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## CAN INCREASED IMMIGRATION BE A SUBSTITUTE FOR LOW FERTILITY?

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*This paper argues that immigrants are not substitutes for births. As demonstrated through several scenarios modelling Australia's future population, fertility and immigration do not have equivalent impacts on population size and age structure. The authors contend that the solution to low fertility does not lie in a choice between supporting fertility and supporting migration but in prudent policy relating to both.*

### INTRODUCTION

In the public discourse surrounding declining fertility in Australia, the observation is often made that low fertility should not be a concern for public policy because, if additional workers or additional people are considered to be necessary at some future time, Australia could simply increase the level of its immigration intake.

Increased immigration is seen to have many advantages compared to sustaining the fertility rate, as expressed in the following viewpoints:

1. It is flexible; the immigration tap can be turned on and off according to fluctuating demand for workers. In contrast, fertility rates are not easily turned on and off. In public debate, this argument is sometimes made by environmentalists who believe that Australia's population should be as low as possible.<sup>1</sup> There is an impression that sustaining the birth rate would ultimately lead to a higher population total for Australia than would the selective use of immigration.
2. Some economists have argued that lower fertility is a benefit because it reduces the public and private costs of child dependency, thus increasing the standard of living of those who are born.<sup>2</sup> Also, immigration is seen as a cheaper option; other countries bear the human capital development costs and Australia reaps the benefits.<sup>3</sup>
3. There is a humanitarian argument that there are millions of poor people around the world who would make good Australians if given the opportunity to move to Australia.<sup>4</sup> Hence, why should we add to the world's total population by attempting to stop the decline of fertility in Australia? Aside from the humanitarian argument, there are those who see policies in support of fertility as being 'anti-immigration' where immigration is a cornerstone of Australian society.
4. Support from the public purse for those who have children is said to discriminate against those who do not have children.<sup>5</sup> This is seen as unjust and could lead to an electoral backlash. Immigration treats these two groups equally.
5. Pronatalism is racist and fascist.<sup>6</sup> It suggests that a pure-bred Australian is preferable to someone who comes from some other country. In evidence, in some European countries today, extreme right political parties express pronatalist and anti-immigration sentiments.

In apparent opposition to these arguments, the Australian Government in its May 2004 budget substantially increased the level of public support for children and, although hidden behind some jocularity,<sup>7</sup> sustaining the Australian fertility rate seems to have been at least one of the

rationales for doing this. Furthermore, in 2003, for the first time since 1976, the Australian Government has reported to the United Nations survey of national population policies that it has a fertility policy, namely, to 'maintain' the fertility rate around its present level.<sup>8</sup> Also in apparent opposition to the notion that immigrants can be substitutes for births, in both the 1997 and 2003 round of surveys, every country in the world that had a Total Fertility Rate under 1.5 births per woman (around 27 countries in both surveys) reported to the United Nations that it considered its fertility rate to be 'too low'.<sup>9</sup> Why is it that all governments around the world seem to be fully convinced that very low fertility is undesirable when, in the public discourse in Australia, many people consider immigration to be a better solution?

#### **WHAT IS THE PROBLEM?**

Before addressing the solution, we need to consider the nature of the problem. Why is very low fertility a problem? There are three main reasons.

First, in the immediate term, evidence suggests that Australians complete their childbearing with fewer children on average than they want. This is also the case in most countries that have very low fertility. While individual histories are involved in this outcome and lead to wide variation across the society as a whole, this outcome is attributed to social-institutional causes such as the difficulty of combining paid work with family responsibilities, and competitiveness and insecurity in the labour market.<sup>10</sup> There is a societal problem if the way society is organised does not enable people to have the number of children they would like to have, when that number is as low as one, two or three children. While satisfying people's

reasonable desire for children is an important social goal, we do not deal with this argument in this paper because immigration is obviously not an alternative solution for this problem.

Second, and the reason that most exercises the minds of policy makers in low fertility countries, is the impact that low fertility has on future labour supply. This effect has its impact in the intermediate term (in 20+ years). To a greater or lesser degree, there is a concern that the country will not be able to meet the costs of an ageing population when the labour supply is falling. This is a huge issue in many European countries today, countries that have already had very low fertility rates for 20 years or more. Australia is in a better position than many other advanced countries in meeting the costs of its ageing population because it is ageing much more slowly and to a lesser extent, and because its social security and health arrangements are already better positioned to deal with an ageing population than is the case in most other countries. Nevertheless, the Government's *Intergenerational Report*<sup>11</sup> places major emphasis on the future ageing issue.

