

Low fertility in Europe: Is the pension system the victim or the culprit?

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Over the last two and a half centuries, fertility has fallen dramatically throughout Europe (Mitchell, 2003). In relative terms, the fall has been more pronounced since the end of World War II. After a modest recovery in the 1960s (the so-called baby boom), the total fertility rate (TFR) declined for almost two decades before settling below the replacement level of 2.1 births per woman.

If we plot the TFR against the share of pension or, more generally, social expenditure in GDP, we detect a negative correlation (see Figure 1). Why? The usual explanation is that, since the state has taken over from the family as the main source of old-age support, any increase in the old-age dependency ratio translates into higher public expenditure on pensions, health and social facilities for the aged. The effect of falling fertility has been exacerbated by the fact that life expectancy has risen, but the statutory age of retirement has not been allowed to keep pace with the age at which people actually become old.

The combined effect of fewer births, longer lives and sluggish retirement age is putting public pension systems, all essentially pay-as-you-go, under increasing strain. Most governments are responding to this by either raising contributions, or cutting benefits (by a variety of means, including later retirement). Those who have gone for benefit cuts are introducing tax inducements to buy into private pension schemes. Some have also introduced or are about to introduce fertility incentives. Others still are making it easier to combine work with parenthood public by improving child-care facilities, introducing flexible working hours, etc..

What does not seem to have occurred to anyone in government, or in a position to influence public opinion, is that

- a. public pensions themselves are in part to blame for the fertility decline, and
- b. cutting pensions would not increase voluntary saving.

I shall try to throw light on these issues drawing on Cigno and Werding (2007).

What do we know about the effects of pension policy?

The effect of pension policy on voluntary saving has long been the object of empirical research. A majority of the studies based on individual or household data finds that pensions will either discourage or have no statistically significant effect on household saving. Others find a positive

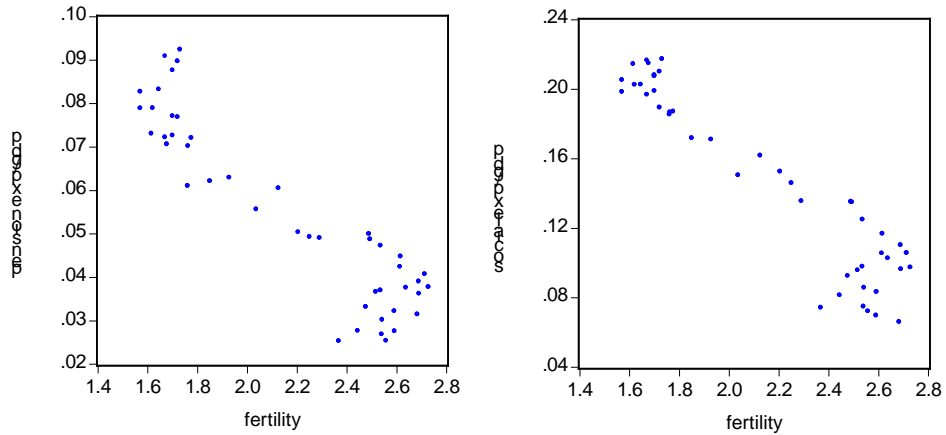


Figure 1. Fertility, and pension/social expenditure as share of GDP (1949-1993)

Source: Puhakka and Viren (2006)

effect. All take the household age structure, hence fertility, as given. Fertility is assumed to be exogenous also in early studies of aggregate data, and the findings are equally contradictory. The effect on fertility has received less attention. A number of cross-country studies finds that pensions discourage fertility.

More recent investigations allowing for saving and fertility to be jointly determined invariably find that pensions have a negative effect on fertility, but either a positive effect, or no effect at all, on household saving.¹ Contrary to what appears to be the assumption behind current policies, it would thus seem that public pensions displace fertility, and human capital investment, rather than voluntary saving. This makes public pension systems, all essentially pay-as-you-go, intrinsically unstable. The system eats away at its own contributive basis.

