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A Review of the Implications of Recent Demographic Changes for Education, Social Welfare and the Health Services

NATIONAL ECONOMIC AND SOCIAL COUNCIL

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NATIONAL ECONOMIC AND SOCIAL COUNCIL

A Review of the Implications of Recent Demographic Changes for Education, Social Welfare and the Health Services

This paper was prepared by Paul Turpin and James Raftery of the Council Secretariat. Mr John Blackwell, UCD, advised on the review of the population projection model and provided background statistical material.

The paper considers the implications of recent demographic changes for education, social welfare and the health services. The information used to consider these demographic changes became available after completion of NESc Report No. 63, *Population and Labour Force Projections by County and Region 1979-1991*. The population projections in that report were used for the subsequent Council reports on the implications of demographic change for education (Report No. 71), social welfare (Report No. 72) and the health services (Report No. 73).

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SUMMARY

1. This note concerns the population projection model described in NESG Report No. 63 (July 1982). It views this model in the light of information recently made available and it considers revisions to the original assumptions.
2. The actual number of births in 1982 and 1983 was less than would have been expected from the projections in Report No. 63. In order to identify the reasons for the divergence between the actual and the projected number of births it is necessary to examine changes in the major demographic variables, in particular, age specific rates of fertility, nuptiality and migration. With regard to the trend in births there are two main difficulties encountered in the measurement of changes in these variables. Firstly, there are many ways in which any particular change in past trends can be interpreted for the purposes of the present exercise, i.e. predicting future trends. Second, the figures for total births become available much earlier than the information required to examine the relative impact of fertility, nuptiality and migration.

The position in 1982

3. The actual number of births registered in 1982 was 70,933. This was more than 3,000 less than the mid-point of the two main projections presented in Report No. 63. In this note it is shown that, whereas the actual trend in fertility appears to have been in line with the lower projection in Report No. 63, the actual proportion of women married in the main child-bearing age groups was less than had been projected.
4. A more accurate up-to-date profile of the proportions of women married is now possible with the publication, in December 1983, of the actual age and marital breakdown of the population which was recorded in the 1981 Census of Population. This suggests that the actual trend in nuptiality explains most of the further variation in total births from the original projections.
5. The note also contains a new projection of births, based on there being no increase in the proportion of married women in the child bearing age groups in 1981, over the projection period. This is, in essence, a technical exercise where the resulting projection illustrates the sensitivity of the model to the trend.

Implications for Education, Health, and Social Welfare

6. *The implications for education* would be a reduction in the number of enrolments, by around 3% relative to the projection for 1991 in the report *Education: The Implications of Demographic Change* (Report No. 71). There would also be a reduction in the teacher and building requirements (see Table 9, p. 27 of this paper).

7. The report, *Social Welfare: The Implications of Demographic Change*, projects the number of recipients for eight types of social welfare schemes. The implications of the lower total births of the new projection would be felt mainly in one scheme, Children's Allowances. The effects on each scheme, along with child dependants, is summarised in Table 10 (p. 28). Some schemes like Old Age and Widows pensions would not be affected at all by a drop in births. Most of the other schemes, e.g., Unemployment Payments, Disability Benefit, Treatment Benefit and Deserted Wives Benefit would be affected only very slightly by the implied drop in the number of the dependent children of claimants.

8. The effect of a lower than projected number of births on the projections of *health service usage* contained in NESC Report No. 73 would be confined to three programmes: the Acute Hospitals, Residential Care for the Mentally Handicapped and the General Medical Services (see Table 11). Introducing the new assumption has the effect of reducing the projected increase in expenditure from 6.8% to 6.5% in 1986 and from 13.1% to 12.7% in 1991, i.e. a decrease of around 3% on the projected total increase in expenditure for 1991.

Monitoring demographic change

9. In 1983 there was a further decline in the total number of births registered, to less than 66,800. This represents the lowest total number of births since 1970. The size of this decline suggests significant changes in one or more of three main underlying factors: migration, fertility and nuptiality. Information which will inform an examination of these trends will come available over the coming months, e.g., the results of the 1983 Labour Force Survey, births by age of mother in 1983, estimates of net migration. The Council will include a consideration of the most up to date position in its report on the overall implications of its four recent studies on the implications for housing, education, health and social welfare. This report is to be completed during the Summer.

10. There must be uncertainty regarding the nature and the likely continuation of the trends which have caused a further decline in births during 1983. It is shown, however, that different rates of change in

fertility over the decade could have a significant effect on the end-year (1991) population.

11. There is a need to exercise caution in seeking to identify long run changes from recent observations. The main underlying factors — nuptiality, age-specific fertility and migration — have proved extremely volatile in the past. This note shows the results of a number of particular assumptions. It does not provide a comprehensive statement on current demographic trends. A major conclusion from the note must be the need to continually monitor demographic changes.

