



## **Australian Social Trends 2007**

### **Article: International fertility comparison**



EMBARGO: 11.30 AM (CANBERRA TIME) TUES 7 AUG 2007

# Australian Social Trends 2007

## Article: International fertility comparison

**Susan Linacre**  
**Acting Australian Statistician**

ABS catalogue no. 4102.0

ISSN 1321-1781

© Commonwealth of Australia 2007

This work is copyright. Apart from any use as permitted under the *Copyright Act 1968*, no part may be reproduced by any process without prior written permission from the Commonwealth. Requests and inquiries concerning reproduction and rights in this publication should be addressed to The Manager, Intermediary Management, Australian Bureau of Statistics, Locked Bag 10, Belconnen ACT 2616, or by telephone (02) 6252 6998, fax (02) 6252 7102, or email <intermediary.management@abs.gov.au>.

In all cases the ABS must be acknowledged as the source when reproducing or quoting any part of an ABS publication or other product.

Produced by the Australian Bureau of Statistics

## INQUIRIES

- General inquiries about the content and interpretation of statistics in this article should be addressed to:

Director  
Social Analysis and Reporting Section  
Australian Bureau of Statistics  
Locked Bag 10  
Belconnen ACT 2616

Telephone Canberra (02) 6252 7187

- Inquiries about the availability of more recent data from the ABS should be directed to the National Information and Referral Service on 1300 135 070, or refer to contacts listed at the back of this publication.

## SYMBOLS AND USAGES

billion	1,000 million
kg	kilogram
m	metre
n.a.	not available
n.e.c	not elsewhere classified
n.p.	not published
n.y.a.	not yet available
no.	number
'000	thousand
'000m	thousand million
\$	dollar
\$m	million dollars
\$b	billion dollars
\$US	American dollar
%	per cent
*	estimate has a relative standard error of 25% to 50% and should be used with caution
**	estimate has a relative standard error of greater than 50% and is considered too unreliable for general use
. .	not applicable
—	nil or rounded to zero (including null cells)

Where figures have been rounded, discrepancies may occur between the sums of the component items and totals.

# International fertility comparison

**Between 1970 and 2004, the average total fertility rate across OECD countries declined by one baby per woman from 2.6 to 1.6.**

Fertility has been in decline globally for many decades. In the five years to 2005, the world average total fertility rate (TFR) was projected to be 2.7 babies per woman, a reduction of nearly two babies per woman on average from the rate in the 1970s (4.5 babies per woman). While the relatively more developed countries of the OECD tend to have significantly lower fertility than most non-OECD countries, the falls in TFR across the OECD have been dramatic. Between 1970 and 2004, the average TFR of the OECD declined by one baby per woman from 2.6 to 1.6.

The transition to low fertility coupled with low mortality has resulted in an ageing of many countries' populations that is projected to continue throughout this century. This presents economic and social challenges due to declining labour force participation and increasing fiscal pressures.<sup>1</sup> In response to sustained low fertility and population ageing, many OECD governments have changed their views concerning fertility levels. Thirty years ago, four OECD governments considered their own country's fertility level to be too low; by 2003, more than half (16) of OECD country governments considered their country's fertility to be too low.<sup>2</sup>

This article compares Australian fertility rates with those in selected OECD countries. It also looks at some of the factors that influence women's fertility such as education and participation in the labour force.

## Data sources and definitions

Data in this article are drawn from a number of sources, including the Organisation for Economic Co-operation and Development (OECD) and the statistical agencies of a number of countries. Comparisons are made with several OECD countries, chosen for their cultural and/or economic similarities to Australia, including Canada, New Zealand, United Kingdom and United States of America. Italy is included as an example of Southern European countries which typically have very low fertility. Japan is chosen as an example of developed East Asian countries and Sweden is included as an example of the Nordic states which tend to have a history of investing in 'family friendly' social policies.

*Age-specific fertility rates (ASFR)* are the number of live births in a year to mothers at each age per 1,000 of the female population of the same age.

