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HOUSEHOLD FORMATION : IMPLICATIONS FOR AUSTRALIA'S FUTURE

by

Pamela Williams and Dennis Sams

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demographic influences will reduce the rate of growth of housing demand and shift the nature of that demand away from family housing towards smaller units suitable for unmarried persons (including single parents) and for older persons. Policy analysis should take into account the implications of these projections; the declining dominance of the traditional married household and continued reductions in average household size point to a future Australia with household and social structures differing from those of today.

6. CONCLUDING REMARKS

The household formation model has been developed as part of the IMPACT Project's medium term model of the Australian economy. The model is intended for use in policy analysis and should not be viewed merely as a forecasting tool. Consequently, the projections presented in this paper provide only an example of the results which can be obtained from a model of this type which explicitly incorporates the effect of economic and demographic changes upon projections of the number of Australian households. The results presented here indicate what the number of households would be if the economic and demographic scenarios underlying the projections were to apply and if the model used were to continue to track Australian household headship behaviour adequately (as it has done over the 1960's and 1970's). Further economic and demographic scenarios could be developed and their effect on household formation investigated. Although we have adopted a broad perspective in analysing our projections, it would be possible to concentrate the analysis on the response to changing conditions of one or a few related demographic groups.

These projections have the potential to assist decision makers in the building industry and in related policy areas. Household formation responds to a variety of economic conditions, especially those in the labour market and those associated with social welfare payments. Governments need to recognize these linkages when formulating policy in housing and in other areas. For the building industry the implication is that economic fluctuations will continue to exert major influences on the demand for their product. Under our assumptions longer term

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1. INTRODUCTION

Since the turn of the century, there have been substantial increases in the numbers of households in Australia and extensive changes in their characteristics. Demographic trends have had a major influence upon household formation; the likelihood that an individual will form his own household, or will live as part of another, varies with that person's stage in his life cycle and his conjugal condition. In the past, the likelihood that an Australian would head his own household rose with increasing age to a peak at prime ages and declined slightly at older ages. As expected, the majority of Australian households are headed by married males, with the next largest group being headed by widowed females, and a lesser number by unmarried persons and married females.[1]

The demand for household formation is obviously dependent on the demographic composition of the population, but an individual's ability to form and maintain a separate household will also depend upon

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1. An excellent historical analysis of the demographic characteristics of Australian household formation can be found in O.B. Di Iulio, "Household Formation 1911-2001, An Historical Analysis and Projection", National Population Inquiry, Research Report No.10, Canberra, 1981.

his expected income, the cost of running such a household and the availability of suitable housing.[1] The availability of housing depends upon the level of activity in the building industry, which is related to interest rates, land costs and availability, costs of construction, availability of finance and other factors, such as the vacancy rate, which determine the profitability of new house construction and investment in rental housing. Government policy relating to the private housing market and the provision of public housing also affects the supply of housing. Fortunately, housing shortages have not been severe in Australia in recent times, although in the short term and for particular regions or types of housing, supply bottlenecks may arise. In this study, we are interested in projecting the long term demand for household formation for Australia as a whole. It has been suggested that, in the long run, the rate of household formation for Australia will be demand determined, with no supply constraints.[2] Consequently, it is our contention that changes in the likelihood that a person of a given age and marital status will head a separate household will arise predominantly from changes in the expected level (in terms of real housing cost dollars), and security of income of persons of that demographic group.

At different stages of the life cycle and under different social and economic circumstances, a person will be dependent on

1. The influences on Australian household formation have been explored in a series of papers produced by the IMPACT Project: P.J. Williams and R.C. Brooks, "An Econometric Model of Household Headship", IMPACT Preliminary Working Paper No. BP-14, Melbourne, July 1978, Pamela Williams and Dennis Sams, "Household Headship in Australia: Further Developments to the IMPACT Project's Econometric Model of Household Headship", IMPACT Preliminary Working Paper No. BP-26, Melbourne, August 1981 and Pamela Williams, "Australian Households - 1976 to 2001", IMPACT Research Memorandum, BACHUROO Module, October 1981.

2. A.R. Hall and M.R. Hill, "Housing Demand in Australia", The Economic Record, Vol. 36, No. 76, December 1960, p. 550.

(iii) even under our most pessimistic scenario of future economic growth, there will be a continuation, at a slower pace, of the decline in average household size to [3.10, 2.96, 2.80] persons in the [low, medium, high] growth scenario by the year 2001;

(iv) partially as a result of our assumption of moderate improvements in the economic position of women, the trend towards the increased importance of women as household heads is maintained for all our scenarios of economic growth, such that over the projection period women comprise an average of [27.9, 27.4, 27.7] per cent of annual new household formation and, by the year 2001, they head [21.3, 21.4, 21.8] per cent of all households;

(v) as a result of their lower sensitivity to economic growth and their declining population growth, the traditional married male and widowed female heads will continue to reduce their dominance in favour of divorced and never married persons;

(vi) under the influence of the ageing of the population, there will be substantial declines in the importance of young persons as a source of new household formation and a concomitant increase in the importance of older persons.

households, such that even small changes in their headship ratios will lead to large changes in household numbers.

Our chosen economic scenarios are admittedly pessimistic, even in our high growth scenario, and obviously this accounts for our projected growth rates for households being lower than those experienced in the past. If, in the future, the rates of economic growth were to return to a level similar to that of the 1960's, then the growth in households would be higher. Although, we cannot forecast the future of the Australian economy, our set of projections does provide an insight into the future numbers and composition of Australian households and their sensitivity to the economic environment.

In summary, our projections indicate the following changes in future Australian household formation:

(i) under the influence of declining population growth and relatively poor economic growth, there will be a slowing in the rate of increase of household numbers to [1.7, 1.9, 2.1] per cent or, on average, [84,600, 96,100 111,800] new households per year for the [low, medium, high] growth scenarios;

(ii) the sensitivity of household formation to the assumed economic scenarios is such that total household numbers in 2001 are [4.4, 5.9] per cent [lower, higher], and the average numbers of new households per year over the projection period are [12.0, 16.3] per cent [lower, higher], in the [low, high] growth scenarios than in the medium growth scenario;

different sources of income. These include wages and salaries, unemployment benefits, the supporting parent's benefit, the invalid pension, the old age pension and private income from dividends and interest. The income derived from these sources will be determined by the levels of wages, salaries, interest, dividends and benefit rates and the likelihood that a person will be in receipt of such income. In particular, the average income for any given demographic group will be determined not only by the real wage, pension, etc., rates enjoyed by that group, but also by the labour force participation rate, the fraction of the year for which a typical member is in the workforce, the unemployment rate, the duration of unemployment, the proportion of the group who are welfare recipients and the proportion receiving private income.

Over the period 1961 to 1976, there have been significant changes in the likelihood that a person of a particular demographic group will head a separate household. Overall, there was an increase in the probability that a person would head a household, especially if that person was a woman, and there was also an increase in the likelihood at both young and old ages. At the same time, there were significant increases in the income of particular groups, arising from changes in the labour force participation rates for these groups, from changes in relative wages, especially changes in wage relativities for women and young persons, and from changes in the unemployment rate and the duration of unemployment. Similarly, over the mid 1970's, there were substantial increases in the level of social welfare benefits, including unemployment benefits, and a rise in the number of persons in receipt of these benefits. Our analysis of Australian household formation[1] has shown that changing real incomes over the 1960's and 1970's have led to a substantial increase in the total likelihood that a person will head

1. See Pamela Williams and Dennis Sams, op. cit..

his own household and to significant growth in the likelihood that members of particular demographic groups, who have not traditionally headed their own household, will become household heads.

Changes in the number of Australian households can be partitioned into the effects arising from demographic change -- in the form of the growth of the population and changes in its sex, age and marital status distribution -- and from social and economic change -- in the form of changes in household headship ratios for each demographic group.[1] The projections of Australian households, reported in this paper, have been made by projecting the future Australian population with the IMPACT Project's Population Projection Facility[2] and future headship ratios with an econometric model of household formation which relates household headship for each demographic group to the income level of that group.[3]

In the following Section, the relevant IMPACT models are discussed briefly. In Sections 3 and 4, the separate projections of household headship and of population, respectively, are presented and analysed. An analysis of the set of projections of household formation is given in Section 5, and concluding remarks are contained in Section 6.

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1. The household headship ratio is the proportion of people in any given population category who are heads of households.

2. See Dennis Sams, "The Demographic Core of the IMPACT Project : An Overview," IMPACT Preliminary Working Paper No. BP-18, Melbourne, September 1979, and Dennis Sams and Pam Williams, "The IMPACT Project's Facility for Disaggregated Population Projections: A Brief Exposition and Progress Report," IMPACT Preliminary Working Paper No. BP-22, Melbourne, May 1980.

3. See Pamela Williams and Dennis Sams, op. cit..

The effect upon household formation of the ageing of the population is clear. The proportion of the adult population over 55 years is projected to increase from 24.2 per cent in 1976 to 27.5 per cent in 2001, providing the majority of the impetus for the projected growth in the proportion of households headed by persons aged 55 years or more, which increases from 32.6 per cent in 1976 to [35.8, 35.0, 33.3] per cent of all households in the [low, medium, high] growth scenarios. In the lower growth scenarios, declining headship ratios at older ages, prompted by declining labour force participation, especially for males, and slower growth in incomes, have to some extent mitigated the effect of ageing upon household numbers, whilst in the higher growth scenarios the relatively higher household formation of younger persons tends to reduce the proportion of households headed by older persons. However, in all scenarios, persons over 55 years represent over 35.0 per cent of the average annual projected increase in households, compared to only 30.0 per cent in the 1961 to 1976 period. These figures imply a dramatic shift in the emphasis of housing needs away from those of young persons and towards those of older persons over the projection period.