Probably more important than aged dependency in most countries, and certainly in the case of Australia, is the economic adjustment and loss of dynamism associated with a falling and ageing labour supply. Where fertility has been higher in the recent past, the size and organization of the economy will have become contingent upon a growing labour supply of young workers. This has certainly been the case in Australia in the past 20 years. If there is a sudden fall in the availability of young workers, as will be the case in many countries in the immediate future in the absence of large scale immigration, considerable economic adjustment will be required. It is

possible that labour shortages will provide a stimulus to technological development and to higher productivity resulting from increases in capital per worker as argued by Kosai et al.<sup>12</sup> However, analyses of this type tend to relate to a single economy and ignores the impacts of international competition. They also assume that there is an adequate number of young skilled workers to apply the new technology. Larsson has made the observation that 80 per cent of technology becomes obsolete within ten years while 80 per cent of the work force gained its qualifications more than 10 years ago.<sup>13</sup> Consequently, young workers are required to assimilate new technology, playing a complementary role to older people who manage, have the perspective of experience and are holders of capital. It is possible that the high wages of young people in labour-scarce economies will induce capital to move to lower-wage economies. This is feasible because technology is owned by firms rather than by countries, and thus is highly transportable. At the same time, emerging economies today have an abundant supply of highly skilled young workers available at very cheap rates.

In a future world in which financial capital, human capital and technology are all highly mobile and skilled human capital is the vital resource, the outcomes for specific countries are unpredictable. Nevertheless, we can conclude that the extent of economic adjustment required is reduced where there are smooth transitions in age structure and where the young labour force is not in sharp decline as a result of very low fertility.

Of course, immigration is a potential source of young workers, so the relative efficiency of immigration in 20+ years time versus births today needs to be considered. However, a potential risk

associated with the immigration option is that, when the immigrants are required in 20+ years time, they may not be readily available with skill levels that are at least equivalent to those of an Australian-educated birth cohort. Global competition for the best skilled workers is already high but will heat up dramatically in the next two decades.

Third, in the long term, very low fertility leads to spiralling population decline. In the absence of migration, a Total Fertility Rate of 1.3 births per woman over a long period of time means each successive generation would be 63 per cent of the size of the previous generation. A demographic generation is about 30 years in length. This means that after 90 years of very low fertility, the generation size would have fallen to just 25 per cent of the original generation size. This is unsustainable population decline. Immigrants might be used to fill the growing population deficit but it is clear that a very large number would be required (see below for actual numbers). Furthermore, unless the immigrants have a much higher fertility rate than the local population, the problem would never go away; immigration would have to continue at very high levels on an on-going basis.

#### **THE DIFFERING IMPACTS ON POPULATION STRUCTURE OF FERTILITY AND IMMIGRATION**

Popular discussion tends to equate one birth with one migrant; that is, it assumes that immigration and fertility have equivalent impacts on population structure. As we demonstrate in this section, this is not the case. This is why we argue that the solution to the problems described in the previous paragraph does not lie in a choice between supporting fertility and supporting migration but in prudent policy that relates to both.

We consider two exercises in population dynamics that indicate the differential effects of fertility and migration on the future population of Australia.

### Population targets exercise

First, using a standard plausible assumption about future mortality in Australia,<sup>14</sup> we examine the various combinations of fertility and net overseas migration that would be required to attain population totals for Australia of 15 million, 25 million, 35 million or 50 million in 100 years (by 2103). In doing so, we are not suggesting that Australia's population policy should be based on the attainment of a particular population total. This is a hypothetical exercise to demonstrate the different impacts of migration and fertility on population structure when the end result is the same in terms of the total population of Australia in 100 years. The various combinations are shown in Table 1. Net overseas migration falls to -55,000 per annum and fertility rises to 2.0 births per woman, when the aim is to achieve a population of 15 million in 2103. In contrast a population of 50 million in 2103 could be achieved with annual net overseas migration of 354,000 and a fertility rate of 1.1. The model that is closest to the current settings (fertility equal to 1.7 and net migration equal to 108,000) produces a population of 35 million by 2103, and average annual

growth of 0.6 per cent per annum. While the combinations in Table 1 are interesting in themselves, our aim is to examine their impacts on population age structure rather than on population size.