12. The population projections contained in NESC Report No. 63 were prepared in 1982, in the absence of other projections available to the Council. There is still no other source of comprehensive population projections. In preparing this note it was found that there were significant differences between experts on the interpretation of the most recent demographic changes. It would now be desirable if those with the expertise and knowledge of demographic trends would combine in the preparation of future population projections. The model prepared by Blackwell and McGregor for the Council would be an important contribution to this work.

PART 1

THE POPULATION PROJECTIONS IN REPORT NO. 63

1. The NESc Report on population and labour force projections (Report No. 63) was completed eighteen months ago.¹ The projection model provided a methodology for projecting the population, broken down by age and sex, in 1986 and 1991. Results from the 1979 Census together with provisional results from the 1981 Census were used as a base for the projections. The results of a number of projections were given, based on a range of possible assumptions.
2. It is now possible to look at the results of these projections in the light of demographic information which has become available subsequently. The more recent information makes it possible to (a) compare actual developments with what had been projected and (b) consider what change in the assumptions, if any, might be warranted if the projections were being done today.
3. This note compares the projected trend in births from Report No. 63 with the most recently available information on the trend in births. The actual number of births registered in 1982 was 70,933. A linear interpolation of the original projections in Report No. 63 would have suggested a higher total births figure, in a range between 72,800 and 75,600, for 1982. The divergence of the projections, from the actual births trend in 1982 has, on the basis of the most recent information, continued in 1983. Total registered births in 1983 was 66,822 (provisional figure, March 1984). Much of the information which would be necessary to analyse the components of the 1983 births figure will not be available until Summer 1984.

4. The population projections prepared by Blackwell and McGregor in NESc No. 63 made assumptions regarding future patterns of *mortality*, *nuptiality*, *fertility* and *net migration*. The main contributing factors to the range of the birth projections were the two different assumptions

¹The full title of the report is *Population and Labour Force Projections, by County and Region, 1979-91*, submitted to the Government, July, 1982.

chosen to project trends in fertility (referred to as 'Fertility 1' and 'Fertility 2' assumptions). There were also two assumptions on net migration: (i) net migration equal to zero and (ii) average net emigration of 5,000 per annum.² Appendix A lists the main assumptions used in the population projections.

5. Only one assumption was made on nuptiality. It was assumed that the proportion of females married in each age group would continue to rise along the trend observed in 1971-79.³
6. The population model in Report No. 63 projects separately the trends in both legitimate and illegitimate births. In each case the number of births is derived from (i) the number of women in each five year age group (ii) the distribution of these women by marital status and (iii) an assumed fertility rate for each group.
 - (a) nuptiality
7. On the basis of the information which has become available since the report was completed, the main reason for the divergence between 'actual' and 'expected' births in 1982 was the divergence between 'actual' and 'expected' nuptiality. Actual nuptiality in 1982 can now be obtained from the provisional results from the 1981 Census. (These results were published in December 1983). Table 1 shows that in 1981 the proportion of women married in the most fertile age groups was less than had been estimated in Report 63.
8. In Tables 2 and 3 the number of births in 1981 and in 1982 are 'predicted' from the Blackwell and McGregor population model, revised to include the actual numbers of women in the child bearing age groups by marital status, now available from the 1981 Census. The main effect of this revision is to introduce lower levels of nuptiality in the main child-bearing age groups. In both tables the results are shown under the original (lower) 'Fertility 1' assumption. This gives a 'predicted' figure for births which was over 2% below actual births in 1981 (Table 2). For 1982 there is little difference (0.5%) between the actual and predicted figures (Table 3).

²The assumption of zero net migration assumes compensating flows in and out of the country. A net inflow is assumed for the ages 0-14 (see Report 63, Table 10 p.21).

³The assumption of a continued rise in nuptiality was made in the context of, (i) convergence with the experience in Western Europe, (ii) past trends in the proportions married and the marriage rate in Ireland. In Report 63 it was shown that the proportion of married females in the age group 20-24 was typically between 60% and 75% of the rates in other EEC Countries (See Report No. 63 Table 5).

(b) fertility

9. An examination of trends in *age-specific fertility* in 1981 and 1982 shows that the actual decline in 1981 was less rapid than would have been predicted from the lower (Fertility I) assumption in Report No. 63 for 1981. Table 4 shows actual and predicted rates of age specific fertility in 1981. The application of the rates predicted from Report No. 63 to the actual population in 1981 gives a total births figure which is nearly 1,600 (2.2%) *below* the actual number of births (Table 2).

10. The actual and predicted fertility rates figures appear very close in 1982. Table 5 compares in that year, an estimate of actual age-specific fertility rates with the rates predicted from Report No. 63. The application of the predicted rates to the estimated 1982 population gives a figure for total births which is close to actual total births (Table 3).

