Size	Multiplier effects on resource use and environmental change	International influence, security	Economic diversity, adaptability, economies of scale,
Growth Rate	Affects ability to control impacts on resources & the environment	Social cohesion	Investment in infrastructure, growth, versus innovation and efficiency
Distribution	Urban congestion, invasion of native plant and animal habitats and environmentally vulnerable areas	Lifestyles, accessibility of services	Market dispersal and concentration; economic viability of curtailed fax
Composition	Uses of resources and the environment	Social inequality, community relations, intergenerational relations	Diversity and scarcity issues of the labour force, market segmentation

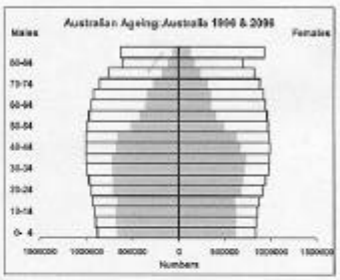
1

"Classical" ageing
(TFR 2.1, ANM Zero)



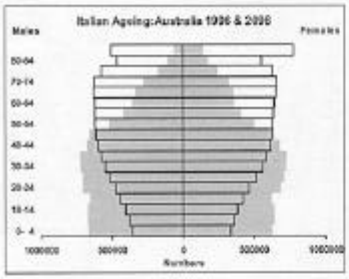
2

Australian Ageing
(TFR 1.75, ANM 110,000)



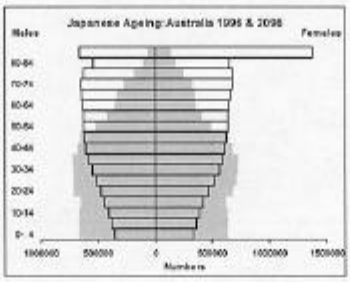
3

Italian Ageing
(TFR 1.2, ANM 110,000)



4

Japanese Ageing
(TFR 1.2, ANM 110,000, e0 high)

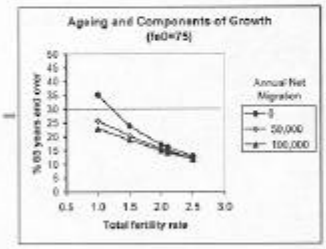


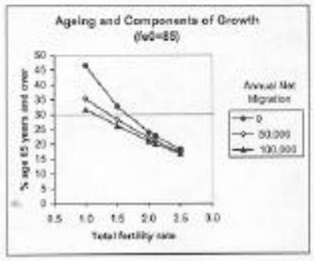
5

Outcomes of patterns of ageing

Pattern	% 65+ 2096	Total Pop 2096 (m)
Classical	24	23
Australian	25	32
Italian	31	20
Japanese	35	21

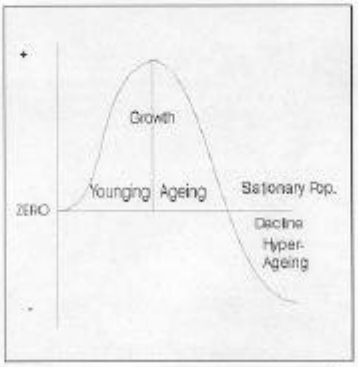
6





7

Momentum curve - the demographic transition and beyond



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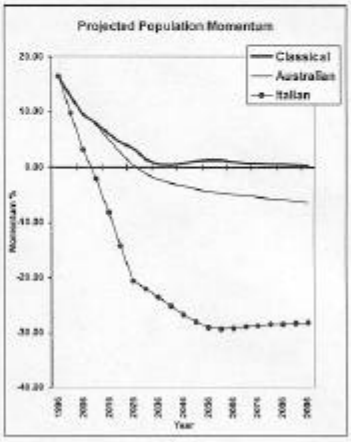

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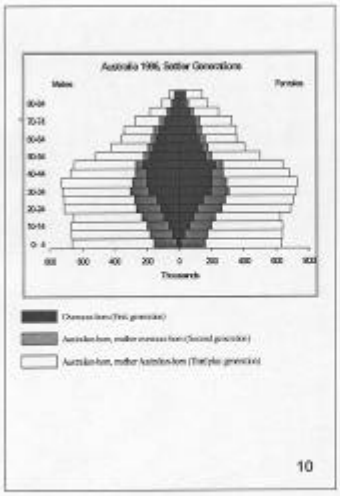
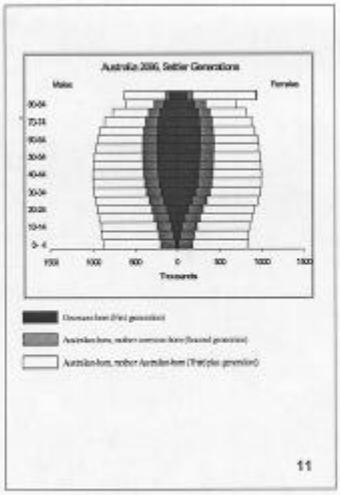

Australia 1996, Settler Generations
Males
Females
Thousands
10


Australia 2056, Settler Generations
Males
Females
Thousands
11