Demographic and social implications of low fertility for family structures in Europe

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The views expressed in this study are those of the author and do not necessarily reflect those of the Council of Europe.

Foreword

The Council of Europe has a long tradition of producing population studies, and the work of the European Population Committee contributes to the understanding of the relationship between social policy and demographic issues in Europe. The findings of this work are published in the series *Population studies*, where topics covered include migration flows, national minorities, demographic changes and the labour market, the ageing of European populations and the demographic consequences of economic transition. These publications provide essential background information for implementing the Council of Europe's strategy for social cohesion: an integrated policy approach aimed at combating poverty and social exclusion through promoting access to social rights in areas such as employment and training, health, social protection, housing, education and social services.

The study which is published in the present volume sets out to investigate the relationship between low fertility and new patterns in the family and non-family sectors. It examines the social implications of childlessness, single-child families and other family sizes with an emphasis on questions of social cohesion. Firstly a theoretical perspective on childlessness is given. This is followed by an analysis of the impact of changes in birth order-specific fertility on family size using the results from a simulation study which analyses how family sizes change when the level and timing of age- and birth order-specific fertility change. The final section discusses possible consequences for social cohesion and social exclusion, with a focus on poverty, of the trends identified in the previous sections.

I should like to take this opportunity to thank the author, Nico Keilman, for his work, which has resulted in the comprehensive and thorough study contained in this volume. My sincere thanks go also to the European Population Committee whose careful discussion of successive drafts has guaranteed the high quality of the final result.

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1. Executive summary

Low fertility is a widespread phenomenon across Europe that has existed for some time and is expected to continue in the foreseeable future. This study investigates some of the consequences of low fertility and in particular the link between the level of fertility and the size and structure of families. Low fertility will obviously reduce family size but by how much? How is that effect spread over the family life cycle? Are two-parent families affected by low fertility in a similar way to lone-parent families? Have increased levels of childlessness very different consequences for family structures than overall low fertility levels?

Most of the effects of low fertility on family dynamics are as one could expect. The effects are generally strongest for women in their thirties. Only when it is assumed that women stop childbearing after the birth of their first child are the effects noticeable. In that case the strongest effects are found for the second half of the reproductive life span of women since childbearing for first births is largely restricted to ages below 35.

Higher childlessness and lower overall fertility both reduce mean family size and the share of families with children. An overall fertility reduction that implies a fall in the ultimate number of children a woman will have at age 50 by 0.6 child, leads to:

• a reduction in mean family size by 0.3 to 0.4 persons;

• a drop in the share of families with resident children by 14 percentage points;

• a decrease in the share of families with two or more resident children by 13 to 15 percentage points.

All three effects are measured as averages across the life course.

Higher levels of childlessness, operationalised as an increase in the share of women without live born children by 19 percentage points, result in:

• a reduction of mean family size by up to 0.3 persons per family;

• a drop in the share of families with resident children by 14 percentage points;

• a decrease in the share of families with two or more children by 1 to 9 percentage points.

Again, this is measured as average effects across the life course.

The effect of low fertility on the number of lone-mother families (relative to all families) is limited. Moreover, whether the effect is positive or negative depends on the particular definition one chooses for the family concept. A drop in overall fertility by 0.6 children in terms of the ultimate number of children of 50-year old women is associated with a reduction up to 4 percentage points in the share of lone-mother families at age 20. In other words, an increase in birth rates leads to more lone-mother families relative to all families.

A situation in which women stop childbearing after the birth of their first child has obviously strong implications for family structures, in particular for women aged 35-50. The result, not surprisingly, would be:

- smaller families (by as much as 1.2 persons at age 40 of the women), because families with two or more children would no longer exist;
- lower shares of families with children (by 42 % at age 45);
- up to 18 percentage points (age 50 of the mother) fewer children who live with a lone mother.

It should be stressed that the simulation results cannot be interpreted as forecasts of family dynamics. The reason is that the results obtained have been based on simulations of the family life course for a hypothetical cohort of 100 000 women starting at age 15. A genuine *forecast* would require the current distribution of all women aged 15-50 who live in different family situations. Next, the *forecast* model would update this distribution based on a set of *realistic* assumptions as to the course of fertility, partnership formation and dissolution, home leaving of young adults and mortality in the years to come.

In a final section the study addresses some of the social implications of low fertility and changed family structures. In particular, it describes possible consequences for social cohesion, and notes that, other things being equal, low fertility reduces poverty for two reasons. It leads to fewer children per family thus reducing family expenses, particularly for lone-mother families. It also leads to more couples without children (resident, ever born), which increases labour supply, and thus family income. Yet the isolated effect of low fertility on poverty is very limited unless the fertility decrease is unrealistically strong.

2. Introduction

This publication presents the findings from the study on "Demographic and social implications of low fertility for family structures in Europe" undertaken for the European Population Committee (CAHP) of the Council of Europe.

It investigates the link between the level of fertility and the size and structure of families. Low fertility will obviously reduce family size, but by how much? How is that effect spread over the family life cycle? Are two-parent families affected by low fertility in a similar way to lone-parent families? Are the consequences of increased levels of childlessness for family structures very different from those of overall low fertility levels?

The study also discusses the social implications of childlessness, single-child families and other family sizes with a focus on social exclusion and poverty.

The approach is limited to birth order-specific fertility and couples; it does not distinguish between married and cohabiting couples. Section 3 presents a number of concepts connected with the family and the household. Section 4 offers a theoretical perspective on childlessness. The impact of changes in birth order-specific fertility on family size is analysed in Section 5 by using the results from a simulation study which analyses how family sizes change when the quantum and tempo of age- and birth order-specific fertility change. The model applied here is a multidimensional life table. Finally, Section 6 discusses possible consequences of the trends identified in the previous sections, for social cohesion and social exclusion with a focus on poverty.

3. Concepts and definitions

The concept of "family" is of central concern in this study. It is defined below using a demographic definition as this study has a clear demographic orientation and many of the data stem from population statistics. At the same time it is contrasted with a closely related concept, namely that of a household. Furthermore, a different type of family definition used by some family sociologists is also examined.

Census family definition

This report uses two different family definitions. The first is the definition often used for census and population statistics purposes, as recommended by the United Nations Economic Commission for Europe (UNECE):

> "A family is defined in the narrow sense of a family nucleus, that is, as two or more persons within a private household who are related as husband and wife, as cohabiting partners, or as parent and child".

Thus, a family comprises a couple without children, or a couple with one or more children, or a lone parent with one or more children. The UNECE has recommended this definition to statistical agencies in connection with the 2000 round of population censuses in the UNECE region (UN 1998). Therefore, this family definition is henceforth called the *census family definition.*

Three comments are in order here:

1. Two persons are defined to be cohabiting partners when they have usual residence in the same household[1], are not married to each other and report to have a marriage-like relationship to each other. This implies that partners of the same sex are considered to be cohabiting partners and thus they form a family.

2. A three-generation household is not considered as one family, but as two separate families, or as one family plus another household member.

3. A child is defined as any person with no partner, who has usual residence in the household of at least one of the parents. "Children" also include stepchildren and adopted children, but not foster children. A child that lives in a family together with a married or cohabiting couple is the (biological, legal) child of at least one of the partners, but not necessarily the common child of the couple.

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1. The concept of a household will be defined below.

The family definition given here implies that one may distinguish various *types of families:* husband-wife families with or without children; cohabiting couples with or without children and lone mothers or lone fathers (by definition they have at least one resident child). The family is the unit of analysis/ classification here. Classifications of this sort should be clearly distinguished from those in which the *individual person* is classified according *to family status (family position):* spouse; cohabiting partner; child; lone parent etc.

Sociological family definition

Although the family definition given here is widely used in demography and neighbouring disciplines, some family sociologists require the presence of at least one child and at least one of the parents (or some other adult). For instance Hoffmann-Nowotny (1987, 115) starts from Durkheim's definition of 1921: a family consists of a married couple and their child(ren). This is, in fact, the definition of what is commonly known as a nuclear family (see, for instance, the definition given in the International Encyclopaedia of the Social Sciences Vol. 5 of 1968, page 303). Hoffmann-Nowotny next removes a number of the restrictions implied by this definition and discusses cohabiting versus married adults, the possibility of just one parent, and finally the presence of just one child and one adult (for example a grandmother with her grandchild). But clearly, a childless married couple is not a family in his view. Also in later work he considers parenthood to be the decisive factor that separates family households from non-family households (Hoffmann-Nowotny and Fux, 2001, 28). This gives rise to the second definition of a family which can be termed the *sociological family definition:*

> "A family is defined as a group of persons within a private household consisting of at least one child and one adult, who are related as husband and wife, as cohabiting partners, or as parent and child".

The census family definition implies that a married or cohabiting couple, whether they never will have children, never had children, or have children who have left the parental home, is considered as a family. According to the sociological family definition, such a group of persons is a non-family household.

The notion of family is different from that of a private household[2]. A private household consists of a group of persons who live in the same dwelling. In addition to such multi-person households there are one-person households, i.e. persons who live alone. Sometimes a further requirement is that household members have common housekeeping (share a common budget, have

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2. Note that some languages do not have a separate word for household, for instance Italian ("famiglia"), Spanish ("familia", "hogar"=home), Portuguese ("família").

regularly meals together, etc.). This is called the *housekeeping unit concept* of a household. The household definition given earlier is known as the *dwelling unit concept* of a household. The housekeeping unit definition is not only recommended by the UNECE for use in current population censuses, it has also a long history going back to population censuses carried out in Austria-Hungary toward the end of the Eighteenth Century (Hajnal 1982).

The definitions given here imply that every family is also a household, but the reverse is not true. Examples of non-family households are (using the census definition of a family) one-person households and households in which two unrelated adults share a dwelling, or (using the sociological definition of a family) a childless married couple. The distinction between family and household is rather recent in demography: "The scope of household and family demography is now fairly well defined … A key step has been the full realization of the difference between household and family, a distinction somewhat blurred in early demographic work, due to a Western tendency to identify the two …" (Burch 1995, 87).

Part of the terms of reference formulated by the European Population Committee was to "… investigate the relationship between low fertility and new patterns in the family and non-family sectors…". The notion of non-family sector requires some clarification. Given the definitions of a family and a household described here it will be clear that the non-family sector consists of non-family households, defined either by means of the census or the sociological family definition.

The study limits itself to private households. This implies that non-family households consist of persons in private households who are not members of a family. Using the census definition of a family, this concerns mainly persons who live alone (one-person households), and households with unrelated persons, for instance students. Of these, one-person households are by far the most important group. When using the sociological definition, childless couples are also included in the non-family sector. This leads to the following classification.

• The family sector consists of family households, that is, households with at least one family;

• The non-family sector consists of one-person households (census definition of the family), or alternatively of one-person households and childless couples (sociological family definition).

Non-private households, such as institutions, are not studied here.

4. Childlessness – a theoretical perspective

In the course of the 20th century, most European countries completed their fertility transition. The changes in fertility have been reflected primarily in reductions in higher-order births. Third births, fourth births, and still higher-order births have become less frequent, while first and second births have been reduced to a lesser extent. The result is that first and second births now account for over 75 % of fertility in most industrial countries. This trend is unlikely to be reversed (National Research Council 2001, 97) because adequate rationales for large families in modern settings no longer exist, and the costs of large families are prohibitive. Very few women have reason to want three, and especially four or more births. Two children have become the norm for couples who wish to have children. Therefore, first births have become critical in determining fertility levels, which now largely depend on the behaviour of childless women.