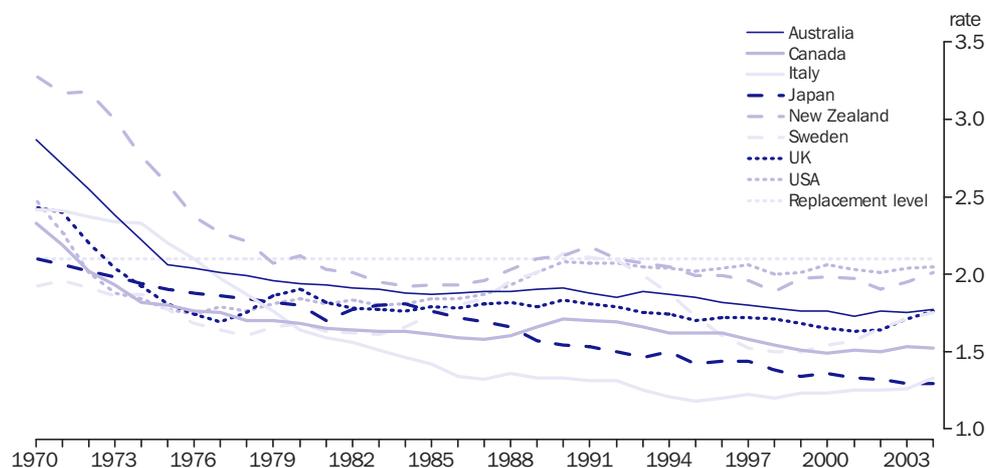
The *total fertility rate (TFR)* for any given year is the sum of the age-specific fertility rates for that year. It is a hypothetical measure which represents the average number of babies a woman would give birth to during her lifetime if she experienced the current age-specific fertility rates at each age of her reproductive life.

*Replacement level fertility* is the number of babies a woman would need to have to replace herself and her partner, and is currently around 2.1 babies per woman.

## Trends in the total fertility rate

Following the Second World War, many developed countries experienced a baby boom. This was marked by record numbers of

**Total fertility rate, selected OECD countries**



Source: OECD, Society at a Glance, 2006.



women having a high average number of babies. After the baby booms, fertility levels generally declined rapidly and the TFRs of many developed countries decreased to below the replacement level of 2.1 babies per woman. The transition to below replacement level fertility occurred in the late 1950s in Japan, the late 1960s in Sweden and around the early 1970s for the United States, Canada and the United Kingdom. Australia's and Italy's TFR fell below replacement level in the mid 1970s, while New Zealand's TFR did not fall below replacement level until around the early 1980s.

Sweden, New Zealand and the United States all underwent a brief recovery to replacement level fertility around the early 1990s. While the period during which these countries were at replacement level was short lived, the TFRs of New Zealand and the United States have remained relatively high compared to the

comparison countries since that time. In 2004, the United States had the highest TFR in the comparison countries (2.05), followed by New Zealand (2.01). Sweden had a TFR of 1.75 babies per woman in 2004, which was a recovery from the late 1990s when it dipped to 1.5. Japan and Italy had the two lowest TFRs among the comparison countries in 2004 with 1.29 and 1.33 babies per woman respectively. Australia was ranked around the middle of the comparison countries with 1.77 babies per woman.

### Fewer babies, older mothers

Underlying the declines in TFRs over past decades have been considerable changes in the age specific fertility rates (ASFRs) for each of the selected OECD countries. In the more recent period from 1990 and 2004, ASFRs have generally decreased in mothers aged less than 30 years and increased in the older age groups reflecting the delayed childbearing of women.