To measure the impacts of different combinations of fertility and migration on population structure, we use three measures:

1. The percentage of the population aged 65 years and over (Table 2)
2. The total numbers in the main labour force ages, 20-59 years (Table 3)
3. The total numbers in the high technology productive ages, 25-39 years (Table 4).

In Tables 2-4, fertility is assumed to take one decade from 2003 to reach the long-term level that is sustained for the following 90 years. The specified level (see Table 1-4) of annual net overseas migration applies from the first year and remains constant throughout the century.

### Results: population targets exercise

Table 2 shows that, no matter what the final level of population, the proportion of the population aged 65 years and over falls as fertility increases and migration falls (left to right in the table), although it takes some 25 years for this pattern to emerge. It is unequivocal, therefore, that if the aim is to slow down the ageing of the population, combinations that have a somewhat higher level of fertility are

**Table 1: Combinations of annual Total Fertility Rate (TFR) and annual Net Overseas Migration (NOM), in thousands, required to reach selected population**

TFR	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
Target: 15 million NOM ('000)	51	38	26	14	2	-10	-21	-33	-44	-55
Target: 25 million NOM ('000)	137	121	105	89	74	58	44	29	14	1
Target: 35 million NOM ('000)	224	203	183	164	145	126	108	90	73	56
Target: 50 million NOM ('000)	354	327	301	276	252	228	205	182	161	140

**Table 2: Percentage of the population aged 65 years and over with given annual combinations of the TFR and NOM, in thousands from, Table 1, 2003 to 2103**

TFR	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
Year	Percentage of the population aged 65 years and over									
<b>Target: 15 million</b>										
NOM ('000)	51	38	26	14	2	-10	-21	-33	-44	-55
2003	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
2028	25.1	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.1	25.1
2053	38.5	38.0	37.6	37.1	36.7	36.3	36.0	35.5	35.2	34.9
2078	49.0	47.8	46.5	45.3	44.1	42.9	41.7	40.7	39.5	38.4
2103	49.2	48.5	47.7	46.8	45.9	44.9	43.9	43.0	41.9	40.8
<b>Target: 25 million</b>										
NOM ('000)	137	121	105	89	74	58	44	29	14	1
2003	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
2028	23.2	23.2	23.2	23.3	23.3	23.3	23.4	23.4	23.5	23.6
2053	34.3	33.9	33.5	33.2	32.9	32.5	32.2	31.9	31.6	31.3
2078	43.3	42.1	41.0	39.9	38.9	37.8	36.8	35.8	34.8	33.9
2103	43.8	42.9	41.9	41.0	40.0	39.1	38.1	37.1	36.1	35.1
<b>Target: 35 million</b>										
NOM ('000)	224	203	183	164	145	126	108	90	73	56
2003	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
2028	21.6	21.7	21.7	21.8	21.9	21.9	22.0	22.1	22.2	22.3
2053	31.5	31.2	30.8	30.5	30.2	29.9	29.6	29.3	29.1	28.8
2078	40.2	39.1	38.1	37.0	36.0	35.0	34.0	33.1	32.2	31.3
2103	41.4	40.5	39.5	38.5	37.5	36.5	35.6	34.6	33.6	32.6
<b>Target: 50 million</b>										
NOM ('000)	354	327	301	276	252	228	205	183	161	140
2003	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
2028	19.7	19.8	19.9	20.0	20.1	20.2	20.3	20.4	20.5	20.6
2053	28.7	28.4	28.1	27.8	27.5	27.2	27.0	26.7	26.4	26.2
2078	37.6	36.5	35.5	34.5	33.5	32.6	31.7	30.8	29.9	29.1
2103	39.7	38.7	37.7	36.7	35.7	34.7	33.7	32.7	31.7	30.7

preferable. Looking down each column in Table 2, we can see how the level of ageing changes with different levels of migration for a given level of fertility. This shows the very familiar pattern reported elsewhere that migration reduces ageing but that increasing levels of migration have an increasingly smaller impact on ageing. For example, with fertility at 1.7 births per woman, as migration shifts from -21,000 to 108,000, the percentage aged 65 and over by 2103 drops by 8.3 percentage points. However, when migra-

tion increases further, from 108,000 to 205,000, the gain is only an additional 1.9 percentage points.

Tables 3 and 4 show similar results as the tables are read from left to right. In the first 50 years of the projections, it is the low fertility-high migration combinations (left end of the table) that produce the larger labour force sizes (for a given total population size).