The projections described in this section illuminate some important features of Australia's future household formation. Household formation has, and will continue to be, closely related to demographic and economic conditions. Our analysis has shown that the economic environment is an important determinant of household headship ratios for all demographic groups, but especially so for the less traditional groups -- never married, divorced and young people. The more traditional groups -- married, widowed and older people -- are relatively insensitive to changing economic conditions, so that their household numbers tend to grow largely according to their population growth. It should be noted, however, that these groups represent by far the largest part of all

[0.5, 0.8, 1.1] per cent of households. The major reason for the declining importance of households with young heads is their below average population growth; the proportion of 15-19 year olds in the adult population is projected to decline from 12.5 per cent in 1976 to 8.9 per cent in 2001. At the same time, headship ratios for this age group, which are quite sensitive to changing economic conditions, are projected to grow rapidly under the high growth scenario but remain approximately static under the medium growth scenario and decline slightly under the low growth scenario.

For households headed by 20-24 year olds, a similar story emerges. By 2001, 20-24 year olds will head only [4.0, 4.5, 5.5] per cent of households, compared with 6.4 per cent in 1976. This age group also forms a declining proportion of the adult population over the projection period, 11.5 per cent in 1976 compared to 8.6 per cent in 2001, and the headship ratios for this age group are also sensitive to the assumed level of economic growth.

The projected changes in the age composition of heads of households must be interpreted carefully, since they derive not only from changing headship ratios and changes in the age distribution of the population but also from changes in its marital status composition. For example, the changing marital status composition of the 20-24 year old group exerts some influence on the numbers of households headed by persons in that group; at the beginning of the projection period, the declining proportion of young married persons (who have the highest headship ratios) leads to substantial reductions in numbers of households headed by this age group, although the assumed recovery in marriage rates over the remainder of the projection period does help to counter this decline.

2. THE MODELS

This paper forms an integral part of the analysis within the IMPACT Project of the effects of economic, demographic and social changes on the structure of the Australian economy.[1] In this section, we shall outline the IMPACT models relating to household formation, and the projection of the Australian population.

As described in the previous section, the observed growth in the number of households over time can be partitioned into the effects arising from (a) the growth of the population and changes in its distribution between demographic groups, and (b) the growth in the household headship ratios for each demographic group. Under the assumption that these two components of the growth in households are independent we can adopt a comparatively simple two-stage method for the projection of households.[2]

This method, which is used in the majority of projections of households, involves the projection of the headship ratios for each population category and the separate projection of the population in each category. Then, by multiplication of the headship ratios and corresponding populations, we can derive the projected numbers of households whose head belongs to each of the population categories. Such projections are usually based almost entirely on past headship and

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1. For background material on the IMPACT Project, see Alan A. Powell, The IMPACT Project : An Overview, First Progress Report of the IMPACT Project, Volume 1 (Canberra: Australian Government Publishing Service, 1977).

2. For full details of alternative projection techniques, see United Nations, "Methods of Projecting Households and Families", Manual VII, Population Studies No. 54 (ST/SDA/Ser A/54), Sales No. E73 XIII, 2.

population trends,[1] and hence do not attempt to identify explicit factors which influence people in their decision to head a separate household.

The household projections reported in this paper were generated using the IMPACT Population Projection Facility[2] to obtain projections of the Australian population and an econometric model of household formation[3], developed using data from the 1961, 1966, 1971 and 1976 Censuses, to project household headship ratios. The projections generated are conditional projections to the year 2001 based on a demographic scenario and set of three economic scenarios which characterise a low, a medium and a high growth economy.[4]

The Population Projection Facility is designed to provide, within a tightly integrated framework, projections of the Australian population subject to the influence of a set of economic, social and demographic variables. Annual projections of the population disaggregated by 101 single years of age, four marital states, and two sexes are available. This level of disaggregation is maintained for all population stocks and demographic flows, such as deaths, migration and marital status change, and the Facility ensures that strict accounting identities are maintained between all population stocks and flows. In particular,

1. For some Australian examples, see Department of Environment, Housing and Community Development, A Method for the Projection of Households and Dwelling Completions 1975-2000 (Canberra: Australian Government Publishing Service, 1977) and R. Riner and H.M. Bingham, Household Formation Projections (Melbourne: Melbourne Metropolitan Board of Works, 1975).

2. See Dennis Sams, op. cit., and Dennis Sams and Pam Williams, op. cit., for more detailed information regarding the Facility.

3. See Pamela Williams and Dennis Sams, op. cit., for details of the econometric model of household headship.

4. See Section 3 for details of these scenarios.

HEADED BY MALES AND FEMALES OF EACH AGE GROUP, 1976 TO 2001

FEMALES

Age	Growth Scenario	As at June 1976	1981	1986	1991	1996	2001
15-19	LOW		2.8	2.1	1.7	1.3	1.2
	MED	1.9	2.8	2.3	2.0	1.7	1.7
	HIGH		2.8	2.4	2.3	2.1	2.3
20-24	LOW		5.6	3.9	3.6	3.1	2.8
	MED	6.2	5.6	4.1	3.9	3.4	3.2
	HIGH		5.6	4.3	4.3	3.9	4.2
25-34	LOW		13.0	13.7	13.2	12.3	11.5
	MED	11.6	13.0	14.0	13.8	13.0	12.3
	HIGH		13.0	14.3	14.5	13.9	13.3
35-44	LOW		12.0	14.3	15.6	16.1	15.7
	MED	10.1	12.0	14.7	15.7	16.6	16.7
	HIGH		12.1	15.0	16.6	17.6	17.2
45-54	LOW		12.3	11.9	13.0	14.9	15.9
	MED	13.9	12.3	11.8	12.8	14.6	15.4
	HIGH		12.2	11.6	12.5	14.4	15.7
55-59	LOW		8.5	7.8	6.7	7.0	7.7
	MED	8.4	8.5	7.7	6.5	6.8	7.4
	HIGH		8.5	7.6	6.3	6.4	6.9
60-64	LOW		9.0	8.9	8.0	6.8	7.0
	MED	10.3	9.0	8.8	7.9	6.6	6.8
	HIGH		8.9	8.6	7.6	6.3	6.4
65+	LOW		36.9	37.3	38.1	38.6	38.2
	MED	37.6	36.9	36.8	37.4	37.4	36.6
	HIGH		36.8	36.1	35.9	35.4	34.1

TABLE 9 : PROPORTIONS OF PROJECTED AUSTRALIAN HOUSEHOLDS (IN PERCENTAGES)

MALES

Age	Growth Scenario	1976	As at June 1981	1986	1991	1996	2001
15-19	LOW		0.6	0.5	0.4	0.4	0.3
	MED	0.5	0.6	0.6	0.5	0.5	0.5
	HIGH		0.6	0.6	0.7	0.7	0.8
20-24	LOW		5.6	5.4	5.2	4.8	4.3
	MED	6.4	5.7	5.6	5.5	5.3	4.9
	HIGH		5.7	5.9	6.0	6.1	5.8
25-34	LOW		24.4	22.3	21.6	20.9	20.1
	MED	24.7	24.4	22.5	21.9	21.3	20.6
	HIGH		24.4	22.7	22.3	21.8	21.1
35-44	LOW		22.3	24.5	24.5	23.5	23.1
	MED	20.7	22.3	24.5	24.4	23.4	23.1
	HIGH		22.3	24.3	24.1	23.2	22.7
45-54	LOW		18.5	17.4	18.7	20.6	20.9
	MED	20.4	18.4	17.3	18.6	20.4	20.7
	HIGH		18.4	17.2	18.3	20.0	20.2
55-59	LOW		8.8	8.4	7.2	7.5	8.4
	MED	8.1	8.8	8.3	7.1	7.4	8.2
	HIGH		8.8	8.2	7.0	7.2	8.0
60-64	LOW		6.7	7.4	7.1	6.2	6.5
	MED	7.1	6.7	7.4	7.0	6.1	6.4
	HIGH		6.7	7.3	6.9	5.9	6.2
65+	LOW		13.1	14.0	15.4	16.2	16.3
	MED	12.1	13.1	13.9	15.1	15.9	15.8
	HIGH		13.1	13.6	14.7	15.3	15.2

the Facility incorporates a two-sex marriage and divorce model which constrains the number of marriages (and divorces) for each sex to be equal.

The high level of disaggregation maintained within the IMPACT Population Projection Facility enables the projections to be used very flexibly. For example, in the household projections reported in this paper, the projected populations have been aggregated into the eight age groups used in the headship model and many of the available demographic variables, which are superfluous to this study, have not been used. However, in another context, a different aggregation and other demographic data could be used.

The IMPACT Population Projection Facility has not been developed simply to provide alternative demographic projections using conventional demographic techniques. The Facility extends these techniques by integrating them with an econometric model of fertility, marriage and divorce which allows these demographic events to be influenced by changing economic and social conditions. As part of this econometric model, the Facility also incorporates a set of equations for the projection of female labour force participation which determines the labour force participation rates of women in a simultaneous and consistent framework with the level of fertility, marriage and divorce.

In the projections of population reported in this paper, we have chosen to set the levels of fertility, marriage and divorce rates explicitly since the performance of the Facility with these rates determined by the econometric model is currently being tested and will

be reported in a future paper. However, we have used the econometric model to provide the projections of the female labour force participation rates which feed directly into the set of economic variables influencing the econometric model of household headship.[1]

The household headship ratios for sixty-four demographic groups[2] are projected using the household headship model, which has been able to explain successfully the evolution of household headship ratios over the 1960's and 1970's in terms of a set of economic variables which are assumed to influence the decisions of people to form households. It is assumed that the household headship ratio for each demographic group is determined by the average expected income for that group.[3] Each

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1. Male labour force participation rates are not yet modelled in the Facility, although work is proceeding in this direction.