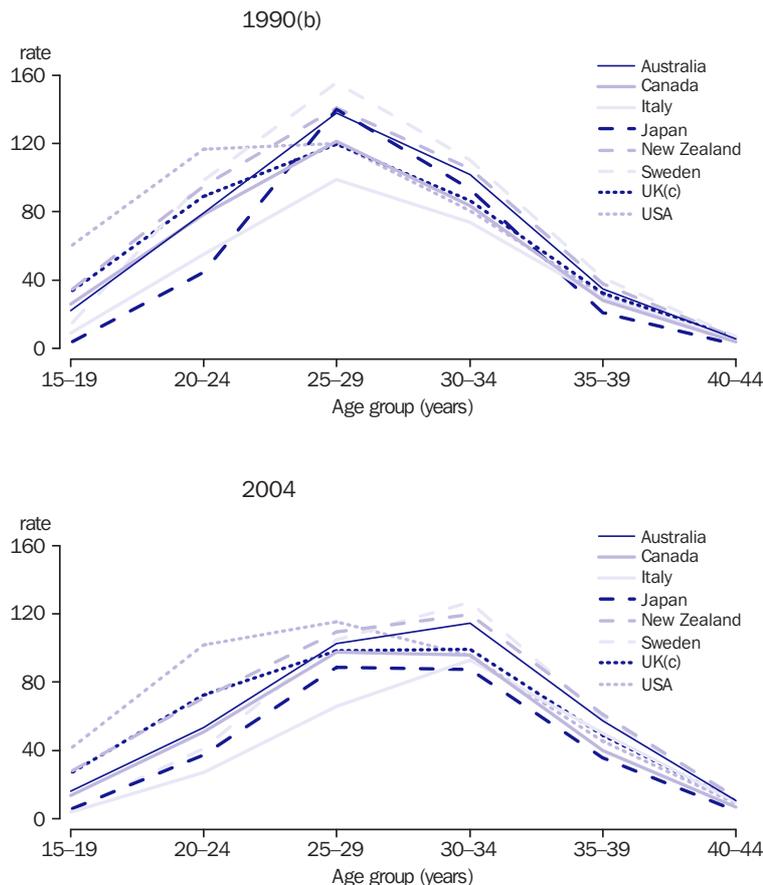
The postponement of childbirth is a widespread and significant phenomenon in OECD countries. When women delay childbearing it reduces the remaining time in which women can have babies. Such women tend to have fewer babies than those who started earlier, and there is an increased risk of childlessness (see *Australian Social Trends 2005*, Recent fertility trends, pp. 23–27).

The shift to older childbearing between 1990 and 2004 is highlighted by the change in the age group with peak fertility. In 1990, women aged 25–29 years experienced the highest fertility of all age groups; by 2004, women aged 30–34 years had the highest age-specific fertility rates for all countries in the comparison group, with the exceptions of the United States, Canada and Japan.

However, the increases in fertility of women aged 30 years and over have not fully offset the decreases in fertility at the younger age groups, leading to declines in the TFRs of all countries over the 1990–2004 period. The most dramatic example was seen in Sweden where the increase in fertility from women aged 30 years and over would have increased the TFR by 10%, had the fertility of women aged less than 30 years remained at the 1990 level. However, the reduction in fertility for women aged less than 30 years was large enough to produce an overall 18% decline in the TFR between 1990 (2.13) and 2004 (1.75).

Although the ASFR declined for United States women aged less than 30 years between 1990 and 2004, the United States is exceptional for its relatively high fertility among younger

### Age-specific fertility rates(a)

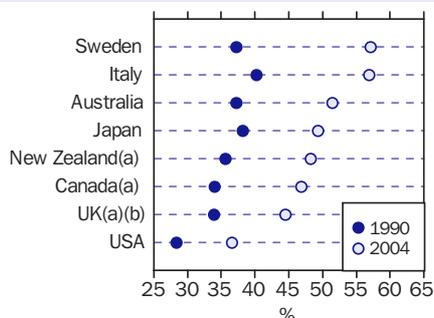


(a) Births per 1,000 women.  
 (b) 1991 in Canada, New Zealand and the United Kingdom.  
 (c) Data are for England and Wales only.