(c) migration

11. The experience of the previous decade had shown the volatile nature of migration. During the 1971-79 period there was an average annual net migration of 13,600. In the 1979-81 period there was net emigration of 2,500 per annum. The experience of the latter period raises the question whether there has been a sustained resumption in net emigration. The most recent estimates suggest that there has been net emigration since 1981.⁴

12. The model in report No. 63 presented two alternative assumptions on migration: (i) zero net migration; (ii) average annual net emigration of 5,000. A distribution of the out-migration and in-migration flows by age and sex are presented for both assumptions.⁵ The introduction of new assumptions would involve a review of these distributions. An actual age distribution of net migration can be calculated for 1979-1981, i.e., from Census of Population results. Subsequent estimates of net migration are not broken down by age and sex.⁶

13. In this note all the calculations have been based on the assumption of zero net migration set out in Report No. 63. This provides a benchmark against which other migration assumptions can be examined. A

⁴The CSO estimates of total population and the rate of natural increase imply net emigration of 11,000 in the period April 1981 to April 1983.

⁵Details are given in Table 10, p. 21 of NESC Report No. 63, (1982).

⁶In the absence of census results the net migration figures after 1981 involve estimates from indicators which have, in the past, been subject to a significant margin of error.

full review of the population projections would merit more detailed analysis of the migration assumptions.

Introducing new assumptions

14. The population projection model prepared for the NESC was set up in a way which makes it possible to test the implications of changed assumptions. Already a number of experts from the civil service and academics have used the model in this way. There is no clear consensus on the most plausible assumptions. This reflects a fundamental lack of knowledge of the strength and influence of the factors which lead to changes in nuptiality and fertility.

(a) nuptiality

15. The authors of NESC No. 63 took the general view that the pattern of demographic change would reflect, (i) a continuation of the trends observed during the last decade modified by an assessment of what was plausible and, (ii) a convergence between Ireland's demographic experience and that of other Western European countries. This latter consideration suggested that legitimate age and marital specific fertility rates could be expected to decline in line with trends in Ireland over the 1970's, while nuptiality in the younger age groups would rise. In fact nuptiality in the younger age groups actually declined between 1979 and 1981.

16. In preparing this note it was decided to examine the implications of a change in the original nuptiality assumption used in NESC No. 63. The importance of the proportion of married women in the child bearing age group has been referred to already. The new assumption examines the implications of maintaining constant from 1981 to 1991 the proportion of married women in the child bearing age-groups. The calculations, which also use the Fertility I and the zero net migration assumption are referred to as Assumption N2. The results of this analysis (Table 6) show a reduction in projected annual births, relative to the previous lower projection in NESC No. 63, of approximately 4,000 in 1986 and 4,700 in 1991. There is an implied reduction in total population of about 41,700, relative to the results of an interpolation of the original projections in Report No. 63.

(b) fertility

17. In using the projections to predict annual births figures it must be recognised that there is, inevitably, a large element of approximation. The model does not attempt to predict short-run changes in fertility. In consequence, it does not provide a basis for distinguishing short run fluctuations from secular trends.

18. The population projections derived from the model in Report No. 63 are intended to illustrate changes over five yearly periods. In using the projections to predict annual births, it is therefore necessary to make a further assumption on annual rates of change. In this note it has been assumed that the main demographic variables are changing at constant rates. Thus it is implied that fluctuations above and below the secular trend are self-cancelling. However, even if the absolute size of the fluctuations around the trend do cancel out, the timing of these fluctuations may have a significant effect on the end year population.

19. There were 66,822 births registered in 1983. This contrasts with an implicit figure of 70,800 under Assumption N2. The variation between the two figures reflects either short or longer term changes in one more of the three key variables: nuptiality; fertility; migration. If a variation of this magnitude were to be maintained for an extended period, there would be a significant change in the projected population for 1991. In this context, it is illustrative to consider the impact of a new assumption of significant changes in the rates of decline in fertility over the projection period. This can be shown simply by illustrating the impact of different assumptions on *total fertility*.*

20. The projections under assumption N2, imply a decline in total fertility of approximately 3% per annum up to 1991. A further assumption, which is referred to as assumption TFI is that there would be a 4% per annum decline in total fertility up to 1986, and a 2% decline in total fertility during the period 1986-1991.⁷ This would leave total fertility, and total births in 1991 equivalent to the position implied under N2. (See Figure 1)

21. In 1991, total births and total fertility under both assumptions (N2 and TFI) would be about 64,000 and 2.3 respectively. However the total population would be about 14,700 less under TFI than under assumption N2.