2. There are eight sex/marital status groups;

   (1) never married males (NMM),
   (2) never married females (NMF),
   (3) married (including permanently separated) males (MM),
   (4) married (including permanently separated) females (MF),
   (5) divorced males (DM),
   (6) divorced females (DF),
   (7) widowed males (WM), and
   (8) widowed females (WF),

   and there are eight age groups;

   (1) 15-19, (5) 45-54,
   (2) 20-24, (6) 55-59,
   (3) 25-34, (7) 60-64, and
   (4) 35-44, (8) 65 and over.

3. See Pamela Williams and Dennis Sams (1981) op. cit., for details of the specification of our measure of income for each group.

HEADED BY MALES AND FEMALES OF EACH AGE GROUP, 1976 TO 2001

FEMALES

Age	Growth Scenario	1976	As at June 1981	1986	1991	1996	2001	Average Annual Growth Rate
15-19	LOW		25.8	21.7	19.5	16.4	15.9	0.4
	MED	14.3	25.8	23.2	22.9	21.5	23.9	2.1
	HIGH		26.0	25.5	27.8	28.9	35.2	3.7
20-24	LOW		51.0	40.0	40.9	37.8	37.5	0.9
	MED	47.3	51.1	42.2	45.4	43.6	45.0	0.2
	HIGH		51.2	45.6	52.2	52.7	64.5	1.2
25-34	LOW		118.5	139.3	149.1	152.1	155.9	2.3
	MED	87.3	118.6	143.9	159.1	166.9	175.1	2.8
	HIGH		118.7	151.0	174.7	189.5	203.7	3.4
35-44	LOW		109.2	145.7	176.0	199.2	211.9	4.1
	MED	76.7	109.6	151.2	180.8	213.0	237.3	4.6
	HIGH		110.1	158.2	199.4	239.2	264.5	5.1
45-54	LOW		111.7	120.7	146.6	184.1	214.5	2.9
	MED	104.8	111.7	121.2	147.9	186.7	218.6	3.0
	HIGH		111.7	121.9	149.8	196.7	240.7	3.4
55-59	LOW		77.4	79.3	75.1	86.5	103.8	2.0
	MED	63.3	77.4	79.4	75.4	87.1	104.9	2.0
	HIGH		77.4	79.6	75.8	87.8	106.2	2.1
60-64	LOW		81.6	90.3	90.4	83.9	94.9	0.8
	MED	77.5	81.7	90.5	90.8	84.6	95.9	0.9
	HIGH		81.7	90.8	91.4	85.5	97.4	0.9
65+	LOW		336.4	379.4	429.8	478.1	516.4	2.4
	MED	283.5	336.4	379.8	430.6	479.8	518.9	2.4
	HIGH		336.4	380.3	432.0	482.3	522.7	2.5
TOTAL FEMALES	LOW		911.6	1016.5	1127.3	1238.1	1350.6	2.4
	MED	754.6	912.3	1031.6	1152.9	1283.2	1419.7	2.6
	HIGH		913.3	1052.9	1203.1	1362.6	1535.0	2.9

TABLE 8 : PROJECTIONS OF AUSTRALIAN HOUSEHOLDS (IN THOUSANDS)

MALES

Age	Growth Scenario	1976	As at June 1981	1986	1991	1996	2001	Average Annual Growth Rate
15-19	LOW		23.2	21.1	19.0	16.4	16.7	0.3
	MED	18.1	23.3	23.1	22.7	21.6	24.4	1.2
	HIGH		23.5	26.3	29.6	32.6	43.0	3.5
20-24	LOW		208.6	214.5	220.9	224.3	215.9	0.0
	MED	217.4	209.1	223.9	240.5	253.3	253.4	0.6
	HIGH		209.9	238.8	272.4	303.4	319.6	1.6
25-34	LOW		899.8	888.9	927.0	970.7	1006.4	0.7
	MED	835.7	900.5	903.4	960.5	1021.6	1073.9	1.0
	HIGH		901.6	924.6	1008.0	1090.3	1158.0	1.3
35-44	LOW		824.0	976.1	1050.4	1090.3	1154.7	2.0
	MED	701.2	824.3	982.3	1069.3	1124.5	1202.3	2.2
	HIGH		824.7	991.9	1091.6	1161.1	1247.4	2.3
45-54	LOW		681.7	691.6	803.3	957.0	1043.9	1.7
	MED	609.2	681.9	695.8	814.7	979.0	1078.1	1.8
	HIGH		682.2	701.6	828.2	1002.7	1111.1	1.9
55-59	LOW		325.0	332.2	307.7	346.8	418.2	1.7
	MED	275.5	325.1	334.0	311.3	353.2	428.8	1.9
	HIGH		325.2	336.3	315.7	360.4	439.7	1.9
60-64	LOW		248.5	296.0	306.1	286.9	325.0	1.2
	MED	238.7	248.5	297.2	308.9	291.0	331.5	1.3
	HIGH		248.6	299.0	312.7	296.1	339.2	1.4
65+	LOW		484.9	558.0	659.4	753.3	816.4	2.8
	MED	409.0	485.0	559.1	662.3	758.6	824.5	2.8
	HIGH		485.1	560.8	666.7	766.7	836.4	2.9
TOTAL MALES	LOW		3695.6	3978.4	4293.7	4645.7	4997.2	1.6
	MED	3385.8	3697.7	4019.5	4390.2	4802.8	5217.0	1.7
	HIGH		3700.8	4079.2	4524.8	5013.2	5494.4	2.0

demographic group can receive income from five sources;

1) wages, salaries and supplements,
2) the unemployment benefit,
3) government welfare payments, such as sickness and invalid pensions, the old age pension, supporting parent's benefit and the like, which are intended to replace labour income,
4) other government transfers such as child endowment, and health benefits, which are not intended to replace labour income, and
5) unearned private income from dividends, interest and the like.

The contribution to average expected income from each of these income sources for each demographic group is determined by the average labour force attachment of each group and the state of the labour market, as encapsulated in the following variables for each group:

a) the labour force participation rate,
b) the fraction of the year a typical person is in the labour force,
c) the unemployment rate, and
d) the average duration of unemployment.[1]

Average expected income is deflated by the housing cost component of

1. It may be helpful to consider income from the five sources as income rates. Weighting by the labour market attachment information produces an expected income rate from each income source. Finally, applying these latter rates to the numbers in each group and summing over groups and income sources produces a total equal to total household disposable income.

the CPI, rather than the CPI itself, since housing, rather than general consumer prices, are more relevant to household headship. The headship model is designed to determine the level of demand for households and the effect of the supply of housing on household formation is only transmitted to the model to the degree that it affects the cost of occupying and maintaining a home. However, as discussed in the previous section, in the long run, the rate of household formation will be demand determined.

The model provides no direct information regarding the relative numbers of persons owning and renting their homes. Given the demand for households, however, subsequent analysis of the owner/renter composition of households could be based on such factors as the cost of home ownership, rental levels and government policies concerning the supply and subsidisation of housing. We have not undertaken such analysis.

Thus, we model the demand for household formation subject to the influence of a set of variables which determine the ability of members of each demographic group to form and maintain a household. In the past, Australian household formation has been a normal good for all demographic groups, in the sense that increasing income has led to increases in household headship. The extent to which projected changes in income from any particular source will lead to increased household headship for a given demographic group will depend upon the importance of that income source for the group. The sensitivity of household headship to changes in average expected income has been the lowest for older age groups and the more traditional household heads, such as

[19.9, 24.2, 25.1] per cent in 2001. Obviously the growth rates for households headed by never marrieds and divorcees are influenced strongly by the economic environment; more so than the traditional groups, who are less likely to relinquish their separate households in times of economic decline and who already have such high rates of headship that they respond less readily to improvements in economic conditions. However, the reader should not become confused regarding implications of the above factors for total household formation. The importance of the traditional household headship groups remains unchallenged; married males will still provide the largest increase in households each year; for the [low, medium, high] growth scenarios, [56.6, 52.2, 46.9] per cent of the average annual increment will be households headed by married males, whilst [32.4, 37.3, 43.0] per cent will be households headed by never married and divorced persons.

In our projections, as in the past, the majority of households are headed by persons in the prime age groups, 25-54 years (see Tables 8 and 9). They constituted 65.8 and 35.7 per cent, respectively, of male-headed and of female-headed households in 1976 and are projected to head [64.1, 64.4, 64.0] per cent of male-headed and [43.1, 44.4, 46.2] per cent of female-headed households by 2001.

