

THE IMPACT ON AUSTRALIAN FERTILITY OF WANTING ONE OF EACH

■ **Rebecca Kippen, Edith Gray and Ann Evans**

This paper examines the extent to which the sex of first, second and subsequent births influences parents' decisions to have another child. The key findings are: a) the sex of the first born in Australia has no influence on the decision of mothers to have a second child, b) that mothers with two children of the same sex are 25 per cent more likely to have a third child than are mothers with a boy and a girl, and c) mothers with three children of the same sex are more likely to have a fourth birth than mothers whose three children include both sexes.

INTRODUCTION

This paper investigates whether Australian parents have a preference for at least one child of each sex and, if so, what impact this has on fertility levels in Australia. Evidence from other countries shows that the sex of existing children is a significant factor in explaining higher-order (third or further) births. For example, parents with two children of the same sex may be more likely to have a third child than are parents with a son and a daughter. However, in Australia there has been little research on the impact that the sex of existing children has on the progression to higher-order births.

When measuring fertility it is important to consider these births.¹ Currently, Australia's fertility is kept from being very low because of the relatively high proportion of women who have three or more children, as compared to many other developed countries.² For example, Australian women born in 1960 had an average of 2.1 births each across their reproductive lives, with 36 per cent of these women having at least three children.³ In Italy, by comparison, women born in 1960 had an average of 1.6 births each, with only 16 per cent having three or more children.⁴ Currently, Australia's fertility rate stands at 1.75 births per woman (in 2003)⁵ compared with Italy's 1.29 births per woman (in 2003).⁶

The proportion of women who have at least three children makes a substantial difference to the level of fertility. Therefore it makes sense to identify and study factors that lead parents to have three or more children, including the sex composition of existing children. In this paper we consider the value of children to parents, and review Australian and international studies of the sex composition of children, and the influence of this composition on having an additional birth. We then use data from the 2001 Australian Census to determine the probability of mothers having a second, third or fourth child given the sex of children already in the family. This allows us to examine whether there is a preference for sons, daughters or mixed-composition families, and which family compositions are more likely to lead to additional children. Finally we estimate the impact on Australia's fertility rate of parents having more children because they wish to achieve a particular sex composition.

WHY DO PEOPLE HAVE CHILDREN?

Caldwell's iconic *Theory of Fertility Decline*⁷ argued that, in high-fertility societies, people have large families because it is economically advantageous for them to do so, with net flows of wealth from children to parents. Fertility

in a society will begin to fall as the wealth flows are reversed and children become an economic liability, rather than an economic asset. However, Caldwell points out that people in these societies will continue to have children because of the non-substitutable, 'unique form of pleasure' that children provide.

Other empirical research has found that, in developed countries, parents derive mainly psychological benefits from their children. For example, a United States survey in the 1970s asked respondents an open-ended question on the 'advantages' or 'good things' about having children compared with not having children.⁸ The responses were classified into seven 'value of children' categories. The first six values were psychological. Economic utility ranked last. The seven categories, in order of importance, are:

1. Primary group ties and affection. Children give and receive love, provide companionship and help prevent loneliness.
2. Stimulation and fun. Children provide new experiences through their growth and change, are fun, and bring joy to their parents' lives.
3. Expansion of the self. Children carry the family name and the family genes. They allow parents to achieve a type of immortality through reproducing themselves and provide parents with a life meaning and purpose.
4. Adult status and social identity. Parenthood is regarded as one of the key markers of the transition to adulthood.
5. Achievement, competence and creativity. Parents gain satisfaction from the production and raising of children.
6. Morality. Children make a parent 'less selfish' and 'a better person'.
7. Economic utility and security in old age.

In Australia, the net lifetime transfer of resources is unequivocally from parents to children. The financial costs of raising children are significant. These include direct maintenance costs, and the indirect costs associated with loss of income due to time out of the workforce.⁹ Australians do not have children because of their economic utility. In fact, a recent study¹⁰ has found, when considering whether to have a child, men and women rank as the most important issue whether they could afford to support a child. That is, economic considerations are a deterrent rather than an incentive to have children. As in other developed countries, the benefits that Australian parents obtain from their children are largely psychosocial.¹¹

Why do parents have more than one child?