22. The sensitivity of the projections to the rate of decline in fertility is illustrated by the results of assuming age specific legitimate fertility

* (Period) total fertility is the sum of the age-specific fertility rates of the different generations of women who are in the child bearing age group in a given year. It is an outcome from the population projection model in Report No. 63, (as that model also disaggregates fertility by marital status). An assumption on the trend in total fertility implicitly therefore combines trends in nuptiality and in fertility by marital status.

⁷The assumption TFI is a simplification of the assumptions which would be required by the Report No. 63 model. Total fertility is an outcome of the fertility and nuptiality assumptions in that model.

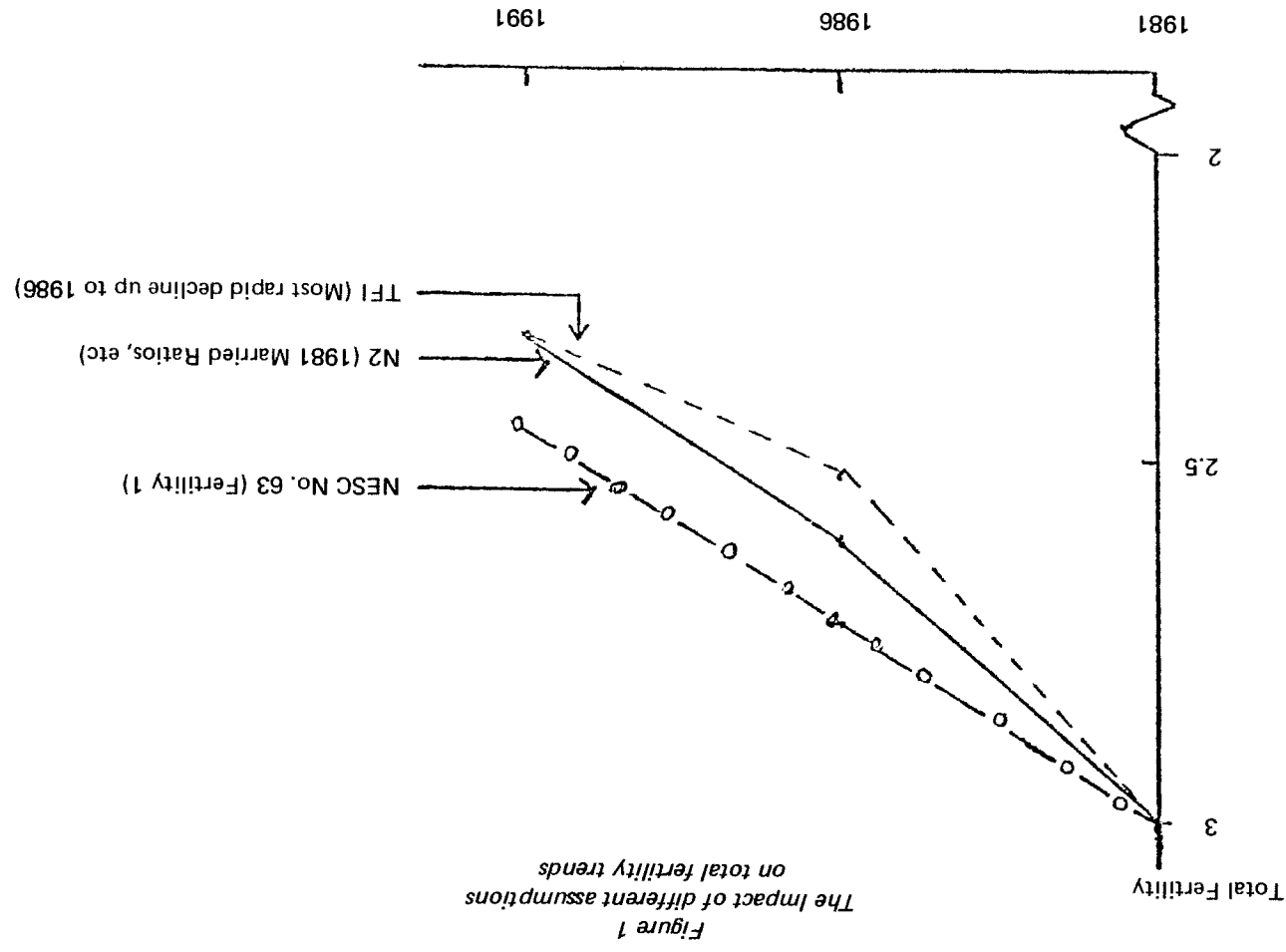


Figure 1
The impact of different assumptions on total fertility trends

were to decline at 5% per annum over 1981-1986. Using the other assumptions from Report No. 63, the total births in 1986 would be 61,800 and total fertility would be 2.37 (Table 7).