The most interesting change in the age composition of projected households is for young people. Between 1961 and 1976, young people became increasingly numerous as household heads. In 1961 15-19 and 20-24 year olds headed 0.2 and 3.1 per cent, respectively, of households and in 1976 these age groups had grown such that they headed 0.8 and 6.4 per cent, respectively, of households. The growth in households headed by 15-19 year olds is projected to continue only in the high growth scenario; by 2001, 15-19 year olds will head only

77.1 per cent of all households in 1961 to 72.4 per cent in 1976. This decline is projected to continue for all three economic scenarios to [66.9, 64.9, 62.0] per cent in 2001. Traditionally, widows have formed the next largest demographic group of households and constituted 9.1 per cent of households in 1976. However, this proportion also declines in all scenarios to [8.0, 7.8, 7.4] per cent in 2001. These declines in the proportions of households with the more traditional married male or widowed female heads both in the past and in the projections are not a reflection of absolute declines in the number of households headed by the traditional groups themselves, but rather a reflection of the greater relative growth in the number of households headed by the less traditional sex/marital status groups. Between 1961 and 1976, the proportion of households headed by never married and divorced persons of both sexes increased substantially from 8.3 per cent to 13.1 per cent. The most important contributions to this increase were from households headed by divorced males and females, which grew, over this period, at average annual rates of 9.4 per cent and 9.0 per cent, respectively. Households headed by never married males and females also grew at above average rates of 5.4 per cent and 4.6 per cent per year respectively. In the projections these trends continue for all economic scenarios with slower, but still above average, annual growth rates for households headed by divorced males of between 5.6 and 6.2 per cent and for divorced females of between 6.4 and 6.9 per cent. Households headed by never married males and females also grew at slower, but still above average, rates of between 2.0 and 4.3 per cent and between 1.9 and 3.3 per cent, respectively. The combined effect of these above average growth rates is to increase the proportion of households headed by never married and divorced persons from the 1976 level of 13.1 per cent to

married males and widowed females, and greatest for young unmarried males. Young unmarried females do not respond as much as young males to changes in their expected income but they are more responsive than the traditional groups. Changes in wages and salaries have the greatest effect of all income sources on headship ratios for all groups except for older people who are more greatly affected by changes in social welfare payments and unearned incomes, which are more important sources of their income. Similarly, in the current situation of high youth unemployment, the headship ratios of young unmarried persons, especially males, are sensitive to the rate of unemployment benefits.[1]

Increases in the labour force participation rate of a demographic group increase the household headship ratio for that group if wages remain the same, since this raises the average expected income of the group. The sensitivity of headship ratios to changes in labour force participation is similar to that for average expected income, in that, the headship ratios of the traditional groups are little affected by changes in participation rates while those of young unmarried males are the most sensitive and those of young unmarried females have an intermediate response. As expected, increases in the unemployment rate and the duration of unemployment discourage household formation but the effect is quite small in both cases, except for young people.

A schematic illustration of the method used to generate the household projections reported in this paper is given in Figure 1. We begin with a chosen demographic scenario of future fertility, marriage and divorce rates and migration levels, and a chosen scenario for the future of the economy. The demographic scenario is used by the

1. See Pamela Williams and Dennis Sams, op. cit. .

population projection model to generate projections of the population in each demographic group in each year. The economic scenario is used, firstly, by the labour force participation model to project the labour force participation rates for each group, which are then used by the household headship model. Secondly, the economic scenario also feeds directly into the household headship model where it influences the average expected income level of each group. The econometric model of household headship then determines the headship ratios for each demographic group on the basis of the estimated response of its headship ratio to its average expected income. The population estimates are then combined with these headship ratios to provide estimates of the number of households in each group and for the population as a whole.

The following sections analyse these contributions to the projected number of households.

TABLE 7 : PROPORTIONS OF PROJECTED AUSTRALIAN HOUSEHOLDS (IN PERCENTAGES) HEADED BY MALES AND FEMALES OF EACH MARITAL STATUS, 1976 TO 2001

Sex/ Marital Status Group[a]	Growth Scenario	As at June					
		1976	1981	1986	1991	1996	2001
NMM	LOW		6.8	7.0	6.8	6.6	6.4
	MED	6.0	6.9	7.4	7.6	7.8	8.0
	HIGH		6.9	8.0	8.9	9.6	10.1
NMF	LOW		3.9	3.9	4.0	4.0	4.0
	MED	3.8	3.9	4.0	4.2	4.3	4.4
	HIGH		3.9	4.1	4.5	4.7	5.0
MM	LOW		68.5	67.5	67.1	67.1	66.9
	MED	72.4	68.5	67.0	66.1	65.5	64.9
	HIGH		68.4	66.2	64.5	63.2	62.0
MF	LOW		3.4	3.4	3.4	3.4	3.5
	MED	3.5	3.4	3.4	3.4	3.5	3.5
	HIGH		3.4	3.5	3.5	3.5	3.6
DM	LOW		2.8	3.3	3.4	3.5	3.6
	MED	1.4	2.9	3.4	3.6	3.8	4.0
	HIGH		2.9	3.5	3.8	4.0	4.2
DF	LOW		3.4	4.4	4.9	5.4	5.9
	MED	1.9	3.5	4.3	4.9	5.3	5.8
	HIGH		3.5	4.3	4.9	5.4	5.8
WM	LOW		2.0	1.9	1.9	1.8	1.8
	MED	2.0	2.0	1.9	1.9	1.8	1.8
	HIGH		2.0	1.9	1.8	1.8	1.8
WF	LOW		8.9	8.7	8.5	8.3	8.0
	MED	9.0	9.0	8.7	8.4	8.0	7.8
	HIGH		9.0	8.5	8.6	7.7	7.4
ALL MALES	LOW		80.2	79.7	79.2	79.0	78.7
	MED	81.8	80.2	79.6	79.2	78.9	78.6
	HIGH		80.2	79.5	79.0	78.6	78.2
ALL FEMALES	LOW		19.8	20.3	20.8	21.0	21.3
	MED	18.2	19.8	20.4	20.8	21.0	21.4
	HIGH		19.8	20.5	21.0	21.4	21.8

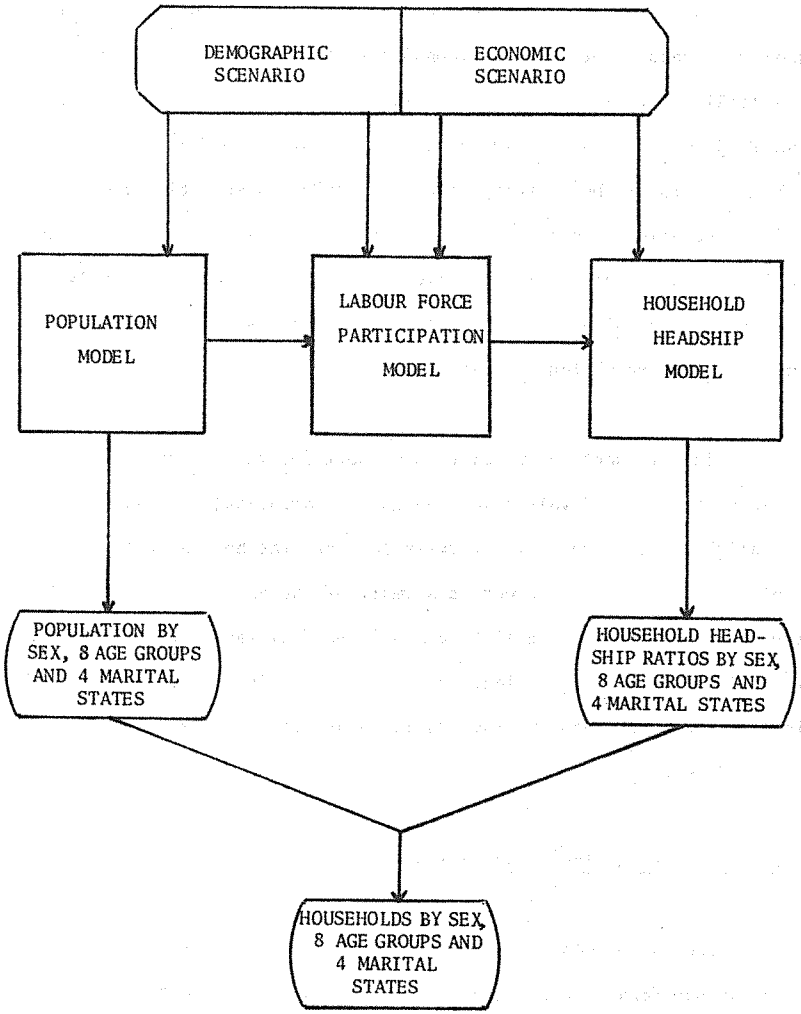
a The sex/marital status groups are defined on page 8.

TABLE 6 : PROJECTIONS OF AUSTRALIAN HOUSEHOLDS (IN THOUSANDS) HEADED BY MALES AND FEMALES OF EACH MARITAL STATUS, 1976 TO 2001

Sex/ Marital Status Group[a]	Growth Scenario	As at June 1976	1981	1986	1991	1996	2001	Average Annual Growth Rate
NMM	LOW		315.1	347.4	367.4	386.4	405.3	2.0
	MED	247.8	316.3	371.5	422.9	475.4	528.6	2.9
	HIGH		318.1	408.3	508.0	632.1	709.9	4.3
NMF	LOW		180.7	196.1	217.7	235.2	252.3	1.9
	MED	157.5	181.0	202.7	230.7	258.7	289.4	2.5
	HIGH		181.5	212.7	256.3	312.2	355.8	3.3
MM	LOW		3156.4	3371.7	3639.7	3945.1	4246.8	1.4
	MED	2997.2	3156.9	3382.4	3664.7	3986.3	4304.2	1.5
	HIGH		3157.8	3396.6	3694.7	4098.9	4361.2	1.5
MF	LOW		158.0	170.1	183.8	201.5	219.3	1.7
	MED	145.2	158.1	173.7	190.0	211.1	232.3	1.9
	HIGH		158.2	178.8	200.7	230.7	249.5	2.2
DM	LOW		132.9	163.8	185.7	206.3	229.3	5.6
	MED	58.7	133.1	169.4	199.8	230.5	264.2	6.2
	HIGH		133.5	177.0	216.8	264.8	297.6	6.7
DF	LOW		160.4	213.6	264.6	314.9	366.7	6.4
	MED	77.5	160.6	217.6	269.6	324.6	382.0	6.6
	HIGH		161.0	222.8	281.1	356.2	407.4	6.9
WM	LOW		91.2	95.4	101.1	107.9	115.8	1.4
	MED	82.1	91.3	96.2	102.8	110.7	119.9	1.5
	HIGH		91.4	97.2	105.2	116.8	125.6	1.7
WF	LOW		412.5	436.8	461.2	486.4	512.4	1.3
	MED	374.4	412.6	437.5	462.6	488.8	515.9	1.3
	HIGH		412.7	438.6	465.0	498.8	522.2	1.3
ALL MALES	LOW		3695.6	3978.4	4293.7	4645.7	4997.2	1.6
	MED	3385.8	3697.7	4019.5	4390.2	4802.8	5217.0	1.7
	HIGH		3700.8	4079.2	4524.8	5112.6	5494.4	2.0
ALL FEMALES	LOW		911.6	1016.5	1127.3	1238.1	1350.6	2.4
	MED	754.6	912.3	1031.6	1152.9	1283.2	1419.7	2.6
	HIGH		913.3	1052.9	1203.1	1397.3	1535.0	2.9

a The sex/marital status groups are defined on page 8.