This section presents a theoretical perspective on childlessness. Which factors are associated with the decision to become a mother, or not to do so? Do these factors change over the life course? By addressing these and similar issues, the study should indicate some of the important background factors that are relevant for judging the fertility simulation scenarios in the following sections of this study.

Hoffmann-Nowotny (1987, 2001) has sketched a useful framework for the understanding of developments in fertility and family formation. The framework integrates macro-sciological, micro-sociological, and economic theories and parts thereof formulated earlier by Hoffmann-Nowotny himself, Coleman, De Bruijn, Fux, Cliquet, Lesthaeghe, Van de Kaa, Kohler, Schmidt, Becker, and others.[3] Applied to the birth of the first child, it is summarised below.

At the macro level, demographic changes are largely a consequence of societal changes, often labelled as "modernisation". The conditions of modernity imply diminishing constraints and an increase in behavioural options. Strong normative pressures to become a parent have weakened; effective contraception has opened up the possibility of choosing a "child-free" life. The cultural counterparts of modernisation are increasing individualism, and a certain loss of the traditions that have governed demographic trends for

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3. See, for example, the very readable account by Hobcraft and Kiernan (1995).

a long time. Hence, Hoffmann-Nowotny speaks of a "structure/culture paradigm" to typify these macro-social developments.

Complementing the structure/culture paradigm, a so-called "resources-restrictions-behaviour" approach is used to understand the relationships between the macro-sociological dimensions of modernity and the individual decisions and behaviour regarding procreation. Individuals and couples dispose of a set of resources: biological resources (age, sex), economic resources (income, assets), socio-cultural resources (educational status, nationality, political or religious affiliation), and social-psychological resources (socialisation, self-perception, social integration). Resources are linked with beliefs, values, and norms. Facilitators and restrictions influence the behaviour of individuals and of couples. Examples of such facilitators and restrictions are economic conditions (e.g. costs of rearing a child, family allowances), social stratification (social class which may stimulate or prohibit childlessness) and bio-technological opportunities (assisted fecundity to solve problems created by involuntary childlessness).

Within this theoretical perspective, modernisation is understood to lead to a partial loosening of structural and cultural ties. Traditional binding orientations, such as religion, become weaker. Actors are confronted with an increasing volume of options. At the same time, the openness of modern societies promotes an achievement ideology and a climate of competition. As a consequence, more frequently people tend to consider alternative routes to self-fulfilment than parenthood.

In order to achieve satisfying behaviour, couples try to balance their limited resources, taking facilitators and restrictions explicitly or implicitly into account. They can be characterised as rational actors, but the concept of "rational" is to be understood in a much wider sense than utility maximiser: rationality refers to free choice within the limits of cognitive capacities and the social environment of the couple. The *procedure* of decision-making is stressed – the reasoning processes that allow people to judge possible behaviour. Understanding this process explicitly takes account of the effects of ignorance, uncertainty, and decision costs in terms of energy, time, and emotional stress. Thus it explains why many childless couples tend to keep the options open. Become pregnant now? With the current partner? Marry now? Wait until later? Postponing commitments has become an important element in the reproductive behaviour of young couples. At the same time, economic arguments are still valid: the higher the cost of children, the lower will be the demand for them.

The importance of economic and non-economic factors changes over the life course. Income generally rises when young adults are in their 20s because they finish education and enter the labour market. On the one hand, this

makes costs connected with child rearing easier to bear later in life. On the other hand, it increases opportunity costs. Emotional stress results from the fact that fecundity falls with advanced age. As a consequence of this uncertainty, the childbearing intentions of women, as expressed in fertility surveys, fall with age, and the actual number of children is often lower than the intention expressed around age 20. At the same time, the actual number increases sharply over the life course. As a result, actual and expected numbers converge towards the end of the reproductive life span – see Van Peer (2002) and Noack and Østby (2002).

The theoretical reflections sketched in this section give us some understanding of the fact that childlessness in a number of countries has increased from levels around 10 % for women born around 1940, to 15-20 % or higher for women born around 1960 (Prioux 2002). The theoretical framework also suggests that a reversal of this trend is not very likely.

5. The impact of changes in birth order-specific fertility on family size and structure

5.1. The simulation model

A simulation model has been used for tracing the impact of changes in birth-order specific fertility on family structures. The model follows individual women over their reproductive life span. These women are classified according to age (five-year age groups, 15-49), number of resident children (0, 1, 2, 3 or more) and partner status (couple/alone). When partner status is combined with the number of resident children, one obtains the following classification for the individual women:

- living alone (SIN0);
- lone mother, one resident child (SIN1);
- lone mother, two resident children (SIN2);
- lone mother, three or more resident children (SIN3);
- with partner, no resident children (CPL0);
- with partner and one resident child (CPL1);
- with partner and two resident children (CPL2);
- with partner and three or more resident children (CPL3).

When using the census definition of a family, categories SIN1, SIN2, SIN3, CPL0, CPL1, CPL2, and CPL3 make up family households. But using the sociological family definition, women in category CPL0 are not interpreted as members of a family and in this case family households are derived from women in categories SIN1, SIN2, SIN3, CPL1, CPL2, and CPL3. Irrespective of family definition, family size can easily be derived for each category: women with family statuses SIN1, SIN2, and SIN3 live in families of size 2, 3, and 4 or more, respectively. Women with family statuses CPL0 (census definition only), CPL1, CPL2, and CPL3 have family sizes 2, 3, 4, and 5 or more.

Hence we see that the classification of individual women can easily be adapted to either of the two family definitions. Sections 5.1-5.3 present the structure of the model, the data requirements, and the scenarios using the census definition. Section 5.4 presents results, both for the census definition and the sociological definition of a family.

This study is restricted to *women*. This implies that not all families are covered in this study: lone-parent families headed by a *man* are disregarded. Lone-father families exist mainly as a consequence of two types of events that

may occur to a family with children: (i) the couple separates/divorces, and one or more of the children live with the father, or (ii) the man's partner (almost always a woman, but not necessarily in all cases) dies. This study focuses on women in their reproductive life span; this means that mortality, although not negligible, is less important than other demographic phenomena incorporated in the model, such as childbearing, partnership formation and dissolution, and home leaving of adolescent children. The first factor that may lead to a lone-father family, namely separation/divorce of a couple with children, is sometimes encountered, but not very frequently. A careful analysis of the household data collected in Norway at the occasion of the Population Census of 1990 showed that 1.4 % of all families were lone-father families (Keilman and Brunborg 1995, Table 5). For lone-mother families the corresponding share was 7.9 %. Comparable figures for other countries are difficult to obtain. For instance, Höpflinger (1991, 323) presents data for 11 western and southern European countries around 1980 which show that, on average, approximately 20 % of the one-parent families in the countries concerned are comprised of the lone parent and the child(ren), together with one or more other persons. It is to be supposed that in many cases this other person is the cohabiting partner of the lone parent and the family should be classified as "cohabiting couple with child(ren)". This includes those cases in which the other person is not the biological parent of the child(ren).

The family status classification with eight groups is a compromise between the ideal classification with many relevant statuses and one that is dictated by the available data. A distinction between married couples and consensual unions is desirable, but in practice difficult to achieve: it is difficult, if not impossible, to find data sources for age-specific and birth-order specific fertility of cohabiting women that allow a comparison across several European countries. Moreover, the numbers involved would become so small that it would be difficult to discern stable patterns.

As a consequence of various types of events, a woman may change her current family status. Five broad types of events can be distinguished:

1. childbirth (child of order one, two, and three or higher);
2. formation of partnership (marriage or start of a consensual union);
3. partnership dissolution (divorce/separation or death of the partner);
4. a child leaves the parental household, and
5. the woman's death.

Childbearing implies an increase in parity, home leaving a decrease. Hence parity is to be interpreted as *social* parity – the number of children living at home – rather than as *biological* parity – the number of children ever born. Partnership formation implies a jump from SINx to CPLx, where x may be 0, 1, 2, or 3. Note that the number of children x is the same before and after partnership formation. The idea is that events take place in continuous time;

or at least in very short intervals – so short that no two events can occur to the same women within the same interval. Partnership dissolution implies a jump from CPLx to SINx. The study ignores twin births so that women can only increase their parity by one unit at the time.

The model is a life course model of the multi-state type, also known as multi-dimensional life table. Mathematical details are given in Van Imhoff and Keilman (1991). It builds on models that were developed earlier by Höhn (1982) and Kuijsten (1986), who limited partnership dynamics to formal marital status changes. The model follows individual women over their reproductive life span, from age 15 to age 50. It is assumed that all women start in SIN0 at age 15. In reality, many of them will not yet live independently at such a young age. (The alternative, i.e. to start at age 20 in SIN0, is even less attractive, as it does not allow for fertility, and more importantly, couple formation, for women under 20.) Most of them will remain in SIN0 for at least a couple of years, but they are exposed to "risks" of partnership formation and childbearing. Many will leave the SIN0-status and find a partner before they eventually give birth to a child. In other words, they first become CPL0, and next CPL1. Others will experience childbirth as the first event, and become a lone mother (SIN1). Next, these women may or may not experience (further) childbirths, partnership formation and dissolution, home leaving of their children, and mortality.

All possible events that are distinguished in the model are summarised in Table 5.1.

Table 5.1 – Events distinguished in the family structure model

Family status before event	Family status after the event								
	SIN0	SIN1	SIN2	SIN3	CPL0	CPL1	CPL2	CPL3	Dead
SIN0		1			2				3
SIN1	4		5			6			7
SIN2		8		9			10		11
SIN3			12					13	14
CPL0	15					16			17
CPL1		18			19		20		21
CPL2			22			23		24	25
CPL3				26			27		28

Explanation: each number represents one particular type of event:
1,5,9: childbirth, no partner
16,20,24: childbirth, with partner
2,6,10,13: partnership formation
15,18,22,26: partnership dissolution
4,8,12: child leaves home, single mother
19,23,27: child leaves home, couple
3,7,11, 14,17,21,25,28: death of the woman

5.2. Data

The model requires occurrence-exposure rates for five-year age groups for all events identified in Table 5.1. Norway is one of the few countries for which almost all such data exist so the study relies heavily on this data, known to be of good quality.[4]

The model requires data on births, on partnership formation and dissolution, on home leaving of children, and on mortality by family status.
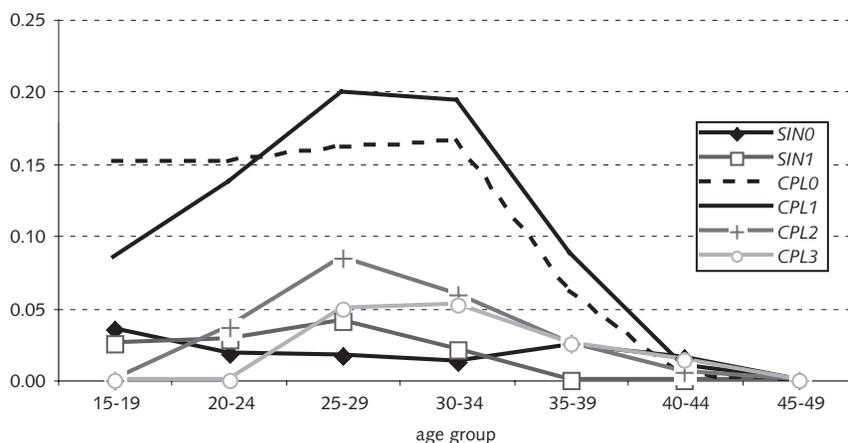
Fertility

Excellent sources for fertility data are the so-called Women file and House-hold file, both constructed by Statistics Norway. The Women file gives high-quality life history data on live births for individual women who have lived in Norway since 1964 (see Brunborg and Kravdal [1986]). The Household file contains information from a random sample of 10,000 households (28,400 individuals) drawn from the November 1990 Population and Housing Census of Norway. It has been used as an input to a household projection for Norway, after extensive quality checks and correction procedures (Keilman and Brunborg 1995). Using the Personal Identification Number that each individual resident in Norway has, women in the Household file born in the years 1940-1977 were linked both to women in the Women file who gave birth in 1990, and women who did not do so. This way, occurrence-exposure rates could be computed broken down by five-year age group, parity, and family status. In spite of the large numbers involved, some smoothing was necessary because numbers in some groups were small. Figure 5.1 plots those rates for the most important groups.

Note the high rates for young (e.g. age group 15-19) childless women who live with a partner (CPL0): the very few women who entered this family status at so young an age probably did so because a birth was expected or planned.

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4. The original ambition was to do comparable analyses for a number of countries in Europe, contrasting very different fertility patterns. Two candidate countries were selected for each of the four regions: Sweden and Norway, representing Northern Europe; Poland and Hungary, representing Eastern Europe; Germany and France, representing Western Europe; and Spain and Italy, representing Southern Europe. In none of these countries, nor any other country is the type of data needed routinely collected by statistical agencies. The Family and Fertility Survey (FFS) project, conducted by the Population Activities Unit of the UNECE between 1988 and 1999, in which all of the eight countries mentioned here participated, resulted in the type of data needed. A preliminary inspection of the data for Norway and Sweden, however, revealed that the FFS-sample sizes (ranging from 2944 women for France to 5976 women for Germany; 4019 women in Norway; 3318 women in Sweden) were too small to identify meaningful fertility patterns for women broken down by four parity classes (0-3+) and two partnership classes (with/without partner), in addition to the seven five-year age groups.

Figure 5.1. – Birth rates by mother's family status and age

Home leaving and partnership formation and dissolution

The aforementioned household projection also supplied data on home leaving and partnership formation and dissolution. These data stem from the 1988 Family and Fertility Survey of Norway. An extensive discussion of the processing of these data and the necessary quality checks is given elsewhere (Keilman and Brunborg 1995, 26-35). Since the input data for the household projection distinguished between married couples and cohabiting couples, some aggregation was necessary. Figures 5.2-5.4 plot a selection of the rates thus obtained.

Figure 5.2. – Exit rates for women with family statuses SIN0 and CPL0
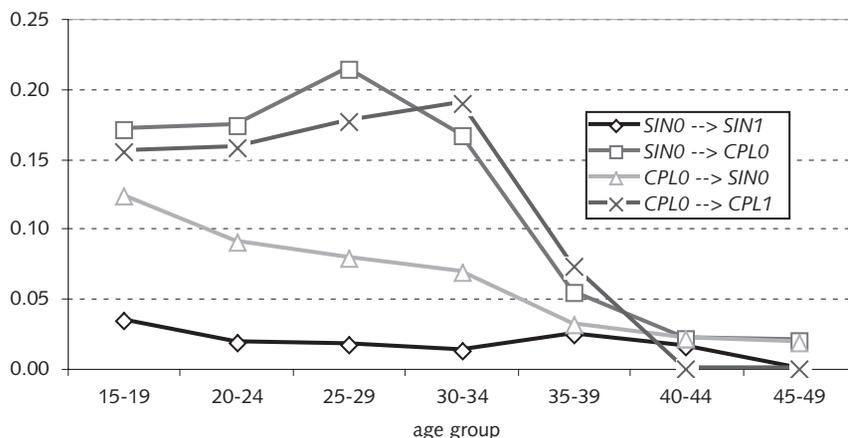
Rates for events SIN0 → SIN1 and CPL0 → CPL1 in Figure 5.2 represent birth rates for single women and women who live with a partner, respectively. They are the same as those in Figure 5.1. The propensity for childless single women to start living with a partner (SIN0 → CPL0) is very strong up to ages 30-34. Rates for dissolution of a union when there are no resident children in the family (CPL0 → SIN0) fall regularly over the life course.

Lone mothers with one child have a high propensity to start living with a partner (SIN1 → CPL1), see Figure 5.3. When the couple separates or divorces, the child joins the mother in the vast majority of cases. Indeed, the CPL1 → SIN1-curve displays much higher values than that for CPL1 → SIN0. The symbols CPL1 → CPL0 and SIN1 → SIN0 represent the event of a child that leaves the parental family.

Figure 5.3. – Exit rates for women with family statuses SIN1 and CPL1
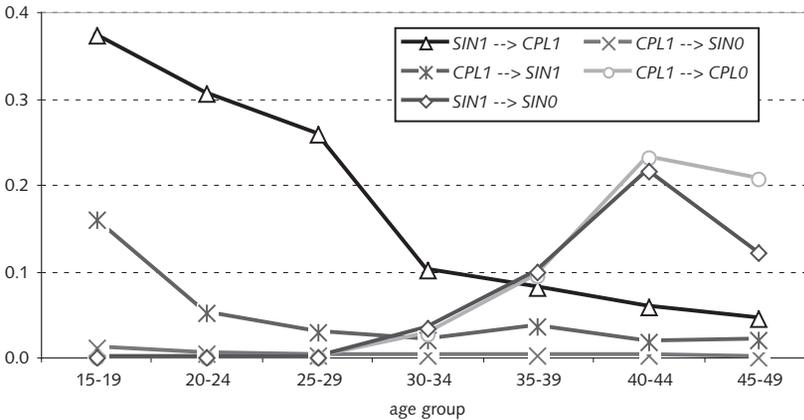
Figure 5.4. – Exit rates for women with family statuses SIN2 and CPL2
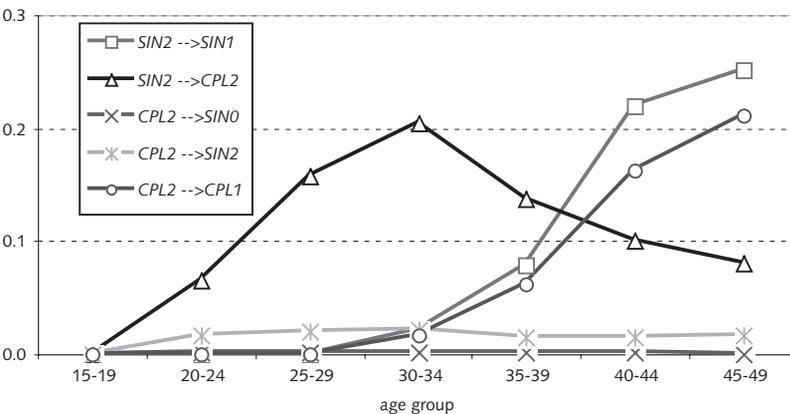
Women with two resident children tend much more often to form a family together with a partner (when single; SIN2 → CPL2) than to separate from such a partner (when in a union; CPL2 → SIN2), even at advanced ages. At those ages, home leaving of one of the two resident children is numerically the most important event.

Mortality by family status

There are no Norwegian data on mortality broken down according to the type of family in which one lives. The study uses marital status as a proxy for family status and assumes that at each age death rates (i) for women living alone and for lone mothers are the same as those for unmarried women, and (ii) for cohabiting women are a simple average of the death rates for married women and unmarried women. Assumption (i) resulted in death rates for women without a partner (family type SINx). Death rates for women with a partner (CPLx) were computed as a weighted average of rates for cohabiting women and married women, using shares of women in these two "partner status" groups from the Household file as weights. Because death risks for women up to age 50 are very low (the highest rates are for single women: 4 per thousand), the assumptions on mortality are not crucial.

The Norwegian data described above has been taken as a starting point. These data reflect the situation in Norway at the end of the 1980s with respect to childbearing, partnership formation and dissolution, home leaving, and mortality. The data set may be interpreted as a benchmark for further calculations. The benchmark birth rates have been adjusted in order to obtain fertility patterns that can be thought to mirror the patterns in Norway and in other European countries as of today.[5] The next section describes four different types of fertility adjustments, each of these corresponding to one additional simulation scenario.

5.3. Fertility scenarios

The benchmark scenario

The benchmark scenario is characterised by a relatively modest level of childlessness (12 %), and a high cohort TFR (an average of 1.93 children per woman). It is the fertility pattern as observed in Norway around 1990. The four additional scenarios differ from the benchmark scenario only with

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5. An update of the Norwegian data was not feasible because household data from the 2001 Census are not yet available.

respect to childbearing patterns. Because this study focuses on the impact of changes in fertility on family dynamics, partnership formation and dissolution, home leaving, and mortality are left unchanged.

30% childlessness

This pattern differs from the benchmark fertility pattern in that it has a high level of childlessness: 30 %. This is achieved by reducing all benchmark birth rates for childless women who live with a partner (CPL0 women) by 52 %. Other birth rates, including first birth rates for women who live alone (SIN0), maintain their benchmark values. The idea is that *intended* childlessness, in other words, that for CPL0-women, would be increased compared to the benchmark scenario. *Unintended fertility*, interpreted largely as reflected by births occurring to SIN0-women, remains unchanged. The consequence of these adjustments is that the cohort TFR is reduced to 1.48. This scenario would reflect a situation in which many women are unable to combine motherhood with a career outside the home, for instance because practical arrangements (kindergart en) or legal provisions (paid parental leave of substantial length) are underdeveloped. Also, gender roles are rather asymmetric under this scenario.

Overall low fertility

When all birth rates, both for women who live with a partner and those who live without one, are reduced by 30 %, the share of women who are childless at age 50 becomes 22 %. At the same time, the cohort TFR is 1.46. Observed period fertility in a number of eastern European countries is not unlike this pattern.

One-child scenario

Under this scenario, we assume that first children are born in accordance with the benchmark scenario, but that no further children are born. Some women remain childless (15 %), which means that the cohort TFR equals 0.85. Needless to say that this is a purely imaginary scenario. It is included largely for analytical reasons.

Fertility at replacement level

Fertility at replacement level is achieved by an overall increase of benchmark fertility rates by 10 %. This implies that 9 % would be childless at age 50, and the cohort TFR would equal 2.07 children per woman on average. There are no clear signs that European countries are moving from their current low

fertility levels to replacement level. Yet the United States could serve as an example, with its current period TFR equal to 2.1 (Sardon, 2002).

In summary, childlessness at age 50 varies between 9 % in the replacement fertility scenario and 30 % in the 30 % childlessness scenario. This range covers largely the empirical situation as documented by Prioux (2002). She found for women in 16 European countries, who were born between 1930 and 1960, a level of childlessness equal to 7-23 %. Prioux's data for cohorts born towards 1960 refer to the situation at age 40, which means that her high figures may overestimate the percentage childless at age 50 by some 1 to 2 percentage points. Thus the 30 % childlessness scenario appears rather extreme, although not entirely impossible: Dörbritz (1992) reports that 27 % of German women born in 1901 remained childless, amongst others as a consequence of the deficit of men due to the World War I, and the high levels of unemployment in the late 1920s and early 1930s. The overall low fertility scenario has second highest childlessness among the six scenarios, with a reasonable level of 22 %.

Ignoring the one-child scenario with its cohort TFR of 0.85, the cohort TFR for the other scenarios ranges from a low 1.46 children per woman in the overall low fertility scenario, to a high 2.07 children per woman in the replacement scenario. In this sense, the various scenarios cover well the observed cohort fertility levels for European women born in the early 1960s. Observed levels range, with a few exceptions, from 1.5 to 2.1 children per woman, with high levels (2.0-2.1) in France, Norway, Poland, Romania, and Slovak Republic, and low levels (1.5-1.6) in Italy and Spain[6] (Council of Europe 2001, Table T3.7; see also Frejka and Calot 2001). The average level for the European Union is 1.7.

Table 5.2 summarises the fertility indicators in each scenario.

Table 5.2 – Fertility indicators for the five scenarios

	Parity progression ratios				Number of children per woman	Number of children per mother
	a0	a1	a2	a3+		
Benchmark	0.88	0.77	0.39	0.27	1.93	2.19
30% childlessness	0.70	0.74	0.38	0.27	1.48	2.12
Overall low fertility	0.78	0.65	0.28	0.20	1.46	1.87
One child	0.85	-	-	-	0.85	1
Replacement	0.90	0.81	0.43	0.29	2.07	2.29

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6. Iceland (2.5) and Ireland (2.4) are the exceptions to the general pattern.

	Distribution of women by number of children ever born					Share of lone-mother births
	0	1	2	3	4+	
Benchmark	0.12	0.20	0.42	0.19	0.07	0.12
30% childlessness	0.30	0.18	0.32	0.14	0.05	0.17
Overall low fertility	0.22	0.28	0.36	0.11	0.03	0.12
One child	0.15	0.85	0	0	0	0.21
Replacement	0.10	0.18	0.42	0.22	0.09	0.12

Each indicator expresses, in its own way, the level of fertility for women at age 50. The strongest contrasts are found, not surprisingly, between the one-child scenario and the replacement scenario. The parity progression ratios in the upper panel reflect the probability for an individual woman with a certain number of children to continue childbearing with at least one additional child. Thus, $a2$ tells us that women, who already have given birth to two children, have a probability for an additional child varying between 28 % in the overall low fertility scenario and 43 % in the replacement scenario (ignoring the $a2$ under the one-child scenario, which does not exist by definition). Note that large families, i.e. women with four or more children, are an exception even under the replacement scenario: this concerns only 9 % of the women, see the lower panel. On average, these women gave birth to 4.4 children.

The lower panel tabulates the share of births by lone mothers, which turns out to vary between 12 % under the benchmark scenario, the overall low fertility scenario, and replacement scenario, to 17 % under the 30 % childlessness scenario, and 21 % under the one-child scenario. Note that this share is different from the share of extramarital births that is often encountered in official birth statistics. The latter share also includes births by unmarried women who live in a consensual union. This is not the case with births by lone mothers in this model, which only relate to women who are not living in a union (at the time the child is born).

There is some evidence which suggests that the share of births that occur outside a union is roughly around 10 % in European countries. Le Goff (2002) presents FFS-data for France and West Germany. He finds that between 6 and 11 % of the French women (cohorts born between 1944 and 1969) and between 7 and 11 % of the women in West Germany (cohorts

born between 1952 and 1966) who ever gave birth to a child were not in a union at the time their first child was born. Kiernan (1999) has analysed FFS-data on first births in eight European countries, together with data from the British Household Panel Survey. She found that between 5 % (Spain, Italy) and 20 % (Austria) of all women aged 20-45 had had a first birth before any partnership. Norway (12 %) had the next highest share, higher than Sweden (7 %), West Germany[7] (10 %), France and Great Britain (9 % in both countries).[8] Kiernan's findings can not be compared directly with those in Table 5.2, for four reasons: (i) she restricted her analysis to first births (ii) *before* any partnership (iii) among women aged 20-45 (iv) computed as a percentage of all *women*. The output of the simulation model is such that points (i), (iii), and (iv) can be accounted for. The benchmark family status life table, starting from 100 000 single women aged 15, results in 7 364 births by women aged 20-45 in family status SIN0, and 53 678 births by women aged 20-45 in status CPL0. Since one woman is equivalent with one first birth, the share of women who had a first birth outside partnership between ages 20 and 45 is 7 364/(53 678+7 364) = 12.1 %, the same as Kiernan's estimate for Norway.[9]

Indicators for the timing of childbearing, in other words, the age at which children of different birth orders are born on average, turn out to be rather stable across scenarios. The average age at childbirth, irrespective of birth order and family status, is 29.7-30.1 years. For women who live with a partner, these average ages are 27.6-28.9 years for first births, 30.7-31.6 years for second births, and 33.3-33.9 for third births. The relative stability of these mean ages is a direct consequence of the fact that, when constructing a particular scenario, the age specific birth rates for all ages were generally adjusted by the same factor. The one-child scenario is the exception to this stable pattern, with an average age at (first) birth equal to 26.7 years.

The study does not present separate *scenarios for the timing* of childbearing. Births are being postponed by successive generations of women in northern, western, and southern Europe. This trend started for women born around 1945 in most countries of northern and western Europe, fol-

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7. Women aged 20-39.
8. Note that both Le Goff's results and Kiernan's results (except those for Great Britain) are derived from FFS data in which childbearing histories and partnership histories were recorded. Whether or not a birth is recorded in a union or outside a union thus depends on the timing recorded for that birth and for the start of that union. We have to be aware of the fact that the start of a union cannot always be recorded very accurately, because of memory lapse, and because the event itself is not well-defined.
9. The fact that this is the same number as that in Table 5.2, is a mere coincidence.

lowed by generations born some 10 years later in southern Europe and in Ireland (Council of Europe 2001). Several authors have stressed the fact that postponement at younger ages will lead to only partial recuperation at later ages (Lesthaeghe and Moors 2000; Kohler *et al*. 2002) – "later means fewer". To the extent that postponement of births leads to fewer births, the scenarios presented earlier already capture this effect. Thus the effect of postponement alone has been traced. A trial scenario has been constructed in which the benchmark level of 1.93 live births per woman is maintained. At the same time, age-specific birth rates for age groups 15-19, 20-24, and 25-29 were reduced by 25 %, 15 %, and 5 %, respectively, while birth rates for age groups 30-34, 35-39, and 40-44 were increased by 5 %, 15 %, and 25 %. The result was a mean age at childbearing equal to 30.6 years (which is close to the mean age of Dutch women born in 1965 which is 30 years (see Council of Europe 2001 Figure G3.6), almost a full year higher than that in the benchmark scenario (29.7). The effects on family size and structure were generally limited.

5.4. Simulation results

5.4.1. The benchmark scenario

For each scenario, a multidimensional life table was computed, which followed women from age 15 to age 50, and traced the changes in the family status of these women. The PC-program LIPRO (version 4.0, written by Evert van Imhoff)[10] was used to carry out the calculations.[11]

This study first presents the detailed output of the benchmark scenario in order to illustrate the general structure of the family status life table. The results of that table can be summarised in various indicators which express the size and the structure of the families in which the women live and how these change over the life course of these women. For the four additional scenarios, the study is limited to a few summary indicators. When necessary distinction is made between the census definition and the sociological definition of a family.

Table 5.3 gives the family status life table for women under the benchmark scenario.

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10. The current study uses the exponential specification of the model, and assumes five-year age groups.
11. The interested reader can find details about this user- friendly program, which is particularly suited for simulating family and household dynamics, at http://www.nidi.nl/research/prj70101.html. The web site has also a link to a PDF file containing the text of the LIPRO book (Van Imhoff and Keilman 1991), which gives full documentation of the model and the program.

Table 5.3 – Family status life table; benchmark scenario

Age	Women's family status								
	SIN0	SIN1	SIN2	SIN3	CPL0	CPL1	CPL2	CPL3	TOTAL
15	100000	0	0	0	0	0	0	0	100000
20	44736	7766	589	0	28160	15597	2948	0	99796
25	24737	5683	984	922	24232	25179	15798	2053	99588
30	12687	3772	2422	1037	17641	21195	28413	12229	99395
35	9050	3687	2927	1173	11975	15634	33140	21502	99090
40	10172	4781	2778	3157	15314	14294	27264	20830	98592
45	15082	3998	2245	1599	30888	13850	16584	13623	97868
50	19278	4311	1591	411	43360	13358	10541	3944	96793

At age 15, 100 000 women start as SIN0. Many of them (44.7 %) are still in that position at age 20, but 28.2 % live together with a partner and are still childless (CPL0). For some women, the five-year interval is long enough that they give birth to a child *and* find a partner with whom they live together. As a result, 15.6 % are in status CPL1 at age 20. The table cannot tell us which of these two events (childbirth or partnership formation) came first. In general, the table gives the *net* result of various family events over five-year intervals. Thus, some of the 7 766 women who are a lone mother at age 20 gave birth to a child when they were single (i.e. in position SIN0), while others had a child while married or cohabiting and then the partnership was dissolved. Clearly it is not very probable that many women experienced multiple events during the five-year age intervals.

How do the family statuses of these women change between ages 15 and 50? First of all it should be noted that mortality reduces the original cohort size by almost 4 % (see the "TOTAL"-column). Numbers of women who live alone (SIN0) are first strongly reduced to 9 % of the original cohort size at age 35. This is a consequence of both childbearing and partnership formation. Next, these numbers grow again, primarily as a result of two types of events. First, some couples without children (that is, with no resident children) separate.

Second, the last child leaves a lone mother (SIN1), who therefore becomes SIN0. (A third event, which is much less common than these two, is the death of the partner of a woman who herself is in status CPL0.) The consequence is that 19.3 % of the women live alone at age 50.

Other family statuses generally show a regular development over the life course with an initial phase of growth due to childbearing and (for women without a partner) partnership dissolution, followed by a reduction as a consequence of adolescents' home leaving and (for women living with a partner) partnership dissolution. However, there are two exceptions to this general pattern: family statuses CPL0 and SIN1.

Women who live with a partner but no child (CPL0) show a non-monotone development over the life course. The numbers in this group may grow as a result of two types of events: (i) a SIN0-woman finds a partner, or (ii) the last child of a CPL1-woman leaves his or her parents. At the same time, the number of CPL0-women may decrease due to three other types of events: (iii) the woman gives birth to a child, (iv) the couple gets separated, or (v) the woman's partner dies. All these five types of events occur during the life course, but with different intensities. Between ages 15 and 20, partnership formation (event i) dominates. From age 20 to age 35, the combined result of childbearing (event iii) and separation/divorce (event iv) is numerically more important. (Death of the partner contributes very little at these ages.) However, between ages 35 and 50 children start leaving the parental household (event ii), and the consequence is that 43.4 % of the women live with a partner but no children at age 50.

Numbers of single mothers with one resident child (SIN1) also fluctuate between ages 15 and 50. Initially, they grow due to childbearing of women who do not live with a partner. However, many of these women find a partner, and hence the numbers in status SIN1 are reduced. (The birth of a second child by SIN1-mothers also leads to a reduction). Next, the numbers show a temporary increase between ages 35 and 40, because couples with one child separate. Between ages 40 and 45, the latter effect is numerically less important than the effect of home leaving by the (last) child who lives with his or her mother, and the number falls again.

The women who belong to categories SIN0 and CPL0 can be divided into two groups: those who never have given birth to a child, and mothers whose last child has left the family. Not surprisingly, the share of mothers in both groups increases quickly over the life course, see Figure 5.5.

Figure 5.5. – Share of mothers among SIN0 and CPL0-women.
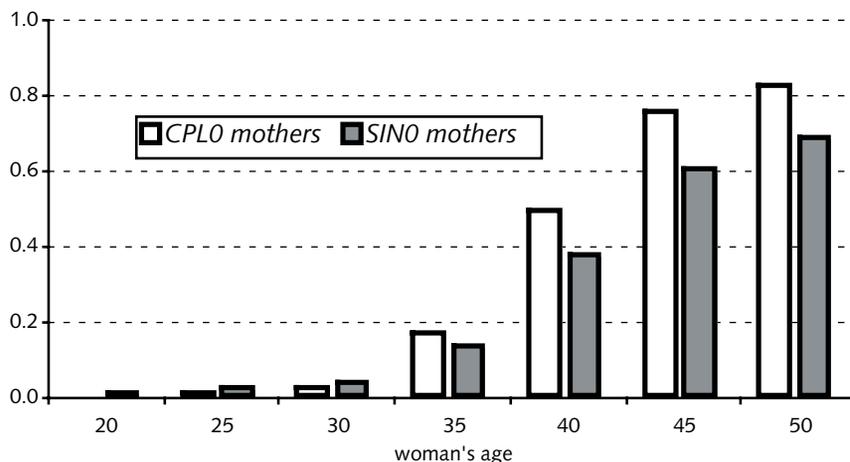
Up to age 30, virtually all women who either live alone (SIN0) or alone with a partner (CPL0) have never given birth to a child. At age 50, however, these women are a minority among SIN0- and CPL0-women, as 69 % (SIN0) and 82 % (CPL0) are mothers whose last child left the family.

The family dynamics of the women in Table 5.3 can be summarised in a few family indicators. When the census definition of a family is used, each woman who is alive represents one family, except for SIN0-women, who live in a one-person household. The sociological family definition also excludes CPL0-women. Panels A (census definition) and B (sociological definition) of Table 5.4 give the following indicators, computed for each age.

Mean family size, computed as a weighted share of women in all family statuses omitting SIN0 (census definition) and SIN0 and CPL0 (sociological definition). The weights are equal to 2, 3, and 4.3 for women in statuses SIN1, SIN2, and SIN3, and 3, 4, and 5.3 for women in statuses CPL1, CPL2, and CPL3[12].

The percentage of families with resident children, computed as the numbers of women in family statuses SIN1-SIN3 and CPL1-CPL3, as a percentage of all non-SIN0-women who are alive. When using the sociological family definition, this share is 100 % by definition.

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12. At each age of the women, the number of resident children in families with three or more children has been estimated as 3.3. It is based on the fact that the number of children *ever born at age 50* for women in positions SIN3 and CPL3 equals 3.3. For young women, this is probably t oo high an estimate, for women between 40 and 50 years of age it is probably too low, although it is unknown by how much.

The percentage of families with two or more resident children, computed in a similar way as the indicator above, but restricted to SIN2, SIN3, CPL2, and CPL3 women.

The percentage of lone-mother *families*, computed as the numbers of women in statuses SIN1-SIN3, as a percentage of all non-SIN0 women (census definition) or non-SIN0 and non-CPL0 women (sociological definition) who are alive.

The percentage of all *children* who live in a family headed by a lone mother. It is computed in the same way as the percentage of lone-mother families, but with weights 1, 2, and 3.3 attached to numbers of women in SIN1/CPL1, SIN2/CPL2, and SIN3/CPL3, respectively. Women in status CPL0 were omitted.

Table 5.4 – Family indicators, by age of the woman; benchmark scenario

	Mean family size	Percentage of families with children	Percentage of families with two or more children	Percentage of lone-mother families	Percentage of children in lone-mother families
Age	*A. Census definition of the family*				
20	2.40	48.9	6.4	15.2	29.4
25	2.89	67.6	26.4	10.1	14.4
30	3.39	79.3	50.0	8.5	9.6
35	3.67	85.9	63.2	9.0	8.7
40	3.55	81.2	57.8	12.0	13.1
45	3.05	59.3	36.5	9.1	13.1
50	2.56	40.3	18.1	7.6	16.1
Age	*B. Sociological definition of the family*				
20	2.82	100	13.2	31.1	29.4
25	3.32	100	39.0	15.0	14.4
30	3.78	100	63.9	10.5	9.2
35	4.03	100	75.2	10.0	8.1
40	4.02	100	73.9	14.7	13.1
45	3.89	100	65.6	15.1	13.0
50	3.46	100	48.3	18.5	15.7

The table shows a fairly regular development of most indicators over the women's life course. The comments below address firstly Panel A, which uses the census definition of the family, and then Panel B, which is based on the sociological definition.

Panel A

Mean family size increases to 3.7 at age 35, and next it falls to 2.6 when the women are 50 years of age, reflecting family expansion and contraction. The shares of families with children (both at least one and at least two children) show parallel developments. The shares of children who live with a lone mother are high for mothers around 20 (29 %) and for mothers around 50 (16 %), but much lower (9-10 %) for mothers who are in their thirties. The share of families headed by a lone mother exhibits the only exception to the regular pattern. Lone mothers are relatively frequent around age 20 (due to births by women who live alone) and age 40 (caused by separation or divorce). The fluctuations in this indicator are largely due to the irregular pattern of the number of lone mothers with one resident child (SIN1), as explained above. Note that at age 20 of the women, almost 30 % of their children live in a lone-mother family. This high share is explained by the fact that at ages under 20, childbearing occurring to single women is relatively important, at least compared to other ages. No less than 38 % of all births for women under 20 occur when these women are in position SIN0. For age intervals 20-24 and 25-29 this share drops quickly to 7 % and 3 %, respectively.

When we compare the percentage of families with children on the one hand with the share of families headed by a lone mother on the other, we note that the difference between these two shares represents the share of families consisting of a couple and one or more resident children. Table 5.4 shows that between ages 25 and 45 the majority of the women live in such a family – more than two-thirds do so between ages 30 and 40. These data, which reflect the situation in Norway around 1990, do not signal any "disappearance" of the traditional family, even when some of these women live with a cohabitee, not a spouse. Similarly, in Sweden in 1992, 71 % of the women aged 33 lived with a marriage partner and one or more children (Granström 1997). Nikander (1998) reports a share of 69 % for Finnish women aged 30-34 in 1989. For Danish women aged 30-34 in 1994, the number is lower, but still more than half (59 %, see Carneiro and Knudsen 2001).

Panel B

Mean family size is obviously higher when children are a prerequisite for denoting a household as "family", as is the case in Panel B, compared to the situation in which also a childless couple can make up a family, as in Panel A. The gap between mean family size according to these two definitions increases over the life course, from 0.4 persons for 20-year old women, to 0.9 persons for women aged 50. The share of lone mother families displays a regular U-pattern between ages 15 and 50. The share continues to rise beyond age 40 due to separation and divorce of couples with children. Indeed, the share is not pulled downwards (as is the case when the census definition is employed) by increasing numbers of couples without resident children.

5.4.2. A comparison across scenarios

Figures 5.6 to 5.10 summarise the main features of family dynamics for each of the scenarios and both family definitions. Solid lines represent family indicators computed according to the census definition and dashed lines reflect the sociological definition. The corresponding numbers are contained in Appendix Tables 1 and 2, respectively. These tables also contain average indicator values across age for each indicator and each scenario (see the last column).

A striking phenomenon is the stability in the patterns across scenarios. Given a particular family definition, the variation over the life course is stronger than that between scenarios. Almost without exception, the replacement scenario and the one-child scenario are at the extreme ends of the spectrum for all ages, with the remaining scenarios in a very regular order. This is the case for mean family size (Figure 5.6), the percentage of families with children (Figure 5.7), and the percentage of families with two or more children (Figure 5.8). When we inspect in Figure 5.9 the percentage of lone-mother families measured by means of the census definition, we still note that fertility at replacement level implies, generally speaking, the highest percentages across the life course among the scenarios. However, the one-child scenario first shows very high shares at ages up to 40 years, and next the share falls quickly for women in their forties. The decrease is explained by the fact that lone mothers, all of them having only one child under this scenario, quickly become a one-person household when their child reaches adolescence. The latter pattern is only observed when we use the census definition (solid lines in Figure 5.9). In case one opts for the sociological definition (dashed lines in Figure 5.9), the pattern is less systematic.

Figure 5.6. – Mean family size

Note: solid lines: census family definition; dashed lines: sociological family definition

Woman's age
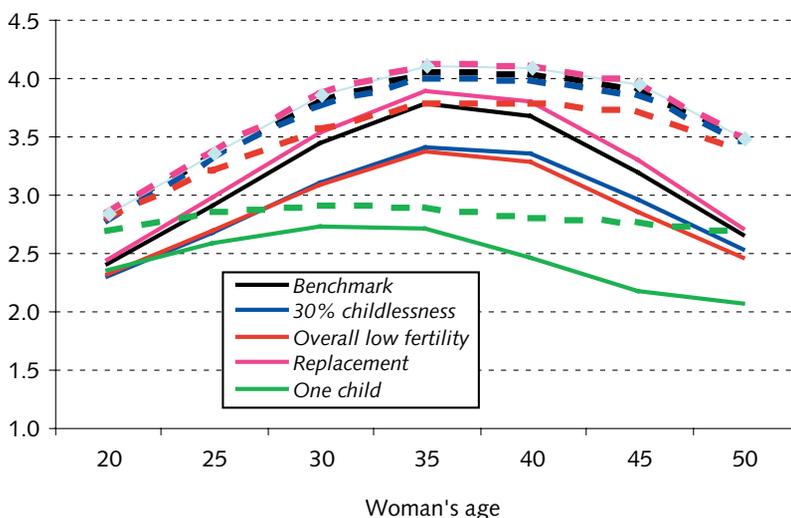
**Figure 5.7. – Percentage of families with children**

Mother's age
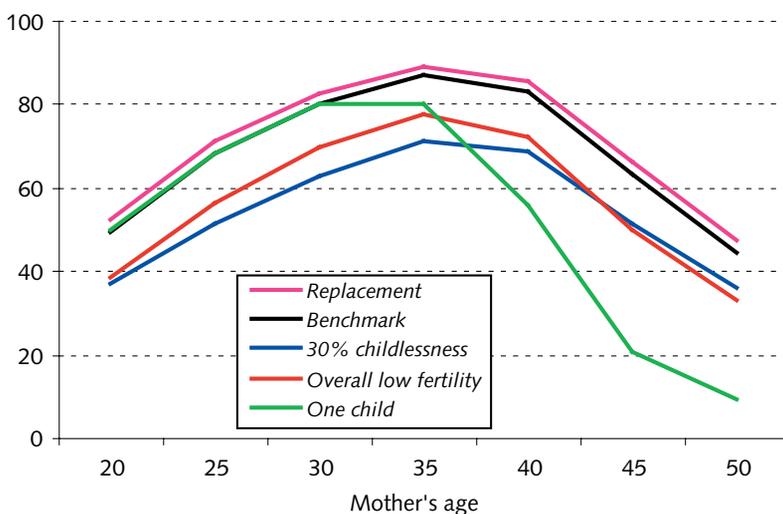
Most striking is the finding that the share of lone-mother families among all families *increases* between ages 30 and 50, as opposed to the situation when we use the census definition. The reason is that under the sociological defini-tion, the group of couple families decreases more rapidly than the group of

lone-mother families. The strongest increase is shown under the one-child scenario. For the other scenarios, the curves follow each other closely, both for the census definition and for the sociological definition.

Figure 5.8. – Percentage of families with two or more children

Note: solid lines: census family definition; dashed lines: sociological family definition
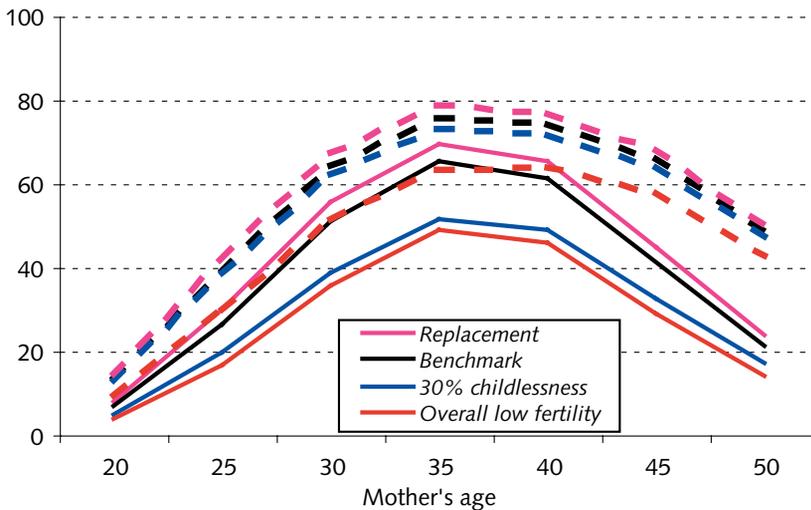
For all indicators, the one-child scenario stands as the most extreme one, in particular for ages beyond 35. This should not come as a surprise since child-bearing stops after the first child under this scenario, whereas it continues for many women (65-81 %, see the parity progression ratio a1 in Table 5.1) under the other scenarios. Note that the mean family size is almost constant under the one-child scenario, in particular when the sociological definition is used (Figure 5.6). The slight variation over the life course in this case (between 2.7 and 2.9) is solely a consequence of the fact that lone-mother families (who by definition have family size 2) get somewhat more weight at young and at old ages than at intermediate ages, while couple families (with family size 3) get most weight at ages 25-40.

Section 5.4.1 shows that categories SIN0 and CPL0 consist of two very different sub-groups: those who never have given birth to a child, and mothers whose last child has left the family. Figure 5.5 shows that the share of mothers in categories SIN0 and CPL0 increases regularly over the life course under the benchmark scenario. Table 5.5 facilitates a comparison of the share of mothers among women in categories SIN0 and CPL0 across scenarios. The numbers are restricted to age 50 of the women.

Figure 5.9. – Percentage of lone-mother families

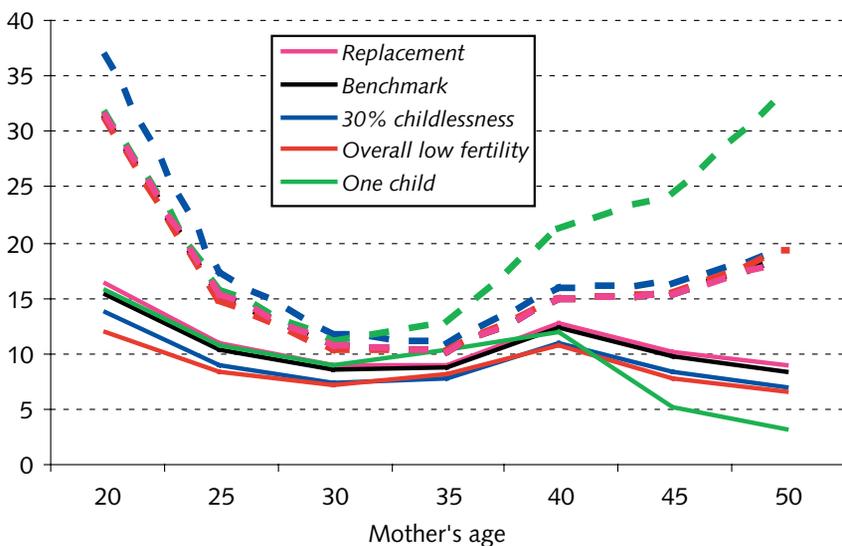Note: solid lines: census family definition; dashed lines: sociological family definition

Legend:
- Replacement
- Benchmark
- 30% childlessness
- Overall low fertility
- One child

X-axis: Mother's age

Figure 5.10. – Percentage of children in lone-mother family

Legend:
- Replacement
- Benchmark
- 30% childlessness
- Overall low fertility
- One child

X-axis: Mother's age
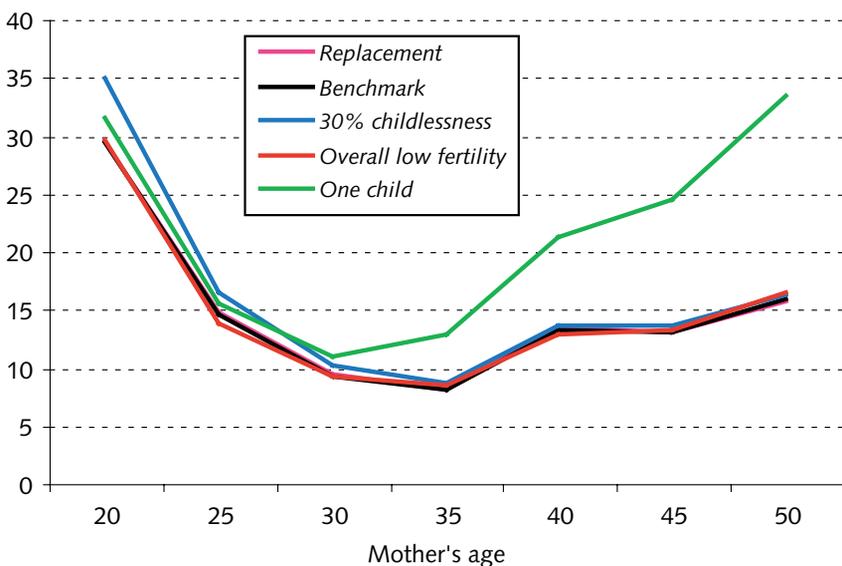
Table 5.5 – Share of mothers among SIN0 and CPL0-women at age 50

	SIN0	CPL0
	%	
Benchmark	68.6	82.3
30% childlessness	50.2	61.7
One child	78.6	87.8
Overall low fertility	58.1	72.8
Replacement	71.3	84.4

Table 5.5 shows that at least half of the women who have no resident children in the household at age 50, are not childless, although the number under the 30 % childlessness scenario indicates that this is the case for barely 50 % of the women who live alone (SIN0). In most other cases, mothers without resident children make up between two-thirds and four-fifths of the women without resident children. Obviously, high levels of childlessness go together with low shares of women who have ever experienced childbearing among the two categories in Table 5.5.

Below the implications for family dynamics of three aspects of low fertility are discussed: increased childlessness, an overall reduction in birth rates, and a situation in which women limit their offspring to at most one child.

Increased childlessness

The implications of increased childlessness can be analysed by comparing the results of the 30 % childlessness scenario with those of the benchmark scenario. These scenarios imply 30 and 11 % childless women at age 50, respectively. Recall that only the birth rates for childless women who live with a partner (CPL0) vary between these two scenarios. All other birth rates, including those for childless women who live alone (SIN0) are the same under these two scenarios.

Of the five summary indicators in Figures 5.6-5.10, mean family size, the percentage of families with children (census definition), and that with two or more children all decrease with increased levels of childlessness. In other words, when more women remain childless, families are smaller on average and fewer families have resident children. This is as could be expected and the effect is seen at all ages of the women. The effect of increased childlessness on the remaining two indicators is somewhat surprising, however. The effects are different for the two family definitions. First, when using the census definition, *higher* childlessness tends to go together with *fewer*

lone-mother families (relative to all families), but at the same time it leads to *more* children who live with a lone mother (relative to all children). This can be explained as follows. Increased childlessness implies fewer families consisting of a couple and children, other things remaining the same. Thus, with constant separation/divorce behaviour, this leads to fewer lone mothers (and more women who live alone). At the same time, fewer couples with children imply more children living with a lone mother, relative to all children. The effect is much more marked for young mothers than for those aged 30 or older, because childlessness (i.e. non-occurrence of first births) is more important at young ages.[13] It should be noted that the positive relationship between childlessness and numbers of children who live with a lone mother only refers to *relative* numbers of such children, not to *absolute* numbers. When childlessness increases, *fewer* children live with a lone mother. For instance, the 30 % childlessness scenario results in 13-22 % fewer children who live with a lone mother, compared to the benchmark scenario (numbers not shown here).

Second, under the sociological family definition, higher childlessness results in both more lone mothers (compared to all families) *and* more children who live with a lone mother (compared to all children). The explanation of more children who live with a lone mother is given above. Concerning the effect on the number of lone mothers, increased childlessness implies fewer families consisting of a couple and children, other things remaining the same. Since the total number of families also decreases (households consisting of a childless couple are not regarded as families under this definition), the result is a larger share of lone mother families among all families.

An overall reduction in birth rates

The consequences for family dynamics of an overall fall in birth rates can be analysed by comparing the results of the replacement fertility scenario, the benchmark scenario, and the overall low fertility scenario. These three scenarios imply an average of 2.07, 1.93, and 1.46 births per woman at age 50, respectively. In terms of the average numbers of births per *mother*, the three scenarios show less contrast: 2.29, 2.19, and 1.87 births at age 50.

Figures 5.6-5.9 reveal no surprises: when fertility shows an overall decrease across family statuses and ages, mean family size, the share of families with children as well as that with two or more children, and the share of lone mother families (relative to all families) also fall, irrespective of the age of the woman. The effects for these four indicators all go into the same direction,

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13. Indeed, an overall reduction in birth rates, i.e. at all ages and birth orders, does not exhibit such an effect for young mothers, see below.

provided one uses the census definition (solid lines in Figures 5.6-5.9). This is also the case for the sociological definition of mean family size and share of families with two or more children (dashed lines in Figures 5.6 and 5.8). But the effect on the share of lone mothers according to the sociological definition (dashed lines in Figure 5.9) is different for young mothers and old mothers: an overall reduction in fertility leads to fewer lone-mother families (compared to other families) at ages up to 30 years, but it increases their relative numbers in the age interval 35 to 50 years. However, the dashed curves for these three scenarios in Figure 5.9 are very close, and the differences are very small indeed.

Figure 5.10 shows hardly any effect of an overall fertility reduction on the share of children who live with a lone mother. According to Appendix Table 1, the effects are less than plus or minus one percentage point, and not systematic across ages. Similar to the effect noted in connection with increased childlessness however, *absolute* numbers of children living with a lone mother are reduced when overall fertility levels fall: under the overall low fertility scenario, these numbers are lower by between 27 % (age 35) and 37 % (age 25) compared to the replacement scenario.

At most one child

What would be the consequences of family size and family structure, in the case where women would have at most one child? This can be analysed by comparing the benchmark scenario with the one-child scenario. Recall that the two scenarios imply a fertility level of 1.93 and 0.85 children per woman on average, and a mean age at childbearing of 29.7 and 26.7 years, respectively.

The result, not surprisingly, would be

• smaller families (by as much as 1.23 persons at age 40);

• lower shares of families with children (by wholly 42 % at age 45);

• no families with at least two children (i.e. a fall in the share of such families by 65 percentage points at age 35);

• up to 4-5 percentage points fewer lone-mother families (ages 45 and 50) under the census definition, but up to 15 percentage points more lone-mother families under the sociological definition;

• and finally up to 18 percentage points (age 50) fewer children who live with a lone mother.

Most of these effects only show up in the second half of the life course since childbearing for parity one is largely restricted to ages 15-34 (see Figure 5.1).

5.4.3. A summary of findings

Most of the effects of low fertility on family dynamics are as one could expect: higher childlessness and lower overall fertility both reduce mean family size and the share of families with children. An overall fertility reduction that implies a fall in cohort TFR by 0.6 child, leads to a reduction in mean family size by 0.4-0.5 persons at age 35 (depending on the family definition used), a drop in the share of families with resident children by 16 percentage points at age 45 (from 66 to 50 %), and a decrease in the share of families with two or more resident children by 16-20 percentage points (depending on family definition). Higher levels of childlessness, operationalised as an increase in the share of women without live born children from 11 to 30 % result in a reduction of mean family size by 0.4 persons at age 35, a drop in the share of families with resident children by 17 percentage points at age 30, and a decrease in the share of families with two or more children, which strongly depends on the family definition one chooses. The latter reduction equals only 3 percentage points under the sociological definition, but no less than 14 points (from 65 to 51 %) under the census definition – both effects being measured at age 35 of the women.

Increased levels of childlessness have a limited effect on the number of lone-mother families (relative to all families). A 19 percentage points increase in childlessness implies a fall in the share of lone-mother families by 1-2 percentage points if one starts from the census definition. In case one employs the sociological definition, higher childlessness is associated with larger shares of lone-mother families (the largest effect being shown at age 20 – 6 percentage points), at least when the increase in childlessness is restricted to women with a partner. A drop in overall fertility by 0.6 children in terms of the cohort TFR is associated with a reduction up to 4 percentage points (depending on the particular family definition) in the share of lone-mother families at age 20. In other words, an increase in birth rates leads to more lone-mother families, relative to all families.

The positive relationship between the level of fertility and the share of lone-mother families explains, at least partially, the observed high prevalence of lone-mother families in the United Kingdom (17 %) and Denmark (15 %), and the low numbers in Italy and Spain (5-6 %), see Pinelli (2001, 63-64). Women in the United Kingdom and Denmark have markedly higher overall fertility than those in Italy and Spain. Clearly, different attitudes towards extramarital childbearing between these two groups of countries also contribute to the contrast, in addition to fertility differentials.

Almost without exception, age 35 turns out to be a pivotal age for the five family indicators plotted in Figures 5.6-5.10. Three of these reach their maximum at age 35 of the woman: mean family size; the percentage

of families with children; and the percentage of families with at least two children. The percentage of children who live in a lone-parent family is at its minimum for 35-year-old women (except under the one-child scenario). The pattern is explained by two factors: (i) Figure 5.1 shows that fertility falls strongly between age groups 30-34 and 35-39 for the numerically important group of women who live with a partner and at most one child (CPL0 and CPL1)[14]; (ii) adolescent children start leaving the parental household around age 35 of the woman. The fact that separation leads to more women who live alone and thus to fewer families starting at age 35 (see Table 5.3) reduces the effect of the factors mentioned under (i) and (ii) somewhat, but not entirely.

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14. For CPL2-women fertility falls already five years earlier, but at those ages the latter category of women are fewer than CPL0 and CPL1-women combined, see Table 5.3.

6. Implications of low fertility for society and individuals, with a focus on social cohesion

The previous sections have analysed the consequences of low fertility for family structures. The current section presents a brief discussion of possible socio-economic consequences restricted to social cohesion and poverty. This is not to say that other socio-economic consequences are of less importance. Indeed, low fertility has implications on various other fields, for example the labour market behaviour of women is strongly associated with the number children they have, and the ages of those children. Up to the 1970s, national cross-sectional data suggested that high fertility went together with low labour force participation in many European countries. In the 1990s, the relationship was reversed (Coleman 1999; Engelhardt and Prskawetz 2002). This development is to be understood as a consequence of the fact that increased female education has led to increased opportunity costs connected with childbearing and large families. Some countries have implemented policy measures in recent decades which facilitate women to combine childbearing with a labour market career. At the same time, social adjustments, such as acknowledgement of equal gender roles have taken place in some countries. When social and policy adjustments have taken place and gender equality is greater, higher fertility levels are often observed (Chesnais 1996). Thus women in Nordic countries combine motherhood with employment whereas Italian and Spanish women have resolved the conflict between homemaker roles and roles outside the home by postponing childbearing. Clearly, the effect of low fertility on labour force participation operates, at least partly, through family structure.

A second important consequence of low fertility is the pension problem. Public old-age pensions covering the whole population were designed in the 1950s and 1960s in most European countries, at a time when the average number of children per family was one child higher, and the life expectancy was 7-8 years lower than nowadays. In many cases the pension system is of a pay-as-you-go nature, in which the elderly in a given year receive their pension benefits from premiums paid by the active population that year. Low fertility will lead to a small active population some twenty years later, other things being equal, and hence to a decrease in the total amount of pension contributions. Increasing life expectancy aggravates the pension problem. A number of countries (e.g. Sweden, Germany, France, the Netherlands, Norway), which experienced a fall in birth rates and a rise in life expectancy, have reformed their pension system, or are studying appropriate adjustments. In the case of

old age public pensions, low fertility has important consequences, but these do not, or hardly, operate through the family structure.

Social cohesion builds on the social ties established through economic, cultural, political, and civil institutions and organisations. Social exclusion is a condition of deprivation that is manifested through the generalised disadvantages facing individuals and social groups due to accumulated social and economic handicaps. Individuals who are socially excluded are vulnerable. Their vulnerability may be partly *determined* by demographic behaviour, but may also partially be an *outcome* of demographic behaviour at the individual level, or demographic changes at the macro level. In her extensive study of the link between demography and social exclusion, Avramov (2002) notes that the nature of this two-way interaction between demography and social exclusion, and the direction of the causal effects is not always easy to identify, and that research on this interaction has remained underdeveloped.

The study focuses on the causal effect of low fertility on one important aspect of social exclusion, namely poverty. Townsend (1979) defined poverty as the situation in which a person lacks the material resources to take part in normal activities or in which one does not have the opportunity to obtain the advantages or the standard of living commonly found in his or her society. Thus poverty expresses an important economic aspect of social exclusion. But note that the poverty definition given here is a relative concept. The crucial factor is how an individual compares with the vast majority of the members of the society to which s/he belongs. One commonly applied measure of poverty is whether a person's income or consumption is less than half the average or the median income of the population (Lyngstad *et al.* 1997).

This section analyses the consequences for poverty of low fertility, assuming that these effects operate through the family structure. The important issue here is that of family equivalence scales. The poverty situation of families of different sizes cannot be compared, unless family size is taken into account. A family of four does not necessarily need twice as much income as a two-person family to achieve the same standard of living. Some expenses do not vary much with the size of the household, for example the costs of housing, a car, TV, and newspapers. Large families have economies of scale that small families do not enjoy. This factor is taken into account by introducing family equivalence scales. A family equivalence scale is a set of weights attached to each family, depending on the number of adults and the number of children in that family. A commonly used equivalence scale is the modified OECD scale (Lyngstad *et al.* 1997), which assigns a value of 1 to the first adult member of the family, a value of 0.5 to every other adult member, while children below the age of 16 are assigned a value of 0.3. Thus a family consisting of two adults, together with one child aged 12 and one aged 17, gets a weight equal to 1+0.5+0.3+0.5=2.3. This weight can be interpreted as the

equivalised family size: the family needs 2.3 times as much income as a single person, in order to achieve the same standard of living.

Avramov (2002) has stressed the fact that four types of population groups are especially vulnerable: the elderly, one-person households, one-parent families, and large two-parent families with children. Of these four, the third and fourth can be analysed here. Avramov finds that one out of two lone mothers in the European Union in 1996-1998 would have been living in poverty were it not for public support. Still, one in five of these lone mothers had an income lower than half the median income in their country. An unfavourable employment situation is an important factor here. Private non-work related income or maintenance from a former spouse or partner is generally inadequate. Two-parent families are less exposed to poverty than lone parents, largely due to the dual income that can be generated. Yet Avramov reports that 4 % of the two-parent families with children in the EU in 1996-1998 had an income below half the median income.

Table 6.1 gives equivalised family sizes for couples with children and for lone mothers under the scenarios employed in this study. Since both income and family size strongly depend on age there is a control for age of the woman. The table is based on the assumption that women aged 50 who lived with 3 or more children (SIN3 and CPL3), had 2 children aged 16 or older. Those with 2 children had one child aged 16 or older, while the child of SIN1 and CPL1-women aged 50 was also at least 16 years of age.

Table 6.1 – Equivalised family sizes by woman's age and scenario; modified OECD scale

	Woman's age						
	20	25	30	35	40	45	50
A. Couples with children							
Benchmark	1.85	1.94	2.07	2.15	2.16	2.19	2.24
30% childlessness	1.85	1.94	2.07	2.14	2.15	2.18	2.24
One child	1.80	1.80	1.80	1.80	1.80	1.80	2.00
Overall low	1.83	1.91	2.00	2.07	2.09	2.11	2.20
Replacement	1.85	1.96	2.10	2.18	2.18	2.21	2.25
B. Lone mothers							
Benchmark	1.32	1.42	1.50	1.52	1.58	1.62	1.63
30% childlessness	1.32	1.42	1.49	1.50	1.55	1.59	1.63
One child	1.30	1.30	1.30	1.30	1.30	1.30	1.50
Overall low	1.31	1.38	1.44	1.46	1.50	1.55	1.61
Replacement	1.32	1.44	1.52	1.54	1.60	1.64	1.64

Table 6.1 shows that low fertility improves mean equivalised family income, all other factors remaining the same. For instance, a lone mother aged 40 will have an equivalised family size equal to 1.50 under the overall low fertility scenario, which is 5 % lower than the equivalised family size for a lone mother under the benchmark scenario (1.58). In other words, other factors remaining the same (in particular the income situation), the average income corrected for economies of scale of this 40-year old lone mother would be the family income divided by 1.50 under the overall low scenario, but divided by 1.58 when fertility is at benchmark level. Compared to the situation under the benchmark scenario, the strongest improvements of mean equivalised family income are seen under the one-child scenario, which improves the income situation of couples with children by up to 18 % (at age 45 of the woman), and by up to 20 % of lone mothers (also at age 45). The relative effects of the other scenarios are very small – the strongest effect is found for the overall low fertility scenario, which would lead to an improvement in mean equivalised income by 5 % for lone mothers aged 40, and by 4 % for couples with children when the mother is between 35 and 40 years of age.

Thus the conclusion is that low fertility reduces poverty, other things being equal. It leads to fewer children per family, thus reducing family expenses. But the effects are very small, unless we assume drastic changes in fertility. Yet we cannot ignore an additional indirect effect: low fertility also leads to more couples without children (resident, ever born), which increases labour supply, and thus family income. However, it would be beyond the scope of this study to analyse changes in fertility, labour supply, and family income simultaneously.

7. Conclusions

Low fertility is a widespread phenomenon across Europe that has existed for some time and is expected to exist in the foreseeable future. This study investigates some of the consequences of low fertility, in particular the link between the level of fertility, and the size and structure of families. Low fertility will obviously reduce family size, but by how much? How is that effect spread over the family life cycle? Are two-parent families affected by low fertility in a similar way to lone-parent families? Have increased levels of childlessness very different consequences for family structures than overall low fertility levels?

A simulation model was designed to trace the effects of low fertility on the size and the structure of families. The model follows individual women over their childbearing years, from age 15 to 50. It simulates the different types of families a woman may be a member of. Two broad family types have been defined: one-parent families, and families headed by an adult couple. A further distinction was obtained by defining the number of resident children in the family: 0, 1, 2, and 3 or more. In this way eight so-called family statuses or family positions for individual women were obtained. The model simulates these women from age 15, when all start as childless and without a partner. Given family events such as partnership formation, the birth of a child, partnership dissolution (due to separation/divorce, or death of the partner), and home leaving of adolescent children, the family status of these women changes when they grow older.

The consequences for family structure and family dynamics of low fertility can only be traced provided one has a precise definition of the concept of family. Two different definitions are often used in social science studies. Both define the family as a group of two or more persons linked by marriage, blood, or adoption. The so-called sociological definition requires the presence of at least one child and one adult. A childless couple is not considered a family under this definition. The so-called census definition does not have this restriction. Persons who live alone are not considered as a family. The marriage requirement is not restricted to legal marriages – it also includes de facto marriages. In other words, a cohabiting couple may or may not be counted as a family: under the census definition they do – under the sociological definition they do so provided there is at least one child in the household.

To run the simulations a data set has been used which describes the family situation and the changes therein in Norway around 1990. This data set gave rise to the so-called benchmark simulations. By systematically varying different aspects of fertility, four additional scenarios were constructed: one with a high level of childlessness (30 % childlessness scenario), two with distinct overall levels of fertility (overall low fertility scenario and replacement scenario), and one in which women stop childbearing after their first child is born (one-child scenario). Childlessness (measured for women at age 50) ranges from 10 to 30 % across the scenarios, while the ultimate number of children at age 50 ranges from 0.85 to 2.07 children per woman on average. Thus the scenarios cover a wide spectrum of fertility patterns, and as of today, many, if not all countries of Europe fall within this range.

The main results of the simulations are summarised in Figures 5.6-5.10 and Appendix Tables 1 and 2.

Most of the effects of low fertility on family dynamics are as one could expect. The effects are generally strongest for women in their thirties. But the one-child scenario is an exception: here the strongest effects are found for the second half of the life course, since childbearing for parity one is largely restricted to ages 15-34.

Higher childlessness and lower overall fertility both reduce mean family size and the share of families with children. An overall fertility reduction that implies a fall in cohort TFR by 0.6 child, leads to

- a reduction in mean family size by 0.3 to 0.4 persons (from 3.3 to 2.9 using the census family definition, and from 3.5 to 3.8 using the sociological family definition),

- a drop in the share of families with resident children by 14 percentage points (from 72 to 58 %),

- and a decrease in the share of families with two or more resident children by 13 to 15 percentage points (from 45 to 30 % based upon the census definition, and from 63 to 51 % when the sociological definition is used),

all three effects measured as averages across the life course.

-Higher levels of childlessness, operationalised as an increase in the share of women without live born children by 19 percentage points, result in

- a reduction of mean family size by 0.03 to 0.26 persons (from 3.73 to 3.70 persons using the sociological definition, and from 3.20 to 2.94 persons on the basis of the census definition),

- a drop in the share of families with resident children by 14 percentage points (from 69 to 55 %),

- and a decrease in the share of families with two or more children by 1 to 9 percentage points (from 60 to 59 % when using the sociological definition, and from 69 to 55 % when using the census definition),

again measured as average effects across the life course.

The effect of low fertility on the number of lone-mother families (relative to all families) is limited. Moreover, whether the effect is positive or negative depends on the particular definition one chooses for the family concept. A 19 percentage points increase in childlessness implies a *fall* in the share of lone-mother families by 1-2 percentage points if one starts from the census definition. In case one employs the sociological definition, higher childlessness is associated with *larger* shares of lone-mother families (the largest effect – 6 percentage points – being shown at age 20), at least when the increase in childlessness is restricted to women with a partner. A drop in overall fertility by 0.6 children in terms of the ultimate number of children of 50-year old women is associated with a reduction up to 4 percentage points (depending on the particular family definition) in the share of lone-mother families at age 20. In other words, an increase in birth rates leads to more lone-mother families, relative to all families.

A situation in which women stop childbearing after the birth of their first child has obviously strong implications for family structures, in particular for women aged 35-50. The result, not surprisingly, would be:

- smaller families (by as much as 1.2 persons at age 40 of the women) because families with two or more children would no longer exist;

- lower shares of families with children (by wholly 42 % at age 45);

- up to 4-5 percentage points fewer lone-mother families (ages 45 and 50) under the census definition, but up to 15 percentage points more lone-mother families under the sociological definition;

- and finally up to 18 percentage points (age 50 of the mother) fewer children who live with a lone mother.

It should be stressed that the simulation results cannot be interpreted as *forecasts* of family dynamics. The reason is that the results have been obtained based on a life *course* model, which simulates the family life course for a hypothetical cohort of 100 000 women starting at age 15. A genuine *forecast* would require the current distribution of all women aged 15-50 over the eight family statuses. Next, the forecast model would update this distribution based on a set of *realistic* assumptions as to the course of fertility, partnership formation and dissolution, home leaving of young adults, and mortality in the years to come.

The final section of the study briefly addresses some of the social implications of low fertility and changed family structures, in particular possible consequences for social cohesion. It is noted that, other things being equal, low fertility reduces poverty for two reasons. It leads to fewer children per family, thus reducing family expenses. This is most clearly visible for lone-mother families. It also leads to more couples without children (resident, ever born), which increases labour supply, and thus family income. Yet the isolated effect of low fertility on poverty is very limited, unless the fertility decrease is unrealistically strong.

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Appendices

Table 1. – Family indicators:
A summary across scenarios (census family definition)

Scenario	Age of the woman							Weighted average across ages
	20	25	30	35	40	45	50	
A. Mean family size								
Benchmark	2.40	2.89	3.42	3.76	3.67	3.18	2.64	3.20
30% childlessness	2.28	2.66	3.09	3.40	3.34	2.94	2.51	2.94
One child	2.34	2.57	2.71	2.69	2.44	2.15	2.06	2.45
Overall low fertility	2.30	2.67	3.08	3.36	3.27	2.84	2.45	2.90
Replacement	2.43	2.96	3.52	3.87	3.78	3.28	2.70	3.29
B. Percentage of families with resident children								
Benchmark	48.9	67.6	79.7	86.7	82.7	62.7	44.1	69.1
30% childlessness	36.8	50.9	62.2	70.8	68.1	51.0	35.5	55.0
One child	49.3	67.7	79.7	79.5	55.5	20.4	8.8	53.7
Overall low fertility	38.2	56.1	69.1	77.3	71.8	49.7	32.8	58.2
Replacement	51.9	70.6	82.2	88.8	85.2	66.1	47.2	71.8
C. Percentage of families with two or more resident children								
Benchmark	6.4	26.4	50.9	65.2	61.1	41.1	21.3	41.5
30% childlessness	4.7	19.6	38.7	51.5	48.6	32.6	16.7	32.3
One child	0	0	0	0	0	0	0	0
Overall low fertility	3.6	16.6	35.5	48.9	45.6	28.6	14.0	29.6
Replacement	7.5	29.6	55.2	69.4	65.1	44.7	23.5	44.9
D. Percentage of lone-mother families								
Benchmark	15.2	10.1	8.3	8.6	12.1	9.5	8.1	10.1
30% childlessness	13.5	8.7	7.1	7.5	10.7	8.2	6.8	8.7
One child	15.5	10.5	8.7	10.1	11.7	5.0	2.9	9.1
Overall low fertility	11.8	8.2	7.0	7.9	10.6	7.6	6.3	8.3
Replacement	16.2	10.7	8.7	8.8	12.5	10.0	8.7	10.5
E. Percentage of children in lone-mother family								
Benchmark	29.4	14.4	9.2	8.1	13.1	13.0	15.7	13.8
30% childlessness	34.9	16.4	10.0	8.5	13.6	13.5	16.2	15.1
One child	31.5	15.5	10.9	12.7	21.1	24.4	33.3	20.3
Overall low fertility	29.5	13.8	9.1	8.4	12.9	13.2	16.4	13.8
Replacement	29.4	14.6	9.3	8.0	13.2	13.0	15.6	13.9

Table 2. – Family indicators:
A summary across scenarios (sociological family definition)

	Age of the woman							Weighted average across ages
	20	25	30	35	40	45	50	
Scenario								
A. Mean family size								
Benchmark	2.82	3.32	3.78	4.03	4.02	3.89	3.46	3.73
30% childlessness	2.76	3.30	3.75	3.98	3.96	3.84	3.44	3.70
One child	2.69	2.84	2.89	2.87	2.79	2.76	2.67	2.75
Overall low fertility	2.79	3.20	3.56	3.76	3.76	3.69	3.36	3.55
Replacement	2.83	3.36	3.85	4.11	4.09	3.94	3.49	3.79
C. Percentage of families with two or more resident children								
Benchmark	13.2	39.0	63.9	75.2	73.9	65.6	48.3	60.1
30% childlessness	12.7	38.5	62.2	72.7	71.4	63.8	47.2	58.7
One child	0	0	0	0	0	0	0	0
Overall low fertility	9.4	29.6	51.3	63.3	63.6	57.6	42.6	50.9
Replacement	14.4	41.9	67.2	78.2	76.5	67.7	49.7	62.5
D. Percentage of lone-mother families								
Benchmark	31.1	15.0	10.5	10.0	14.7	15.1	18.5	14.5
30% childlessness	36.6	17.1	11.5	10.7	15.7	16.1	19.2	13.9
One child	31.5	15.5	10.9	12.7	21.1	24.4	33.3	25.0
Overall low fertility	30.7	14.5	10.2	10.2	14.7	15.4	19.2	14.3
Replacement	31.2	15.1	10.6	9.9	14.7	15.1	18.3	14.6

Notes. The share of families with children (cf. Panel B of Appendix Table 1) is 100 % by defini-
tion. The share of children living in lone-mother families is the same as that in Panel E of Appen-
dix Table 1.

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