Having one child provides many of the psychological benefits outlined in the previous section. However, most parents still have more than one child. A recent report on fertility decision-making from the Australian Institute of Family Studies¹² has found that most young Australian adults still want and expect to have at least two children. This study also found that those who wanted or had more than one child, did so for a number of reasons. These included social norms, giving the first child a sibling or siblings, growing up in a large family themselves, positive experiences with existing children, and achieving a particular gender mix.¹³

The desire for sons and daughters

There is a long history of literature on the parental desire for children of a particular sex. Sons and daughters are seen as providing different practical and psychological benefits to their parents. Studies carried out in countries such as

China and India have invariably found a strong preference for sons. This preference has led to differential treatment of sons and daughters and distorted sex ratios. Sons are desired for a number of reasons including practical and financial support — and status. For example, they provide parents their ability to carry on the family name, they receive the family inheritance, and they perform specific religious ceremonies.¹⁴

Data from the United States consistently show a parental preference for a mixed-sex family; that is, a family with at least one son and one daughter.¹⁵ A study of young American wives found that this preference was a ‘minor but significant’ determinant of family size in the 1940s and 1950s, with parents of children of the same sex being more likely to have another child than were parents of children of both sexes. The authors of this study hypothesised that the value to parents in having at least one son and one daughter lay in the different social connections and activities that each facilitated. For example, fathers could hunt and play sport with their sons while mothers and daughters could play with dolls and share an interest in clothes.¹⁶ Pollard and Morgan¹⁷ note that U.S. women born 1915-1954 were, on average, 23 per cent more likely to have a third child if their first two children were of the same sex than if they were of different sexes. They argue that society’s ‘gender system’ — in which males and females have different roles — is responsible for the preference for one child of each sex.

Evidence from European countries is mixed. France, Norway, Poland and West Germany,¹⁸ show no gender preference, with no difference in the probability of progression to another child based on the sex of existing children. Austria, Italy, Spain and Sweden¹⁹ show a parental

preference for one child of each sex; while parents in Denmark,²⁰ East Germany, Portugal and the Czech Republic²¹ prefer daughters, as indicated by the greater probability of having another child if children already born consist entirely of sons.

There are very few studies of sex preference of children in Australia. In 1977, Young²² examined expected completed family size of Australian parents based on the sex of their existing children. Her research showed that expected family size was larger for families with all same-sex children than for families with sons and daughters. However the study was limited in that it was not able to consider actual completed family size based on the sex of existing children. More recently, a study conducted by the Australian Institute of Family Studies²³ has found that the desire to have at least one or another son, or to have at least one or another daughter, are important factors in fertility decision making for young Australians. Two Australian studies of factors affecting progression to another birth have used data from the longitudinal *Negotiating the Life Course* survey. Meyer²⁴ finds that men, but not women, with two children of the same sex are more likely to have a third child. Gray and Evans²⁵ demonstrate that Australian women with a son or a daughter are equally likely to have a second child, indicating that sons are not valued over daughters, nor vice versa. However, they find that the likelihood of having a third birth is higher if the first two children are of the same sex than if they are of different sexes, indicating a desire for children of both sexes.

DATA AND METHOD

To examine this issue in Australia further, we use data from the 2001 Australian Census of Population and Housing. The advantage of Census data

over survey data is the relatively large number of observations obtained (millions as opposed to hundreds or thousands). This increases the robustness of the results. In addition, because the Census has close to complete coverage of the population, problems of sampling error are avoided.

Using 2001 Census data, Australian-resident women in each household are linked to their children living in the same household at the time of the Census. This is done using the 'relationship in the household' Census variable which describes the relationship of each person in the household to the household reference person (generally Person 1 or Person 2 on the Census household form). Data for this variable are derived from responses to the Census question, 'What is the person's relationship to Person 1/Person 2?', where 'the householder or any adult household member' is entered on the Census form as Person 1 and 'the spouse or partner' of Person 1, if present, is entered on the Census form as Person 2.²⁶ If a mother with children present in the household is listed as Person 1 or Person 2 on the Census form, then the linkage is straightforward; each of her children is recorded as 'Child of Person 1 and Person 2', 'Child of Person 1 only' or 'Child of Person 2 only'. In cases where the mother is *not* recorded as Person 1 or Person 2, a mother-child relationship may be inferred from the relationships of each person in the household to the household reference person. For example, if Person 2 is the mother of Person 1, and Person 3 is the grandmother of Person 1, then it may be deduced that Person 3 is the mother of Person 2, provided the age difference is plausible. In cases where children are not resident with their mothers, or were temporarily absent on Census night, it is not possible to match

mother and child.²⁷

Available characteristics from these data are age of mother, and age and sex of each of her children resident in the household. These data are used to construct distributions of parity (number of children) by age of mother and sex composition of children. We adjust these parity distributions to those for Australian women in 2001 to account for mortality of children and children not resident in their mother's household, in order to reflect all children of the mother rather than just resident children.²⁸ The adjusted distributions are then used to calculate parity progression ratios (the proportion of mothers with x children who went on to have $x+1$ children) by age of mother and sex of existing children.