Source: ABS Births collection<sup>3</sup>; Statistics Canada (cat. no. 84F0210 and 91209XIE)<sup>4</sup>; Annuario Statistics Italiano 2006<sup>5</sup>; Statistics Bureau, Japan<sup>6</sup>; Statistical Yearbook of Sweden 1992 and 2006<sup>7</sup>; Statistics New Zealand<sup>8</sup>; Office for National Statistics, United Kingdom<sup>9</sup>; National Center for Health Statistics, United States.<sup>10</sup>



### Proportion of total fertility rate contributed by mothers aged 30 years and over

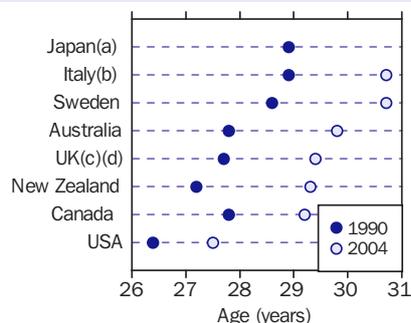


(a) 1991 in Canada, New Zealand and the United Kingdom.  
 (b) Data are for England and Wales only.

Source: Derived from individual country data: Statistical Yearbook of Sweden 1992 and 2006<sup>7</sup>; Annuario Statistics Italiano 2006<sup>8</sup>; ABS Births collection<sup>9</sup>; Statistics Bureau, Japan<sup>6</sup>; Statistics New Zealand<sup>8</sup>; Statistics Canada (cat. no. 91209XIE and 84F0210)<sup>4</sup>; Office for National Statistics, United Kingdom<sup>9</sup>; National Center for Health Statistics, United States.<sup>10</sup>

women. In 2004, the fertility of women aged 20–24 years in the United States (102 births per 1,000 women) was around twice that of women in Canada and Australia (51 and 53 babies per 1,000 women respectively), and considerably more than the countries with the nearest rates, the United Kingdom and New Zealand with 73 and 71 babies per 1,000 women respectively. The high fertility of this age group in the United States is driven in part by the high fertility among young Hispanic women. For example, the fertility of Hispanic women aged 20–24 years was 63% higher than for the total United States population of those aged 20–24 years.<sup>12</sup>

### Average age of mother at childbirth



(a) Data for 2004 not available for Japan.  
 (b) 2003 for Italy.  
 (c) 1991 for the United Kingdom.  
 (d) Data are for England and Wales only.

Source: Eurostat Yearbook<sup>11</sup>; Statistics Sweden<sup>7</sup>; ABS Births collection<sup>9</sup>; Office for National Statistics, United Kingdom<sup>9</sup>; Statistics New Zealand<sup>8</sup>; Statistics Canada (cat. no. 91209XIE and 84F0210)<sup>4</sup>; National Center for Health Statistics, United States.<sup>10</sup>

### Low fertility

The United Nations defines low fertility countries as those countries with a total fertility rate at or below 2.1 (replacement level fertility). In 2000–05, 65 countries were classed as having low fertility while 127 countries had above replacement level fertility. Approximately two-fifths of the world's population lived in a low fertility country in 2000–05.<sup>13</sup> Persistent low fertility was a concern for many countries. In 2005, 46 countries viewed their fertility to be too low. Of these countries, more than three-quarters had government policies intended to boost fertility.<sup>13</sup>

Countries with low fertility can be further defined by how far below replacement level their TFR is. Very low fertility countries have total fertility rates below 1.3 babies per woman. In 1993, Italy (1.25), Spain (1.27) and Germany (1.28) were the first OECD countries to record very low fertility. United Nations data estimate that in 2000–05, 18 countries had very low fertility, all of which were located in Southern Europe, Eastern Europe and Eastern Asia.<sup>13</sup>

### Total fertility rate — selected countries

Country	1950–55	1970–75	2000–05
	rate	rate	rate (a)
Australia	3.2	2.5	1.8
Canada	3.7	2.0	1.5
China	6.2	4.9	1.7
France	2.7	2.3	1.9
Hong Kong	4.4	2.9	0.9
Indonesia	5.5	5.3	2.4
Italy	2.3	2.3	1.3
Japan	2.8	2.1	1.3
Malaysia	6.8	5.2	2.9
New Zealand	3.7	2.8	2.0
Singapore	6.4	2.6	1.4
Sweden	2.2	1.9	1.7
United Kingdom	2.2	2.0	1.7
United States	3.5	2.0	2.0
Viet Nam	5.8	6.7	2.3
<b>World</b>	5.0	4.5	2.7

(a) Medium variant projections.