FIGURE 1 : SCHEMATIC REPRESENTATION OF THE IMPACT PROJECT'S HOUSEHOLD FORMATION PROJECTION FACILITY



3. THREE ECONOMIC SCENARIOS AND THEIR IMPLICATIONS FOR FUTURE AUSTRALIAN HEADSHIP RATIOS

In order to generate our projections of household formation, we have developed a set of three economic scenarios for the future of the Australian economy. However, the role of these projections, and of of our projections of household formation, is not to forecast what will happen in the future but rather, given our estimated sensitivities of household formation to changes in economic conditions, to present three plausible scenarios of future economic growth - characterised broadly as low, medium and high - and to analyse what these scenarios imply for future household formation in Australia.

In this section, we provide a short description for each scenario of the assumed values for the income variables, the labour force variables, the unemployment variables, and the housing cost variables.[1] To aid the reader, a summary of the values of the variables in the economic scenarios in 1976 (actual) and 2001 (assumed) are given in Table 1. Finally, we consider the sensitivity of household headship ratios to these scenarios and the resulting projected values of the headship ratios.

The scenarios for the income variables

The three economic scenarios can best be characterised by our assumptions regarding the growth in real Gross Domestic Product per head and our choice of the long term unemployment rate. In the [low, medium, high] growth scenario, real GDP per head grows at [0.0, 1.0, 2.5]

1. For a complete description of the methods used to derive these scenarios, see Pamela Williams, op. cit..

increased from 16.0 per cent in 1961 to 18.0 per cent in 1976. Between 1976 and 2001, female-headed households are projected in all scenarios to grow at close to 1.0 per cent faster than male-headed households, with the difference again being accounted for mainly by the higher growth in headship ratios for females. More precisely, male households are projected to grow at [1.5, 1.6, 1.9] per cent per year, whilst female households grow at [2.3, 2.5, 2.8] per cent per year, with the growths in the headship ratios being [-0.1, 0.1, 0.3] per cent for males and [0.7, 0.9, 1.2] per cent for females in the [low, medium, high] growth scenarios. As a result, the proportion of households headed by women increases to [21.3, 21.4, 21.8] per cent by 2001. Also, the percentage of new households headed by women in all scenarios will increase to an annual average of 27.0 per cent (from a level of 22.8 over the 1961 to 1976 period). Thus, although the majority of all households and the majority of new households will be headed by men, women will become increasingly important.

The marital status composition of the heads of households projected by the model reflects the continuation, albeit at a slower rate, of trends established during the 1960's and 1970's (see Tables 6 and 7). Above average growth in the number of households headed by divorced and never married persons, coupled with below average growth for households headed by widowed and married persons, has substantially altered the marital status composition of household heads in the past and continues to do so in the projections for all three economic growth scenarios.

By far the largest proportion of households are headed by married males, but this proportion has been declining steadily from

of 2.0 per cent per year, whereas over the projection period, 1976 to 2001, it is projected to grow at 1.4 per cent per year. Given the historical and projected growth rates in total households discussed in the previous paragraph, these population growth rates imply an historical annual growth rate of the total household headship ratio of 0.7 per cent and projected growth rates of [0.3, 0.5, 0.7] per cent under our [low, medium, high] scenarios. Thus, although most of the growth in the projected number of households arises simply from the growth in the projected population, there is nevertheless a significant contribution from increasing headship ratios -- the size of that contribution increasing with the level of economic growth. In fact, the projected total number of households is 5.9 per cent higher and 4.4 per cent lower than the medium projection for the high and low scenarios respectively, with all of this difference being accounted for by the variation in headship ratios. Of more interest to policy-makers and to the building industry is the sensitivity of the average number of new households per year to the economic scenarios chosen. The average annual increase in the number of households is [12.0, 16.3] per cent [lower, higher] in the [low, high] growth scenario than in the medium growth scenario, indicating that household formation will continue to be sensitive to changing economic conditions.

In the past, one of the most interesting features of household formation in Australia has been the differential growth in headship by males and females. In the projections these differentials continue. Between 1961 and 1976, male-headed households grew at 2.5 per cent per year, whilst female-headed households grew at 3.6 per cent per year. The majority of this differential was accounted for by the higher annual growth in female headship ratios (1.5 per cent compared to 0.6 per cent for males). As a result, the proportion of households headed by females

TABLE 1 : SUMMARY OF ECONOMIC SCENARIOS

Variable[1,2]	1975/76	2000/01		
		Low	Medium	High
Real GDP per head[(a)]	$2717	$2735	$3770	$4594
Unemployment rate[(b)]	4.6%	6.0%	4.0%	2.0%
Real male hourly wage rate[(a)]	$1.56	$1.50	$1.85	$2.52
Real female hourly wage rate[(c)]	$1.45	$1.50	$1.85	$2.52
Social welfare payments[(d)]:				
Old age pension[(a)]	$36.8	$50.6	$62.4	$85.0
Widow's pension[(a)]	$49.0	$45.5	$56.1	$76.4
Male participation rate[(e)]	78.4%	75.4%	75.4%	75.4%
Female participation rate[(f)]	42.4%	44.6%	49.3%	55.4%
Expenditure per child[(g)]	$434	$792	$981	$1345
Nuptial confinement rate[(h)]	105.4	113.4	113.4	113.4
Education participation rate[(i)]	32.2%	39.2%	39.2%	39.2%
Housing costs index[(j)]	0.99	1.00	1.00	1.00

(a) Set to grow at [0.0,1.0,2.5] per cent per year in the [low, medium, high] growth scenario from the known value in 1979/80.
(b) Changes at a uniform growth rate from the known 1979/80 value to the given value in 1990/91, and remains constant thereafter.
(c) The male/female wage relativity moves to unity in 1990, and remains constant thereafter.
(d) All social welfare payments are adjusted to grow at the same rate as real GDP per head.
(e) See text for a description of the participation rates for each age group.
(f) Projected with the econometric model of labour force participation for three age groups, and disaggregated into the required eight age groups. See text for a description of the participation rates for each group.
(g) Projected as part of the econometric model of fertility, marriage, divorce and female labour force participation.
(h) Nuptial confinements per thousand married women 15-44; see text for a description of the demographic scenario.
(i) The education participation rate for 15-24 year old unmarried women is assumed to increase from the known 1979/80 value to a long run value of 40%.
(j) Set to unity after 1990.

1. For a listing of sources and a detailed description of these variables see; Clive Brooks, "The Database of the Econometric Model of Fertility, Marriage, Divorce and Labour Force Participation of Australian Women", IMPACT Research Memorandum, BACHUROO Module, November 1981.
2. All monetary variables are expressed in constant 1966/67 Australian Dollars.

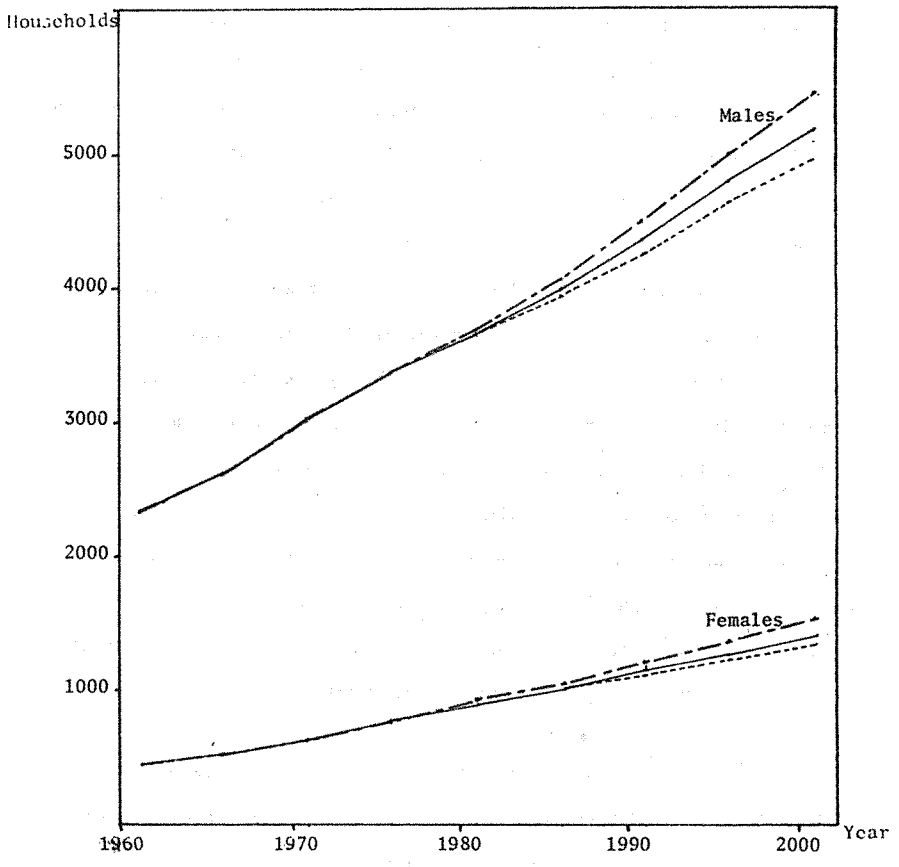
per cent per year while the unemployment rate is [6.0, 4.0, 2.0] per cent after 1990. These scenarios are quite pessimistic and do not indicate a return to the high growth economy of the 1960's. Naturally, more optimistic scenarios could be applied if that suited the purposes of the user. Given the average propensity to save, which is assumed not to vary between the scenarios and takes values between 0.14 in 1976/77 and 0.12 in 2000/01, these growth rates in real per capita GDP imply similar growth rates in real per capita household disposable income. For the projection of the headship model, household disposable income is disaggregated according to some simple rules to give the required real per capita incomes according to the source of that income. In each scenario, wages and salaries for males, and government pensions and benefits, unemployment benefits, and unearned incomes for both males and females are assumed as a first step to increase at the same rate as real per capita GDP. For females, however, we assume that the wage relativity gap between females and males will close over the projection period, implying higher growth in female wages and salaries than for other income sources.[1] As a second step, the incomes are rescaled to ensure that they are consistent with the assumed growth in real per capita GDP.