Using these data we ask the following questions:

To what extent does sex of existing children influence the propensity to have another birth?

Is there a preference for mixed-sex families in Australia; that is, at least one child of each sex?

If the sex of the children were a factor this would be indicated by a higher propensity to have another child if existing children were all sons or all daughters.

If so, what effect does the desire for at least 'one of each' have on Australia's fertility?

FINDINGS

The effect of the sex of the first child on the progression to a second child

Figure 1 shows the percentage of mothers with one child who have had a second child, by age of mother and sex of the first child. The most striking feature of this chart is that there is virtually no difference in the propensity to have another child based on the sex of the first

Figure 1: Percentage of mothers with one child who have had a second child, by age of mother and sex of the first child, 2001 Australian Census



Source: ABS, Women by age, by age and sex of resident children, unpublished data from 2001 Australian Census of Population and Housing, Canberra, 2005; authors' calculations

child. At every age, mothers are equally likely to have had a second child whether their first child was a boy or a girl. This indicates that in Australia sons are not valued over daughters nor vice-versa. If, for example, mothers are more likely to have a second child if their first child is a daughter, this would indicate a preference for sons, as mothers 'try again' to achieve a child of the desired sex.

The effect of the sex of the first two children on the progression to a third child

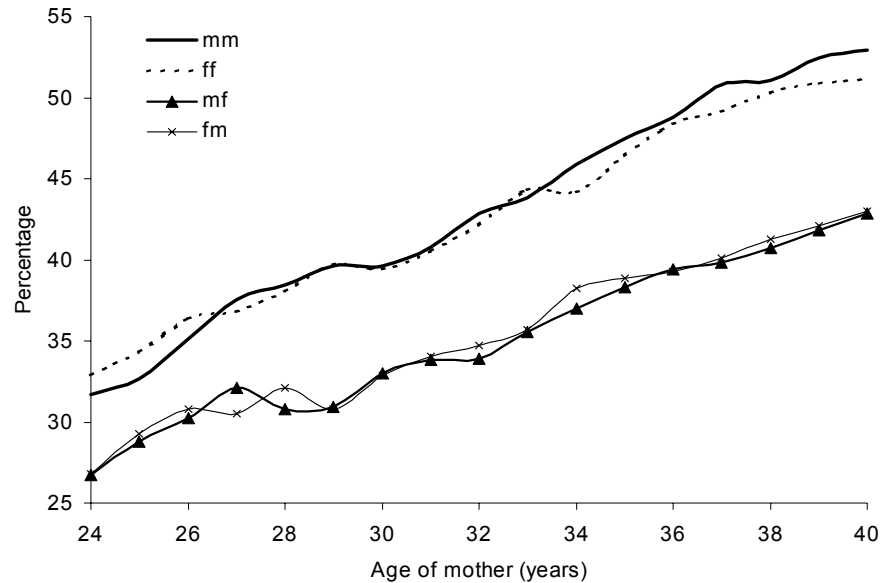
The percentage of mothers with two children who have had a third child is shown in Figure 2, with mothers classified by age and the sex of their first two children. Significant differences emerge in mothers' progression to a third child, based on sex of existing children. There is a marked preference for at least one

child of each sex. Mothers with two sons or two daughters are around 25 per cent more likely to have a third child than are mothers with a son and a daughter. For example, at the time of the 2001 Census, 40 per cent of 37 year-old mothers with one child of each sex had had a third child, compared with 50 per cent of 37 year-old mothers with two boys or two girls. This indicates that the desire to have at least one child of each sex is a significant factor in the decision to have a third child. However, the analysis again shows that, overall, sons are not preferred to daughters nor vice versa. Mothers of two boys or two girls are equally likely to progress to a third child.