Concluding remarks on population projections

23. Information which became available in December 1983 makes it possible to look at the underlying cause of the lower number of births than would have been expected on the basis of the assumptions used in NESc Report No. 63. The Report was completed in mid-1982. It is now desirable to distinguish between the model and the projections presented in it. This note is based on the view that the structure of the model provides a good basis for population projections. The results of any projections based on the model, however, reflect the particular set of assumptions used, which in turn are based on the information available at that time. There is therefore a need to constantly review demographic trends to ensure the most accurate up-to-date information is incorporated before projection results from the model are used as an aid to policy decisions.

24. It would be undesirable to attach too much emphasis to demographic patterns observed over the last 18 months. The model used in Report No. 63 sought to identify longer-term trends and does not exclude the possibility of short-run fluctuations around these trends. A relative decline in total fertility may reflect a secular trend e.g. the more widespread use of family planning. A decline in fertility may also be in response to cyclical factors, e.g., a decline in real incomes.⁸ The fact that the proportions married were lower than predicted could be seen as a reflection of the current economic recession, which began in 1979, rather than a longer-term trend.

25. The trend in nuptiality appears as an important factor in the more rapid than expected decline in births over the last 18 months. It is shown to be a major explanatory factor in 1982. The information is not yet available which would make it possible to distinguish the trends underlying the continuing decline in births recorded in 1983. The decline may represent an acceleration in the rate of decline in age-specific fertility, although how long a trend of this nature would be maintained is even more uncertain. Trends in fertility have proved extremely volatile in the past. Nevertheless, even if the longer term trends discussed in this note were broadly correct fluctuations around these trends could have a significant effect on the numbers in younger age groups in 1991.

⁸The decline in real after tax incomes over the period 1979-83 was about 13%.

PART II

REVIEWING THE PROJECTIONS OF EDUCATIONAL REQUIREMENTS (IN REPORT NO. 71)

26. In the report *Education: The Implications of Demographic Change* (NESc Report No. 71) the author outlines an approach to the projection of future numbers in education at first, second and third levels. His projections combine the population projections contained in NESc Report No. 63 together with assumptions on the future trends in participation rates (i.e., the proportions in education at each age) to project total numbers in education in 1986 and 1991. The numbers in education are then used as a basis for showing the implications for teacher numbers, building requirements and total current expenditure in the two projection years, 1986 and 1991. The main projection results for first level education in Report No. 71 are given in Table 8.

The impact in 1986

27. A lesser number of births in 1982, and subsequent years, than was implied in the original population projections would translate into reduced numbers in school four years after their occurrence. For a revised 1986 projection it is, therefore, necessary to consider births up to 1982. A revision to the projections to incorporate (actual) births up to 1982 gives an estimated school population which is below the lowest projection in Report No. 71.

28. Relative to the previous lower projection, the reduction is not large in terms of the total numbers at primary level.⁹ The new births information would imply a further reduction of about 0.17% relative to the middle of the range of projections in Report No. 71 of the numbers at first level in 1986.¹⁰

⁹The relative decline in enrolments is estimated at 990.

¹⁰The population projections in Report No. 63 presented birth figures for 1986 and 1991 and did not project births for the intervening years. Annual figures have been derived by interpolation.

The impact in 1991

29. A permanent decline in the number of births, relative to the projections used in the original population projections (Report No. 63), would become much more significant by 1991. Other things being equal, it would mean a lower than projected number in primary school at ages 4 to 9. If births are projected under Assumption N2 then it is estimated there would be nearly 17,000 less pupils in primary schools in 1991, than was projected using the former nuptiality assumption. This represents a 2.8% reduction relative to the middle of the projection range of first level enrolments in Report No. 71.¹¹

30. In Report No. 71 the consultant uses the enrolment projections to estimate *teacher and building requirements*. The projections give orders of magnitude largely based on average pupil teacher ratios and the average size of classrooms. The reduction in 1991 numbers implicit in assumption N2 would involve a relative reduction in the recruitment needs for primary teachers of about 560, or approximately 94 in each of the years 1986-1991. This would be a reduction of around 8.5% relative to the annual recruitment requirements of 1,010 to 1,210 calculated by the consultant.

31. The reduction in building requirements, implicit in the reduction in enrolments, is estimated at 51,000 sq. ft. This would represent an estimated 8.5% reduction in the total first level building requirements projected in Report No. 71.

32. The estimates of the current expenditure implications of 1991 enrolments in Report No. 71 are dominated by (i) the non-demographic assumptions on the rate of change in unit costs and (ii) assumptions on changes in the participation rates in non-compulsory age groups. The difficulty of choosing plausible assumptions, for example from past trends, is made all the more acute in the light of the Government's present commitment to (i) changes in policy (for example, see Programme for Action in Education 1984-87, 30 January 1983) and (ii) the severe pressures on public finances which are likely to continue in the medium term.