However, as time moves into the second 50 years, this situation is reversed such that it is the high fertility-low migra-

**Table 3: Total numbers in the main labour force ages, 20 to 59 years, given combinations of the TFR and annual NOM in Table 1, 2003 to 2103**

TFR	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
Year	Population aged 20-59 years									
Target: 15 million										
NOM ('000)	51	38	26	14	2	-10	-21	-33	-44	-55
2003	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
2028	11.5	11.3	11.1	10.9	10.7	10.5	10.3	10.1	9.9	9.7
2053	9.1	9.0	8.9	8.8	8.7	8.6	8.5	8.4	8.2	8.1
2078	6.7	6.7	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
2103	5.2	5.3	5.3	5.3	5.3	5.4	5.4	5.4	5.4	5.5
Target: 25 million										
NOM ('000)	137	121	105	89	74	58	44	29	14	1
2003	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
2028	13.2	12.9	12.6	12.3	12.0	11.8	11.5	11.2	11.0	10.7
2053	12.1	12.0	11.8	11.6	11.4	11.2	11.0	10.8	10.6	10.4
2078	10.6	10.6	10.6	10.6	10.5	10.5	10.4	10.4	10.3	10.2
2103	9.7	9.8	9.8	9.8	9.9	9.9	10.0	10.0	10.0	10.1
Target: 35 million										
NOM ('000)	224	203	183	164	145	126	108	90	73	56
2003	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
2028	14.8	14.4	14.1	13.7	13.4	13.1	12.7	12.4	12.1	11.8
2053	15.2	14.9	14.6	14.4	14.1	13.8	13.5	13.2	12.9	12.6
2078	14.6	14.5	14.4	14.4	14.3	14.2	14.1	13.9	13.8	13.7
2103	14.2	14.2	14.3	14.4	14.4	14.5	14.5	14.5	14.6	14.6
Target: 50 million										
NOM ('000)	354	327	301	276	252	228	205	183	161	140
2003	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
2028	17.3	16.8	16.3	15.9	15.4	15.0	14.6	14.2	13.8	13.4
2053	19.8	19.4	18.9	18.5	18.1	17.6	17.2	16.8	16.4	16.0
2078	20.5	20.3	20.2	20.0	19.9	19.7	19.5	19.2	19.1	18.8
2103	20.9	21.0	21.0	21.1	21.2	21.3	21.3	21.4	21.5	21.5

tion combinations (right end of the table) that produce the larger labour force sizes. As the differences in the first 50 years are larger than those in the second 50 years, it is the result in the first 50 years that is more impressive from the policy perspective. As labour supply in the next 50 years is likely to draw a great deal of policy attention (the *Intergenerational Report* is the outstanding example), this result argues the case for migration. Looking down the columns in Tables 3 and 4, it is evident that the sizes of the

labour force and the young labour force rise substantially as the total population size increases. This again is due primarily to the effects of migration.

#### **Projection scenarios exercise**

Our second exercise is to examine the population structure outcomes for two hypothetical population projection scenarios. The two projections involve different combinations of the total fertility rate (TFR) and annual net overseas migration (NOM). Both make the same

**Table 4: Total numbers in the high-technology productive ages, 25 to 39 years, given combinations of the TFR and annual NOM in Table 1, 2003 to 2103**

TFR	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
Year	Population aged 25-39 years									
<b>Target: 15 million</b>										
NOM ('000)	51	38	26	14	2	-10	-21	-33	-44	-55
2003	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
2028	4.4	4.3	4.2	4.1	4.0	3.9	3.8	3.7	3.6	3.5
2053	2.8	2.9	2.9	3.0	3.0	3.0	3.0	3.0	3.0	3.0
2078	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.4	2.5	2.5
2103	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	2.0
<b>Target: 25 million</b>										
NOM ('000)	137	121	105	89	74	58	44	29	14	1
2003	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
2028	5.1	5.0	4.8	4.7	4.6	4.4	4.3	4.2	4.1	3.9
2053	4.0	4.0	4.1	4.1	4.0	4.0	4.0	4.0	4.0	3.9
2078	3.6	3.7	3.7	3.7	3.7	3.8	3.8	3.8	3.8	3.8
2103	3.4	3.5	3.5	3.5	3.6	3.6	3.6	3.7	3.7	3.7
<b>Target: 35 million</b>										
NOM ('000)	224	203	183	164	145	126	108	90	73	56
2003	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
2028	5.9	5.7	5.5	5.3	5.2	5.0	4.9	4.7	4.6	4.4
2053	5.2	5.2	5.2	5.1	5.1	5.1	5.0	5.0	4.9	4.9
2078	5.1	5.1	5.1	5.2	5.2	5.2	5.2	5.2	5.2	5.2
2103	5.0	5.1	5.1	5.2	5.3	5.3	5.4	5.4	5.5	5.5
<b>Target: 50 million</b>										
NOM ('000)	354	327	301	276	252	228	205	183	161	140
2003	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
2028	7.0	6.7	6.5	6.3	6.1	5.9	5.7	5.5	5.3	5.1
2053	7.0	6.9	6.9	6.8	6.7	6.6	6.5	6.4	6.4	6.3
2078	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.2	7.2	7.2
2103	7.5	7.6	7.6	7.7	7.8	7.9	7.9	8.0	8.1	8.2