The effect of the sex of the first three children on progression to a fourth child

Figure 3 shows that there are three dis-

Figure 2: Percentage of mothers with two children who have had a third child, by age of mother and sex of the first two children, 2001 Australian Census



Source: ABS, Women by age, by age and sex of resident children, unpublished data from 2001 Australian Census of Population and Housing, Canberra, 2005; authors' calculations

tinct clusters in the percentage of women with three children who went on to have another child. Women are most likely to have a fourth child if their first three children are all of the same sex. This reinforces the observation made above that a large proportion of Australian parents want at least one son and one daughter, and that this desire is an important factor in the decision to have another child. Again, however, there is no difference in progression between mothers of all boys and mothers of all girls.

The middle cluster are those mothers whose first two children were of different sexes. The wish to have at least one son and one daughter obviously did not play any part in the decision of these women to have a fourth child, since this sex mix was achieved with their first two children.

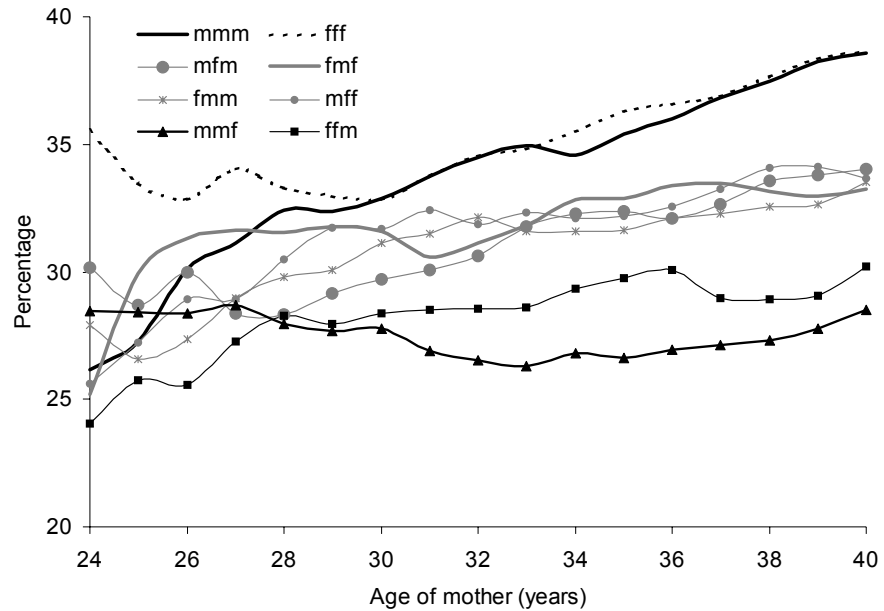
The mothers least likely to have a

fourth child are those whose first two children were of the same sex and the third was of the opposite sex. This phenomenon has been noted in other studies,²⁹ and occurs because a large proportion of these parents were influenced to have a third child because they wanted one of the other sex. Once a child of the missing sex is gained, no more children are added to the family.

The effect of the preference for 'one of each' on Australia's fertility

In demographic research, the most common measure of fertility is the total fertility rate, which is a cross-sectional measure of the number of births a woman would have over her lifetime if she experienced the age-specific fertility rates of a particular year. Over the past few years, Australia's total fertility rate has been relatively stable at around 1.75 births per

Figure 3: Percentage of mothers with three children who have had a fourth child, by age of mother and sex of the first three children, 2001 Australian Census



Source: ABS, Women by age, by age and sex of resident children, unpublished data from 2001 Australian Census of Population and Housing, Canberra, 2005; authors' calculations

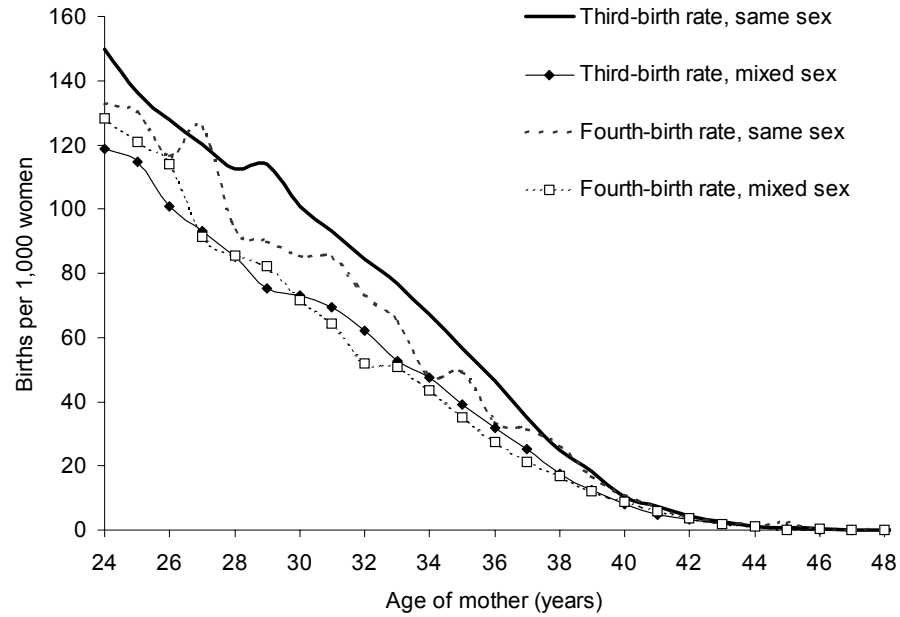
woman. We can calculate what effect the desire for a child of each sex has on the recent total fertility rate. This is done by considering third and fourth children aged under twelve months at the time of the Census. The adjusted number of these children is used to calculate third-birth rates and fourth-birth rates³⁰ for each age of mother, distinguishing between mothers of all same-sex children and mothers of mixed-sex families. These rates are shown in Figure 4. As shown in the previous analysis, mothers with children of all one sex are more likely to have another child than are mothers with both sons and daughters.