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat 2007, *World Population Prospects: The 2006 Revision*, viewed 27 March 2007, <<http://esa.un.org/unpp>>.



A consequence of the shift in fertility to older ages is that today, a much larger proportion of the TFR comes from women who are in their 30s and 40s compared with fifteen years ago. Younger mothers (aged under 30 years) accounted for the majority of the TFR in each of the selected countries in 1990. In 2004, mothers aged 30 years and over were responsible for over half the TFR in Italy (57%), Sweden (57%) and Australia (52%), while in Japan (49%), New Zealand (48%), Canada (47%) and the United Kingdom (44%), they accounted for just under half. Consistent with the younger fertility pattern in the United States, the proportion of TFR attributable to women aged 30 years and over (37%) was lower than all other comparison countries and showed the least change over the period.

A further indication of the postponed fertility is an increase in the average age of mothers at childbirth. As would be expected, the shift in childbearing to older age groups is reflected in an increase in the average age of mothers when they have their children. In 1990, the average age of mothers at childbirth for all comparison countries ranged between 26 and 29 years. By 2004, the average age of mothers had increased by around two years for most countries, except for the United States which increased by one year.

In 2004, the oldest average age of mothers at childbirth was in Sweden (30.7 years in 2004), the same as in Italy in 2003. The average age of Australian women who gave birth was around one year younger (29.8 years), while the youngest age of the comparison countries was the United States (27.5 years).

## Socioeconomic factors and fertility within countries

The number of children women have in developed countries is largely determined by their (and their partners') preferences, taking into account the relative costs and benefits of having children.<sup>14</sup> Women who wish to have children and pursue a career are faced with challenges in reconciling the two aspirations. Time spent in education and a career can mean less time for partnering and having children as a greater proportion of a woman's childbearing years may be taken up with study and work.

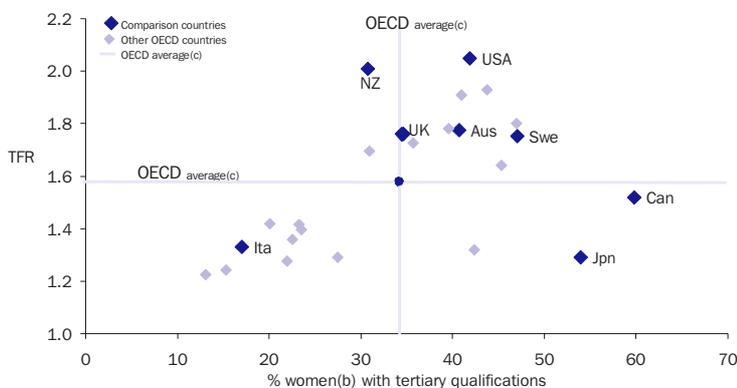
Differences in the way countries are organised with respect to facilitating a balance between women's employment and family responsibilities provide part of the explanation for the gap between the very low fertility countries of Southern Europe and the more moderate fertility countries of the OECD.<sup>15</sup> The lowering of costs of having children (both direct and indirect) through family friendly policies such as those promoting flexible work arrangements, child care subsidies and paid parental leave may all contribute to higher fertility.<sup>2,15</sup> In addition, cultural and economic factors such as the presence of strong family ties, the level of unemployment and relative ease of the transitions from education to labour market may also impact on women's fertility.<sup>16</sup>

## ...education

Women in all OECD countries are more educated today than those in previous generations.<sup>2</sup> The relationship between education and fertility among women within individual OECD countries shows that higher levels of qualifications are associated with lower fertility. Spending longer in education tends to delay women's age at first birth, and women with high levels of skill may be less inclined than less educated women to interrupt their careers to have children.<sup>2</sup>

However, the relationship between the tertiary qualification level of women aged 25–34 years and the TFR across countries of the OECD in 2004 is quite different. Most countries tended to either have low levels of qualification with low TFR or relatively higher levels of qualifications with relatively higher TFRs. For example, Italy had a lower proportion of women with tertiary qualifications (17%) compared with the OECD average (34%), as well as a lower TFR. On the other hand, Australia (41%), the United States (42%) and Sweden (47%) all had higher tertiary qualification levels and higher TFRs.