assumption about future mortality that was made for the first exercise. The two scenarios are as follows:

1. TFR = 1.25, NOM = 200,000
2. TFR = 1.75, NOM = 100,000 (current levels)

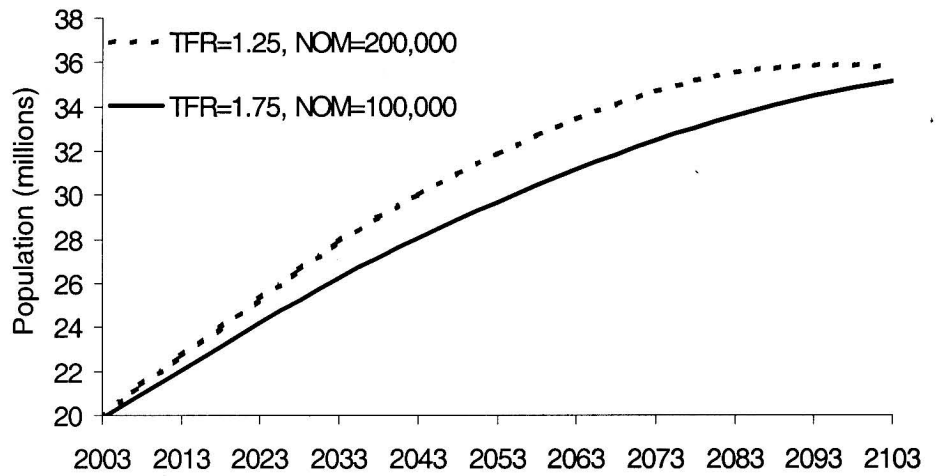
For each scenario, three results are shown: the total population (Figure 1), the percentage of the population aged 65 and over (Figure 2) and the numbers in the young labour force ages, ages 25-39 (Figure 3).

**Results: population scenarios exercise**

Scenario 2 is more efficient than Scenario 1 in the sense that, over the first 40 years of the projection, the same level of population ageing (27 per cent of the population aged 65 and over) is achieved with two million fewer people being added to the population (Figures 1 and 2). In the long-term, Scenario 2 has a much younger age structure than Scenario 1, with around the same population size (Figures 1 and 2). The adverse impact on age structure of Scenario 1's very low fertility



**Figure 1: Total projected population under two different combinations of the TFR and annual NOM, 2003 to 2103**



**Figure 2: Percentage of the population aged 65 years and over under two different combinations of the TFR and annual NOM, 2003 to 2103**