Third and fourth births currently make up around one fifth of Australia's total fertility rate. If women with all sons or all daughters had third and fourth children at the lower rate of women with children of

both sexes, then the total fertility rate would be around 1.70 instead of 1.75 births per woman. This translates to approximately 7,000 extra births (out of about 250,000 births) that occur each year in Australia as parents 'try again' to gain the desired son or daughter. In a society where an increase in the total fertility rate of 0.02 is heralded as a baby boom,³¹ a difference of 0.05 births per woman is significant.

Although the calculations have not been done here, it is also likely that parents are more likely to have a fifth child if the first four are all of the same sex. However this is unlikely to impact much on the total fertility rate, as fifth- and higher-order births constitute less than four per cent of all births at present, and only 13 per cent of women with four children have children who are all of the same sex.

Figure 4: Third- and fourth-birth rates by sex of existing children (same sex/mixed sex), Australia, 2001



Source: ABS, Women by age, by age and sex of resident children, unpublished data from 2001 Australian Census of Population and Housing, Canberra, 2005; authors' calculations

Whether or not the effect on fertility of wanting one of each becomes more or less significant in the future is the subject of some speculation. Wood and Bean³² argue that the trend towards smaller family sizes means that a preference for one child of each sex will have a bigger impact on fertility in the future. When there is a large-family norm, most parents will have at least one son and one daughter without trying. However, when families are small, the probability of achieving at least one child of each sex is much lower, and the sex of the first two (or first three) children becomes a major factor in the decision to have another child.

However, Pollard and Morgan³³ argue that the opposite is true; that there will be a lessening effect on fertility of the preference for a mixed-sex family. This

will occur as gender differentiation continues to decrease, and sons and daughters come to provide exactly the same psychosocial benefits to their parents.

Since these two trends — to smaller families and gender substitutability — are happening concurrently, it is difficult to determine the future net effect on fertility. Further research by the authors will consider past trends using data from previous Australian Censuses. This will shed light on whether the desire for children of each sex is likely to have a greater or lesser effect on fertility in the future.

Acknowledgements

This paper forms part of a larger study, funded by the Australian Research Council (DP0558818), entitled 'Do Australian parents want both a son and a daughter?'. This study investigates Australian parental desire for at least one child of each sex, and the differential value to parents of sons and daughters. The project is based on detailed analyses