Concluding remarks

33. A summary of the implications of the decline in births which

results from introducing Assumption N2 into the population projection model is given in Table 9. In Report No. 71, the consultant concludes: "Perhaps the most pertinent point to emerge is the case for a ten year rolling projection based on the latest demographic data and survivorship rates." The validity of this point is reflected in how births numbers may be changing in a way which was not forecast only a short time ago. Similarly, it would be necessary to monitor trends in migration, changes in the average age of entry to first level schooling and other factors leading to changes in educational participation rates.

¹¹If the decline in total fertility were to be concentrated more in the period up to 1986, as in Assumption TF1 described in part I, there would be a further reduction of over 9,000 in the school age population, or a total reduction of 4.3% relative to the mid-point of the projections in Report No. 71.

37. The increase in the number receiving Children's Allowances in 1986 compared with 1981 would be between 1.9% and 2.3% compared to between 3.0% and 3.5% in NESR Report No. 72. The effect of these changes on total social welfare expenditure, as projected in NESR Report No. 72 would be to reduce very slightly the original projected increases (i.e. from between 9.7% and 15.2% to between 9.6% and 15.1% in 1986 and from between 23.5% and 34.4% to between 23.2% and 34.0% in 1991).

38. These results show the isolated impact of a particular change in demographic trends. It must be noted that the projections would also be highly sensitive to variations in the numbers unemployed, to changes in the real levels of payments and in the eligibility criteria.

PART III IMPLICATIONS FOR SOCIAL WELFARE PROJECTIONS (IN REPORT NO. 72)

34. The report, *Social Welfare: The Implications of Demographic Change*, projects the number of recipients for eight types of social welfare schemes. The implications of the lower total births implied by Assumption N2 would be felt mainly in one scheme, Children's Allowances. The effects on each scheme, along with child dependents, is summarised in Table 10. Some schemes like Old Age and Widows pensions would not be affected at all by a drop in births. Most of the other schemes, e.g., Unemployment Payments, Disability Benefit, Treatment Benefit and Deserted Wives Benefit would be affected only very slightly by the implied drop in the number of the dependent children of claimants.

35. The methodology employed in NESR Report 72 does not project the number of child dependents separately. It assumes unchanged numbers of children per recipient. The decline in the number of recipients' dependent children would be small for two reasons:

- the recipients of many schemes do not have child dependents, for example, some two out of every three persons claiming unemployment compensation are childless,
- the drop in births would result in a decline of some 42,000 persons in the under 15 age group by 1991, which, even with high claimant rates for unemployment relief, would involve a small proportionate decrease in the number of child dependents.

36. The effect of the decline in births implied by Assumption N2 on the number of recipients of Children's Allowances would have greater significance in 1991 than in 1986. In 1991 the increase over 1981 (the base year of the projection) would be between 0.8% and 1.4%, compared to between 4.2% and 4.8% in the original projections (NESR Report No. 72).*

* These results are given in the form of a Low-High range, as used by the consultants, and based on two sets of assumptions on external migration, activity rates, participation rates, the level of unemployment and the level of disability benefit claims (see Figure 4 in NESR Report No. 72). In each case the Fertility Assumption I is employed.

may mean that a reduction in total births will ease pressure on existing resources rather than freeing them for alternative uses.

(ii) Residential care for the mentally handicapped

43. The projections for usage of this service in NESc Report No. 73 are based on projected prevalence rates in 1986 and 1991, which in turn are based on extrapolation of the 1974-1981 trend in prevalence rates. The two age groups affected, those aged 0 to 4 and 5 to 9, both have relatively low prevalence rates. The application of these prevalence rates to the new totals for the age groups affected reduces the projected increase in usage for all age groups from 5.9% to 5.5% in 1986 and from 11.9% to 11.0% in 1991.

(iii) The General Medical Services

44. The methodology employed in NESc Report No. 73 assumed the same proportion of each age group would be eligible for the General Medical Services in the future and that consultation rates by age group would also remain unchanged. The effect of Assumption N2 would be to reduce the projected number in the under 15 age group which has a relatively low consultation rate. The results show a reduction in the projected increase in total consultations from 6.0% to 5.8% in 1986 and from 11.3% to 10.7% in 1991.

Effect on overall usage

45. The usage levels of the various programmes were combined in NESc Report No. 73 by weighting the projected increases by programme expenditures. The results of this show the effects of increased usage on expenditure. Adoption of Assumption N2 has the effect of reducing the projected increase in expenditure from 6.8% to 6.5% in 1986 and from 13.1% to 12.7% in 1991, i.e. a decrease of around 3% on the projected total increase in expenditure for 1991.

46. A more comprehensive review of the likely future demand on the health services would require examination of a number of other factors which are likely to affect health service usage in the future.

PART IV

**IMPLICATIONS FOR THE HEALTH SERVICES PROJECTIONS
(IN REPORT NO. 73)**

39. The effect of Assumption N2 on the projections of health service usage contained in NESc Report No. 73 would be confined to three programmes: the Acute Hospitals, Residential Care for the Mentally Handicapped and the General Medical Services (see Table 11).