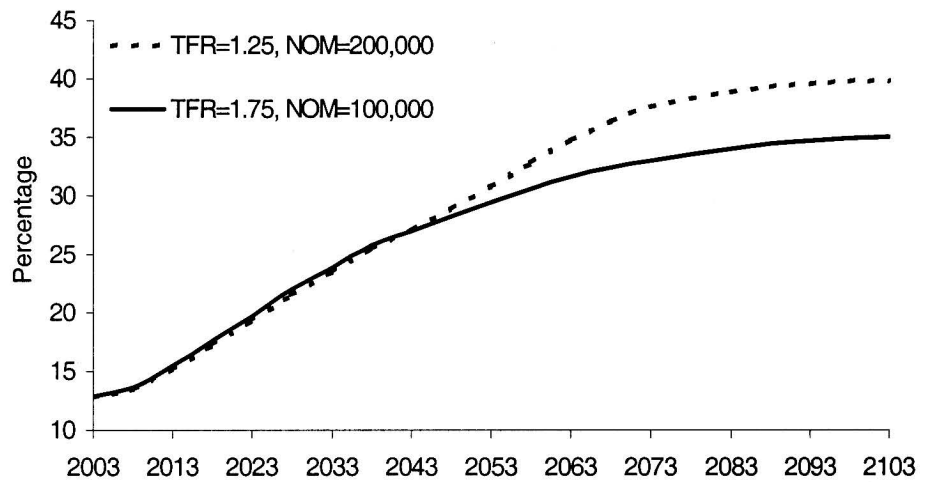
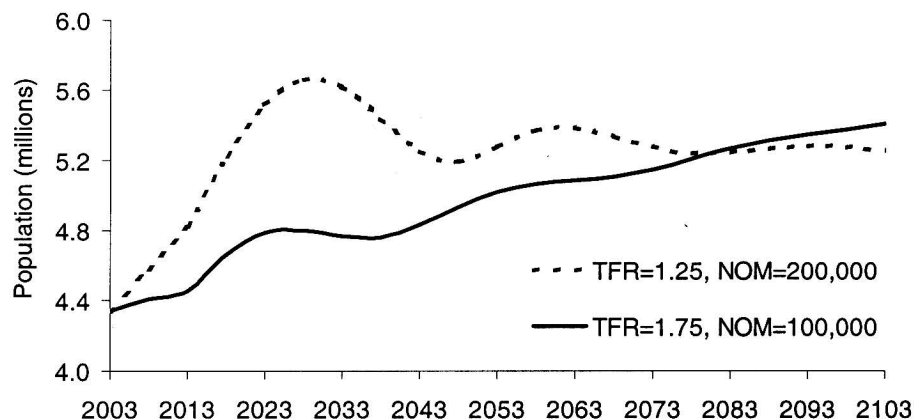


Figure 3: Population aged 25-39 years under two different combinations of the TFR and annual NOM, 2003 to 2103



becomes dominant after the first 50 years of the projection.

In contrast, in the first 40 years of the projection, Figure 3 shows that the low fertility-high migration scenario provides the more favourable result with the number of persons in the young labour force ages being somewhat higher in these years. After the first 40 years, however, this advantage tends to disappear quickly.

The conclusion is that migration has beneficial impacts in the first 40 years, especially in increasing the population in the young-adult ages (compared to the high fertility-low migration scenario). Beyond the first 40 years, however, the impact of low fertility takes on more force and the population with low fertility and high migration ages more rapidly and its young-worker advantage disappears. This conclusion is consistent with the results of the first modelling exercise.

#### DISCUSSION

Both fertility and migration have important impacts on future population structure when fertility is below the replacement level. If we have no interest in the

legacy that we would leave to future generations; that is, if, like the *Intergenerational Report*, our time frame is restricted to the next 40 years, then higher migration combined with low fertility has the beneficial effect of producing a younger work force without increasing the proportion of the population aged 65 years and over (compared to the high fertility-low migration scenario). If we have any interest in what happens beyond the next 40 years then stabilising fertility now at its present level is important because the combination of high fertility and low migration produces a younger population in the long term.

Thus, if fertility were to fall over the next 10 years, to a level of 1.25 births per woman, theoretically it would be possible to produce a sustainable age structure for the next 40 years by doubling the current level of annual overseas net migration — from 100,000 per annum to 200,000 per annum. In practical terms, however, Australia has never had annual net migration much above 150,000, and even this level was only ever experienced for one or two years before falling rapidly to

levels that were lower than the long-term average. Experience suggests that running net migration at 200,000 per annum every year for the next 100 years would be difficult to sustain and would be potentially expensive. Indeed, there is the possibility that, over the next century, recruitment of immigrants in the numbers and skill levels required may become more difficult because of the shift to low fertility everywhere and because of the intensification of competition for immigrants on a global scale. This logic sug-

gests that the Australian Government is correct in declaring its current policy to maintain the existing level of fertility. This is a safer and probably less expensive option to achieving a long-term sustainable age structure than to launch into the unknown territory of attempting to double the migration intake. On the other hand, smaller increases in immigration would certainly have a beneficial impact on the young labour force in the next 40 years.