References

- ¹ R. Kippen, 'Declines in first- and second-birth rates and their effect on levels of fertility', *People and Place*, vol.12, no.1, 2004, pp. 28-37
- ² P. McDonald, 'Contemporary fertility patterns in Australia: first data from the 1996 Census', *People and Place*, vol.6, no.1, 1998, pp. 1-12
- ³ Authors' calculation from unpublished births data provided by the Australian Bureau of Statistics (ABS), Canberra, and the Australian Institute of Health and Welfare's National Perinatal Statistics Unit, Sydney
- ⁴ T. Frejka and G. Calot, 'Cohort reproductive patterns in low-fertility countries', *Population and Development Review*, vol. 27, no. 1, 2001, pp. 103-132; T. Frejka, W. Kingkade, G. Calot, J-P. Sardon and A. Confesson, 'Cohort childlessness and parity in low-fertility countries', paper presented at the European Population Conference, Helsinki, Finland, 7-9 June 2001
- ⁵ ABS, *Births Australia 2003*, Cat. no.3301.0, Canberra, 2004
- ⁶ Eurostat, *First Results of the Demographic Data Collection for 2003 in Europe*, Luxembourg, 2004
- ⁷ J.C. Caldwell, *Theory of Fertility Decline*, Academic Press, New York, 1982
- ⁸ L.W. Hoffman and J.D. Manis, 'The value of children in the United States: a new approach to the study of fertility', *Journal of Marriage and the Family*, vol. 41, no. 3, 1979, pp. 583-596
- ⁹ T. Breusch and E. Gray, 'New estimates of mothers' forgone earnings using HILDA data', *Australian Journal of Labour Economics*, vol. 7, no. 2, 2004, pp. 125-150
- ¹⁰ R. Weston, L. Qu, R. Parker and M. Alexander, "*It's Not for the Lack of Wanting Kids*": *A Report on the Fertility Decision Making Project*, Australian Institute of Family Studies, Melbourne, 2004
- ¹¹ *ibid.*
- ¹² *ibid.*
- ¹³ *ibid.*
- ¹⁴ M.J. Graham, U. Larsen and X. Xu, 'Son preference in Anhui Province, China', *International Family Planning Perspectives*, vol. 24, no. 2, 1998, pp. 72-77; F. Arnold, M.K. Choe and T.K. Roy, 'Son preference, the family-building process and child mortality in India', *Population Studies*, vol. 52, no. 3, 1998, pp. 301-315
- ¹⁵ M.S. Pollard and S.P. Morgan, 'Emerging parental gender indifference? Sex composition of children and the third birth', *American Sociological Review*, vol. 67, no. 4, 2002, pp. 600-613
- ¹⁶ D.S. Freedman, R. Freedman and P.K. Whelpton, 'Size of family and preference for children of each sex', *The American Journal of Sociology*, vol. 66, no. 2, 1960, pp. 141-146
- ¹⁷ Pollard and Morgan, *op. cit.*
- ¹⁸ K. Hank and H-P. Kohler, 'Gender preferences for children in Europe: empirical results from 17 FFS countries', *Demographic Research*, vol.12, no.1, 2000
- ¹⁹ *ibid.*
- ²⁰ R. Jacobsen, H. Møller and G. Engholm, 'Fertility rates in Denmark in relation to the sexes of preceding children in the family', *Human Reproduction*, vol. 14, no. 4, 1999, pp. 1127-1130
- ²¹ Hank and Kohler, *op. cit.*
- ²² C. Young, 'Family building differences between same sex and mixed sex families in Australia', *Australian Journal of Statistics*, vol. 19, no. 2, 1977, pp. 83-95
- ²³ Weston et al., *op. cit.*
- ²⁴ R. Meyer, 'Which Australians are having three or more children?', *People and Place*, vol. 7, no. 3, 1999, pp. 31-38
- ²⁵ E. Gray and A. Evans, 'Parity progression in Australia: What role does sex of existing children play?', paper presented at the Australian Population Association Conference, Canberra, 15-17 September, 2004
- ²⁶ ABS, *2001 Australian Census of Population and Housing Household Form*, Canberra, 2001
- ²⁷ T. Rawnsley, personal communication, ABS, 2005, Canberra
- ²⁸ The parity distributions were adjusted to those calculated by R. Kippen, *op. cit.* and R Kippen, 'Trends in age- and parity-specific fertility in Australia', *Working Papers in Demography*, no. 91, Demography and Sociology Program, The Australian National University, Canberra, 2003. The 2001 parity distributions calculated by Kippen are based on the number of children that each woman has given birth to. The Census parity data used in this analysis are based on biological and adopted children. However the discrepancy will be small given the number of adoptions relative to births; there are around 500 births for every adoption in Australia today.
- ²⁹ See, for example, Jacobsen, Møller and Engholm, *op. cit.*
- ³⁰ See R Kippen, 2003, *op. cit.*, for the method of calculating these rates.
- ³¹ C. Pirani, 'Policies praised for birth boom', *The Australian*, 9 April 2005, p.5; 'Why we need a baby bounce', *The Australian*, 11 April 2005, p.14

- ³² C.H. Wood and F.D. Bean, 'Offspring gender and family size: implications from a comparison of Mexican Americans and Anglo Americans', *Journal of Marriage and the Family*, vol. 39, no. 1, 1977, pp. 129-139
- ³³ Pollard and Morgan, op. cit.