**Total fertility rate by tertiary qualifications(a) of women(b) — 2004**



(a) Includes Tertiary-type A, Tertiary-type B and Advanced Research Qualifications, according to ISCED-97 levels 5A, 5B and 6.

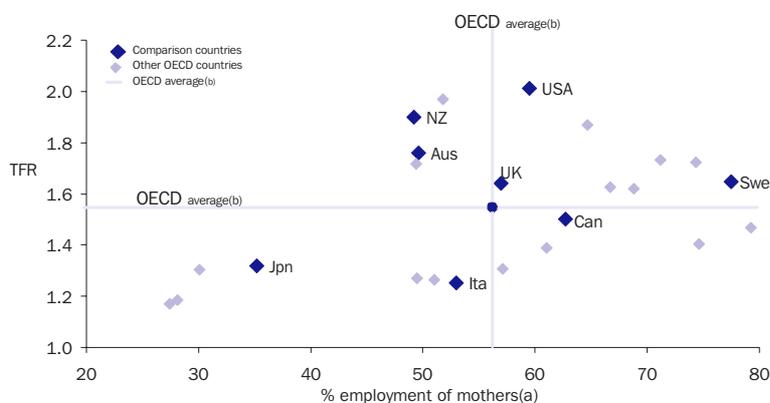
(b) Women aged 25–34 years.

(c) Average of 24 OECD countries.

Source: OECD, Education at a Glance, 2006 and OECD, Society at a Glance, 2006.



## Total fertility rate by employment of mothers(a) — 2002



(a) For mothers with youngest child aged under 6 years.  
 (b) Average of 24 OECD countries.

Source: ABS 2003 Family Characteristics Survey; OECD, *Society at a Glance*, 2005.

### ...employment

The relation between women's employment and their fertility is complex and differs markedly between countries.<sup>2</sup> The constraints that mothers experience are influenced by their countries' specific social and economic factors.<sup>16</sup>

The 2002 inter-country comparison of employment of mothers with a child aged less than 6 years reveals a pattern of lower participation being generally associated with lower TFRs.

While some countries with lower employment rates for mothers did show lower fertility (e.g. Japan and Italy), others did not. For example, both Australia and New Zealand had lower rates of employment for mothers with the youngest child under 6 years (50% and 49% respectively) compared with the 2002 OECD average rate of 56%; however, both had higher TFRs than the OECD average (1.8 and 1.9 respectively compared with an average of 1.5). Sweden had one of the highest levels of employment among mothers (78%) and moderate TFR (1.7), while the United States with the highest TFR (2.0) had only a slightly higher rate of employment among mothers than the OECD average.