### References

- <sup>1</sup> See, for example, B. Carr, *Populate and Perish?*, interview for Worksite: Issues in Workplace Relations, [www.econ.usyd.edu.au/wos/worksite/carr.html](http://www.econ.usyd.edu.au/wos/worksite/carr.html), accessed July 2004, and A. Hepworth, 'A singular attack on families', *Australian Financial Review*, 5 June, 2004.
- <sup>2</sup> R. Guest and I. McDonald, 'Would a decrease in fertility be a threat to living standards in Australia?', *Australian Economic Review*, vol. 35, no. 1, 2002, pp. 29-44
- <sup>3</sup> T. Nankivell, 'Coughing up for mums and dads. You propagate, you pay', *The Australian*, 20 June, 2000; M. Kalantzis, 'The benefits of immigration and a case for civic pluralism', paper presented at RMIT University, September, 2002, [www.apop.com.au/MaryKalantzisse2402speech.pdf](http://www.apop.com.au/MaryKalantzisse2402speech.pdf), accessed August 2004
- <sup>4</sup> *ibid.*
- <sup>5</sup> Nankivell, *op. cit.*, 2000; Hepworth, *op. cit.*, 2004; S. Moore and D. Moore, *Child-free Zone: Why More People are Choosing Not to be Parents*, Chequered Gecko, Dee Why, NSW, 2000; H. Burden, 'The frustrating rise of family favouritism', *Sydney Morning Herald*, 6 September, 2004
- <sup>6</sup> Note, for example, the furore over then Victorian Premier Jeff Kennett's comment that 'women are not producing enough offspring to...maintain our population levels', which led to the accusation by the New South Wales Premier, Bob Carr, that his view 'was reminiscent of Nazi breeding camps'. See 'Go fourth form, and multiply, Kennett urges high school girls', *Sydney Morning Herald*, 20 April, 1999. See also Burden, *op. cit.*, 2004, and Hepworth, *op. cit.*, 2004
- <sup>7</sup> Even in Australia, the association of pronatalism with fascism lies only a little below the surface so, if you are going to be pronatalist, it is safer to be funny as well.
- <sup>8</sup> United Nations, *World Population Policies 2003*, Population Division, ST/ESA/SER.A/230, United Nations, New York, 2004
- <sup>9</sup> *ibid.*
- <sup>10</sup> C. van Peer, 'Comparative analysis of differences in desired and realised fertility', paper presented at the FFS Flagship Conference, Brussels, 29-31 May, 2000, [www.unecp.org/ead/pau/flag/papers/vanpeer.pdf](http://www.unecp.org/ead/pau/flag/papers/vanpeer.pdf), accessed August 2004
- <sup>11</sup> Commonwealth of Australia, *Intergenerational Report, 2002-2003*, Budget Paper No. 5, Canprint Communications, Canberra, 2002
- <sup>12</sup> Y. Kosai, J. Saito and N. Yashiro, 'Declining population and sustained economic growth: can they coexist?', *American Economic Review*, vol. 88, no.2, 1998, pp. 412-416
- <sup>13</sup> A. Larsson, 'Comment on the Panel Report on Employment and Societal Change', paper presented at a Forum on the Techno-economic and Societal Impact of Enlargement Futures Project, Slovenia, December, 2001, [enlargement.jrc.es/FuturesEnlargement/Bled-01-11/Presentations/larsson.pdf](http://enlargement.jrc.es/FuturesEnlargement/Bled-01-11/Presentations/larsson.pdf), accessed August 2004
- <sup>14</sup> We assume that male life expectancy increases from 78.9 years in 2003-08 to 92.4 years in 2048-53, and that female life expectancy increases from 83.7 years to 94.9 years over the same period. This is in line with the high life-expectancy assumption in the most recent set of population projections from the Australian Bureau of Statistics, see *Population Projections Australia: 2002-2101*, Cat. no. 3222.0, Australian Bureau of Statistics, Canberra, 2003 and mortality projections in H. Booth, J. Maindonald and L. Smith, 'Age-time interactions in mortality projection: applying Lee-Carter to Australia', Working Paper in Demography 85, Demography and Sociology Program, The Australian National University, 2002, [demography.anu.edu.au/Publications/WorkingPapers/85.pdf](http://demography.anu.edu.au/Publications/WorkingPapers/85.pdf), accessed August 2004. From 2048-53, the rate of increase in life expectancy is projected to decline, so that male and female life expectancy reach 98 years and 100 years respectively in 2098-2103.