The scenario for labour force participation and its duration

In the past, male labour force behaviour has been relatively insensitive to small changes in economic conditions. Consequently, in the low, medium and high growth scenarios, the same movements in male labour force participation and its duration have been assumed. Participation rates are assumed to decline for 15-19 year old males in response to a return

1. See Pamela Williams, op. cit., pp. 36-38, for a full explanation.

FIGURE 3 : ACTUAL AND PROJECTED[1] AUSTRALIAN HOUSEHOLDS (IN THOUSANDS) FOR MALES AND FEMALES, 1961 TO 2001



1. Projections are made using three scenarios of economic growth; low (·····), medium (———), and high (-·-·-).

TABLE 5 : SUMMARY OF ACTUAL AND PROJECTED HOUSEHOLD FORMATION IN AUSTRALIA[1], 1961 TO 2001

	1961	1976	2001		
			Low	Medium	High
Households	2782.0	4140.4	6347.8	6636.7	7029.4
Growth rate		(2.69)	(1.72)	(1.91)	(2.14)
Total headship ratio	.3784	.4205	.4238	.4431	.4693
Growth rate		(0.71)	(0.03)	(0.20)	(0.44)
New households		90.56	84.57	96.12	111.83
Average household size	3.78	3.29	3.10	2.96	2.80
Male headed households	2337.1	3385.8	4997.2	5217.0	5494.4
Growth rate		(2.50)	(1.47)	(1.64)	(1.85)
Male headship ratio	.6338	.6939	.6763	.7060	.7436
Growth rate		(0.60)	(-0.07)	(0.10)	(0.31)
New male households		69.91	60.99	69.78	80.88
Female headed households	444.9	754.6	1350.6	1419.7	1535.0
Growth rate		(3.60)	(2.32)	(2.52)	(2.84)
Female headship ratio	.1214	.1519	.1780	.1871	.2023
Growth rate		(1.50)	(0.70)	(0.90)	(1.22)
New female households		20.65	23.57	26.34	30.95
Percentage of households headed by females	15.99	17.98	21.28	21.39	21.84
Percentage of new households headed by women		22.80	27.88	27.40	27.67

1. Numbers of households are expressed in thousands, growth rates are calculated as annual averages per year, and expressed as percentages, and new household units are the annual average increments to households per year.

to rising education participation for young people, to remain constant for prime-aged (20-54 year old) males, and to decline for older males in response to improved possibilites for, and social acceptance of, early retirement. (However, there is an assumed rise in participation rates for 60-64 year olds up to 1990/91 as a consequence of a return to more normal retirement patterns after the substantial early retirement of war veterans in the 1970's). For males of all ages the annual duration in the labour force is assumed to remain constant or to decline slightly.

For females, past history has indicated more volatility in the relationship between labour force behaviour and economic conditions. Consequently, the labour force participation model (discussed in the previous section) has been used to determine the labour force participation of married and unmarried females.[1] It attempts to model consistently the behaviour of females with respect to fertility, marriage, divorce and labour force participation and will eventually be used as an important input to the Population Projection Facility.

According to this model, female labour force participation rates:

- increase with increases in female wage rates, which, in our scenarios, are assumed to increase faster than male wage rates and to increase more quickly in the higher growth scenarios;

- decrease with the level of alternative income sources, such as the aged pension for older women and the widows' and deserted wives' pension for unmarried women, which are assumed to increase at higher rates, the higher the economic growth suggested by the scenario;

1. The labour force participation rate equations for married and unmarried females are discussed in Clive Brooks, Dennis Sams and Lynne S. Williams, "An Econometric Model of Fertility, Marriage, Divorce and Labour Force Participation for Australian Women, 1921/22 to 1975/76", forthcoming.

- increase with increases in demand for female labour, which is assumed to be static for the low growth scenario and to increase in other scenarios, especially the high growth scenario;

- decrease (reflecting the discouraged worker effect) with increases in the total unemployment rate, which is assumed to move towards a long term value of [6.0, 4.0, 2.0] per cent in the [low, medium, high] growth scenarios;

- decrease (for young unmarried females) with increases in the education participation rate, which is assumed, in all scenarios, to increase towards a long run value of 40.0 per cent.

In the case of women of childbearing age, labour force participation rates:

- decrease with increases in the nuptial confinement rate, which is assumed, in all scenarios, to decline initially, then to increase to 1991/92 after which it is assumed to decrease slightly to 2000/01; and

- increase with increases in child quality (i.e., expenditure per child) which is assumed to continue to rise by amounts which are greater in the higher growth scenarios.

Given these assumptions, the female labour participation rates of married women are projected, in the medium and high growth scenarios, to rise for all ages[1] and, in the low growth scenarios, to increase only slightly

1. In fact, the econometric model produces projections of labour force participation rates for three aggregated age groups. The methods used to disaggregate these projections to the required eight age groups are detailed in Pamela Williams, op. cit., pp.12-33.

5. THE PROJECTIONS OF HOUSEHOLD FORMATION

A summary of actual and projected household formation in Australia is given in Table 5 and the actual and projected number of households headed by males and by females for the period 1961 to 2001 are illustrated in Figure 3. Over the projection period, for all three economic growth scenarios, we see a substantial abatement of the rapid increases in household numbers which occurred in the 1960's and 1970's. In the fifteen years from 1961 to 1976, the numbers of households grew at an average annual rate of 2.7 per cent per year. However, in response to deteriorating economic conditions, the growth rate slowed dramatically for the period 1976 to 1981 to an annual average of only 1.6 per cent. Over the whole projection period from 1976 to 2001, the number of households is expected to increase from 4.14 million in 1976 to [6.35, 6.64, 7.03] million in 2001 for the [low, medium, high] growth scenarios, implying average annual growth rates of only [1.7, 1.9, 2.1] per cent, or, on average, [84,600, 96,100, 111,800] new households per year, and a reduction in average household size from 3.29 persons per household in 1976 to [3.10, 2.96, 2.80] in 2001. Our economic scenarios do not reflect a return to the high economic growth of the 1960's and early 1970's, and, consequently, they imply a substantially slower future growth in the number of Australian households, especially for the lower growth scenarios. However, even in our low growth scenario there is still a slight reduction in average household size.

The major component of the growth in the total number of households, in the past and in our projections, is population growth. Between 1961 and 1976, the population grew at an average annual rate

in the proportion married from 64.9 per cent in 1976 to 62.2 per cent in 2001.

The important aspects for household formation of the population projections are:

(i) the slow-down in the growth of the population,

(ii) the ageing of the population, and

(iii) the increasing proportion of divorced persons and the corresponding declining proportion of never married, married and widowed persons.

for young and prime ages and to fall slightly for the older ages. For unmarried females, participation rates are projected to decline for the young and old and to increase for the prime ages in all scenarios. The sensitivity of the labour force participation rates to changing economic scenarios is much lower for unmarried females. The fraction of the year spent in the labour force (i.e., the duration of labour force participation) is projected to increase for married females of all ages in all the scenarios, whilst, for unmarried females, it is projected to decline for younger ages and to remain approximately constant for the other ages in all the scenarios.

The scenarios for unemployment and its duration

Following a decade of low unemployment, the 1970's saw a period of continually increasing unemployment rates for all age, sex and marital status groups. From 1976/77 to 1980/81, the overall unemployment rate increased to over 6.0 per cent. From 1981/82, we assume that the overall unemployment rate moves towards a long term value of [6.0, 4.0, 2.0] per cent in the [low, medium, high] growth scenarios. These overall rates are then disaggregated to give unemployment rates for males and married and unmarried females in each of eight age groups. The disaggregation assumes that the cohort of teenagers who experienced continued high unemployment in the 1970's will, throughout their working life, show some of the characteristics of hardcore unemployables. Further, it is anticipated that government policy and/or educational practices will be changed to ensure that disproportionately high unemployment rates amongst young persons will not be repeated in future generations. We also assume that married women are

becoming more employable and employers will cease to see married women as "different" in employment to unmarried women, such that the differentiation between the unemployment rates of married and unmarried women will disappear. These underlying assumptions imply, after the rising unemployment rates for all groups in the late 1970's, that:

- unemployment rates for young males and females will fall [slightly, substantially, dramatically];

- unemployment rates for prime-aged and older males will [increase, fall slightly, fall substantially]; and

- unemployment rates for prime-aged and older married and unmarried females will [increase, fall for unmarrieds and slightly increase for marrieds, fall].