## Endnotes

- 1 Productivity Commission 2005, *Economic Implications of an Ageing Australia, Research Report*, Canberra, viewed 1 May 2007, <<http://www.pc.gov.au/study/ageing/index.html>>.
- 2 d'Addio, C and d'Ercole, M 2005, *Trends and determinates of fertility rates in OECD countries: the role of policies*, OECD Social, Employment and Migration Working Papers, No. 27, Paris, OECD, viewed 23 April 2007, <<http://www.oecd.org/dataoecd/7/33/35304751.pdf>>.
- 3 Australian Bureau of Statistics 2006, *Births, Australia, 2005*, cat. no. 3301.0, ABS, Canberra.
- 4 Statistics Canada 2006, *Report on the Demographic Situation in Canada 2003 and 2004*, (cat. nos. 91-209-XIE); Statistics Canada, Canadian Vital Statistics, Birth Database (CANSIM tables 102-4503 and 102-4504), viewed 1 May 2007, <<http://www.statcan.ca/>>.
- 5 Istituto nazionale di statistica, *Annuario Statistico Italiano 2006*, viewed 25 April 2007, <[http://www.istat.it/dati/catalogo/20061109\\_00/](http://www.istat.it/dati/catalogo/20061109_00/)>.
- 6 Statistics Bureau, Japan, viewed 27 June 2007, <<http://www.stat.go.jp/>>.
- 7 *Statistical Yearbook of Sweden* 1992 and 2006, vol 78 and vol 92, Statistics Sweden, viewed 1 May 2007, <<http://www.ssd.scb.se/>>.
- 8 Statistics New Zealand, viewed 16 March 2007, <<http://www.stats.govt.nz/analytical-reports/de-mi-trends-05/downloadable-excel-tables.html>>.
- 9 Office for National Statistics 2006, *Birth Statistics FMI no 33*, United Kingdom, viewed 27 March 2007, <[http://www.statistics.gov.uk/downloads/theme\\_population/FMI\\_33/FMI\\_33.pdf](http://www.statistics.gov.uk/downloads/theme_population/FMI_33/FMI_33.pdf)>.
- 10 National Center for Health Statistics 2006, *National Vital Statistics Reports vol.55, no.1*, viewed 1 May 2007, <[http://www.cdc.gov/nchs/data/nvsr/nvsr55/nvsr55\\_01.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr55/nvsr55_01.pdf)>.
- 11 Office for Official Publications of the European Communities, *Eurostat Yearbook*, 2002 and 2006-07, viewed 27 March 2007, <<http://ec.europa.eu/eurostat/>>.
- 12 National Center for Health Statistics, *Births: Preliminary Data for 2005*, viewed 27 March 2007, <[http://www.cdc.gov/nchs/data/hestat/prelimbirths05\\_tables.pdf#1](http://www.cdc.gov/nchs/data/hestat/prelimbirths05_tables.pdf#1)>.
- 13 United Nations Department of Economic and Social Affairs, Population Division 2006, *World Population Prospects: the 2004 Revisions, Volume III: Analytical Report*, viewed 23 April 2007, <[http://www.un.org/esa/population/publications/WPP2004/WPP2004\\_Volume3.htm](http://www.un.org/esa/population/publications/WPP2004/WPP2004_Volume3.htm)>.
- 14 McDonald, P 2000, 'Low fertility in Australia: Evidence, causes and policy responses', *People and Place*, vol. 8, no. 2, pp. 6-21.
- 15 McDonald, P 2005, *Fertility and the State: the efficacy of policy*, paper presented at the International Union for the Scientific Study of Population XXV International Population Conference, Princeton.
- 16 Del Boca, D, Pasqua, S and Pronzato, C 2004, *Why are Fertility and Women's Employment Rates so Low in Italy? Lessons from France and the United Kingdom*, IZA Discussion Papers 1274, Institute for the Study of Labor (IZA), viewed 23 April 2007, <<http://ideas.repec.org/p/iza/izadps/dp1274.html>>.

## FOR MORE INFORMATION . . .

*INTERNET*      **www.abs.gov.au** the ABS website is the best place for data from our publications and information about the ABS.

*LIBRARY*      A range of ABS publications are available from public and tertiary libraries Australia wide. Contact your nearest library to determine whether it has the ABS statistics you require, or visit our website for a list of libraries.

## INFORMATION AND REFERRAL SERVICE

Our consultants can help you access the full range of information published by the ABS that is available free of charge from our website, or purchase a hard copy publication. Information tailored to your needs can also be requested as a 'user pays' service. Specialists are on hand to help you with analytical or methodological advice.

*PHONE*      1300 135 070

*EMAIL*      client.services@abs.gov.au

*FAX*      1300 135 211

*POST*      Client Services, ABS, GPO Box 796, Sydney NSW 2001

## FREE ACCESS TO STATISTICS

All statistics on the ABS website can be downloaded free of charge.

*WEB ADDRESS*      [www.abs.gov.au](http://www.abs.gov.au)