The following paragraphs illustrate the impact of this assumption relative to the projections based on the zero net migration and the 'Fertility 1' assumptions in NESc Report No. 63).

Individual programmes

40. Of the five programmes whose usage by age, and in some cases sex, are projected in NESc Report No. 73, two would be unaffected by the decline in annual births implied by assumption N2: Geriatric Long Stay Provisions and Psychiatric Hospitals, which have a very low usage rate by the under 15 age group. The under 15 age group are, however, significant users of each of the three remaining services: The Acute Hospitals, Residential Care for the Mentally Handicapped and the General Medical Services. These programmes are considered separately below.

(i) Acute hospitals

41. The under one age group have a relatively high usage rate which falls sharply for the 1-14 age group. Inclusion of the new totals for each of these age groups, by sex, reduces the projected increase in usage for all age groups from 6.3% to 5.9% in 1986 and from 11.9% to 11.3% in 1991.

42. Demand for maternity services were not included in the analysis in NESc Report No. 73 because of the wide range of results obtained from the two fertility assumptions in NESc Report No. 63. In addition the Hospital Inpatient Enquiry, which was the basis for the usage rates for acute hospitals, excludes maternity discharges. Maternity beds amount to about 10% of acute hospital beds. There is evidence (see NESc Report No. 75, Table 2.8) that Ireland's maternity bed provision per 1,000 births is low relative to the countries of the UK, which

Table 1

Actual and estimated proportion of females married in the child bearing age groups, 1981.

Age	Assumption in Report No. 63 of % married 1981	Actual % married 1981
15-19	2.8	2.3
20-24	34.2	32.3
25-29	72.6	71.0
30-34	86.1	84.9
35-39	88.0	87.7
40-49	85.9	85.8
45-49	80.4	81.5

Notes: Actual percentage married is calculated from provisional results of 1981 Census of Population: Bulletin No. 40, December 1983

Table 2

Actual and predicted births with updated nuptiality information, 1981

	Predicted	Actual
Legitimate births	67,055	68,444
Illegitimate births	3,708	3,911
	<u>70,763</u>	<u>72,355</u>

Notes: The predicted births are based on Fertility Assumption I in NESC Report No. 63 and the actual population of women by age and marital status in 1981.

APPENDIX A

Summary of the assumptions used in Report No. 63 for projecting population, 1979-91

Mortality (one assumption)

Infant mortality continues to decline. Mortality continues to decline at ages 65 and over. In the age groups 5-64 survivorship rates of 1979 are used.

Nuptiality (one assumption)

The proportion of females married in each age group is assumed to continue along the rising trend of 1971-79.

External Migration

ASSUMPTION I
Zero net migration for all ages combined.

ASSUMPTION II

Average net emigration of 5,000 per annum for all ages combined.

Fertility

ASSUMPTION I

The legitimate fertility rates decline for all ages as in 1971-79, with the exception of the ages 35-49 where half that rate of decline is assumed.

ASSUMPTION II

The legitimate fertility rates decline for all ages at half that of the 1971-79 rate.

Table 3

Actual and predicted births with updated nuptiality information 1982

	Predicted	Actual 1982
Legitimate	66,661	66,582
Illegitimate	<u>3,908</u>	<u>4,351</u>
Total	70,569	70,933

Notes: (1) The predicted births are based on Fertility Assumption 1 in Report No. 63, together with the estimated population in 1982 by age and marital status.

(2) Fertility rates for 1982 are interpolated, from those in Report No. 63.

Table 4

Age specific fertility, 1981 (births per 1,000 females)

Age of Mother	Actual		Interpolation of Report No. 63	
	Legitimate	Illegitimate	Legitimate	Illegitimate
15-19	554.3	9.8	513.2	9.3
20-24	327.4	17.6	319.6	16.3
25-29	263.8	13.7	259.0	14.1
30-34	188.6	11.1	184.6	10.6
35-39	106.0	6.3	102.6	5.2
40-44	30.3	1.1	33.2	1.7
45-49	2.9	0.2	2.7	0.0

Table 5

Age specific fertility, 1982 (births per 1,000 females)

Age of Mother	Estimated		Interpolation of Report No. 63	
	Legitimate	Illegitimate	Legitimate	Illegitimate
15-19	455.4	10.6	499.0	9.7
20-24	296.2	18.9	308.4	16.7
25-29	252.8	16.1	251.4	14.4
30-34	183.3	11.6	179.2	10.9
35-39	103.7	7.4	100.1	5.3
40-44	29.3	1.0	32.2	1.8
45-49	2.7	0.1	2.6	0.0

Notes: (1) The 1982 population has been estimated by applying survivorship rates to the 1981 population.