There are various ways in which one can explain this phenomenon. The one I favour goes as follows. Most people derive pleasure from having children, and from seeing them do well. But children are very costly in terms of actual expenditure and forgone earnings. If pension entitlements increase with earnings, there is a further cost in terms of forgone pension benefits. Fertility will consequently be higher if, in addition to altruistic pleasure, children bring tangible rewards – in other words, if bringing a person into the world is a good investment, as well as an act of love. Explanations of reproduction and transfer behaviour based entirely on the latter do not appear to fit the facts.²

In developing countries where young children can be made to work, part of the reward for having a child may come rather early, in the form of the child's net contribution to family income. In developed countries, young children do not usually make any contribution to family income. But most grown-up children provide their elderly parents with personal services, and a few also with material support. Since, in developed countries, the old are relatively well provided with money through either personal saving or the pension system, and given that the market does not provide perfect substitutes for the services of their own children, the money-equivalent of the utility that they derive from such services (i.e., the amount of money that they would be willing to pay for them) is likely to be even higher than in developing countries.

The problem with the idea that money and time spent on a young child might return in the form of old-age support is that parents cannot oblige a grown-up child to do or give anything. Both the economic and the sociological literature abound with arguments to the effect that a child can be brought up to feel it is his moral duty to support his parents in old age, or otherwise that an adult

¹ See Cigno and Rosati (1992), Cigno and Rosati (1996), Ehrlich and Zhong (1998), Cigno et al. (2003a), and Zhang and Zhang (2004). Those in which I am involved are single-country, time-series studies. The other two are cross-country studies, and estimate also the effect of pensions on growth. But one finds this effect to be negative, the other to be positive.

² See Cigno et al. (2003a, 2006), and references therein.

will meet with society's disapproval if he does not support his elderly parents. My own argument, not incompatible with those mentioned, is based on the family-level equivalent of a political constitution. A family constitution (unwritten, and typically also unspoken) is a set of rules specifying the minimum that an adult must give, or do for, his elderly parents, and each of his young children, so designed that it is in every family member's interest to obey it, and in no generation's interest to amend it.

The introduction of a public pension scheme makes a number of these constitutions unviable.³ For a number of adults, the investment motive for having children, and for investing money and time in their upbringing, will then disappear. These persons will have fewer children than they would have had without the scheme. Indeed, if the scheme is pay-as-you-go, they will have fewer children than is efficient. An extra birth would in fact make all participants in the scheme collectively better-off.⁴ Given a large number of participants, however, the benefit to the child's own parents will be too small to matter, and will thus be disregarded in taking fertility decisions.

The effect on voluntary saving is ambiguous. On the one hand, compulsory saving in the form of pension contributions tends to substitute for voluntary saving. On the other, however, those who, without the policy, would have saved very little or not at all, may now find that the pension does not fully compensate them for the loss of filial support, and will then save more. The household saving rate may thus rise or fall. As already mentioned, there is evidence that it would either rise or stay the same.

Is there anything a government can do?

One thing a government can do, if it wants to get rid of the undesirable effects of a public pension system, is get rid of the system (or cut it back drastically, leaving in place only a low safety net). That would restore the incentive to have children, and invest in them. But it would also reduce the incentive to save. Could this be countered by tax inducements to buy into private pension plans? Since the tax advantages induce a substitution of pension plans for other forms of voluntary saving, there will be an overall increase only if the substitution effect is dominated by the income effect. But the latter will in any case be compensated away if the government raises the income tax rate to recover lost revenue.

³ The demonstration is in Cigno (2006). Evidence that a statistically significant fraction of the population is constrained by it is reported in Cigno et al. (2006).

⁴ For Germany, Werdinger and Hofmann (2005) put the average present value of the net benefits accruing to the pension fund as a result of the birth of a child at about 139000 euros.

An alternative to cutting the public pension system, or cutting it too drastically, is to subsidize fertility. Cash benefits and tax allowances for families with children are present almost universally. Fertility-related benefits are present in some pension systems. Examples of this are the *majoration de durée d'assurance pour enfants* in the French *Régime Général*, and the Swedish *extrapension för barn*. In 1986, the German government started crediting parents who withdraw from the labour market to look after a child with a notional pension contribution, *Kindererziehungszeiten*, originally set at 75% of average earnings, for up to one year. Later, this notional contribution was raised to 100% of average earnings, and extended to three years. Since 1996, however, the condition that the parent should actually give up work in order to qualify for the benefit has been removed, and *Kindererziehungszeiten* has become a fertility-related pension benefit just like the French and Swedish ones.

The only difference between child benefits as commonly understood, and fertility-related pension benefits, is that the former are paid much earlier, and are less uncertain, than the latter. Given imperfect credit and insurance markets, one euro in the form of conventional child benefits is thus likely to elicit a stronger fertility response than the promise of a fertility-related pension benefit with a present value of one euro. