
Low Fertility Rates in OECD Countries:
Facts and Policy Responses

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Low fertility rates in OECD countries: facts and policy responses

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3. The views expressed in this paper are those of the author, and do not necessarily reflect those of the OECD or of its member countries.

SUMMARY

4. Fertility rates have declined in most OECD countries to levels that are well below those needed to secure generation replacement. While attitudes towards this decline in fertility rates differ across countries, several OECD governments have introduced — or are considering — specific measures aimed at countering it. Such measures are often justified by government’s wish of either reducing some of the negative consequences of population ageing for society as a whole, or of removing obstacles that discourage those women wishing to have more children from doing so, because of the negative economic consequences of childbearing and of the length of the associated responsibilities. This paper provides a comparative overview of the evidence about the size, timing and nature of this decline in fertility rate across “mature” OECD countries, and about the effects of different measures introduced to deal with it.

5. The first chapter of this paper reviews a range of indicators of the fertility patterns that have characterised the recent experience of OECD countries. Some of the main “stylised facts” identified are:

- A generalised decline in fertility rates since the 1970s in most OECD countries, together with large differences in the experiences of individual OECD countries (between Nordic and English-speaking countries, where the decline in fertility rates started earlier but then stabilised or reversed, and Southern and several Continental European countries, where the decline started later but then proceeded much faster). As a result of this differential pace of decline, some of the OECD countries that were at the top of the fertility league just a few decades ago are now close to the bottom, and vice versa.
- A general increase in the mean age of women at first childbirth, but also differences across countries in the extent of fertility-recuperation at higher ages, and differences in the distribution of births according to mothers’ age (with persistently high teenage births in some countries).
- Systematic differences in the level of fertility rates among women with different characteristics (with higher fertility among non-working women, those working part-time, those living in married couples and those coming from ethnic minorities), but with variation across countries in the size of these differences.
- A persistent gap, in many OECD countries, between realised and desired fertility, with the latter tending to remain clustered around the “two-child” norm.
- A tendency for fertility rates to be lower in OECD countries with lower employment and educational attainment of women; lower frequency of divorce and of out-of-wedlock births; greater difficulties faced by youths in their transition from school to independent living; and, to a less extent, higher income of elderly people. For some of these variables, their pattern of association with fertility rates also appears to have reversed sign relative to few decades ago.

6. The second chapter discusses the factors driving fertility behaviour. While several competing theories of fertility decisions are discussed in the literature, a broad set of determinants is shared by most accounts of recent fertility declines in OECD countries. These determinants (or causal factors) include: *i*) material and psychological benefits provided by children; *ii*) direct and opportunity costs of children

incurred by their parents; *iii*) the broad economic environment in which reproductive decisions take place, as shaped by the labour market difficulties faced by youths, by changes in women's economic roles and by increased valuation of women's work; *iv*) individual lifestyle factors, such as greater values attached to autonomy and self-realisation, greater willingness by women to adjust family aspirations to pursue career goals, and the diffusion of alternative forms of relationships; and *v*) societal and cultural norms, such as those determining the division of home responsibilities within families and those underpinning the functioning of the welfare and tax systems.

7. While not all of these factors are amenable to policy interventions, a range of measures *may* allow policy makers to influence fertility rates. These policies can be divided in two groups:

- Direct policies that shape the financial incentives to childbearing, such as tax payments and subsidies.
- Indirect policies that, while targeted to other goals (such as increasing women's employment, and diffusing dual-earner families), may also influence fertility, such as child-care, maternity and parental leave, the structure of tax and benefit system.

Information about the nature of these different policy variables, and their importance in individual OECD countries, is presented and reviewed.

8. Evidence about the effectiveness of these policy instruments is reviewed based on a range of multivariate studies. These studies differ in terms of the country and policy instrument considered; the nature of the data and statistical methods used; the variable used to proxy fertility behaviour; the range of individual and national characteristics that are controlled for. Despite the partial nature of this review, and findings that are sometimes contradictory among countries and instruments, most studies seem to suggest a weak positive relation between reproductive behaviour and a variety of cash benefits and tax policies. Impacts of family-friendly policies are more contradictory, with several studies suggesting strong positive effects on fertility from higher child care availability but weaker or mixed effects from maternity and parental leave. More generally, however, these studies also suggest that no single "silver bullet" is likely to reverse recent declines in fertility rates in OECD countries. What is required is coherent application of a range of well-designed interventions, applied consistently over time. Also, measures should be directed to families, children, labour markets and society at large, with the aim of supporting those couples who accept the responsibility to have children because of the collective benefits that stem from their decision.

RESUME

9. La plupart des pays de l'OCDE affichent des taux de fécondité nettement inférieurs à ceux nécessaires pour assurer le remplacement des générations. Si les réactions à l'égard de ce phénomène diffèrent selon les pays, un grand nombre de gouvernements ont adopté – ou envisagent – des mesures spécifiques pour y faire face. Ces mesures visent bien souvent soit à réduire certaines conséquences négatives du vieillissement de la population pour la société dans son ensemble, soit à supprimer les obstacles qui dissuadent les femmes d'avoir plus d'enfants en raison des retombées économiques négatives liées à la maternité et à la durée des responsabilités à assumer. Ce document présente une analyse comparative de la dimension et de la nature du déclin des taux de fécondité dans les pays de l'OCDE, et sur l'effet de différentes mesures pour le contrer.

10. Le premier chapitre de ce document passe en revue une série d'indicateurs des schémas de fécondité observés récemment dans les pays de l'OCDE. Cette situation se caractérise principalement par :

- Un déclin généralisé des taux de fécondité depuis les années 70 dans la plupart des pays de l'OCDE, ainsi que des différences profondes dans l'évolution observée dans ces mêmes pays (entre les pays nordiques et anglo-saxons, où la baisse des taux de fécondité s'est amorcée plus tôt mais s'est ensuite stabilisée voire inversée, et les pays du Sud et un grand nombre de pays de l'Europe continentale où le déclin a commencé plus tard mais s'est ensuite accéléré beaucoup plus rapidement). Les différences de rythme dans la baisse des taux de fécondité a bouleversé le classement des pays de l'OCDE à cet égard.
- Une augmentation de l'âge moyen des femmes à leur première grossesse, mais aussi des différences entre les pays s'agissant de l'accroissement de la fécondité à des âges plus avancés et des disparités dans la répartition des naissances selon l'âge de la mère (avec des taux de natalité obstinément élevés chez les adolescentes dans certains pays).
- Des différences systématiques de taux de fécondité entre les femmes présentant des caractéristiques différentes (fécondité plus élevée chez les femmes au foyer, celles qui travaillent à temps partiel, les femmes mariées et celles provenant de minorités ethniques), l'ampleur étant toutefois plus ou moins marquée selon les pays.
- Un écart persistant, dans de nombreux pays de l'OCDE, entre la fécondité réelle et la fécondité souhaitée, qui reste souvent limitée à la norme « deux enfants ».
- Des taux de fécondité généralement plus bas dans les pays de l'OCDE où le taux d'activité et le niveau d'études des femmes sont plus faibles, les divorces et les naissances hors mariage moins fréquents, où les jeunes sont confrontés à des difficultés plus grandes lors du passage de l'école à la vie active et, dans une moindre mesure, où les personnes âgées disposent de revenus plus élevés. Pour certaines de ces variables la corrélation avec les taux de fécondité semble aussi s'être inversée par rapport aux décennies précédentes.

11. Le second chapitre analyse les motivations de la fécondité. Si plusieurs théories contradictoires concernant la décision de la fécondité retiennent l'attention, il est largement admis qu'un vaste ensemble

d'éléments déterminants expliquent la baisse des taux de fécondité observée récemment dans les pays de l'OCDE. Parmi ces éléments (ou facteurs de causalité) figurent : *i*) les avantages matériels et psychologiques apportés par les enfants ; *ii*) les coûts directs et coûts d'opportunité que les enfants représentent pour leurs parents ; *iii*) le contexte économique général dans lequel sont prises les décisions de fécondité, caractérisé notamment par les difficultés rencontrées par les jeunes sur le marché du travail, l'évolution du rôle économique de la femme et la valorisation du travail des femmes ; *iv*) les facteurs de mode de vie personnel, comme l'importance accrue accordée à l'autonomie et à la réalisation de soi, la volonté plus forte des femmes d'adapter leurs aspirations familiales pour mener une carrière, et enfin l'émergence de formes différentes de relations ; *v*) les normes sociales et culturelles, par exemple en matière de répartition des tâches domestiques au sein de la famille et les normes qui sous-tendent le fonctionnement des systèmes de prestations sociales et des régimes fiscaux.

12. Certes tous ces facteurs ne peuvent pas faire l'objet d'interventions des autorités, mais les décideurs ont à leur disposition un éventail de mesures leur permettant d'influer sur les taux de fécondité. Ces mesures se divisent en deux groupes :

- Les mesures directes qui déterminent les aides financières en faveur de la procréation comme les réductions d'impôts et les subventions.
- Les mesures indirectes qui, tout en étant ciblées sur d'autres objectifs (notamment développer l'emploi des femmes et encourager les ménages bi-actifs) peuvent aussi avoir des effets sur la fécondité ; c'est le cas notamment des dispositifs de gardes d'enfant, des congés de maternité et parental, et de la structure des systèmes de prélèvements et de prestations.

Des informations relatives à la nature de ces différentes variables et à leur importance dans chaque pays de l'OCDE sont présentées et examinées.

13. Les observations concernant l'efficacité de ces moyens sont analysées à partir d'une série d'études à plusieurs variables. Ces études diffèrent selon le pays et le moyen d'intervention considéré, la nature des données et les méthodes statistiques utilisées, la variable retenue en tant qu'indicateur du comportement de fécondité, l'ensemble des caractéristiques individuelles et nationales dont il est tenu compte. Malgré le caractère partiel de cet examen et les résultats parfois contradictoires selon les pays et les dispositions, la plupart des études semblent faire apparaître une relation positive faible entre le comportement reproductif et un ensemble de prestations monétaires et de mesures fiscales. Les constatations concernant les conséquences des politiques favorables à la famille sont plus hétérogènes : plusieurs études mettent en évidence une corrélation très positive entre la fécondité et l'accroissement des possibilités de gardes d'enfants tandis que plusieurs autres semblent indiquer que les congés maternité et parental ont des effets moins marqués ou mitigés. Cependant, d'une manière plus générale, il ressort aussi de ces études qu'aucune « mesure miracle » ne pourra sans doute, à elle seule, inverser la baisse des taux de fécondité observée récemment dans les pays de l'OCDE. Il est nécessaire de recourir à un ensemble de mesures appropriées et de les appliquer de manière cohérente et systématique sur le long terme. En outre, des dispositions doivent être prises en faveur des familles, des enfants, des marchés du travail et de la société dans son ensemble, l'objectif étant de soutenir les couples qui acceptent la responsabilité de décider d'avoir des enfants dans l'intérêt général.

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INTRODUCTION

14. Together with mortality and migration, fertility is one of the major determinants of a nation's population. In itself, this is good reason to look at fertility rates. Traditionally, concerns about fertility have focused on "excess" fertility, mainly in developing countries, and on its implications for natural and environmental resources. However, OECD countries are confronting today a very different problem: fertility that has declined for several decades to levels that are, in most of them, well below those needed to secure generation replacement. Whether this decline in fertility is itself an issue amenable to policy interventions is still an open question. Attitudes towards low fertility also differ markedly among OECD countries, with some of them regarding policies in this area as an intrusion in personal life choices, and other countries justifying them in the light of the potential benefits that could follow for society as a whole. Whatever these differences, however, the society-wide consequences of the recent fertility decline will be pervasive, affecting demography, the economy, family links, inter-generational and international relationships. These pervasive consequences justify the attention that policy makers are devoting to identify possible measures to reverse the ongoing decline in fertility rates to below-replacement levels.

15. The effects of fertility declines are not limited to society as a whole but extend to the well-being of individuals. In many OECD countries, many young people face large difficulties in getting established in labour markets and delay the time when they move to independent living. These factors, in turn, lead an increasing number of women to postpone their first motherhood, or to abandon it altogether. Survey evidence in many OECD countries of a persistent gap between desired and achieved fertility suggests the existence of a welfare problem for individuals. Many OECD countries are designing policies to bridge this gap between desires and outcomes, so as to allow women to combine opportunities in the labour market and responsibilities within the family.

16. This paper describes some of the main trends in fertility rates in OECD countries since the 1970s, identifies their likely determinants, and reviews the policies that have been introduced, or are being considered, to influence women's reproductive behaviour. Chapter 1 identifies some of the "stylised facts" that characterise fertility trends in OECD countries on the basis of a range of indicators for both countries and individuals. Chapter 2 identifies some of the factors advanced in the literature to account for these stylised facts, and describes the different policies that OECD countries have introduced, either with the explicit goal of raising fertility or, more often, to reconcile work and family life and thereby reduce the opportunity costs of childbearing. This chapter also reviews a range of multivariate studies that have tried to assess the effectiveness of various measures in changing reproductive behaviour.

CHAPTER 1. RECENT TRENDS IN FERTILITY RATES IN OECD COUNTRIES

Why fertility matters?

17. As a consequence of the declines observed in most OECD countries, fertility rates have reached levels that are well below those needed to secure generational replacement (roughly 2.1 children per women). Current levels of fertility — such as those recorded in several countries in Southern and Continental Europe — imply, for given mortality and migration rates, that the population of these countries may shrink to about a third of today's level in as little as one century. UN projections of future population assume an increase in fertility rates in OECD countries from today's low levels whose realisation is highly uncertain. Even this recovery, however, will not avoid sharp reductions in the level of OECD populations in the near future (Visco, 2001).

18. The “optimal” size of population remains, by itself, a controversial subject (Dasgupta, 1998). On the one hand, a smaller population might reduce human pressures on the environment and on natural resources. On the other hand, however, fertility rates below those needed to assure generational replacement might have a range of unfavourable social and economic effects. In general, these negative effects occur more because of changes in the *structure* of population, than because of reductions in its *size*. These changes in population structure are often described by an increase in the *dependency ratio*: as the proportion of older persons in the overall population rises by more than the declines in the share of children, the ratio between the dependent population and that of working age increases.¹

19. The economic effects of the fertility decline for individuals, firms and governments are important. Some of these consequences include:

- Lower growth, when not an absolute decline, in total population and, in particular, in the population of working age. This, in turn, will reduce the growth of real GDP relative to what it would otherwise have been.² One consequence of lower GDP growth relative to baseline will be a reduction in the size of OECD countries relative to developing ones, and possible shifts in the political weights of countries in the international arena.
- Because of the greater decline for the population of working age than for total population, income per capita will also decline, relative to what it would otherwise have been.³ However, this effect is smaller relative to the reduction in the growth of real GDP.

1. The OECD population over 65 years of age, as a percentage of the total population, is expected to increase from 15% today to 25% by 2030. Over the same time-period, the share of those aged more than 80 is projected to increase from 3.5% to 7.5%. The ratio between the population above 65 and that of working age is projected to increase from 23% today to 42% in 2030. (Turner *et al.*, 1998)

2. OECD projections suggest that the OECD population of working age, following increases of 76% in the past 50 years, will increase by only 4% in the next 50 years. Because of demographic changes, growth of potential GDP is projected to decline in Europe, from 2.3% today to 0.5% by 2050; and, in the United States, from 2.5% today to 1.4% by 2050.

3. The growth rates of per capita income is also projected to decline from 1.7% today to 1.1% by 2050 in European countries; and from 1.7% to 1.2% in the United States. However, despite this decline, per capita GDP in European countries is still projected to double from current levels (Turner *et al.*, 1998).

- Under current institutional arrangements, whereby public pensions are financed out of the contributions paid by today's workers, fewer workers supporting a greater number of older retirees (in terms of pensions, caring, and health expenditures) will put greater pressures on government's budgets. As the extra costs of this higher public spending will largely exceed the savings in educational expenditure, higher public deficits and debt will follow.⁴
- Lower domestic savings, from both private and public sources, for a given investment level, will increase the size of current accounts deficits and require greater capital inflows from abroad to sustain current exchange rates.

20. The indirect, and less visible, consequences of these fertility declines for society as a whole will also be significant, and possibly even deeper and more complex to deal with. These might include:

- Growing numbers of people who have no, or few, immediate family ties, which will increase demand for formal provision of services, either by governments or the private sector.
- Changes in the nature of intergenerational ties, as the number of grandparents will exceed that of grandchildren, and as more children grow up without siblings and other children of the same age.
- Possible tensions and shifts in political clout of different generations, which may lead to political conflicts when larger and healthier groups of elderly persons at the top of hierarchical organisations (in firms, governments, and bureaucracies) resist the progression and career advancement of younger people (WWR, 2000).⁵
- Divergence in the population profile of developed and developing countries, with shrinking population in the former and expanding population in several of the latter, and with regions that traditionally had been a source of migration becoming major destination of migration flows.⁶

21. Because of these consequences, fertility declines may pose a greater problem for society than the problem of longer life expectancy in old age. While all OECD countries are trying to adapt to the consequences of populations ageing, some OECD countries are also trying to influence the level of fertility as part of the solution (Crawford, 2002). This note does not discuss whether recent trends "justify" specific government measures aimed to increase fertility rates. Its more limited ambition is to describe some of the "stylised facts" that characterise the recent experience of OECD countries in terms of their fertility behaviour, and to identify some of the potential policies that may have an influence on them.

Aggregate trends in fertility in the OECD area

22. Since the beginning of modern society, distinct social and economic forces have contributed to the decline of fertility. These forces include the advance of education and rational decisions by families, changes in the benefits and costs of children, and the emergence of new economic roles for women. The "demographic transition", which characterised industrial societies around the late XVIIIth and early XIXth centuries (Montgomery, 2000) was mainly driven by lower infant mortality, which allowed families to

4. For a "stylised" country, representative of the OECD average conditions – *i.e.* a country with a primary government budget surplus of 2.5% of GDP and a public debt of 55% of GDP – the demographic impact of population ageing may increase the governmental primary deficit by 6% of GDP, and double its public debt over the next 50 years (Dang *et al.*, 2001).

5. While this problem always existed to some extent, it would get worse as an increasing number of older people progress to the top of their organisation (Fukuyama, 1999).

6. The decline in fertility also extends to other regions of the world, especially Asia, although fertility there generally remained well above replacement levels (McDonald, 2001).

achieve a given number of children surviving to maturity with lower levels of fertility. Other factors that contributed to fertility declines were fertility control — which translated into a decline in unwanted childbearing at higher ages, and in lower mean ages at childbirth — and the transition from a predominantly rural and agricultural society, to an urban and industrial one, where children were less important as a source of labour for family business and for security in old age.

23. The long-term decline in fertility came to halt with the end of the Second World War, when fertility increased significantly in many OECD countries. The “baby boom” that developed countries experienced in this period partly represented a recuperation of births that did not occur during the war years (Muller *et al.* 1999). By the late 1950s, however, when this recuperation was over, fertility rates resumed their downward trend. By the early 1990s, fertility rates had reached levels well below replacement in several European and non-European countries. Today, the large cohort of “baby boom” women is close to the end of its reproductive cycle, while the cohorts of women born in the late 1960s and early 1970s (the so-called “baby boom echo”) are entering the time when they are most likely to have children. In the near future, most OECD countries will be confronted with much smaller group of women of reproductive age, at the same time as the number of children per women is also falling.

24. Some authors (Castles, 2003; Lochhead, 2000; Lesthaeghe and Moors, 2000) have referred to this more recent experience as the “second demographic transition”. Some of the factors highlighted as responsible for this second transition include the emergence of new economic roles for women, and changes in social and demographic behaviour — driven by values of individuals’ self-realisation, satisfaction of personal preferences and freedom from traditional forces of authority, particularly religion. These socio-economic changes, in turn, have combined with the diffusion of more efficient contraception methods at early ages, and with postponement of parenthood and marriage.

25. Whatever its determinants, current fertility rates in many OECD countries are so low that they can hardly be considered to represent a long-run equilibrium (McDonald, 2001). Furthermore, fertility is low today in many countries where it was traditionally high (*e.g.* countries in Southern Europe), and it is high in some OECD countries (*e.g.* Nordic countries) where the opposite occurred a few decades ago (Castles, 2003). Some of the main trends in fertility for OECD countries are reviewed below using data on total and cohort (or completed) fertility.⁷

Total fertility rates

26. Trends in total fertility rates have undergone profound changes over the last 30 years, declining from an average value of 2.4 child per women in 1970 to 1.6 in 2000 (Figure 1).⁸ Most of this decline occurred from 1970 to 1985. From the mid-1980s to the early 1990s, on the contrary, the average decline in total fertility rates experienced by OECD countries was smaller, and some countries (*e.g.* the United States and several Nordic countries) experienced a recovery. In the context of the prolonged economic

7. The description provided in this section excludes Turkey and Mexico, as they do not share most of the features in terms of fertility of other OECD countries.

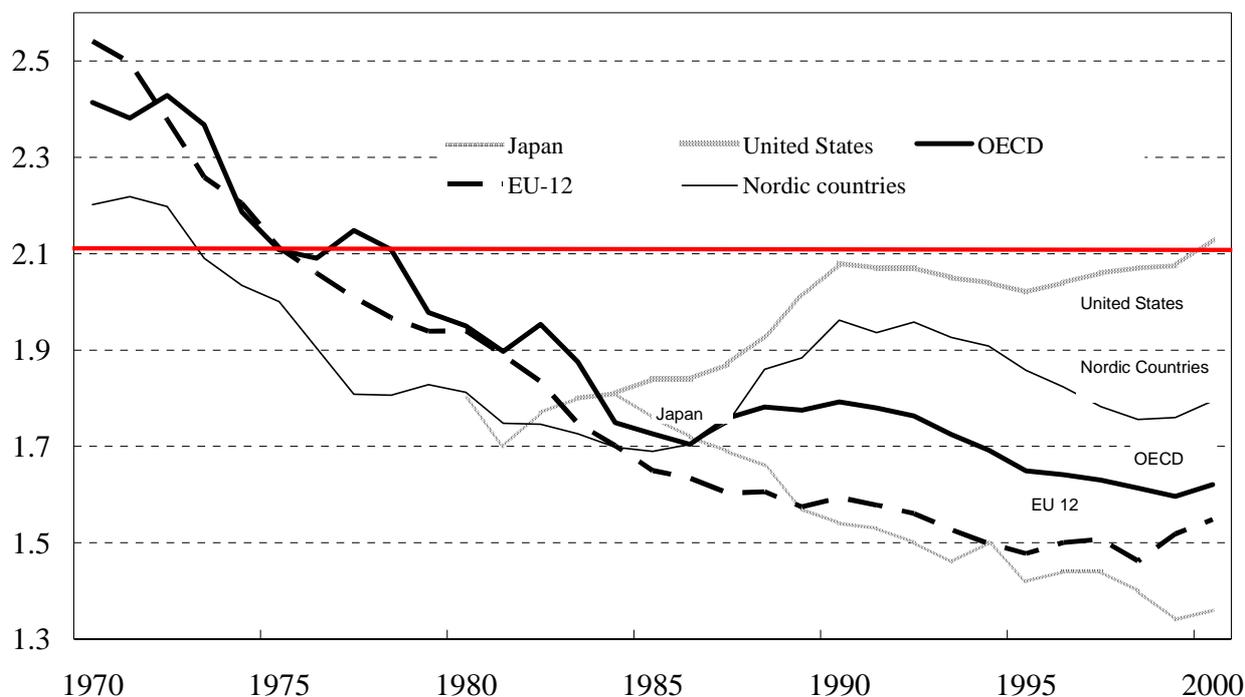
8. The total fertility rate (TFR) in a specific year is the average number of children who *would be born* to a synthetic cohort of women whose age-specific birth rates were the same as those actually observed in the year in question (Hotz, Klerman, Willis (1999). The total fertility rate in year *t* may be expressed as:

$$TFR_t = \sum_{a=15}^{44} BR_{t,a} \times 1000$$

where $BR_{t,a}$ is the birth rate among women aged *a* in year *t*.

expansion and improved labour market conditions that characterised the second half of the 1990s, the increase in fertility has extended since 1998 to a broader range of countries (e.g. the EU).

Figure 1. Trends in total fertility rates in selected OECD countries, 1970 – 2000



Note. The horizontal line corresponds to the level of total fertility rates needed to assure a constant population.

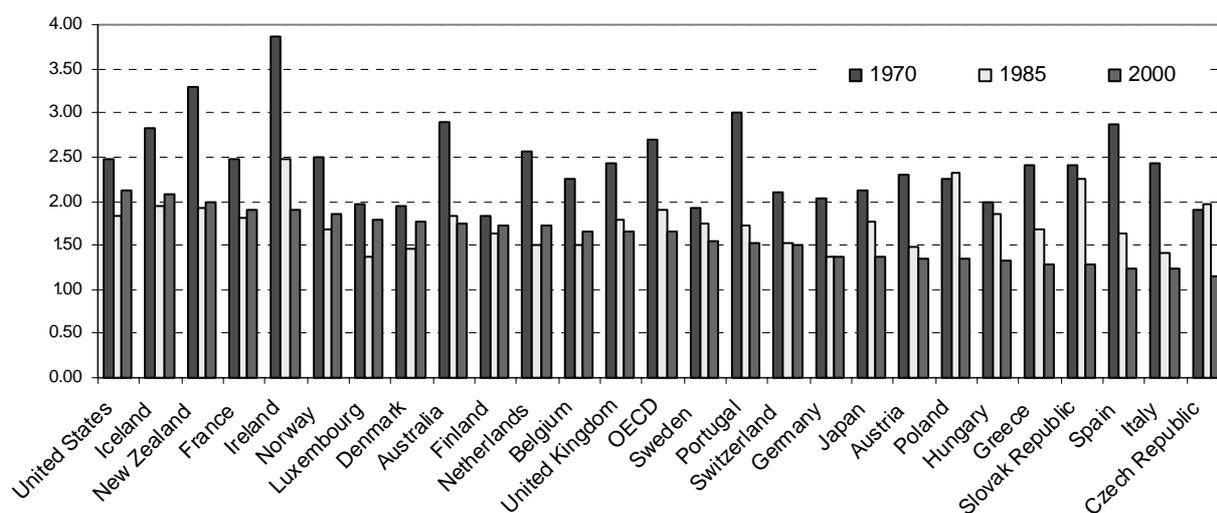
Source: OECD (2002), *Society at a Glance. Social Indicators 2002*, Paris (www.oecd.org/els/social/indicators)

27. Looking more closely at the experience of individual OECD countries, the decline of total fertility rates affected most of them (Figure 2). However, despite this convergence towards low fertility levels, OECD countries differ in the timing and intensity of developments. In Southern European countries (Spain, Italy, Greece and Portugal) fertility dropped much later, but then at a much faster rate (Bagavos and Martin, 2001). By the mid of the 1990s, total fertility rates in Spain, Italy and Greece were below 1.3. The pace of fertility decline was also especially fast in the former Communist countries, such as Slovenia, Croatia, Slovak Republic, Czech Republic and Poland, who saw their total fertility rate decline from around its replacement level in the mid-1980s to around 1.3 recently. In former East Germany, the total fertility rate was cut in half between 1990 and 1992, to a level of 0.9, in the aftermath of reunification.

28. Nordic countries (Denmark, Finland, Norway and Sweden), on the other hand, recorded a slight increase in fertility rates since the mid-1980s.⁹ Despite some renewed declines in recent years, their current fertility levels are among the highest in the OECD area (Bagavos and Martin, 2001). In Ireland, a country which topped the OECD league for a long time and by wide margin, total fertility rates declined rapidly in recent years, to a level close to 1.9. With the exception of the United States, New Zealand and Iceland, the total fertility rate of all OECD countries is now well below its replacement level.

9. However, fertility rates declined in Sweden in the first half of the 1990s, in the aftermath of a deep economic recession and of reforms in welfare programmes.

Figure 2. Total fertility rates in OECD countries



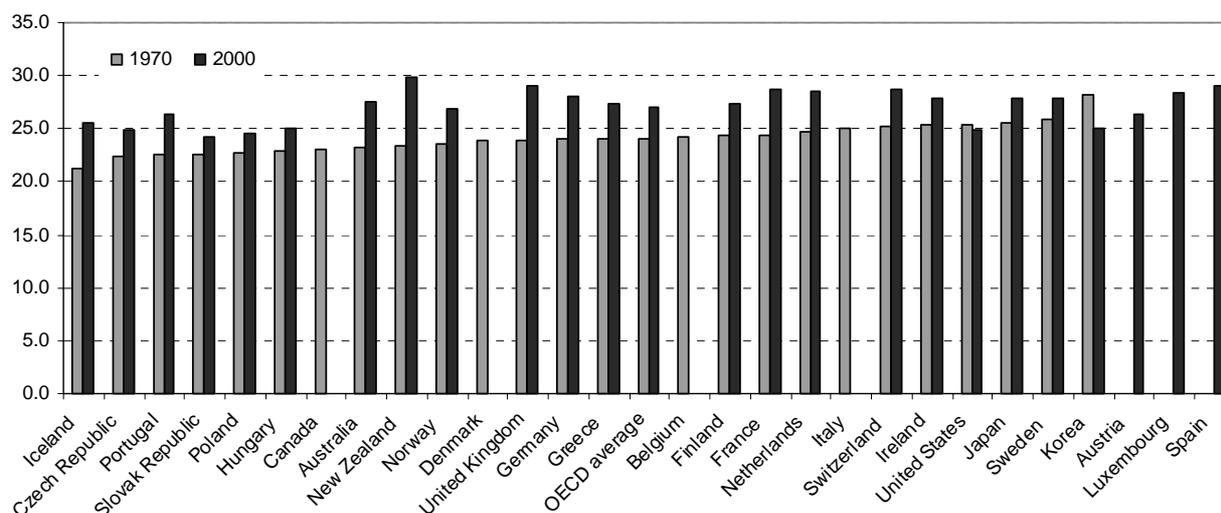
Note. Countries are ranked according to the level of the total fertility rate in 2000.

Source: "Society at a Glance: social indicators 2002", Paris (www.oecd.org/els/social/indicators).

Age of women at child birth

29. One of the proximate causes of the observed decline in total fertility rates in OECD countries has been a tendency by women to postpone their decisions to have children until a later age. While several explanations of this trend have been provided, most of them emphasise labour market insecurity and the desire by women to defer family formation until completion of education and full integration into the labour market (OECD, 1999). This postponement has increased the mean age at first birth in most countries to levels never experienced before (Figure 3): from 24.1 years in 1970, to 27.1 years in 2000, on average. In New Zealand, Spain and the United Kingdom, mean age of mothers at first childbirth now approaches 30. As the age of first childbirth increases, fertility rates tend to recuperate as women get older. However, there are large differences in the extent of this recuperation of fertility at higher ages, with this process being stronger in Nordic countries, France and the United Kingdom than in Southern European and several other Continental European countries (Lesthaeghe *et al.*, 2000).

Figure 3. Mean age of women at first childbirth in 1970 and 2000



Data for Australia, France, Germany, Greece, Japan, Korea and Spain refer to 1999.

Source: OECD (2001), *Society at a Glance. Social indicators 2002*, Paris (www.oecd.org/els/social/indicators)

30. Postponement of childbirth affects the distribution of births according to age of the mothers. The data shown in Figure 4 refer to the distribution of *all* births, for a selection of OECD countries, rather than to the age of mothers at birth of the *first* child shown in Figure 3. While changes in the distribution of births are less sharp than those highlighted in Figure 3, Figure 4 highlights large differences among countries in both the shape of these distributions and in how these distributions have changed over time.

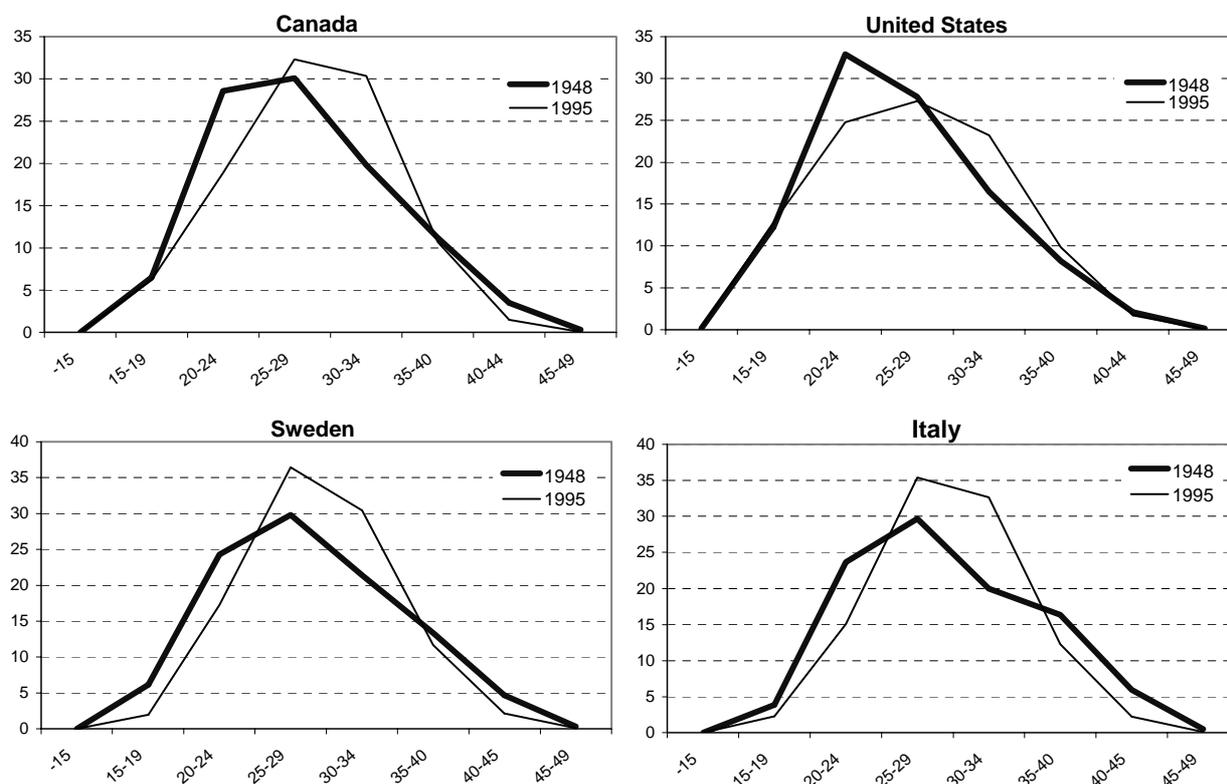
31. In Figure 4, the trend to delayed birth is represented by the rightward shift of the 1995 curve relative to the 1948 curve. The main differences between these two years can be observed for women 20-24 years old and for those 30-34 years old. In general, the proportion of births attributed to women aged 20 to 24 declines from 1948 to 1995, while the opposite occurs for women aged 30 to 34. This change in the distribution of births partly reflects higher enrolment of women in post-secondary education, and lower fertility during this period of study. Figure 4 also highlights large differences across countries in terms of the "tails" of these distributions, *i.e.* the proportion of childbirth among teenagers (below 20 years old) and older women (above 40 years old).

32. Relatively high proportions of teenage girls have children in the United States (and to a lesser extent Canada), as compared to both Nordic and Southern European countries. In the United States, this proportion has also not fallen much between 1948 and 1995. While, by itself, teenage pregnancy and birth are not always a policy problem, it is perceived as one in several OECD countries (UNICEF, 2001). Teenage pregnancy and birth are often associated with an interruption of schooling and greater problems in integrating the labour market for mothers. It is also associated with a higher risk of single parenthood, of being poor, and of depending on social assistance. These negative consequences are not limited to mothers, but also extend to the health and future socio-economic status of their children: the chances of educational, economical or family "success" are lower for the children of teenage mothers, even when differences in the socio-economic characteristics of the mother are taken into account (Bélanger, 2002).

33. Total fertility rates provide an up-to date indicator of recent developments, but they are strongly affected by the timing of births. Also, these data often fluctuate substantially, as temporary economic and social circumstances may lead to pregnancies being deferred or brought forward. Whether the fall in the total fertility rate is a *permanent* or a *temporary* phenomenon will depend on the extent to which deferral

of childbirth during women's 20s and early 30s is followed by recuperation at later ages. When the age of first births is increasing, trends in total fertility rates are likely to exaggerate the extent of long-term fertility decline. A better indicator of long term trends is provided by data on completed fertility rates (for a cohort of women born in the same year).¹⁰

Figure 4. Distribution of births across women of different ages



Note. In percentage of all births.

Source: United Nation (2001a), *Demographic Yearbook, Historical Supplement 1948-1997*, UN Statistics Division, New York.

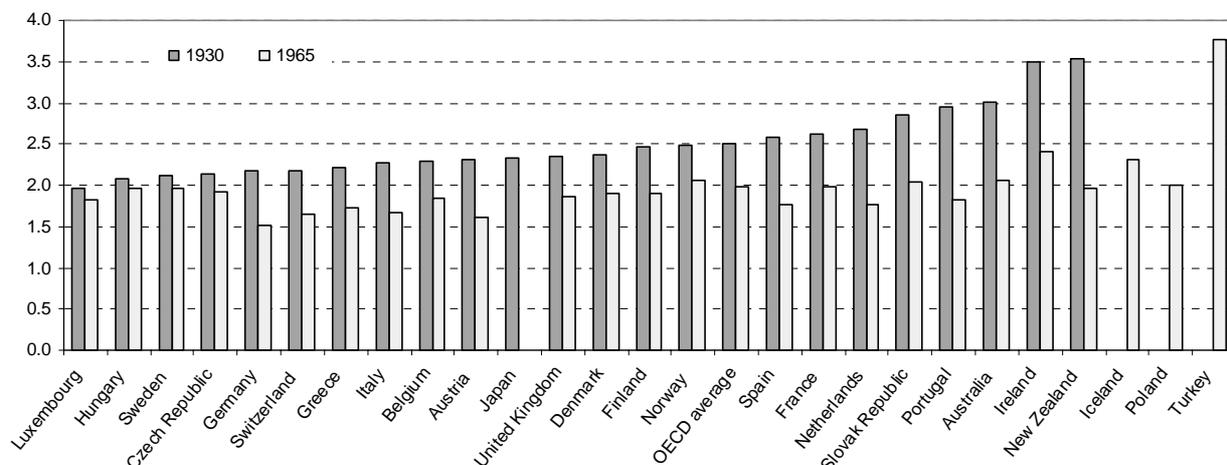
Completed fertility rates

34. Completed fertility rates are generally calculated for women who have reached the end of their child-bearing years (*i.e.* for women born at least 50 years ago). However, as a relatively small proportion of births occur after age 40, reasonable estimates of completed fertility can be made for women born up to 1965 (OECD, 2001b). These estimates of completed fertility can be used to track fertility over an (almost) entire reproductive cycle.

10. The completed fertility rate (CFR) measures the number of children that a cohort of women who have reached the end of their childbearing years *had* in the course of their reproductive life. This is measured by cumulating the age-specific birth rates of a given cohort of women as they age from 15 to 49 years (Hotz *et al.* 1999). The completed fertility rate of women born in year c may be expressed as:

$$CFR_c = \sum_{a=14}^{44} BR_{c+a,a} \times 1000$$

Where $BR_{t,a}$ is the birth rate in year $(c+a)$ to women of age a .

Figure 5. Completed fertility rates for women born in 1930 and 1965

Note: Data for Belgium, Ireland, Italy, Spain, Turkey and the United States refer to women born in 1960. Countries are ranked according to the level of the completed fertility rate in 2000.

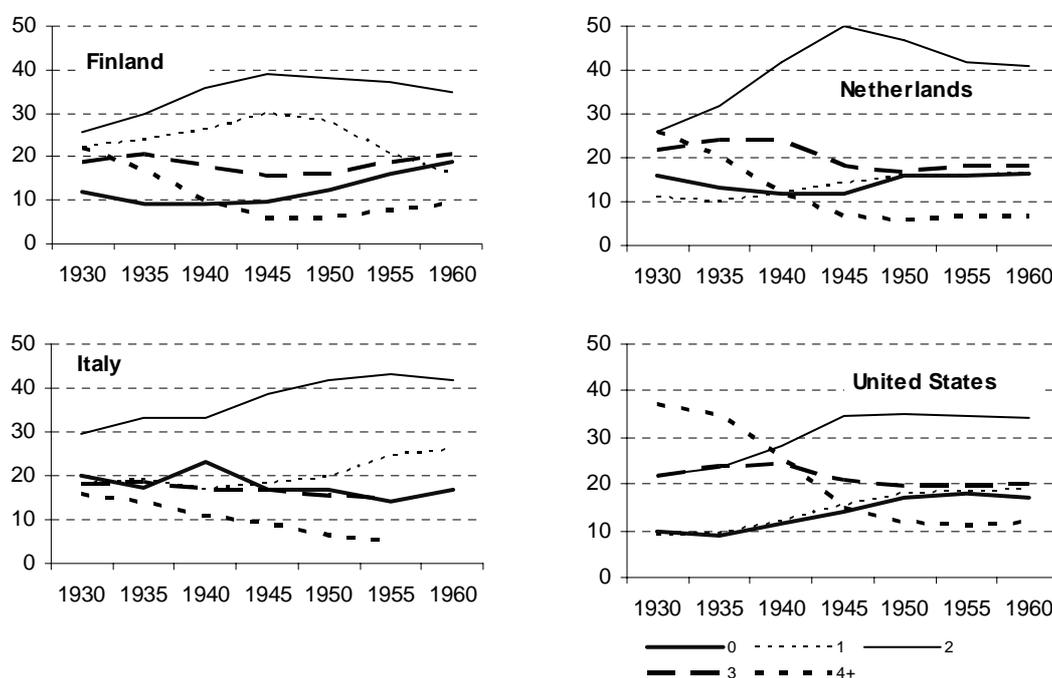
Source: OECD (2001), *Society at a Glance. Social indicators 2002*, Paris. (www.oecd.org/els/social/indicators)

35. Data for complete fertility for women born in 1930 and in 1965 are shown in Figure 5. Completed fertility rates have declined in most OECD countries, although reductions are relatively small in Sweden, the Czech Republic, Hungary and Luxembourg. Declines also appear to be largest in those OECD countries where complete fertility of women born in 1930 were highest, leading to sharp reduction in the degree of dispersion of these rates. Australia, Ireland, New Zealand and Iceland are the only countries where completed fertility of women born in 1965 is above the replacement level. The first three countries also recorded the highest completed fertility rates among women born in 1930.

Parity distributions

36. Information about the distribution of women of a given age according to the number of children they had over their lifetime is available only for a few OECD countries. Some of the main changes in these parity distributions are discussed by Freika *et al* (2001), and briefly summarised in Figure 6 for women from different birth cohorts at the age of 40 (which is close to the end of their reproductive life), limited to four OECD countries. The largest changes in these distributions occurred for women with no children (which increased in all countries except Italy, in particular for cohorts born in 1950 and after) and for women with 4 or more children (which declined continuously in all countries). The proportion of women with 2 children, after having increased in all four countries among the cohorts born in 1930s and 1940s, has slowly lost ground among younger cohorts (the United States being an exception), but remains the most prevalent pattern.

Figure 6. Parity distribution for women of different birth cohorts, at age 40



Source: Data from the Observatoire Démographique Européen, as published in Freijka *et al.* (2001).

Correlates of fertility across countries

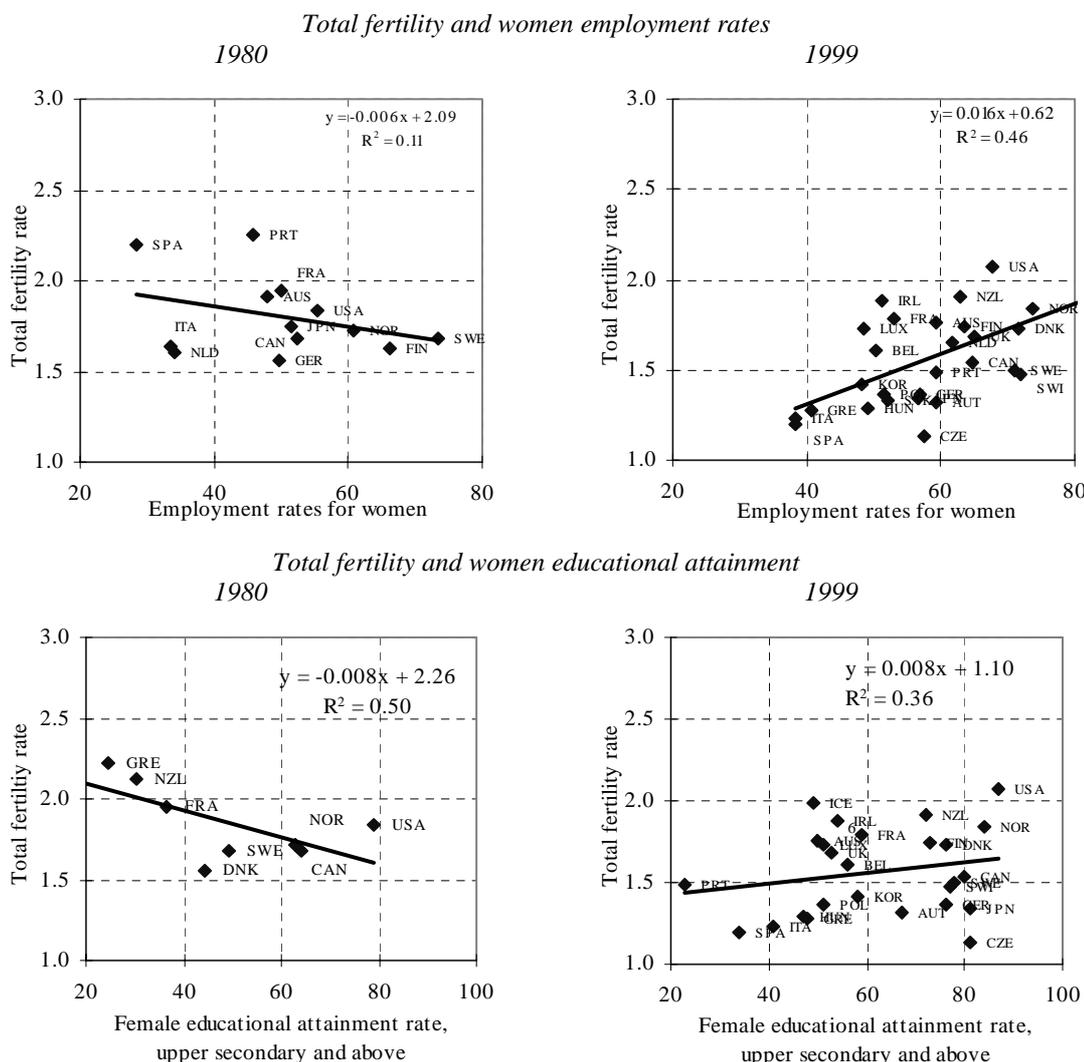
Women's employment and education

37. Discussions about the determinants of fertility rates in OECD countries often stress the existence of trade-offs confronting individual women between having children, on one side, and taking advantage of the education and employment opportunities available to them, on the other. When applied across countries, the notion of a trade-off facing individual women would suggest that countries where total fertility rates are lowest should also record higher employment and educational opportunities for women. However, Figure 7, which shows such relationships across OECD countries in two points in times, shows a different pattern. While, in 1980, fertility was higher in countries where women's employment and their educational attainment were lower, the same relations reversed their sign by 1999.¹¹ Although causation is difficult to establish, the reversal in these patterns suggests that other factors beyond those implied by these trade-offs facing individuals have been at work.¹²

11. Survey evidence also suggests that those countries which have been more successful in reversing the decline in fertility experienced high and rising fertility outside marriage.

12. In recent years, several studies have indicated a positive correlation between female education/ female employment and fertility. These studies suggest that "in some countries [...] women have found ways to combine work and child rearing, and in others they have not" (Brewster and Rindfuss 2000).

Figure 7. Fertility, women employment and education



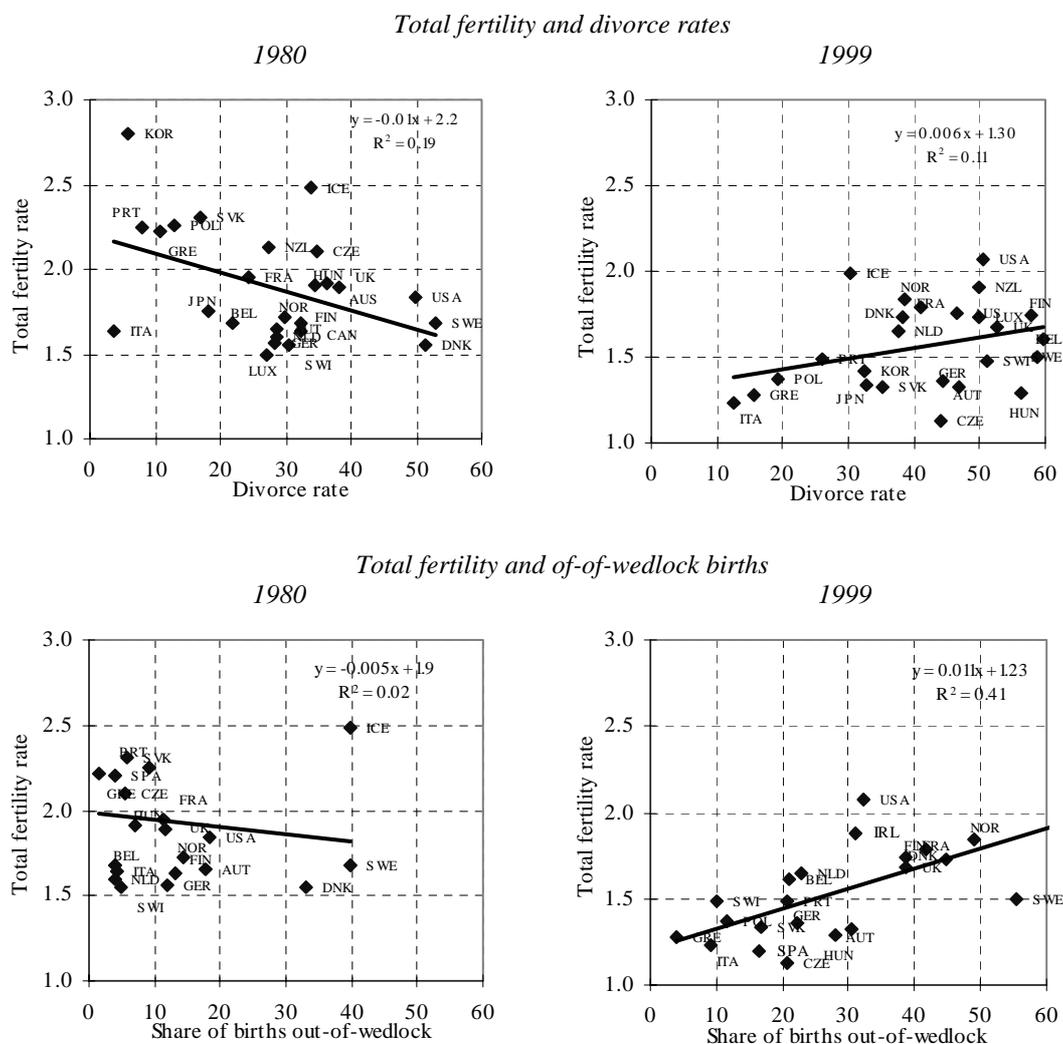
Note. The trend line refers to the same number of countries in the two periods.
 Source: OECD data

Family patterns

38. The strength and nature of family relationships may also influence fertility rates, as the proportion of women with children tends to be higher among married women than for women cohabitating with a partner in the context of a consensual union and for those living alone (see below). Again, cross-country correlations between total fertility rates and several proxies of the dominance of traditional forms of family relationships suggest a different pattern. Two indicators of family patterns are shown in Figure 8: divorce rates (an indicator of the frequency of disruptions in marriages) and the proportion of out-of-wedlock births (*i.e.* birth occurring outside marriages, as a proportion of all births). In both cases, Figure 8 suggests that OECD countries where divorce and out-of-wedlock births are more frequent have, at the end of the 1990s, lower fertility rates than other countries. Further support for this cross-country pattern is provided by the large increase in the proportion of out-of-wedlock births in Sweden, France, the United Kingdom and the United States (countries with relatively high total fertility rates), as compared to broad

stability in Italy and Spain.¹³ While such associations obviously do not imply causal relations, they provide a warning against the assumption that higher marriage rates is a necessary condition for increasing fertility, and suggest that marriage laws that are more neutral with respect to the form of relationship may be an important condition for sustaining fertility.

Figure 8. Fertility, divorce rates and out-of-wedlock births



Note. The trend line refers to the same number of countries in the two periods.
Source: OECD data.

The transition from school to work

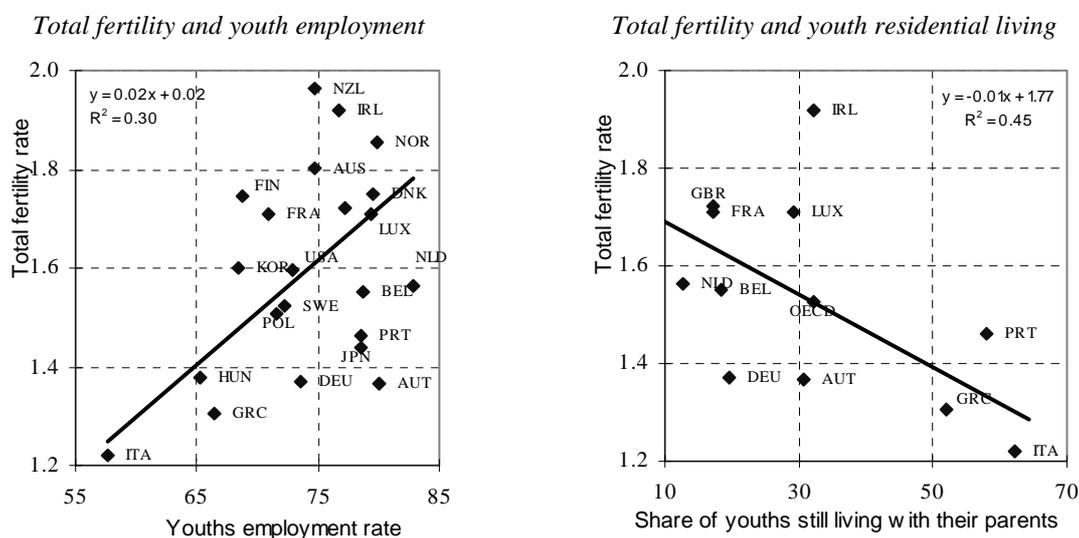
39. The difficulties that youths face in their transition from school to work and to independent living may also affect fertility. For young people, partnership formation may be influenced by the difficulty of achieving the financial independence that only steady employment may offer. This is because the long-

13. In France and the United Kingdom, the share of out-of-wedlock births increased from around 7% in 1960 to more than 40% in 2000. The increase was sharper in Sweden (from 11 to 55%) and less significant in Italy (from 2 to 9%).

term responsibilities that are associated with having a child assume a minimum of financial (and emotional) security, and a reasonable level of confidence in the future. OECD reviews of the transition from school to work have identified the Nordic and English-speaking countries as those where youths' transition is easier, and Central and, especially, Southern European countries as those where this transition is more difficult (OECD, 2000). Figure 9 tends to support the view that countries where a higher proportion of young adults hold jobs also experience higher fertility (Panel A).¹⁴

40. The transition from school to work also affects patterns of residential living, leading many youths to remain longer in their parents' home and to defer the formation of a partnership (be it marriage or cohabitation): Panel B suggests that total fertility rates are lower in countries where a higher proportion of youths continue living with their parents in their later 20s. Both associations suggest that, while the extended family may be important to soften the difficulties that young people face in finding a suitable job and housing, the cosiness of the "family nest" may also affect the reproductive behaviour of young people.

Figure 9. Fertility, youth employment rate and percentage of youth living with their parents



Note. Data refer to youths aged 25 to 29 in 1999 or most recent year. The trend line refers to the same number of countries in the two periods.
Source: OECD databases.

Security in old age

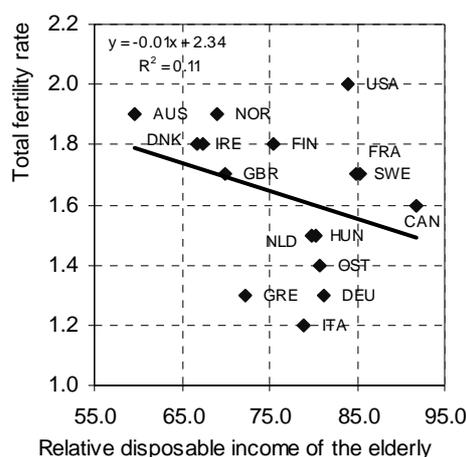
41. Some authors have also identified the existence of comprehensive pension systems as an important determinant of low fertility in developed countries (Livi Bacci, 2001). While, in traditional societies, a higher fertility rate may reflect parents' wish to get support from their children when they reach old age, the expansion of alternative forms of support for the elderly might have reduced the importance of this factor.¹⁵ When applied to OECD countries, this hypothesis would suggest that countries with more

14. Other studies have identified high and persistent unemployment in Southern European countries as one of the factors contributing to the acceleration of their fertility decline (Del Boca, 2002a). For example, Simo Noguera *et al.* (2002) argue that, in a context of growing unemployment and precariousness of jobs available to new labour market entrants in Spain, greater economic uncertainty facing youths reduce the likelihood that they will enter into first parenthood.

15. The World Commission on the Environment and Development, which established the concept of "sustainable development", already in 1987 had linked social security with demographic growth and

generous pension systems, and with expectation that this generosity will continue in the future, will also experience lower fertility. As income of older people does not depend only on the social security system, a more general indicator of the economic resources of the elderly is used here to highlight this possible relation: the mean disposal income of people above the age of 65, relative to that of the working age population. Figure 10 suggests the existence of a negative relationship between higher relative income in old age and total fertility, although the relationship is not strong.

Figure 10. Fertility rates and relative disposal income of elderly people, mid-1990s



Note: Mean disposable income of people over age of 65, relative to those aged 18 to 64. Total fertility rates in 1995.

Source: OECD data.

Fertility among women with different characteristics

42. Beyond indicators of fertility at the national level, it is also important to look at fertility for women with different demographic characteristics. One important source of information used to explore links between fertility and other characteristics of mothers is provided by the Family and Fertility Surveys (FFS) project.¹⁶ The section below reviews data from these and other surveys for a range of variables.

Employment and fertility

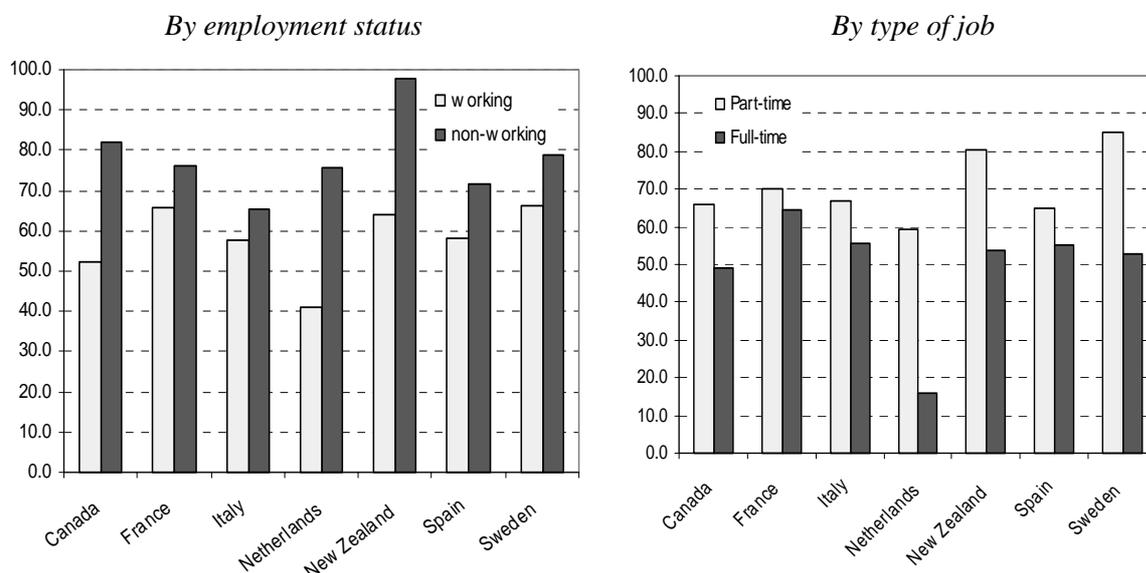
43. In traditional societies, women's self-realisation has often been explicitly linked to being "a mother and a wife". Nowadays, most women in OECD countries can choose to enter paid employment, either in place or in addition to the traditional childbearing role. However, mothers' opportunities for paid employment largely depend on the types of jobs that are available to them, and on how much of the burden of childbearing falls on them.

environmental pressures, arguing "that governments will have to work on many fronts to provide people with forms of security in old age other than the number of children"(WCED, 1987).

16 The Fertility and Family Surveys project was initiated by the Population Activities Unit (PAU) of the United Nations Economic Commission for Europe in the late 1980s. The main goal of these surveys, which cover 25 countries, was to look at family decision in the wider context of personal biographies and attitudes, and to assist the development of consistent and effective fertility and family policies (Festy and Prioux, 2002). Guidelines and a model questionnaire were provided to each participating country. Upon completion of these surveys, each country agreed to convert their national data files into a standardised data file and to prepare a standard country report.

44. The difficulty that women face in combining work and family responsibilities account for the fact that, in general, the proportion of women with children is higher among those that do not work than for those who do (Figure 11, Panel A). There are however large differences across countries, both in terms of the gap between these two groups of women (this being much larger in Canada, the Netherlands and New Zealand than in other countries) and in the proportion of women with children according to their employment status. The type of jobs held by mothers is also important for decisions to have children. Part-time jobs, in particular, generally allow women greater opportunities to combine work and family responsibilities.¹⁷ Across countries, the proportion of women with children is generally higher among those working part-time than among those working full-time (Panel B), with differences between the two groups being larger in the Netherlands, New Zealand and Sweden but much smaller in France, Italy and Spain. Because part-time jobs are the preferred option of working mothers, in countries where part-time employment is rare women will have to choose between either having children or taking up a full-time job, neither of which is likely to be their preferred option.

Figure 11. Proportion of women with children, by employment status and type of job

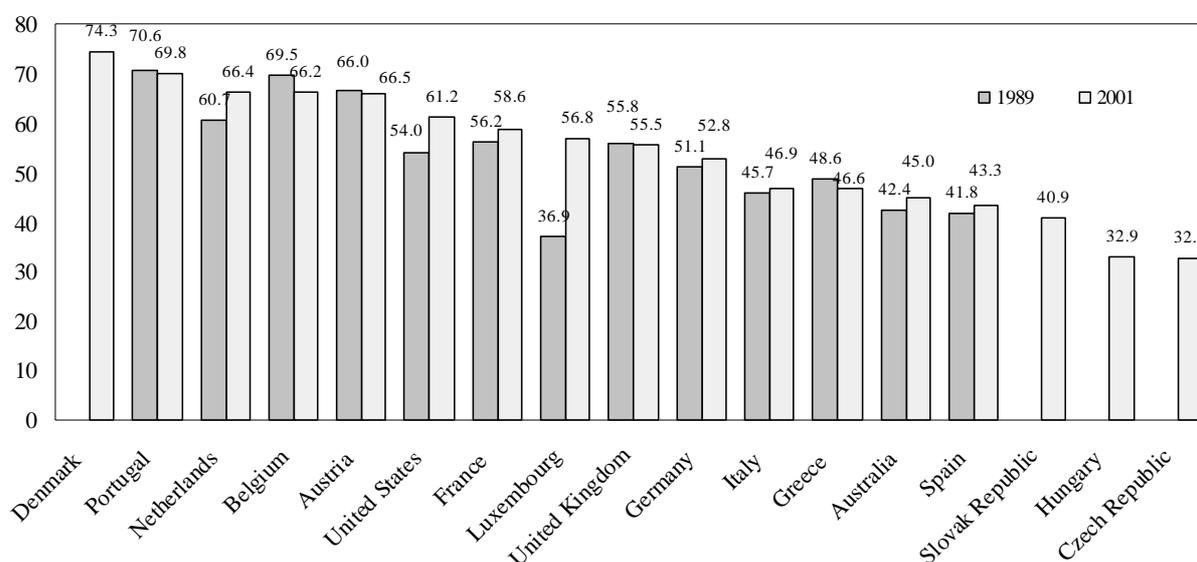


Note: Data refer to women aged 20 to 49. Panel A shows the proportion of working women (light-shaded bar) and the proportion of non-working women (dark shaded bar) with children (*i.e.* the ratio of working women with children to all working women, and the ratio of non-working women with children to all non-working women). Data are based on individuals' self-assessment of their employment for a period of at least 3 consecutive months. Persons on maternity leave, who retain attachment to their job, are counted as employed. Panel B shows mothers working part-time as a share of all women working part-time, and mothers working full-time as a share of all women working full-time.

Source: FFS data

45. Additional information on how women's reproductive and employment decisions interact is provided by labour force survey data (OECD, 2001a). Trends in women's employment rates, for a broader range of countries than those shown in Figure 11, suggest that while these have increased in almost all countries (OECD, 2002d) those for women with young children have remained, with few exceptions (Ireland, Luxembourg, the Netherlands, the United States) fairly stable over the last 10 years (Figure 10).

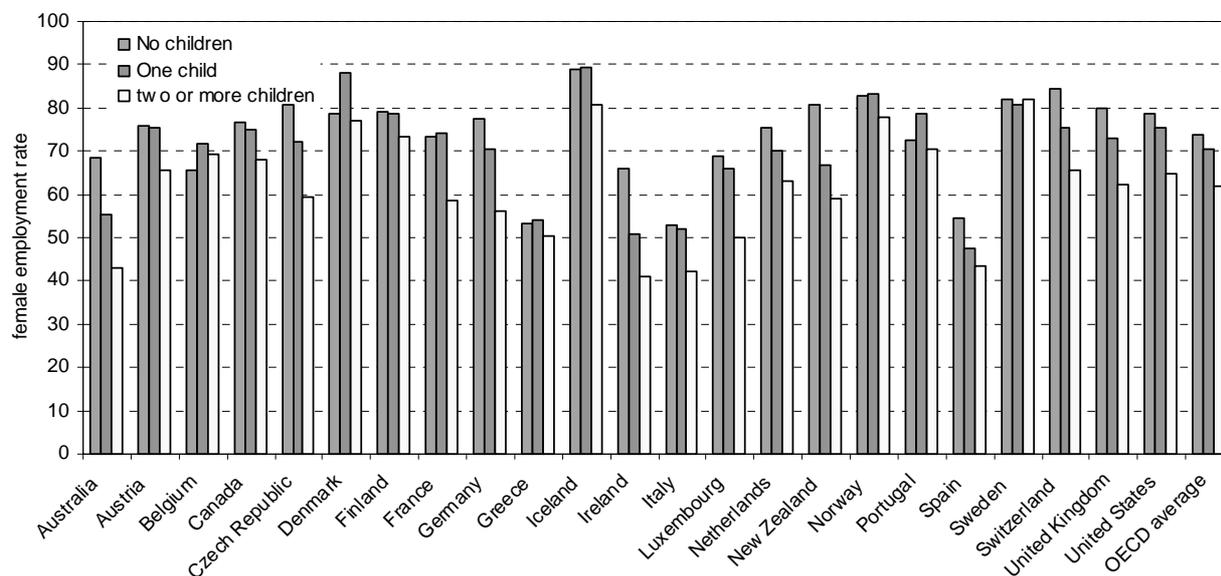
17. The evidence provided in OECD (1999b) suggests that only a small proportion of women working part-time prefers to work longer hours, and that this proportion is lower in countries where part-time employment is more widespread.

Figure 12. Employment rates for mothers with young children

Note. Children aged less than six.

Source: OECD (2002), *Society at a Glance. Social indicators 2002*, Paris (www.oecd.org/els/social/indicators)

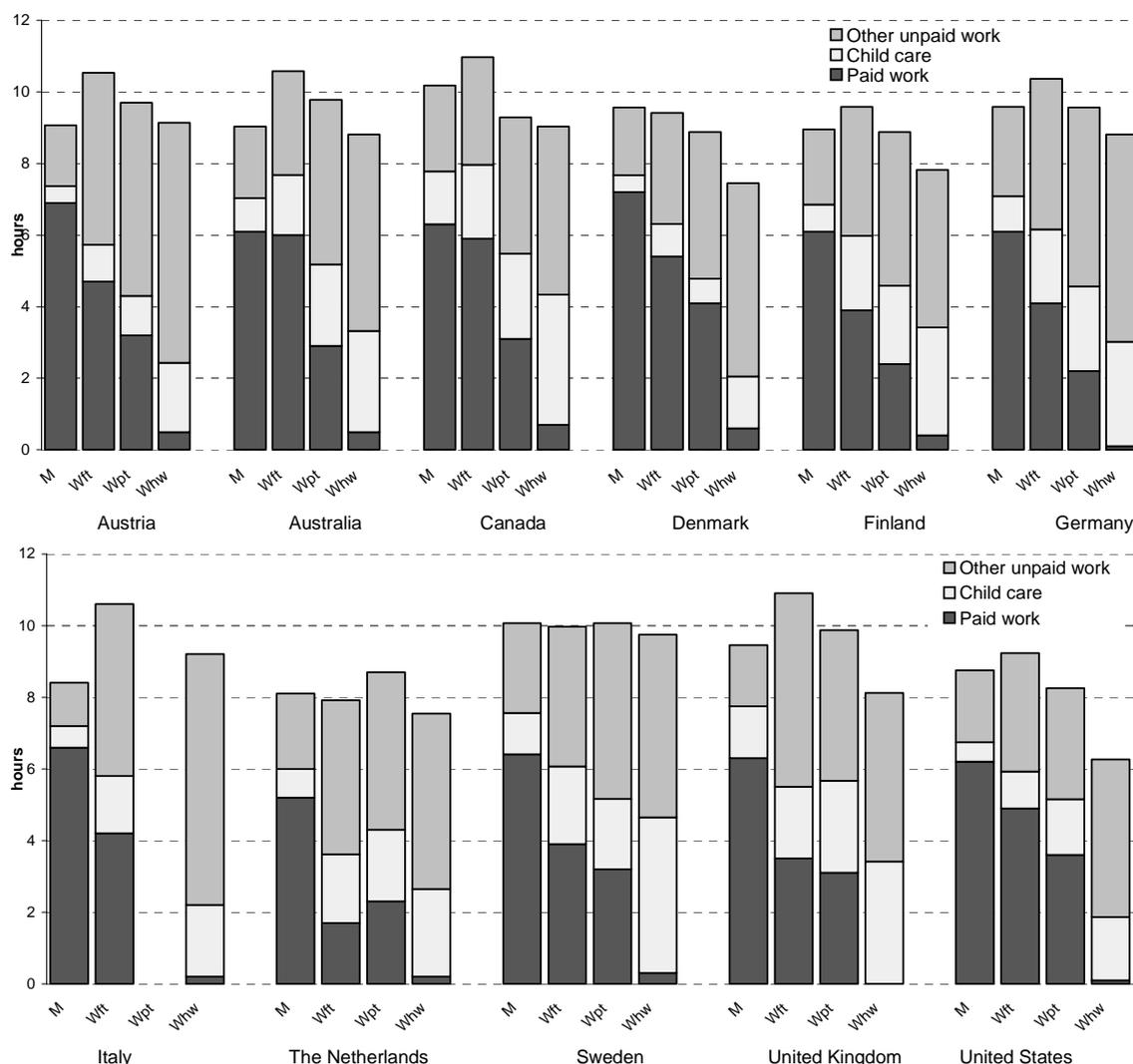
46. Figure 13 also suggests that both the presence and the number of children have a significant impact on the employment status of women. Across OECD countries, average employment rates for prime age mothers (aged 25 to 54) with one child, at just over 70%, are lower than the employment rates for non-mothers (at around 74%) but well above the employment rates of mothers with two or more children (62%). The only exceptions are Belgium, Denmark and Portugal, countries where female employment rates do not appear to be greatly influenced by the presence of children one way or the other. Cross country differences in employment rates among mothers may be partly accounted for by differences in paid parental leave provisions across countries, as mothers on such leave are often counted as “employed” even when they are absent from work to look after their children.

Figure 13. Women's employment rates by presence of children in 2000

Note: As a percentage of persons aged 25-54. Data for Denmark are from 1998, Finland from 1997, New Zealand from 2001, and United States from 1999

Source: OECD (2001b), *Employment Outlook*, Paris

47. The number of hours that mothers can spend on their job also depends on the way home and caring tasks are divided among men and women. For many women, performing household duties is often in direct competition with taking up the opportunities for paid employment as, in general, women continue to bear most of the burden for the household tasks that are associated to childbearing. Figure 14 presents evidence about the distribution of paid and unpaid work between men and women in couple households with children under 5. These data suggest that mothers having full-time jobs spend on child care more than twice as much time as fathers, and about twice as much on other unpaid work. Their total hours of work (both paid and unpaid) is close to 10 hours per day, one hour more than the average for men as a whole. As these data are limited to couple families, they do not show the caring burden falling on mothers in lone-parent families, whose incidence has increased in many OECD countries. While comparisons of time budget data need to be made with caution, Canadian and Swedish men appear to contribute the most to unpaid household work, and Italian men the least among the countries shown (OECD, 2001b). This “excess” burden of work and family responsibility falling on women working full-time may be a factor contributing to low fertility in some countries.

Figure 14. Time spent on child care, paid and unpaid work for women and men

Note. Data refer to a couple family with a child aged less than 5. Time devoted to child-care includes that spent feeding children, dressing, bathing and changing them, and providing medication. Other unpaid work is defined broadly. Paid work includes working in a family enterprise and is averaged over the year, including weekends and paid leave. The data refer to 1985 for the Netherlands; 1987 for Denmark and Finland; 1991 for Italy; 1992 for Australia and Germany; 1995 for the United Kingdom and the United States; 1997 for Austria; 1998 for Canada. Data are drawn from time-budget surveys harmonised by researchers co-ordinated by Essex University, United Kingdom. OECD (2001b), *Employment Outlook*, Paris

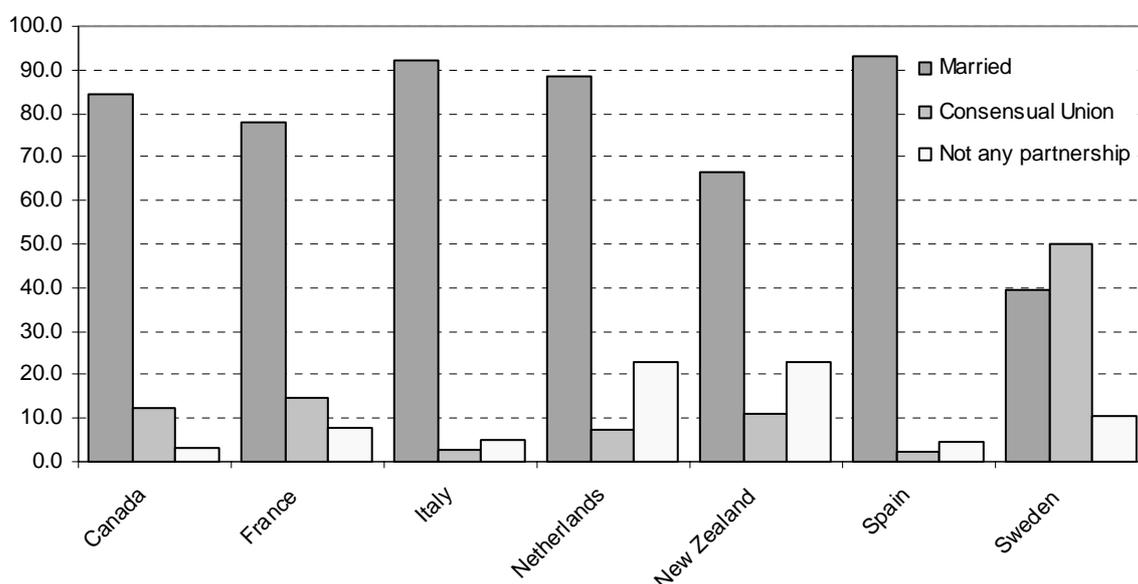
Forms of relations and fertility

48. Three main trends have characterised the behaviour of individuals in OECD countries in terms of the type of relationship they enter. The first is a trend to later formation of the first partnership. The second is that fewer people enter into partnerships at all, or remain alone after a break-up in this partnership. The third is that, among those individuals living with a partner, co-habitation has become more important relative to marriage. Each of these trends has an influence on fertility rates. Where partnership formation occurs later, childbearing will be postponed. Also, the growing importance of consensual unions implies more births out of wedlock. Finally, because of greater frequency of partnership breakdown, a growing proportion of children live with only one parent, and a growing number of mothers act as the only

responsible parent for both care and maintenance of the child. While national rates of lone parenthood vary among countries,¹⁸ the increase in the number of lone-parent families is general. These trends are affecting most OECD countries, but are especially important in Nordic countries.

49. Despite these changes in forms of relationships, some of the “traditional” patterns in terms of reproductive behaviour continue to hold. In general, across OECD countries, the proportion of mothers that, at the time of their first births, were married is much larger than the corresponding proportion among those living in consensual unions and, even more so, without any partnership (Figure 15). In Italy and Spain, two countries where the imprint of the catholic culture is strongest, more than 90% of mothers were married at the time of their first births. By contrast, in Sweden, where marriage is today less common than cohabitation, the share of women who were living within a consensual union at the time of their first birth exceeded that for those living within marriage.

Figure 15. Partnership status of mothers at first birth



Note: Data refer to women aged 20-49. The figure shows the proportion of women who, at the time of their first births, were either married, living in consensual union, and living alone.

Source: FFS data

50. Differences across countries in the reproductive behaviour of women by forms of relationships are partly influenced by legal provisions, in particular by the extent to which rights and protections are extended to mothers and children living outside marriages. To a significant extent, high fertility in Nordic countries may reflect the existence of forms of support to families with children that do not discriminate between different forms of relationships. The risk of not receiving forms of support when parents are not married, or when marriages break down, is reduced by making the forms of support more neutral with respect to types of relationships.

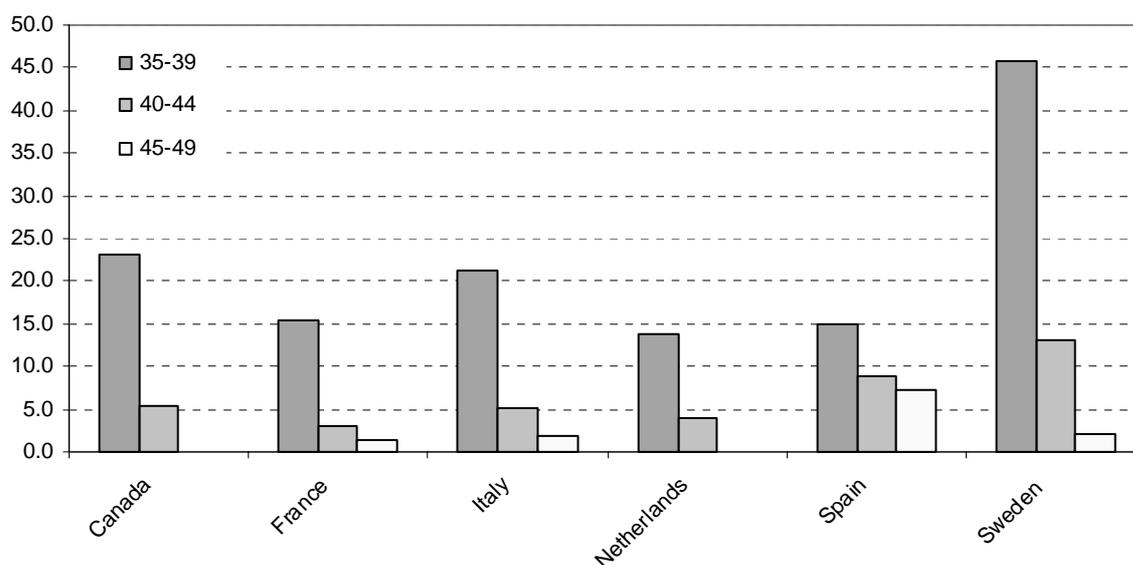
18. Children in Canada, the United Kingdom, Sweden and the United States are more likely to be in lone-parent families than those in France and Germany, and far more likely than in Italy, Portugal or Spain.

Fertility intentions

51. Information about “desired” (or “expected”) fertility shows that, in all OECD countries, the proportion of women desiring to stay childless, or to have only one child, is generally low, while the choice of having two children remains by far the most popular. While the observed decline in total fertility rates may partly reflect preferences for smaller families, data on desired fertility at different ages also highlights that, in several countries, women prefer more children than they actually realise (Figure 16).¹⁹ This gap between desired and achieved fertility suggests the existence of a welfare problems for individuals, and the scope for policies to help couples meet their desires.

52. Desired family size depends on a range of factors, such as economic prospects, partnership formation, and the specific stage in individuals’ life cycle. The importance of the latter factor is highlighted by the fact that the gap between desired and realised fertility is generally higher among younger relative to older women (Peer, 2000). This pattern is accounted by two main factors. The first, and more obvious, is that younger women could still have children at a later age: as realised fertility increases, the gap between desired and outcomes narrows at higher ages. The second factor is that desires may be reduced as individuals get older, because of learning in the face of personal experiences, and because young persons are likely to overestimate their chances of experiencing positive life-events (Weinstein, 1980). Such “unrealistic optimism” of young people is likely to reflect an exaggerated sense of their own ability to control events, and their efforts to protect their self-image when confronting negative experiences.

Figure 16. Proportion of women that have not reached their desired number of children in selected OECD countries



Note. Age groups differ across countries. In the case of Sweden, data refers to women aged 33, 38 and 43.

Source: FFS data

53. Interpretation of data on fertility intentions is complicated by a range of factors. For example, responses to questions about the ideal number of children may reflect more global norms of behaviour, as shaped by cultural models and religious beliefs, than personal preferences (Livi Bacci, 2001). This factor may account for the clustering of responses to questions about ideal number of children around the

19. The size of the gap is also likely to reflect a tendency to postpone births. Despite the advances of medically assisted reproduction, this trend of postponement raises questions about the risk of involuntary childlessness run by couples (Sardon, 2002).

replacement level, and for why very few people report zero or one child as the ideal. Whatever its rationale, the gap in fertility intentions provides a window of opportunity for policies aimed to increase fertility, and to bring it into line with individual preferences.²⁰

54. Fertility intentions also change over time. Goldstein *et al.* (2002) note that, on average, achieved fertility has always been slightly less than the ideal in industrial countries, reflecting a combination of unexpected obstacles in life, breakdown in partnerships, career surprises, health problems, difficulties with conception. They also argue that, in some European countries such as Germany and Austria, the ideal family size has now declined below the two-child norm, as ideals are adapted in the light of experience. Young people, which have experienced below-replacement fertility among their parents during their entire lives, increasingly bring ideals into line with a history of low-fertility. At its extreme, such “generational conditioning” may cause a downward spiral of desired fertility, as family size ideals of each generation are influenced by the fertility regime in which they grew up.

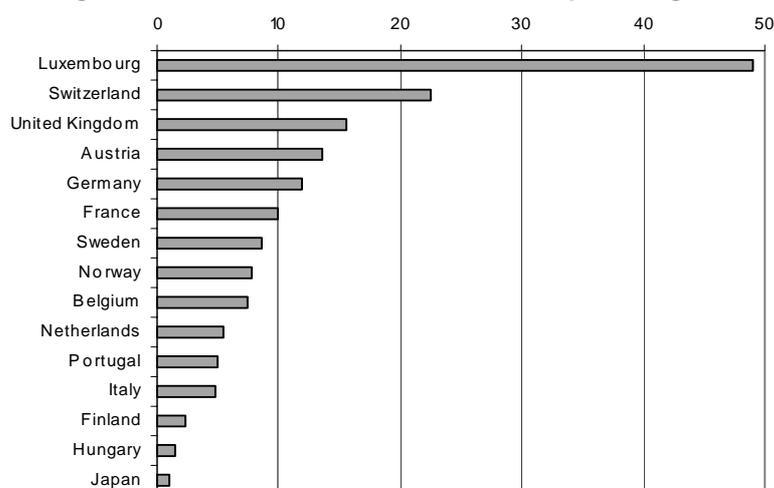
Fertility of ethnic minorities and foreign born populations

55. Fertility rates also differ according to the ethnicity of women. Some OECD countries where total fertility rates are comparatively high also have large proportions of ethnic minorities, whose younger age profile and higher fertility contribute to sustain their total population. This is the case of both the United States (with respect to Hispanic and black women) and New Zealand (with respect to Maori populations). In the United States, Hispanic women have a fertility rate of 3.0 children, which is higher than in many developing countries, as compared to levels of 2.1 for black women and 1.8 among non-Hispanic whites.

56. Although ethnicity is a significant factor for explaining cross-country differences in fertility rates only in a few countries, its importance could grow over time because of migration. Higher migration, beyond its direct effect on population levels in host countries, contributes to demographic trends because of the higher fertility of foreign women relative to natives (OECD, 2002c). In a number of OECD countries, births to foreigners and to persons of foreign origin already account for a percentage of total births that is larger than the proportion of foreigners in the total population (Figure 17).²¹ The importance of migration in shaping trends in fertility rates across countries is also likely to increase over time, as immigration flows over the next few decades are projected to be lower in Europe than in the United States (which will increase the difference in the fertility rates between these two regions). Because of this effect on fertility rates, migration can be a significant brake on population ageing, even if it is unlikely to reverse that process.

20. Because of this evidence on fertility intentions, some authors have argued that the rationale for a population policy is the same in both developed and developing countries: to meet an excess demand (in developed countries) or supply (in developing countries) for children. Chesnais (1998) argues: “When the fertility rate is too high, the proportion of unwanted children is important and there is.. a ‘latent demand for family planning’. Conversely, when fertility is too low, many desired children never enter the world: there are obstacles to family formation and growth, and there is a corresponding ‘latent demand for family support’”.

21. OECD countries differ in how they measure foreign births. The term “foreign” may refer either to the child or to parents; in this latter case, it may refer to the nationality of both parents, of the mother or of the father only. Because of these classification differences, national data on births to foreign mothers may not fully reflect the contribution of migration to fertility. The extent to which the legislation on naturalisation is more or less liberal will also affect the assimilation of foreigners in host countries, and the recorded numbers of foreign births.

Figure 17. Foreign births in selected OECD countries, as a percentage of all births, in 1999

Note. Foreign births refer to births to a foreign mother in Finland, France and Sweden; births to foreign parents in Japan; births to mothers born outside the country in England and Wales and Norway; births to foreign-born mothers who have been granted immigrant status in Canada; births of children of foreign nationality in all other countries. Data refer to 1996 for Canada; 1997 for Sweden and the United Kingdom; 1998 for Belgium and France. Data from the United Kingdom refer to England and Wales.

Source: OECD (2002b), Trends in international migration, Paris.

57. Whether the positive effect of migration in sustaining fertility rates is a temporary or permanent phenomenon depends on the size of annual flows and their composition (as affected by the naturalisation policies of host countries, e.g. facilities or obstacles to family reunions); on the nationality of new entrants; on the labour force participation of foreign-born spouses; and on the size of new inflows linked to second-generation migrants who choose a partner from their country of origin. It will also depend on the speed at which the reproductive patterns of foreign women of second (and subsequent) generations converge towards that of natives. This speed, in turn, is a function of the cultural and personal characteristics of both home and destination countries. For example, in the Netherlands (a country where ethnic groups represent around two-thirds of the population) fertility rates of different ethnic minorities have fallen over much of the 1990s. However, both the speed and form of convergence among second-generation migrant women towards the patterns prevailing among natives differ among different ethnic groups, with stronger recuperation at older ages for Turkish and Moroccan women than for natives and Surinam women (Schapendonk-Maas *et al.*, 2000).²² Because of both lower fertility and postponement, reproductive behaviour of foreign women tends to converge towards that of native women, although differences in fertility levels may persist for long periods of time (CBS, 2002).

22. In the Dutch case, “first generation” migrants are men and women born in foreign countries and with at least one parent also born abroad. “Second generation” migrants are men and women born in the Netherlands, with at least one parent born in a foreign country.

CHAPTER 2. POLICIES INFLUENCING FERTILITY RATES

Factors shaping fertility behaviour

58. The “traditional” explanation of women’s reproductive and childbearing decisions relies on the “rational choice” approach. This model of fertility, which was pioneered by Gary Becker (1981) in the 1970s and 1980s, regard individual’s decisions to have a child as the result of a utility maximization process that depends on the economic cost and benefits of children, subject to income constraints and individual’s preferences. In this framework, the decline in fertility that characterise developed countries may be the consequence of the higher price of children relative to other goods, of lower family incomes, or of a change in preferences for children relative to other consumption goods. This model, which has been very influential in the literature, also lies at the core of most policies aimed to influence women’s childbearing decisions. For example, reductions in the cost of children (*e.g.* as a result of public subsidies) or increases in the income of women of reproductive age (*e.g.* due to higher transfer payments) will increase demand for children (unless children are an inferior good). Backer’s basic model has been extended over time to account for additional aspects of the childbearing decision, such as “quality” of children and timing of births (Hotz *et al.*, 1999).

59. Most recently, however, a large number of studies have offered explanations of women’s reproductive decisions that go beyond the focus on individuals’ decisions that characterise “rational choice” models.²³ These studies typically stress the importance of cultural and institutional constraints within which individuals’ reproductive decisions take place. In some accounts, emphasis is given to the “risk aversion” of individuals who consider having children, and to the fact that both future costs and benefits of children cannot be known with certainty: when uncertainties about future economic, social or personal conditions increase, individuals may lean on the side of safety in order to avoid risk. In other accounts, emphasis is put on the emergence of post-material values in industrialised societies (such as individual self-realisation, satisfaction of personal preferences, and freedom from traditional forces of authority) and on changes in gender roles.

60. While different theories of women’s reproductive decisions emphasise different “causal” factors, most explanations of recent trends in fertility rates in OECD countries share a common set of determinants. Figure 18 identifies some of the most important factors suggested in the theoretical and empirical literature on fertility, and the broad set of policies that influence each of them.

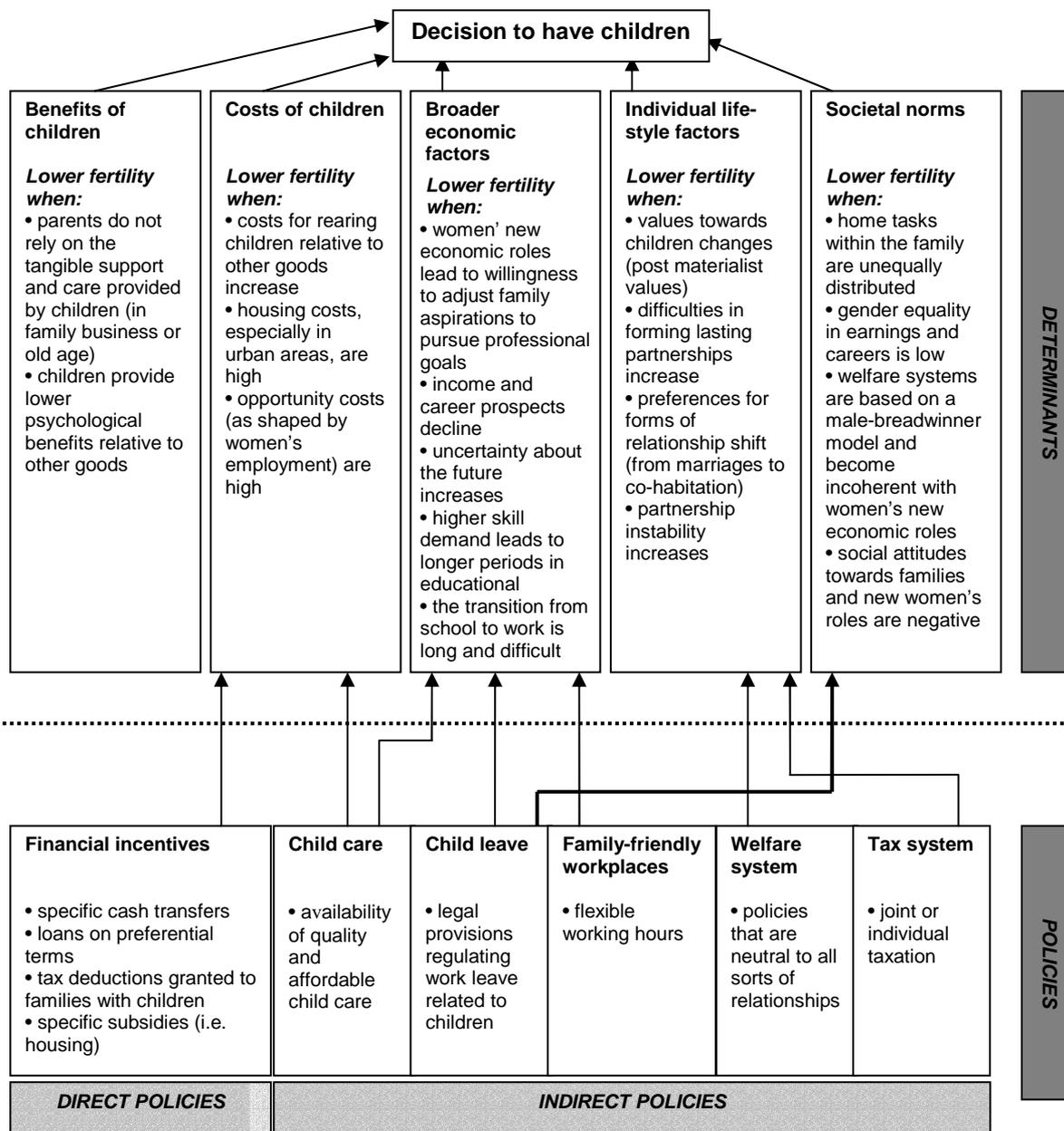
- *Benefits of children.* Benefits provided by children to their parents are both tangible and intangible. Tangible benefits include help provided by children in the running of family business, the material support that children may provide to parents during old-age, and the sharing of consumption

23. One of the weaknesses of Becker’s model is that it does not predict different outcomes for different societies, although the choice of having children is likely to be based on different arguments in traditional and liberal societies, or in developed and developing countries. For example, in sub-Saharan Africa parental costs are lower when costs of rearing children are shared among the kinship. In these societies children are seen as a common responsibility, and kinship groups can be seen as providing an effective form of “insurance”. In the extreme case, these arrangements can create free-rider problems if the parent’s share of the benefits from having children exceeds their share of the costs; in this case too many children are born (Dasgupta, 2000).

possibility allowed by larger families. The second category, which is more difficult to define, encompasses a range of psychological benefits, such as the feeling of “having a family”, of nurturing and educating children according to parents’ values, the importance that parents may attach to assuring a future lineage. Only few of these benefits can be expressed in monetary form. This is the case, for example, of the support and care that parents may receive in old age from their children, but even this “value” is highly uncertain, and will only be known in the future. In general, tangible benefits are likely to have become less important in advanced societies, as a consequence of industrialisation, urbanisation, the decline of the “extended family”, and the development of formal caring arrangements for the elderly.

- *Costs of children.* The costs of having children represent all the child-related expenses faced by families with children. While difficult to quantify, these costs may have increases relative to other goods, as parents feel an increasing obligation to invest heavily in their children to assure their success in life. Costs related to providing appropriate housing for families with children may also increase as urbanisation unfolds, as in large cities housing costs tend to increase with space, and cheaper forms of housing may be less suited for raising children. Another reason for higher costs of children, in several OECD countries, is that couples often live away from their parents, and may have to rely on costly child-care facilities. Beyond direct costs, mothers will incur opportunity costs due to earnings loss during their absence from work, and to the possible effect of work interruption on their future career development. The importance of these opportunity costs will partly depend on the feasibility of combining paid work with child-rearing (with higher opportunity costs where such combination is more difficult).
- *Broader economic factors.* Changes in society have provided more economic opportunities for women, which in turn may have lead many of them to adjust family aspiration in the pursuit of career goals. How these broad economic factors will affect fertility is *a priori* difficult to say, as this will depend on the country and the characteristics of women. On the one side, buoyant labour markets and greater job opportunities may drive more women into employment, increasing opportunity costs and lowering fertility. On the other side, fertility rates may decline when economic conditions deteriorate, as women become less certain about their future financial situation, their income declines, and the transition from schools to work by youths becomes more difficult. Society-wide economic factors may also affect fertility rates by increasing human capital investment of women: as firms’ demand for skills increase, a much higher proportion of women will acquire high levels of education, reducing fertility among these women.
- *Individual life-style factors.* Preferences for children may also decrease with the emergence of post materialist values for individual self-realisation and quality of life. Individual preferences may also affect the forms of relationships of youths and, through this channel, fertility — for example by increasing the proportion of individuals who prefer to stay single, and by making it more difficult to meet a suitable partner for forming a lasting partnership. These factors may lead to births being postponed when not abandoned altogether.

Figure 18. Reproductive decisions: proximate determinants and policy measures



- *Societal norms.* Societal norms, in particular in respect to gender roles, also influence fertility. When there is “incoherence” among women’s roles within the family, working places and society at large, fertility may be negatively affected.²⁴ Societal norms as to the ideal, or standard, family type may also influence fertility. In societies where large families are less socially accepted or encouraged, individuals might lower their preferred family size away from the nuclear family norm. In societies where out-of-wedlock births are less accepted, fertility may also be discouraged.

The broad set of policies (as identified in the lower part of Figure 18) which influence each of these factors is reviewed in the following section.

Policies to influence fertility

61. Public policies shape the context in which individuals’ reproductive decisions take place. They regulate the terms of employment, set eligibility conditions to social benefits, determine the level and quality of provision for education and health services, and define the rights and responsibilities of parents. In addition, the realisation of individuals’ childbearing plans often requires supporting policies. For example, without changes in employment conditions at the plant level, the onus of the commitment to childbearing within a couple will generally rest solely on women, thus threatening women professional plans and aspirations.

62. Fertility decisions made by individuals during their reproductive age are affected by their preferences and values, but also by a range of factors outside their control. These include conditions in the labour and housing market, support provided by extended family, and social policies. For example, women’s decisions as to the timing of childbirth, the length of time they withdraw from employment to care for children, the timing of return to employment, and choice to work part- or full-time are all shaped by conditions outside their immediate control. These choices may partly depend on the availability of affordable and quality day-care, on how much women would earn if employed (net of commuting time and work-related costs), and on preferences between being a full-time housewife and combining career and mother roles. These choices also depend, to a large extent, on the institutional and cultural settings to which women are confronted, and which are shaped by public policies. Fertility below the level desired by individuals may also reflect shortcomings in the supply of social services and social support, rather than inadequate income *per se* (Bagavos and Martin, 2001).

63. Despite some overlap between these different categories, policies to affect fertility levels can be divided into two broad groups (Hugo, 2000):

- Policies that aim to influence fertility *directly*, by offering financial incentives to families and individuals with children and disincentives to those who choose to have none. These policies typically involve cash payments for each child, privileged access to public housing, free or subsidised provision of medical or education services to families with children, taxation incentives related to the presence and number of children.

24. Within this framework, McDonald (2002) emphasises the importance of the “coherence” between the levels of gender equity in different social institutions, and between the roles, functions and preferences of different actors. McDonald distinguishes between two types of gender roles, in paid and unpaid work. The first setting (“male breadwinner model”) is characterised by a complementary division of labour between men and women, with a clear distinction between the responsibilities of men for jobs and market-income, and those of women for care and domestic work. The second setting (“gender equity model”) is characterised by a symmetric division of responsibilities within the family and the labour market. While both settings may *a priori* lead to a high fertility rate, societies where changes in women’s economic roles and aspirations are not matched by similar changes in institutions and family responsibilities are deemed to experience lower fertility rates.

- Policies that change the environment in which decisions by couples about the number of children they intend to have are made. While these policies often have other goals than fertility *per se*, they may influence reproductive decisions *indirectly*. These policies may be further subdivided into “family friendly” policies, which focus on reconciling the professional and family responsibilities of individuals; and other policies, such as those promoting gender equity within families and society, those shaping the general structure of the tax system or the features of the pension system, and those which encourage broad societal support of children and parenting.

64. Relative few OECD countries have policies in place with the explicit goal of increasing fertility. Most often, public policies try to stimulate fertility through other variables. In some countries, such as France, Luxembourg and Sweden, promoting higher fertility is often regarded as a government responsibility to avoid the adverse consequences of population ageing (Gauthier and Hatzius, 1997). On the other side, in countries where the imprint of liberal culture is stronger, governments are often reluctant to interfere with decisions that are regarded as essentially private. In addition, most policies to affect fertility are expensive, and evidence on their effectiveness is often contradictory and not specific enough to provide real guidance to policy makers.

Financial incentives

65. A range of instruments focuses on reducing the direct costs of children through financial incentives. The following are those most commonly used in OECD countries.

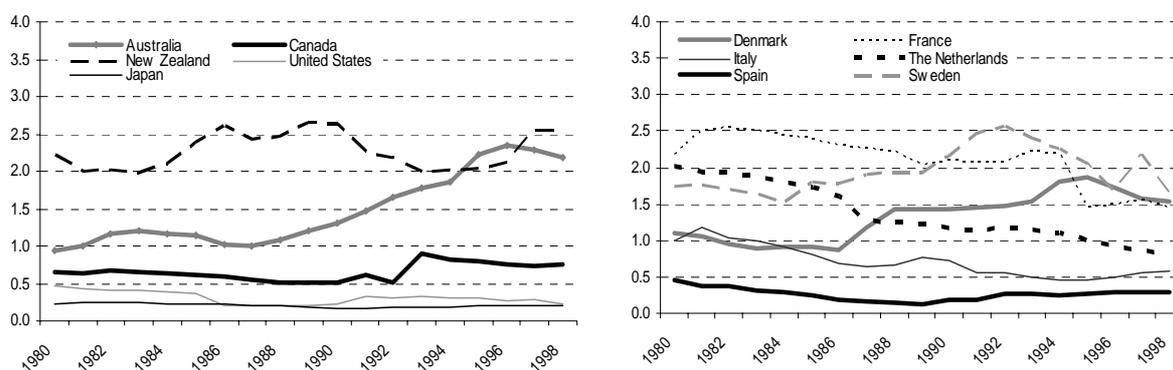
Child-related cash payment

66. These include all child-related payments made in cash. These most often take the form of regular payments to parents for each child. Some countries, however, also provide lump sum grants (or loans) when a baby is born, when he or she starts school, or at some other age. The payment might vary according to the age and birth order of the child, and it may be either available to all families with children or be mean-tested (*i.e.* reduced or eliminated for families with higher income or assets). One of the potential advantages of cash payments is that they can be directed to the child’s principal carer. This is important, as payments to the mother of the child, rather than to the father, are more likely to be used for the child’s benefit, and are probably more effective in raising fertility than tax cuts accorded to the father (McDonald, 2002; Micklewright 2002).²⁵ A disadvantage of cash payments is that direct financial incentives may be based on “incorrect” assumptions that income is shared equitably within families: when this does not happen, these cash payments may fail to support childrearing.

67. Family cash benefits, often conditional on the presence of children, exist in all OECD countries. Figure 19 shows public expenditure on family cash benefits, as a ratio of GDP, for some of these countries. In general, Nordic and English-speaking countries have higher family cash benefits than Southern European countries — with the highest level in 1998 recorded in Australia and New Zealand. Family cash benefits have been broadly constant since the early 1980, but declined in several countries and increased significantly only in Australia. Differences across countries in the level of family cash benefits, as a proportion of GDP, tend to be positively related to total fertility rates, but the relation is weak (Figure 20).

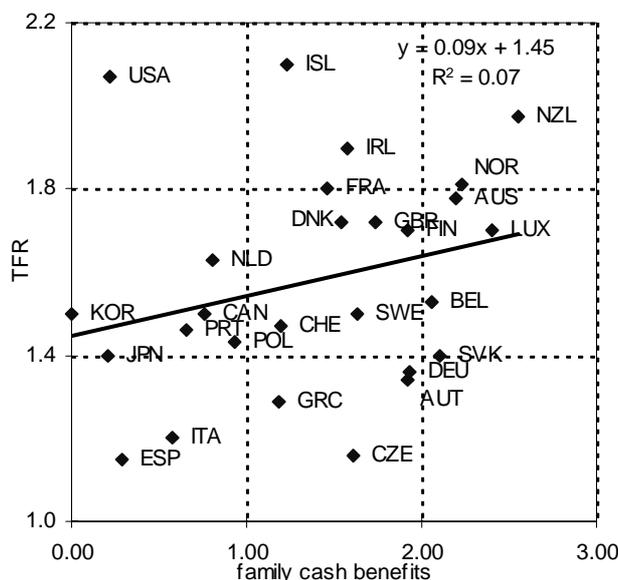
25. The inequality between mothers and fathers matters for children, because the impact on their living standards of higher family benefits may depend on which parent the extra resources are paid to. Micklewright (2002) suggests that payments to mothers are more effective in raising expenditure on children’s goods and services.

Figure 19. Family cash benefits as a percentage of GDP



Source: www.oecd.org/els/social/expenditure

Figure 20. Total fertility rates and family cash benefits



Note. Family cash benefits are expressed as a share of GDP in 1998.

Source: OECD Social Expenditure data base

Tax expenditures

68. Financial incentives may also be provided through tax expenditures — *i.e.* tax reductions or tax credits based on the presence of a child. Tax expenditures are often targeted to children of different ages or of different birth orders. Several OECD countries have recently introduced reforms of their tax codes aimed either to directly affect fertility, or to increase mothers' return to work after child birth.²⁶ While tax

26. In Spain, for example, the government recently announced plans to grant working mothers with a child under the age of three a tax credit of € 1200 per child (Crawford, 2002). Similarly, the United Kingdom recently introduced a Working Families Tax Credit (Cabinet Office of the United Kingdom, 1998) to raise work incentives for spouses with children. Australia recently extended tax rebates on the basis of the presence of children, with higher rebates for one-income than for two-income families (although

expenditures are less likely to be spent on children than cash payments, they are also less visible. Hence they are more likely to be the preferred option in periods of public expenditure restraints. Tax approaches may also be more politically acceptable than cash payments in some countries, and their administration costs are generally lower than for cash benefits.

Subsidies and subsidised services

69. Housing subsidies often provide special support to families with children. These subsidies may be either explicitly targeted to families with children, or may be granted at more favourable conditions to these families. These housing subsidies can take the form of periodic cash payments, lump sum payments (such as grants for first-time home-buyer), interest rate reductions at the birth of each child, tax rebates for housing costs, or subsidies to housing-related services. Most OECD countries offer a general means-tested housing benefit, include housing-related supplements in the social assistance system, or rely on both (OECD, 2002e). Subsidised services for children may include education, medical and dental services, public transport, and recreation services such as sporting, entertainment, leisure or artistic activities. While difficult to quantify, free or subsidised provision of these services significantly reduce the financial costs of rearing children in several countries.

Support for parents to combine work and family responsibilities

70. Several of the policy measures that are introduced to sustain fertility aim at encouraging parents, mothers in particular, to combine work and family responsibilities. The rationale for supporting parents to combine work and family responsibilities goes beyond fertility *per se*. Encouraging mothers to enter, or re-enter, the labour market after childbirth is important to maintain their skills, to ensure adequate resources for women living alone, to mobilise untapped labour supply in a context of population ageing, and to make further progress towards gender equity. While not directly targeting fertility, these policies will also affect women's decisions to have children. Governments face a double challenge: persuading women to have more children and persuading them to stay at work after maternity (Crawford, 2002). Because alternative uses of time compete with each other, policies that make it easier for mothers to combine work and family roles may reduce the opportunity costs of having children. Lower opportunity costs of childbearing may also be encouraged by greater gender equity in society and within families, for example by measures that encourage a more equitable division of family responsibilities between men and women.

Childcare provision

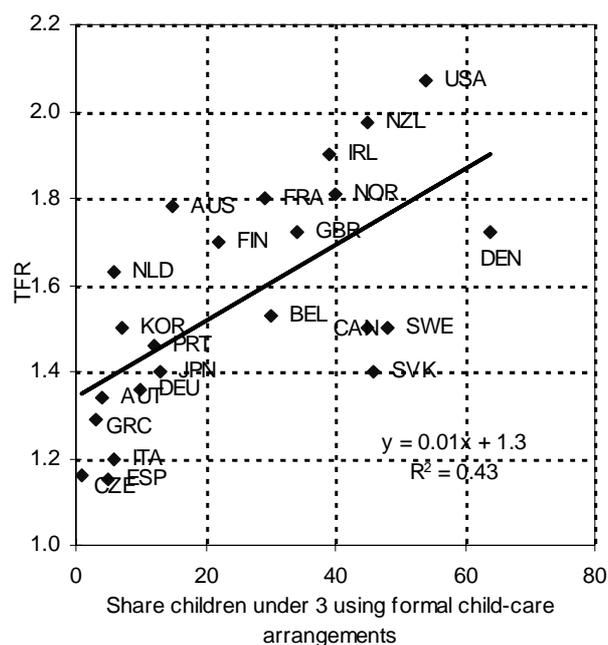
71. Provision of free or subsidised childcare is an important element of family-friendly policies, both to allow mothers to work, and to provide those without jobs with opportunities to train or seek paid employment. There are large differences across OECD countries in the form of these child care facilities, ranging from child-care provision by low-wage workers in private structures in the United States, to the long-established, high-quality and state-subsidised child care system in Sweden (McDonald, 2002). Child-care provision figures prominently in the government strategy of the United Kingdom and Norway, as major elements of these countries' family-friendly policies. In the United States, tax breaks are provided for child care expenses.

72. Provision of childcare facilities, and related cash benefits and subsidies, are difficult to measure and compare cross-countries. Countries differ in the specific forms of child-care arrangement they prefer, and in their views as to the age at which children should start participating in these arrangements. Across OECD countries, around 75% of children from the age of 3 to mandatory school age were enrolled in early

progressivity of the individual-based tax system means that two-earner couples who "split" their income evenly save at least as much tax as they lose in means-tested benefits).

education and care institutions in the second half of the 1990s, with some of these countries approaching 100% — although this proportion was much lower in some of them. However, coverage of children less than 3 years old is much lower in all countries and less uniform across countries (with attendance rates at or above 40% in several Nordic European countries, Canada, New Zealand and the United States, but much lower in the Southern and Central European countries). Figure 21, which shows the cross-country relation between total fertility rates and the availability of childcare for children aged less than three, suggests a positive and significant relationship.

Figure 21. Total fertility rates and childcare availability for children below the age of 3



Note: Data used refer to total fertility rates in 1998, and to participation in childcare arrangements in 1995 – 2000.
Source: OECD database

73. While provision of childcare has increased substantially in all OECD countries since the 1980's (Gauthier, 2000), the levels of governmental involvement differ widely across OECD countries. While in Finland all children are entitled to formal day-care, the provision of publicly financed childcare is still much debated in other countries, such as the United Kingdom. Ways of financing these childcare arrangements also vary. Beyond formal childcare, a number of countries, such as Denmark, Finland, France and Norway, have schemes to provide subsidies to parents who look after their children at home.

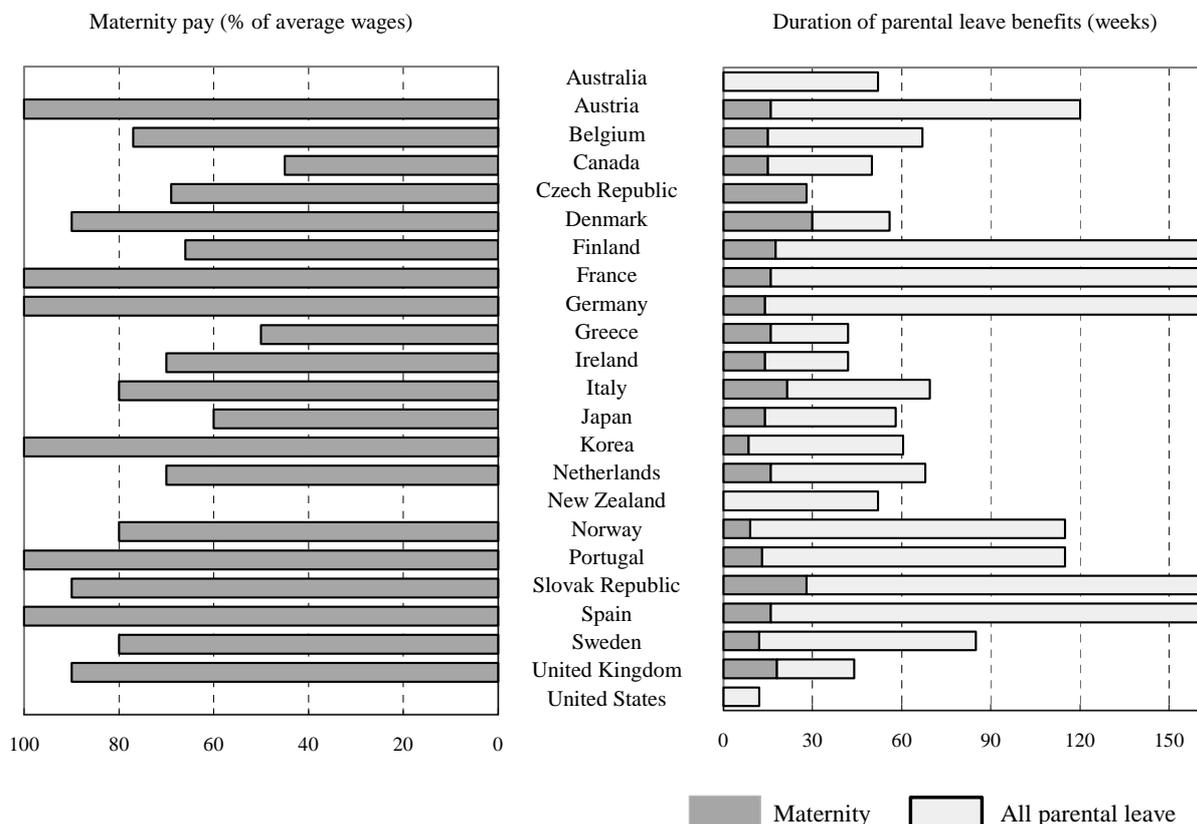
Maternity and parental leave

74. Maternity leave and benefits have a long history, dating back to the end of the XIXth century (Gauthier, 2000). Parental leave, on the other hand, have a much shorter history. Most OECD countries now provide several weeks of maternity leave, often remunerated at rates of 100% of previous wage (Figure 22).²⁷ While both duration and level of the benefits vary significantly among OECD countries, several have recently extended some forms of leave (e.g. to part-time employees in Ireland), and

27. Main exceptions are Australia, New Zealand and the United States, which provide alternative forms of parental and family leave.

introduced greater flexibility into these arrangements (*e.g.*, following the precedent set by Sweden, Austria, Denmark, Finland and the Netherlands now provide some flexibility in the working hours of parents).²⁸ Childcare leave provision also exist in several OECD countries, most often not remunerated.

Figure 22. Maternity and parental leave: duration and benefits



Source: OECD databases.

75. The effect of these leave provisions on fertility will depend on its duration, on the benefit received during this period, and on the way in which the benefit is financed. When relying on maternity leave provision to increase fertility, policy makers confront difficult trade-offs. For example, when benefits are paid through payroll taxes, more generous maternity leave may lower demand for female workers, which in turn may lead to lower wages or lower employment, with possible negative consequences for fertility as women’s reward from work falls. On the other hand, if the financing of maternity leave falls on other taxes and demographic groups (*e.g.* men, through general contributions or taxes) then higher maternity benefits may reduce the opportunity cost of childbearing, raise women’s net rewards from work, and have a positive effect on fertility. Effects of duration of maternity leave on fertility are also uncertain. On the one side, beyond the immediate earnings loss captured by the maternity pay component, the longer mothers stay out of the labour force, the greater the loss they could incur in terms of skill and career

28. Leave policies are especially developed in Norway, where all mothers have a right to return to part-time work after childbirth, and fathers are ‘forced’ to take part of the parental leave (*i.e.* some of the parental leave entitlement cannot be taken by mothers) so as to encourage greater sharing of childcare responsibilities between parents.

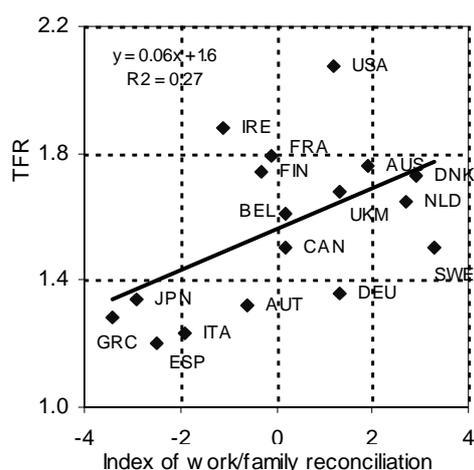
opportunities (e.g. promotion and training); on the other side, longer leave periods will provide mothers with more time to care for their child while retaining job security.

Employment conditions

76. Regulations affecting working hours are very important for women with children. Flexible working hours are often provided to help employees in reconciling work and family responsibilities. Specific regulations may also aim to avoid that working hours of mothers with young children are changed at short notice, or that working mothers are asked to have meetings or work-related social occasions scheduled at times that conflict with taking responsibility for their children. Also, provisions are sometimes made for setting working hours in concert with school hours, and for granting rights to short-term absences to care a sick child, to attend school occasions, or to take children to important appointments. Employment legislation that prohibits discrimination in employment on the grounds of gender, relationship and family status can also help women in reconciling work and childbearing.²⁹

77. Figure 23 shows the relationship across countries between total fertility rates and a composite index of work and family reconciliation policies. This composite index — which combines information about the extent of part-time employment, flex-time working and voluntary family leave provided by firms, in addition to child care availability and maternal leave provisions (OECD 2001b) — shows a weak positive relationship with total fertility rates across countries.

Figure 23. Total fertility rates and index of work and family reconciliation policies



Note: The composite index of work/family reconciliation policies is obtained as the sum of indicators for child-care coverage for children less than 3, maternity pay entitlement, extent of flex-time working and of voluntary part-time jobs, and (half of) voluntary family leave provided in firms. To put all the indicators on a common scale, they are scaled so as to have a mean of zero, and standard deviation of one.

Source: OECD database

29. From an historical perspective, many countries with high female employment — notably the Nordic countries — have been among the first to introduce work/family reconciliation policies as part of their measure to facilitate higher levels of female employment (OECD, 2001b). Overall, in countries where the government plays a large role in combining work and family responsibilities for women, firms tend to add relatively little to these public provisions. In other countries, such as Australia, Japan, the United Kingdom and the United State, which are traditionally characterised by little government interventions in regulating employment, a good deal of responsibility for the work/family reconciliation has fallen on individual firms. An OECD review of firms' practices in this area concluded that, although firms are slowly taking up this responsibility, this gap is far from being filled (OECD, 2001b).

Other measures supportive of children and parenting*General features of the social protection system*

78. The social protection system of OECD countries differ not just in the size of benefits and direct support provided through family cash benefits and family services, but also in the extent to which they are based on specific assumptions about gender roles within families. In some OECD countries, social protection systems remain based on a “male breadwinner” assumption for family relationship, where coverage to a range of social benefits is provided through the bias of an employed household head, and where social support may fail to be adequately provided to individuals without family ties, and to those with weak attachment to the labour market. In these countries, women also tend to retain the main caring responsibilities towards dependent family members, and the tax system is structured so that the joint, after-tax income of couples is highest when the income is earned by one person, and lowest when each member contributes in equal parts to family income. Non-gender specific welfare systems, on the contrary, tend to rely on gender-neutral social insurance programmes.

79. A specific aspect of the welfare system that may affect fertility is the extent to which countries provide specific pension rights to mothers who interrupted their career during childbearing, or (irrespective of their employment status) at the birth of a second or third child. These provisions differ significantly among OECD countries, *inter alia* as a function of the general features of the pension system (*i.e.* whether benefits are linked to employment or granted more generally), of their overall generosity and of the form that they take.³⁰

Gender equity in workplaces and society

80. Gender equity includes support of workers with family responsibilities irrespective of gender, and more general recognition and support to fathers as parents. Measures in each of these respects may improve social support for childbearing. Gender equity is prominent in the policies of many European countries. For example, in Germany new legislation applying to births that occurred in 2001 recognises the wish of young fathers and mothers to share work and caring tasks by allowing part-time work and care simultaneously for each parent (Gustafsson *et. al*, 2002). Gender equity has also been given prominence (at least in theory) in Japan, while it is less developed in other OECD countries.

81. The shift of institutional settings and cultural roles from a predominantly ‘male bread winner’ model towards greater gender equity may take the form of either an adaptation of welfare systems, (*i.e.* by using the tax and benefit system to provide financial transfers to families with children, or free or subsidised services for children); or of greater provision through markets (*i.e.* by employer-sponsored dependent care, or through provision of low-cost child-care provided by immigrants). Flexible working conditions, such as part time work, flex-time and liberal conditions for absences, are also more compatible with greater economic opportunities for women and with higher fertility. In general, the shift in institutional settings and cultural roles in the direction of accommodating the new economic roles of women has been stronger in English speaking and Nordic countries, than in Southern Europe, Germany and Japan, where policies built on the premise of male-dominated nuclear family still dominate.

Support to relationships and positive attitudes towards children and parenting

82. Other policies might encourage young people to form relationships and start families. Relationship education and counselling are part of the menu of policy tools used in some OECD countries.

30. One of the countries with the more generous provisions is France, where mothers with three or more children can retire with an immediate pension after only 15 years of contribution (Assous, 2002).

Some OECD countries also rely on direct economic incentives for young people to marry, such as housing programmes and tax advantages, in the expectation that earlier marriage may lead to earlier childbearing and a greater likelihood of having a third child, although earlier marriage is also likely to bear a higher risk of family breakdown at a later stage.

83. Specific policy measure aimed at increasing fertility may also try to raise the psychological benefits of having children. While this variable is not readily amenable to policy interventions, measures that will make society more “child-oriented” may raise these benefits. Benefits from children will be lower, for example, when children are portrayed as a threat to good relationship, as an obstacle to having a good time, as potential drug addicts, or when social institutions do not make allowance for the possibility that a person has children. Providing a clear and strong message that people with children will be supported by society at large, without penalising and stigmatising women who remain childless, is also important.

Effectiveness of policies: evidence from multivariate studies

84. The effectiveness of any specific policies on women’s reproductive decisions depends on a broad range of factors. This section presents evidence, for a range of OECD countries, on the impact of various policies on fertility behaviour. Annex 1, which extends a similar table provided by Gauthier (2001), provides an overview of studies concerning the impact of policies on fertility in several OECD countries: for each study, it shows the country covered, dataset used, statistical methods, dependent variables, policy measures and main findings. Table 1 provides a “qualitative” assessment of the empirical evidence from these studies, for some of the most significant policy (on the rows) and fertility variables (on the columns).

85. Before reviewing the results of these studies, some considerations are in order. First, very few studies are based on “real” experiments where individuals are randomly assigned to “treatment” and “control” groups (Gauthier, 2001). While the United States has carried out over the years a series of demonstration projects using this type of research,³¹ most of the studies on the impact of policies on fertility behaviour are based on econometric methods that exploit variations, over time or space, in the level of various policy instruments and in the variable of interest. Second, the effectiveness of any specific policy instruments will generally depend on the broad setting in which they are introduced. In general, it is unlikely that any particular set of measures to influence women’s reproductive behaviour will provide answers for all countries, all groups within each country, and all individuals within each group (McDonald, 2002). The scope for introducing each measure will also depend on the culture, tradition, and political economy of each country. Third, an important consideration for the assessment of the effectiveness of different instruments is that, empirically, results will depend on the type of indicator used. While an effort has been made to cover a broad range of OECD countries, this review has no ambition to be exhaustive.

Total fertility rates

86. Most of the studies reviewed have looked at total fertility rates at the aggregate level, and at the effect of family cash benefits to support it. In general, most of these studies tend to suggest the existence of a weak but positive relation. Buttner and Lutz (1990) report evidence of such relation at least for France and Germany, while Lefebvre and Merrigan (2001) conclude that in Canada “stronger incentives cause

31. As noted by Moffitt (1998), experimental evaluations — whereby a randomly chose group of individuals is given a “treatment” and a randomly chosen control group is not — are not easily applied in the case of fertility. Reasons for this include the difficulties of following these groups of individuals over several years, of controlling for “community” effects through which policies may influence individual behaviour, and of isolating the effects of individual measures (*e.g.* contraceptive use) that are part of a mix of reforms. A review of experiments at the state level, conducted in the United States over the 1980s and early 1990s, suggests that results are quite mixed, with some programmes (generally those with greater focus on health and family planning) decreasing childbearing and others increasing it (Maynard *et al.*, 1998).

larger changes of the probability of giving birth to children". However, in most cases (*i.e.* Brouillette *et al.* , 1993; Blanchet and Ekert-Jaffe, 1994; Walker, 1995; and Gauthier and Hatzius, 1997), the estimated impact of policies is small. For example, on the basis of a cross-country analysis, Blanchet and Ekert-Jaffe (1994) estimate the impact of family cash benefits at 0.2 children per woman. Using a similar research design, Gauthier and Hatzius estimate that a 25% increase in family allowances would increase fertility rate by about 0.6% in the short-run, and by about 0.4% in the long-run — that is, an increase of the total fertility rate of 0.07 children per woman. This effect was found to vary across countries. Several studies that have focused on family size (*e.g.* Ermisch, 1988; Zhang *et al.*, 1994; Ekert, 1986; Caudill and Mixon, 1993; Blachet and Ekert-Jaffe, 1994) all report that higher family benefits tend to lead to larger families.

87. Both Milligan (2000) and Whittington *et al.* (1990) also suggest a strong positive influence of tax policies on the total fertility rate. For the United States, Whittington *et al.* suggest that tax policies, in the form of the personal tax exemption to low-income households with dependents, have a strong positive impact, at the aggregate level, on family birth decisions. Similarly, Milligan (2000) estimates that a pro-natalist tax policy in the Canadian province of Quebec have increased fertility by 12% on average among persons eligible to the program, and by 25% for those eligible for the maximum benefit. Commenting on the Quebec experience, however, Gauthier (2001) notes that, despite a short-term recovery, fertility in Quebec remained lower or equal to that of other provinces where no similar policies were introduced. Georgellis and Wall (1992) also suggest a positive, but weak, effect of the real value of tax exemptions for dependent children on fertility in the United States.

88. Assessing the impact of family-friendly policy on fertility rates is less simple. Several studies for Austria, Canada, Hungary, Italy, the Netherlands, Norway, Swedish and the United States all conclude that work/family reconciliation measures, such as maternity or parental leave and childcare subsidies, have a positive impact on fertility. The estimated effect is however also small. Hyatt and Milne (1991) estimated that 1% increase in the real value of maternity benefit would increase total fertility rate in Canada between 0.09 and 0.26%. Other studies report contradictory results. For Germany, Buttner and Lutz (1990) found that changes in maternity leave provisions (a 40% increase in the duration of maternity leave, plus the introduction of special paid leave for working mother with 2 or more children) had a positive effect on age-specific fertility rates, up to 5 years after implementation of the reform. Gauthier and Hatzius (1997) report that neither the duration nor the benefits provided by maternity leave explain much of the variation in total fertility rates across OECD countries. Availability of jobs suited to the needs of mothers also favours fertility. Castles (2003) reports a positive link between the percentage of employees working flexi-time and total fertility rates across OECD countries. Del Boca (2002*b*) also finds a positive relationship between availability of part-time jobs and fertility rates in Italy.

89. Results on the impact of child care on total fertility rates also vary, partly depending on the form of child care. Lehrer and Kawasaki (1985) suggest that availability of care by relatives increase parent's desire to have another child in the United States. Kravdal (1996) estimated that a 20 percentage point increase in the provision of childcare in Norway would increase completed cohort fertility by only 0.05 children per women. Similarly Castles (2003) also finds a strong positive relationship between total fertility rates and formal childcare availability, in particularly for children below the age of three, across OECD countries. Del Boca (2002*b*) also reports a positive relation between availability of child care and fertility in Italy: a 10% increase in the availability of child care increases the odds of having a child by 0.2. Finally, Mason and Kuhlthau (1992) found that 10% of respondents in a sample of Detroit-area mothers report that limits in the availability of childcare have a negative influence on the timing and number of children. Blau and Robins (1989) found that greater availability of child-care encourages fertility, and that higher child-care costs have the opposite effect, in the United States. However, according to Walker (1995) and Kravdal (1996), improved provision of day care had a weak effect on fertility in Sweden and Hungary, while Hank and Kreyenfeld (2001) find that, in all of their estimated models, childcare availability has no effect on the decision to have a first child.

Table 1. Qualitative findings from empirical studies on the impact of policies on fertility

	<i>Total fertility rates</i>	<i>Timing of births</i>	<i>Specific birth order</i>	<i>Age of mothers</i>	<i>Other individual characteristics</i>
Family cash benefits	Small positive effects in most countries		Contradictory results on whether effects of policies are larger for first or subsequent births	Small positive effects, or contradictory results, on the effects of welfare benefits on teenage births (but evidence limited to few countries)	Some evidence that effects of policies differ among ethnic groups
Tax policies	Positive effects in the US and Canada	Larger effects of policies on the timing of births than on completed fertility			
Family-friendly policies	Positive effect of part-time and flex-time work Weak or contradictory effects of maternity leave		Small or no effect on probability of having a first child		
Child care availability	Positive effect, weak in some countries				Some evidence that effects of child-care availability and costs differ according to the employment status of mothers

Source: See detailed studies referred to in Annex Table 1.

Timing of births

90. When assessing the effectiveness of policies in raising fertility, an important issue is whether these policies affect the “completed” fertility rates of individuals or only the timing of births — in other words, whether any possible effect of policies is only temporary, or extends to the long-term. Studies that have tried to distinguish between the two, by using age- and parity-specific fertility rates, tend to conclude that impacts are more significant on the timing of fertility rather than on the total number of children achieved over a full reproductive cycle. Ermisch (1988), for example, suggests that higher family benefits may encourage early entry into motherhood, but not necessarily a larger family size. Barmby and Cigno (1990) confirm this finding on the basis of British data: higher child benefits encourage early entry into motherhood, rather than family size. When focusing on the mean age of mothers at childbirth, Beets (2001) reports that policies aimed to reconcile work and family responsibilities led to a slight reduction of the age at first birth in the Netherlands. However, he also warns this by itself will not guarantee a change in the ultimate family size.

91. Cigno and Ermisch (1989), and Barmby and Cigno (1990) present results on the impact of child benefit rates on completed fertility rates in the United Kingdom (benefit rates payable for the first child in the case of Barmby and Cigno). Both studies suggest that a rise in child benefits will raise completed fertility. However, their results on the effects of this policy instrument on the timing of births differ. While Cigno and Ermisch suggest that the “tempo” — *i.e.* the distribution of births over a woman’s life-time — of fertility will rise, Barmby and Cigno report inconclusive results.

Impacts of policies according to individual and household characteristics

92. The effectiveness of different policies on women’s reproductive behaviour will differ according to individual and household characteristics. These may include existing family size, age of the mother, presence of other children in the households, and other group characteristics like ethnicity, employment status and family income. For example, Lehrer and Kawasaki (1985) suggest that, in the United States, the

presence and availability of other relatives (*e.g.* grandmothers) have a positive effect of fertility because it reduces the economic burden of raising children: monetary costs of care by relatives are not only lower than those of other forms of care, but they are also unlikely to increase as more children are born.

Specific birth-order fertility

93. Several studies have tried to assess whether the effectiveness of measures to increase fertility differ according to the birth-order of children — *e.g.* whether impacts of policies on couples with no children are different from those on couples with children. These studies typically document systematic differences in the impact of various policies on specific birth-order fertility, although they often differ on whether such responsiveness is higher for low- or high-order fertility.

94. For example, Hyatt and Milne (1991) report that an increase of the real value of (unemployment insurance) maternity benefit in Canada increase the probability of having an additional child by around 4% in the case of families with no children, by 13% for families who already have one child, and by close to 25% for families who already have two or more children. Lefebvre and Merrigan (2001) similarly report higher effects of an increase in family benefits on the probability of having a third child in Austria. However, Gauthier and Hatzius (1997), in a cross-section analysis of 22 industrialised countries, suggest that increasing assistance for the first child by a given amount has a greater effect on fertility than those for subsequent children. This effect also differs across regions: in Southern Europe (Greece, Italy, Portugal and Spain), effects of child benefits are larger for first-order births, while in Continental European countries (Austria, Belgium, France, Germany, Luxembourg, the Netherlands and Switzerland) the effect is stronger for second- and third-birth orders.

95. Relatively few studies seem to have focused specifically on the impacts of policies on women probability of having their first birth. Hank and Kreyenfeld (2001) find that availability of child care (provided by both family networks and regional authorities) has no significant impact on women's probability of having a first birth. On the contrary, more studies have looked at couples who already have one child. Olah (1996, 1998) who analyse the childbearing decisions of one-child mothers and fathers, suggests that family-friendly policies (such as parental-leave and subsidised public child care) and gender equity have a positive effect on second-order birth rates in both Sweden and Hungary. Kravadal (1996) finds that greater availability of public day care (for children aged three or less) in Norway increases the probability of third-birth rates, although this effect becomes insignificant when mothers' employment is also included; conversely, the probabilities of first- and second-birth decline with increased child-care provision. Finally, Hoem *et al.* (2001) suggest that extensions of parental-leave in Austria in the mid-1990s, which favoured women who had their second or subsequent child shortly after their previous one, led to a sudden increase in the tempo of childbearing. Bélanger *et al.* (1998) reports no effect of financial allowances for newborn children on third-order fertility in Canada.

Age of mothers

96. Several studies have restricted their analysis to the impact of policies on the fertility behaviour of women of different age groups, with special focused on young women and the probability of out-of-wedlock births. Most of these studies refer to the United States and the United Kingdom, and focus on impact of means-tested benefits on teenage fertility.

97. Findings are mixed, ranging from insignificant effect of policies to small positive effects. For example, Duncan and Hoffman (1990) conclude that receipt of the means-tested AFDC (Aid to Families with Dependent Children) has no statistically significant impact on the probability of teenage out-of-wedlock birth in the United States; and Fairelie and London (1997) conclude that reforms to the AFDC

programme had no impact on higher-parity births for welfare recipients aged between 15 and 44.³² Thus, both studies suggest that receipts of welfare benefits have little (or no) influence on teenage births. On the other hand, Olausson *et al.* (2001) find that receipt of welfare benefits is positively associated with teenage birth in Sweden. An *et al.* (1993) also report that welfare dependency among mothers encourages out-of-wedlock childbirths among their teenage daughters.

98. Acs (1996) focuses on women aged 14 to 21 who already have a child in the United States. This study reports that changes in welfare benefits had little impacts on the subsequent childbearing decisions of both young women in general and of those dependent on welfare in particular. Kearney (2002) also suggests that the introduction of a “cap” to ADFC benefits in the United States did not lead to a significant reduction in teenage births overall. In summarising a large body of studies on the effects of welfare programs on fertility in the United States, Moffitt (1998) concludes that “findings... are.. consistent with the existence of a small, real effect but one that is difficult to detect.. sensitive to the methodology used and.. small relative to other factors determining demographic outcomes”.³³

Ethnicity, employment status, form of relationship, and income level

99. The impact of different policies on women’s reproductive behaviour may also differ according to their ethnicity, employment status, form of relationships and household income. In the context of his work on the impact of welfare reform on teenage fertility across US states, Kearney (2002) report that results varies among various ethnic groups: the introduction of a “cap” to ADFC benefits (*i.e.*, no additional cash assistance is provided for those children born while the family was receiving ADFC benefits), in particular, was found to have no significant effect on fertility rates, while (paradoxically) higher-order births to unmarried black teens and white high-school dropouts increased approximately one year after the policy reforms. Robins and Fronstin (1996) also report that both the basic benefit available to lone-parents families and the incremental benefit awarded to a second child in the United States increase family size for black and Hispanic women, but not for white women. Plotnik (1990) also suggested that welfare benefits have some impact on the probability of out-of-wedlock birth among black and white teenagers, but not for Hispanics.

100. Evidence of differential fertility impacts of policies according to other characteristics is often provided in the context of studies that focus on specific policies. For example, Blau and Robins (1989) finds that the relationships between fertility and the availability (and costs) of child-care vary between employed and non-employed women: higher child-care costs tend to lower the birth rate for non-employed women, but not for employed women. Whittington *et al.* (1990) also suggest that the positive effect on fertility of personal tax exemption vary among income groups, with middle income families recording positive birth incentive, and low and high income groups recording a negative one.

32. A large number of demonstration projects introduced in US states in the 1980s and 1990s tested various reforms to the ADFC system. Among the reforms that had a more direct potential influence on fertility was the introduction of a “cap” on AFDC benefits, which the traditional practice of providing families on welfare with additional cash benefits for each new birth.

33. Moffitt (1998) also notes that the effects of the 1996 US welfare reforms on fertility could exceed those associated to the more limited pre-1996 policy changes. Based on a review of more recent studies, however, Blank (2000) reaches similar conclusions: “Overall, the recent literature on the effects of policy on family structure has not provided clear guidance as to what states should do if they want to influence fertility and marriage through their welfare reform efforts”.

Conclusions

101. Overall, the multivariate studies reviewed above provide mixed conclusions as to the effects of various policies on fertility behaviour. Findings are often inconclusive or contradictory, partly because of methodological differences (such as different datasets and statistical models used) among studies. Some of the datasets refer to individuals, while others refer to aggregate data (especially among studies on the effect of policies on fertility); a few datasets are longitudinal (based on panel or retrospective data), while most are cross-sectional. Some analyses include only one type of policy instrument, while some measure the aggregate value of welfare benefits (at the level of state or country). On balance, in the author's subjective assessment, the evidence provided by this review seems to suggest a weak positive relation between reproductive behaviour and a variety of policies.

102. While few generalisations can be drawn from this review, an important one is that measures which may potentially affect reproductive behaviour will manifest their influence only in the long-term. Because of this, a consistent application of different measures over time is likely to be more important than abrupt introduction of large pro-natalist measures, which could be reversed at some later stage. This long-term horizon has also implications about the formulation of the policy goal that government try to achieve. A constant population level is likely to be the ultimate aim for many countries, but even in this case the question is how far into the future governments should look before demographic sustainability is achieved.

103. A second generalisation is that combining some of the above-mentioned measures would seem to be the most effective approach. If individuals have the means to purchase services that reduce the workload consequent on maternity, it will be easier to combine employment and fertility. The same applies where childcare services are cheaply available or are freely provided by the state. Women are also likely to feel more secure in temporarily absenting themselves from work to have children if their right to return to work is written into laws, and if their absence from work is compensated by generous parental leave arrangements. When state schemes of parental leave are not available, combining work and family will be easier where working hours are flexible and part-time jobs are widely available.

104. A third generalisation is that strategies will not succeed if they relate only to individuals or couples, rather than being supported by society at large. For example, while supporting changes in gender roles within the family is an essential element of any strategy to raise fertility, the way families are structured and organised is also a fundamental element in the cultural identity of each country. Societies facing very low fertility need to investigate the particular reasons that account for this in their country, define a broad agenda to address the reasons of low fertility, and finally mobilise political support for this new policy agenda. A comprehensive set of measures, which affects the various fields of society, is more likely to succeed than a number of *ad hoc* interventions.

105. The last general point is that policy-makers should probably not expect too much from pro-natalist policies. We still do not understand fully why birth rates in OECD countries have declines so precipitously over the past three decades, and knowledge about the effects of policies and their complementarities is still too limited to guide the design of cost-effective interventions.

ANNEX 1. OVERVIEW OF STUDIES ON THE IMPACT OF POLICIES ON FERTILITY

Country	Authors and years	Data and area ¹	Dependent variables	Methods of analysis	Policy variables considered ²	Findings ³
<i>International</i>	Castle (2002)	Late 1990s. OECD countries	Total period fertility rate	Cross country regressions	<ul style="list-style-type: none"> • Formal childcare provision • Publicly funded childcare • Maternity/childcare leave • Social expenditure on families • Flexible workplace arrangements 	<ul style="list-style-type: none"> • Strong positive impact of formal childcare, in particular for children aged less than 3. • Weak impact for flexi-time • Negligible or preserve impact for other policy variables
	Blanchet and Eckert-Jaffe (1994)	1969 – 83 11 countries in Western Europe	Total period fertility rate	Two stage squares regression and two-stage least squares regression	Index of family policy	<ul style="list-style-type: none"> • Positive effect.
	Ekert (1986)	1971–83 8 Western European countries	Total period fertility rate	Ordinary least squares regression	Index of family policy	<ul style="list-style-type: none"> • Positive effect.
	Gauthier and Hatzius (1997)	1970 – 90, OECD countries	Total period fertility rate	Pooled cross-national and time-series regression	Family cash benefits	<ul style="list-style-type: none"> • Weak positive impact.
<i>Austria</i>	Hoern, Prskawetz and Neyer (2001)	1995-1996	Third order births	Intensity (or hazard) regression analysis	A one-year extension of parental leave	<ul style="list-style-type: none"> • Positive impact on timing of third birth
<i>Canada</i>	Bélanger <i>et al</i> (1998)	1996 Quebec	Third-order births		Financial allowances for newborn children	<ul style="list-style-type: none"> • No effect

Note. This table extends the findings reported in Gauthier (2001)

Annex Table 1 (continued). Overview of studies on the impact of policies on fertility

Country	Authors and years	Data and area ¹	Dependent variables	Methods of analysis	Policy variables ²	Findings ³
	Brouillette, Felteau, Lefebvre (1993)	1985-88	Conditional fertility probabilities	Maximum likelihood	Direct and indirect cash transfers to families	<ul style="list-style-type: none"> • Weak positive effect.
	Duclos (2000)	1981-96 Quebec		Fixed-effects regressions		<ul style="list-style-type: none"> • Fertility rates in Quebec increase relatively to other provinces
	Hyatt and Milne (1991)	1948-86	Total period fertility rate (log)	Ordinary least squares	Maternity benefits	<ul style="list-style-type: none"> • Weak positive effect
	Kearns (1996)	1975-93 Quebec		Qualitative response model [NOT CLEAR WHAT IT IS]		<ul style="list-style-type: none"> • Fertility is less responsive to public support in Quebec than in other provinces • Strong increase of third births in Quebec
	Lefebvre and Merrigan (2001)	1981-77	Birth rate	Multivariate regression / difference-in-difference approach	Family cash benefits	<ul style="list-style-type: none"> • Positive effects on the probability of first, second and (especially) third child.
	Milligan (2000)	Quebec	Total fertility rates	Difference-in-difference approach	Pro-natalist tax policy provided by the province of Quebec	<ul style="list-style-type: none"> • Strong impact, particularly on the probability of a third child.
	Zhang, Quan and Meerbergen (1994)	1971-83	Total period fertility rate	Generalized least squares	<ul style="list-style-type: none"> • Tax exemptions • Child tax credit • Family allowances • Maternity leave 	<ul style="list-style-type: none"> • Strong positive effects.

Note. This table extends the findings reported in Gauthier (2001)

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Annex Table 1 (continued). Overview of studies on the impact of policies on fertility

Country	Authors and years	Data and area ¹	Dependent variables	Methods of analysis	Policy variables ²	Findings ³
Germany	Buttner and Lutz (1990)	1964-87	Age specific fertility rates	Age-period-cohort analysis	Pro-natalist measures introduced in 1976	<ul style="list-style-type: none"> • Positive effect on birth rate up to 5 years after implementation.
	Cigno, Casolaro and Rosati (2001)	1960-95	Total period fertility rate	Value at Risk method	Social security (pensions)	<ul style="list-style-type: none"> • Higher old-age pensions have a negative effect on fertility (but a positive effect on aggregate household saving)
	Hank and Kreyenfeld (2001)	1984–1995 West Germany	Transition to the first child in western Germany	Multilevel discrete-time logit models	<ul style="list-style-type: none"> • Availability of public childcare • Availability of childcare through social networks 	<ul style="list-style-type: none"> • No effect of childcare availability on fertility.
Hungary	Olah (1998)	1992–93	Second birth rate	Intensity (or hazard) regression	<ul style="list-style-type: none"> • Family-friendly policies • Gender equity 	<ul style="list-style-type: none"> • Positive influence (<i>i.e.</i> limited decline of fertility compared to other in Eastern and Central Europe)
Italy	Del Boca (2002b)	1991-95	Probability of working and having children	Pooled cross-sections Fixed-effect logit estimator	<ul style="list-style-type: none"> • Availability of publicly-provided child care • Part-time employment opportunities 	<ul style="list-style-type: none"> • Positive impact
Norway	Kravdal (1996)	1988	Probability of first, second, and third birth	Logistic regression	Day care facilities	<ul style="list-style-type: none"> • Weak positive effect
Sweden	Hoern (1993)	1961-90	Parity-specific birth rate	Indirect standardization	Parental leave	<ul style="list-style-type: none"> • Positive impact

Note. This table extends the findings reported in Gauthier (2001)

Annex Table 1 (continued). Overview of studies on the impact of policies on fertility

Country	Authors and years	Data and area ¹	Dependent variables	Methods of analysis	Policy variables ²	Findings ³
	Olah (1996, 1998)	1992-93	Second-birth rates	Intensity (or hazard) regression	<ul style="list-style-type: none"> Family-friendly policies Gender equity 	<ul style="list-style-type: none"> Positive influence of public policies on individual's childbearing behaviour Greater equity in relationship between men and women has a positive effect on fertility.
	Olausson et al. (2001)	1985	Probability of teenage birth	Multiple logistic regression	Welfare benefits	<ul style="list-style-type: none"> Receipt of welfare benefits is positively associated with teenage birth
	Walker (1995)	1955-90	Total period fertility rate	Time-series analysis	<ul style="list-style-type: none"> Parental benefits Public child care availability Child allowances 	<ul style="list-style-type: none"> Small positive effect on fertility since the early 1970s (only partially offsetting the larger and negative effects of higher female earnings and return to human capital).
<i>The Netherlands</i>	Beets (2001)	2000	Age at first birth	Multivariate regressions analysis	<ul style="list-style-type: none"> Family policies to reconcile family- and labour market careers 	<ul style="list-style-type: none"> Small reduction of the age at first birth, but this does by no means guarantee a change in the ultimate family size
<i>United Kingdom</i>	Bamby and Cigno (1990)	1980	Completed fertility	Micro-econometric model	A raise in benefit rate payable for the first child.	<ul style="list-style-type: none"> Positive effect
	Cigno and Ermisch (1989)	1980	Completed fertility	Ordered probit model	<ul style="list-style-type: none"> Child benefits Taxes 	<ul style="list-style-type: none"> Positive effects of higher child benefits on fertility. Higher women's hourly earnings net of tax reduce fertility.
	Ermisch (1988)	1971-86	Parity- and age specific birth rates	Time series regression	Child allowances	<ul style="list-style-type: none"> Higher child allowances increase the change of third and fourth births, as well as early motherhood
	Ermisch (1991)	1980	Pre-marital birth	Proportional hazards model	Welfare benefits	<ul style="list-style-type: none"> Small effects of higher welfare benefits on pre-marital births.

Note. This table extends the findings reported in Gauthier (2001)

DELSA/ELSA/WD/SEM(2003)15
Annex Table 1 (continued). Overview of studies on the impact of policies on fertility

Country	Authors and years	Data and area ¹	Dependent variables	Methods of analysis	Policy variables ²	Findings ³
United States	Acs (1996)	1979-88	Probability of giving birth to a second child before the age of 25	Discrete time hazard models/logit regression	<ul style="list-style-type: none"> • Family cash benefits (Assistance to Families with Dependent Children, AFDC) • Food stamps 	<ul style="list-style-type: none"> • Little impact of benefits on subsequent childbearing decisions
	An <i>et al.</i> (1993)	1968-87	Probability of teenage birth out of wedlock	Bivariate probit model	Welfare benefits	<ul style="list-style-type: none"> • Teenage girls whose mothers received welfare are more likely to give birth out of wedlock.
	Argys and Rees (1996)	1979-91	Probability of conception		Welfare guarantee Level of the marginal benefit	<ul style="list-style-type: none"> • No effects
	Blau and Robins (1998)	1980	fertility	Hazard functions	Child-care availability and cost	<ul style="list-style-type: none"> • Greater availability of child-care encourages fertility, but higher child-care costs have the opposite effect.
	Caudill and Mixon (1993)	1985-86	Ratio of births to single mothers to total births, per year	Ordinary least squares	AFDC benefits	<ul style="list-style-type: none"> • Positive relationship between welfare payments and illegitimacy rates.
	Duncan and Hoffman (1990)	1973-85	Probability of teenage out of wedlock birth	Logit model	AFDC benefits	<ul style="list-style-type: none"> • no effect
Fairlie and London (1997)	1990	Probability of higher-order birth for mothers who are AFDC recipients	Logit model	Introduction of a "cap" on AFDC benefits	<ul style="list-style-type: none"> • The family cap is unlikely to lead to large reduction in the number of births among AFDC recipients. 	

Note. This table extends the findings reported in Gauthier (2001)

Annex Table 1 (continued). Overview of studies on the impact of policies on fertility

Country	Authors and years	Data and area ¹	Dependent variables	Methods of analysis	Policy variables ²	Findings ³
	Georgellis and Wall (1992)	1973-84	Fertility	Generalized least squares method	Dependent tax exemptions	<ul style="list-style-type: none"> Weak positive impact of tax exemptions on fertility.
	Kearney (2002)	1989-98 US States	Total number of births (log of) in each state and month for women aged 15 to 34.	Ordinary least squares	Introduction of a "cap" on AFDC benefits	<ul style="list-style-type: none"> No evidence that this measure lead to a reduction in births.
	Lehrer and Kawasaki (1985)	1976	Intended future fertility	Log-linear probability model	Availability of childcare	<ul style="list-style-type: none"> Availability of care by relatives may increase parent's desire to have another child.
	Mason and Kuhthau (1992)	1986, Detroit area	Fertility	Logit analysis	Policies to increase the supply of child care or to lower its cost	<ul style="list-style-type: none"> Negative influence of childcare constraints on the timing and number of children reported by 10% of respondents mothers
	Plotnik (1990)	1979-84	Teenage out-of-wedlock childbearing	Logit regression and discrete time hazard models	Five indicators of state welfare policy including monthly AFDC benefit plus the value of food stamps	<ul style="list-style-type: none"> Weak effect of welfare benefits on teenage out-of-wedlock childbearing among Blacks and Whites, but not for Hispanics.
	Robins and Fronstin (1996)	1980-1988	Family-size	Bivariate probit model	AFDC benefits level and differentials	<ul style="list-style-type: none"> Both the benefit level and the incremental benefit for a second child have a positive effect of Black and Hispanic women, but not of White women
	Whittington, Alm and Peters (1990)	1973-84	General fertility rate	General least squares regression	Real tax value of personal exemption	<ul style="list-style-type: none"> Strong positive effect of tax exemptions on birthrates.

Note. This table extends the findings reported in Gauthier (2001)

1. The following acronyms are used: CPS: Current Population Survey; PSID: Panel Study of Income Dynamics; NLS: National Longitudinal Survey; NLSY: National Longitudinal Survey of Youth; NSFH: National Survey of Families and Households; SIPP: Survey of Income and Program Participation.

2. Policy variables: the following acronyms are used: AFDC: Aid to Families with Dependent Children; AFDC-UP: Aid to Families with Dependent Children (Unemployed Parent)

3. Only significant effects are reported (unless mentioned otherwise).

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