(2) The births information relates to registered births in 1982.

Table 6

Birth projections for 1986 and 1991*

	Assumption N2 (1981 married ratios, fertility assumption 1 in NESc No. 63)	Assumptions on marital status in NESc No. 63; Fertility Assumption 1 in NESc No. 63
	<u>1986</u>	
Legitimate births	63,937	68,092
Illegitimate births	4,485	4,221
Total	<u>68,422</u>	<u>72,313</u>
Total fertility rate	2.633	2.775
	<u>1991</u>	
Legitimate births	58,881	63,954
Illegitimate births	5,393	4,976
Total	<u>64,274</u>	<u>68,930</u>
Total fertility rate	2.312	2.471

Notes: These calculations are based on State nuptiality rates applied to the total population. They would not be exactly equal to the figures calculated in Report No. 63 where the births are first calculated at the level of the county. An adjustment to nuptiality in each county is made through multiplying each age-specific State rate by the ratio of the county rate to the State Rate.

Table 7

Legitimate fertility assumptions

Age of mother	Fertility 1 NESc No. 63	% decline per annum
15-19	2.76	5.0
20-24	3.52	5.0
25-29	2.94	5.0
30-34	2.91	5.0
35-39	4.83	5.0
40-44	6.10	5.0
45-49	4.94	5.0
Total births 1986	72,313	61,800
Total fertility rate, 1986	2.775	2.37

Table 8

Projections of demand in 1991 for first level
education (Report No. 71)

	PI	HE	PII	LE	Age survival model	Mid point of projection rate
No. of enrolments (000s)	606.8		591.6		601.9	599.2
No. of teachers	21,321		20,789		21,152	21,055

(1) All these projections are based on Fertility Assumption 1 in NESC No. 63.
(See Appendix A of this note)

(2) PI - zero net emigration
PII - 5,000 net emigration per annum.

(3) Participation rates:

LE - rates change at half the 1974-1981 trend

HE - rates continue on 1974 - 1981 trend

Notes (Impact relative to
projections in Report No. 71)

- (1) Reduction in total population relative to Report No. 63 (b) 41,700 (a reduction of about 2.8% of first level school population in 1991)
- (2) Decline in numbers of school level teachers 16,800 (a reduction of about 8.5% in annual requirements in 1991 (c))
- (3) Reduction in total requirement for first level teachers 564 (a reduction of 8% in the building requirements estimated for 1981-1991)
- (4) Reduction in first level building requirements 51,500 sq. ft. (a reduction of 8% in the building requirements estimated for 1981-1991)

Notes: (a) Assumption N2 uses the lower age specific fertility assumption in Report No. 63, the assumption of zero net migration and introduces a new assumption on nuptiality: the proportions of women married in the child bearing age groups to remain constant over the projection period, 1981-1991.

(b) the decline in population is estimated as equal to the sum of differences of births interpolated from Fertility Assumption 1 in NESC 63 and the lesser number of births implied under Assumption N2.

(c) The total reduction in teachers would be equivalent to an reduced average annual recruitment of 94 during the period 1986-1991.

(a) Direct effect (1) Children's allowance	Share in total social welfare expenditure 1982 (1)	Number of child dependents in 1981 (2)	Change in low/high projections in NESC No. 72 entailed by N2	
			1986: was 3.05 to 3.55 Under N2, 1.95 to 2.35 1991: was 4.25 to 4.85 Under N2, 0.85 to 1.45	1986: was 9.75 to 15.25 Under N2, 9.75 to 15.15 1991: was 23.55 to 34.25 Under N2, 23.25 to 33.95
(b) Spill effect				
(i) Unemployment compensation (UB & UA)	24	174,000	minimal	
(ii) Disability benefit	11	144,000	minimal	
(iii) Deserted wives benefit	1	12,000	minimal	
(iv) Treatment benefit	1	-	-	
(v) Other one parent allowances	1	8,000	minimal	
(c) No Effect				
(i) Old age pensions	25	6,000	minimal	
(ii) Widows Pensions	11	26,000	minimal	
Total	83			

Notes (1) Derived from Report of the Department of Social Welfare, 1981 and 1982.

(2) NESC Report No. 72, Table A2

Programme	1986		1991	
	Assumption 1 (as in NESC 73)	N2	Assumption 1 (as in NESC 73)	N2
(a) Change				
Acute (HIPE) acute hospitals	6.3	5.9	11.9	11.3
Residential care for mentally handicapped	5.9	5.5	11.9	11.0
General medical services	6.0	5.8	11.3	10.7
(b) No Change				
Psychiatric hospitals	8.9	8.9	16.8	16.8
Geriatric long stay provisions	7.4	7.4	15.7	15.7
Total change (i.e. weighted by expenditure shares of above programmes)	6.8	6.5	13.1	12.7

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