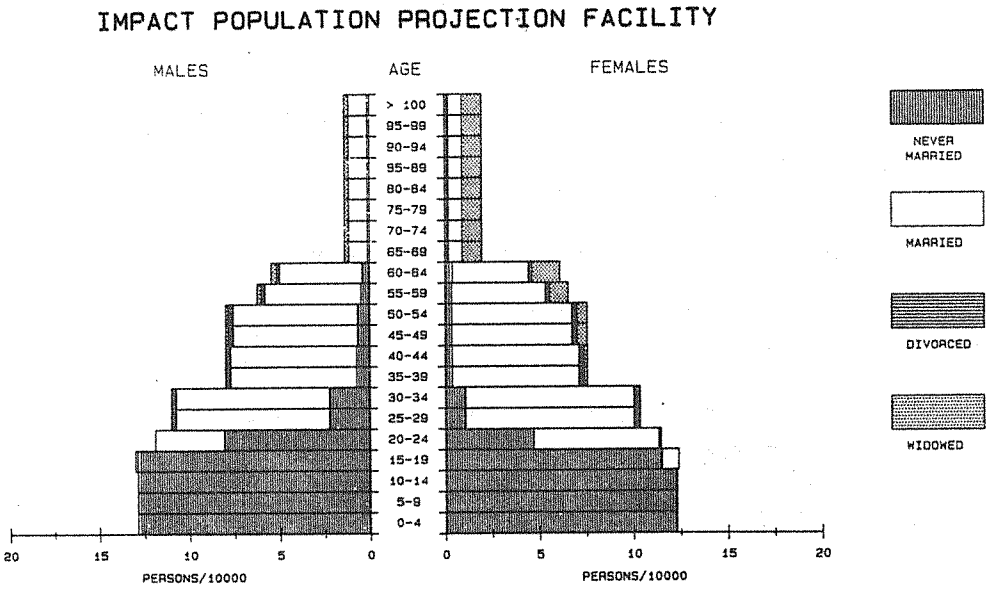
The durations of unemployment are assumed to move in the same direction as the unemployment rates for all ages and in all scenarios.

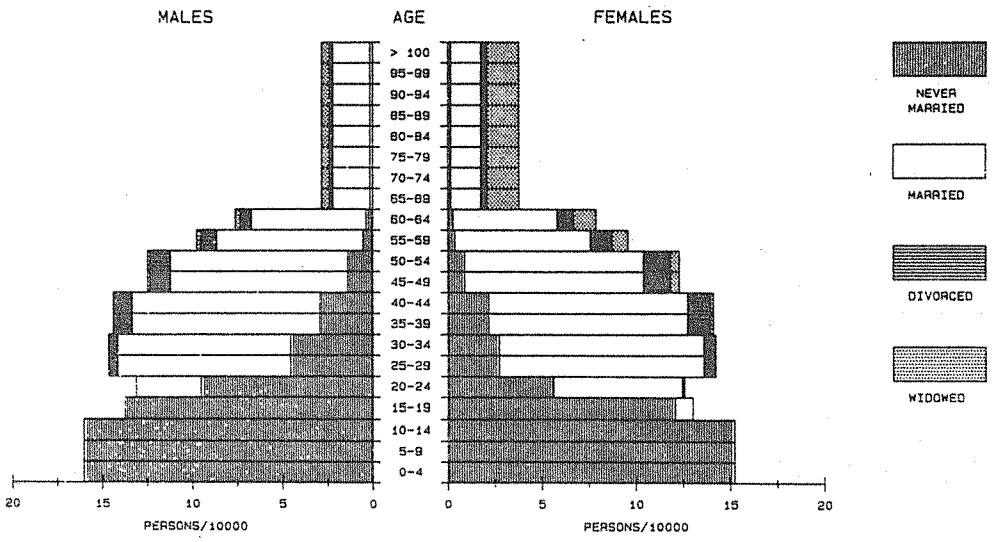
The scenarios for housing costs

The cost of setting up, or maintaining a separate household was incorporated into the model as a deflator for all income variables[1].

1. For the sample period, the housing cost index was calculated as the weighted average of the "housing" and "household equipment and operation" components of the CPI, in an attempt to measure the entire cost of setting up and maintaining a household.

FIGURE 2 : AGE AND MARITAL STATUS PYRAMIDS[1] FOR THE AUSTRALIAN POPULATION AS AT JUNE 30, 1976 (ACTUAL) AND 2001 (PROJECTED)





1. Data for the age pyramids have been aggregated into nine age groups corresponding to those used in the household headship model.

TABLE 4 : PROJECTIONS OF AUSTRALIAN POPULATION (IN THOUSANDS)[1] FOR ADULT MALES AND FEMALES OF EACH MARITAL STATUS, 1976 TO 2001

Sex/ Marital Status Group[a]	As at June						Average Annual Growth Rate
	1976	1981	1986	1991	1996	2001	
NMM	1506.7 (14.9)	1740.9 (15.7)	1936.3 (15.9)	2058.4 (15.6)	2083.6 (14.8)	2147.5 (14.4)	1.4
NMF	1099.6 (10.8)	1299.6 (11.7)	1459.7 (12.0)	1548.2 (11.7)	1535.6 (10.9)	1562.1 (10.4)	1.4
MM	3289.3 (32.4)	3408.5 (30.7)	3654.2 (30.1)	3958.2 (30.1)	4298.1 (30.6)	4627.0 (30.9)	1.4
MF	3289.8 (32.5)	3419.8 (30.8)	3681.5 (30.3)	3999.7 (30.4)	4352.3 (31.0)	4692.3 (31.3)	1.4
DM	116.7 (1.2)	222.1 (2.0)	283.2 (2.3)	332.8 (2.5)	378.2 (2.7)	422.4 (2.8)	5.3
DF	134.7 (1.3)	255.1 (2.3)	334.0 (2.7)	407.6 (3.1)	481.0 (3.4)	554.0 (3.7)	5.8
WM	135.2 (1.3)	144.0 (1.3)	154.0 (1.3)	165.9 (1.3)	178.9 (1.3)	192.4 (1.3)	1.4
WF	567.8 (5.6)	611.8 (5.5)	654.5 (5.4)	697.3 (5.3)	739.1 (5.3)	779.3 (5.2)	1.3
ALL MALES	5048.0 (49.8)	5515.6 (49.7)	6027.8 (49.6)	6515.2 (49.5)	6938.8 (49.4)	7389.3 (49.3)	1.5
ALL FEMALES	5091.9 (50.2)	5586.3 (50.3)	6129.7 (50.4)	6652.8 (50.5)	7107.9 (50.6)	7587.6 (50.7)	1.6

1. Marital status proportions for the total adult population are given in brackets.

a The sex/marital status groups are defined on page 8.

To convert the assumed values of real incomes in terms of consumer prices to real incomes in terms of housing prices, we require an index which measures the relative prices of consumer goods and housing costs. In the past, this index has been rising slowly. We assume that, for all scenarios, the index moves towards unity by 1990/91 and remains at that level thereafter.

The projections of household headship ratios

The effect upon household headship ratios for each demographic group of the scenarios outlined above is summarized in Table 2. After a period of rapid growth in household headship over the 1960's and 1970's, especially for the less traditional groups, headship ratios are projected to increase at a much slower rate in the future.

For the lower growth scenario, where Australia's economy is projected to remain static, household headship ratios for males of all ages and marital states are projected to decline slightly under the influence of static incomes, declining rates and durations of labour force participation and increasing rates and durations of unemployment. This is especially so for never married and divorced males whose headship has previously showed substantial response to changing economic conditions. In the low growth scenario female hourly wage rates are assumed to progress towards equality with male rates and labour force participation for women of prime age is assumed to increase. Thus, headship ratios for unmarried females decrease only slightly for younger and older ages and increase slightly for prime ages over the projection period. A similar situation applies to married females, as their headship responds positively to their increased income

TABLE 2 : HOUSEHOLD HEADSHIP RATIOS FOR AUSTRALIAN MALES AND FEMALES OF EACH MARITAL STATUS AND AGE GROUP, 1976 (ACTUAL) AND 2001 (PROJECTED)

Sex/ Marital Status Group[a]	Year	Growth Scenario	Age 15-19	20-24	25-34	35-44	45-54	55-59	60-64	65+
NMM	1976		.0223	.1631	.3286	.4014	.4753	.5260	.5502	.5011
	2001	LOW	.0186	.1344	.2501	.3750	.3980	.4504	.4823	.4939
		MED	.0295	.2010	.3427	.4670	.4789	.5105	.5246	.5167
		HIGH	.0563	.3265	.4728	.5620	.5638	.5733	.5728	.5475
NMF	1976		.0246	.1585	.2879	.3330	.3964	.4705	.5099	.5115
	2001	LOW	.0251	.0851	.2483	.2943	.3643	.5211	.5167	.5046
		MED	.0365	.1000	.2859	.3581	.3791	.5342	.5260	.5069
		HIGH	.0536	.1485	.3459	.4356	.4734	.5502	.5391	.5104
MM	1976		.6671	.8475	.9184	.9477	.9486	.9411	.9290	.8989
	2001	LOW	.6391	.8401	.9039	.9416	.9358	.9269	.9170	.8954
		MED	.6817	.8706	.9241	.9518	.9472	.9387	.9274	.8986
		HIGH	.7372	.9045	.9438	.9606	.9576	.9507	.9397	.9044
MF	1976		.0130	.0298	.0414	.0497	.0494	.0453	.0450	.0558
	2001	LOW	.0119	.0340	.0441	.0503	.0495	.0451	.0445	.0530
		MED	.0357	.0428	.0488	.0541	.0499	.0446	.0440	.0527
		HIGH	.0542	.0567	.0555	.0579	.0509	.0440	.0433	.0522
DM	1976		.2182	.4138	.5949	.6321	.6363	.6319	.5953	.5759
	2001	LOW	.1897	.3473	.4902	.5847	.5348	.5254	.5279	.5557
		MED	.2874	.4764	.6060	.6782	.6334	.6094	.5908	.5806
		HIGH	.4540	.6373	.7177	.7527	.7255	.6977	.6670	.6165
DF	1976		.2632	.3376	.5243	.6851	.7086	.7220	.7054	.6587
	2001	LOW	.2577	.2328	.5681	.6756	.6770	.7552	.6950	.6459
		MED	.3814	.2836	.6270	.7354	.6919	.7675	.7082	.6505
		HIGH	.5197	.4340	.7011	.7858	.7697	.7818	.7261	.6577
WM	1976		.1967	.3502	.5692	.7103	.7634	.7300	.7191	.5869
	2001	LOW	.1859	.3044	.5245	.7078	.7299	.6989	.6778	.5756
		MED	.2382	.3812	.6012	.7523	.7649	.7345	.7078	.5932
		HIGH	.3272	.5005	.6941	.7955	.8001	.7740	.7454	.6196
WF	1976		.3274	.4612	.7008	.8239	.8329	.8010	.7619	.6300
	2001	LOW	.3194	.3731	.7341	.8313	.8115	.8132	.7542	.6214
		MED	.4148	.4169	.7631	.8503	.8174	.8209	.7625	.6246
		HIGH	.5184	.5314	.7996	.8674	.8494	.8304	.7741	.6292

a The sex/marital status groups are defined on page 8.

FOR MALES AND FEMALES OF EACH AGE GROUP, 1976 TO 2001.

FEMALES

Age	As at June 1976	1981	1986	1991	1996	2001	Average Annual Growth Rate
0-14	1844.2	1812.2	1812.4	1913.8	2109.5	2284.7	0.9
15-19	618.7 (12.2)	625.1 (11.2)	651.1 (10.6)	652.0 (9.8)	605.5 (8.5)	651.5 (8.6)	0.2
20-24	573.1 (11.3)	637.5 (11.4)	649.3 (10.6)	675.3 (10.1)	676.4 (9.5)	630.1 (8.3)	0.4
25-34	1040.0 (20.4)	1179.1 (21.1)	1280.6 (20.9)	1363.2 (20.5)	1401.5 (19.7)	1429.0 (18.8)	1.3
35-44	754.8 (14.8)	882.7 (15.8)	1080.3 (17.6)	1227.4 (18.4)	1328.1 (18.7)	1410.6 (18.6)	2.5
45-54	753.0 (14.8)	731.3 (13.1)	759.3 (12.4)	889.7 (13.4)	1084.7 (15.3)	1229.8 (16.2)	2.0
55-59	326.1 (6.4)	366.6 (6.5)	372.2 (6.1)	350.7 (5.3)	400.6 (5.6)	478.9 (6.3)	1.5
60-64	304.0 (6.0)	316.6 (5.7)	358.3 (5.8)	364.6 (5.5)	344.8 (4.9)	394.1 (5.2)	1.0
65+	722.3 (14.2)	847.4 (15.2)	978.7 (16.0)	1129.9 (17.0)	1266.3 (17.8)	1363.6 (18.0)	2.6
ADULT FEMALES	5091.9 (100.0)	5586.3 (100.0)	6129.7 (100.0)	6652.8 (100.0)	7107.9 (100.0)	7587.6 (100.0)	1.6
TOTAL FEMALES	6936.1	7398.5	7942.1	8566.6	9217.4	9872.3	1.4

given in brackets.

TABLE 3 : PROJECTED AUSTRALIAN POPULATION (IN THOUSANDS)[1]

MALES

Age	As at June 1976	1981	1986	1991	1996	2001	Average Annual Growth Rate
0-14	1931.4	1896.8	1899.9	2013.4	2219.4	2403.9	0.9
15-19	650.7 (12.9)	658.3 (11.9)	683.1 (11.3)	680.1 (10.4)	638.2 (9.2)	686.8 (9.3)	0.2
20-24	597.5 (11.8)	664.5 (12.1)	677.2 (11.2)	702.2 (10.8)	699.6 (10.1)	658.4 (8.9)	0.4
25-34	1101.5 (21.8)	1225.0 (22.2)	1320.0 (21.9)	1405.1 (21.6)	1443.7 (20.8)	1467.1 (19.9)	1.2
35-44	802.6 (15.9)	937.7 (17.0)	1136.2 (18.9)	1265.7 (19.4)	1359.3 (19.6)	1444.0 (19.5)	2.4
45-54	797.6 (15.8)	774.2 (14.0)	791.9 (13.1)	928.4 (14.3)	1121.8 (16.2)	1247.3 (16.9)	1.8
55-59	311.3 (6.2)	369.9 (6.7)	382.2 (6.4)	355.0 (5.4)	401.7 (5.8)	487.3 (6.6)	1.8
60-64	272.8 (5.4)	287.1 (5.2)	344.6 (5.7)	357.8 (5.5)	334.5 (4.8)	380.2 (5.1)	1.3
65+	514.0 (10.2)	598.8 (10.9)	692.8 (11.5)	821.0 (12.6)	939.9 (13.6)	1018.2 (13.8)	2.8
ADULT MALES	5048.0 (100.0)	5515.6 (100.0)	6027.8 (100.0)	6515.2 (100.0)	6938.8 (100.0)	7389.3 (100.0)	1.5
TOTAL MALES	6979.4	7412.4	7927.7	8528.6	9158.2	9793.2	1.4

1. Percentages of the adult population in each age group for each sex are

and participation rates at younger and prime ages and negatively to their increasing unemployment. It is interesting to note that even in a situation of economic stagnation, people will continue to head their own households; that is, there will be only a minimal decline in headship ratios.

Under the medium growth scenario, headship ratios do not fall, nor do they show significant growth. For males, increasing incomes and slightly declining unemployment are sufficient to counteract the effects of declining labour force participation such that headship ratios for each marital state tend to increase at young and prime ages and decline slightly at older ages. For unmarried females we again observe no substantial growth in headship ratios, except for prime aged females, whose labour force participation is projected to improve. For married females there is some growth at young and prime ages, but not for older ages. Thus, under a scenario of medium economic growth, headship ratios for all demographic groups are projected to remain relatively static.

For the high growth scenario, we observe more substantial changes in headship ratios. Males of all ages and marital states experience substantial increases in headship ratios, especially at the prime ages. Unmarried females of all ages and marital states also show increased headship ratios, whilst married females show substantially increased headship for all but the older ages.

In summary, the trends that were established in the 1960's and 1970's with respect to higher growth in headship ratios for younger people and the less traditional household headship groups are projected to continue, but with substantially reduced force. Given the scenarios used in this projection, headship ratios for each demographic group are not expected to change dramatically in the future.

4. THE FUTURE AUSTRALIAN POPULATION

As discussed in Section 2, projections of the Australian population, including sex, marital status and age structure, from 1976 to 2001, have been derived using the IMPACT Population Facility and a set of assumptions concerning future levels of fertility, marriage, divorce, mortality and migration. These population projections are, therefore, invariant to the choice of economic scenario. In particular, we have assumed:

1) that fertility recovers to give a net reproduction rate of unity by 1987 and 1.13 by 2001;
2) that death rates decline uniformly at all ages by 1.5 per cent per year;
3) that migration levels are maintained at 110 000 arrivals and 30 000 departures per year, and
4) that marriage rates, which declined after the mid-1960's and remained approximately constant in the late 1970's, begin a slow rise back to their earlier values after 1980;
5) that divorce rates, which have declined from their high values at the time of the introduction of the Family Law Act, will level out and start to rise again. However, this increasing rate of divorce will be accompanied by an increased rate of remarriage of divorcees which will give rise to a situation where serial marriage is common.

These assumptions are considered to be reasonable but are by no means the only possible set of assumptions. Alternative population projections could be produced, for example, with different levels of migration, and this should be borne in mind when analysing the

projections of households.

The results of these projections are given in Tables 3 and 4. By the year 2001, Australia's population is projected to be 19.7 million, having grown at an average annual rate of 1.4 per cent. As the tables and the population pyramids for 1976 and 2001 (given in Figure 2) indicate, the structure of the population is projected to change substantially. By 2001, declining death rates will have had the effect of ageing the population such that 16.0 per cent of all persons will be aged 60 or more, compared with 13.0 per cent in 1976. In fact, this ageing process would have been more severe but for two factors. First, the people moving into the aged group during the projection period are the cohort who were born in the low fertility years of the Depression. Second, the prime-aged groups are still enlarged by the cohort who were born in the "baby-boom" of the 1950's. The slow increase in fertility which is assumed to occur in our projection is not sufficient to reverse the declining proportion of children in the population, which falls from 27.1 per cent in 1976 to 23.8 per cent in 2001.

The effects of our demographic assumptions, especially those relating to marriage and divorce, on the marital status distribution of the population are given in Table 4. As could be expected, the proportion of the adult population who are never married decreases from 25.7 per cent in 1976 to 24.8 per cent in 2001, and the proportion widowed falls slightly from 6.9 per cent in 1976 to 6.5 per cent in 2001. However, despite projected increases in remarriage, the projected increase in divorce rates leads to an increase in the proportion divorced from 2.5 per cent in 1976 to 6.5 per cent in 2001 and a decrease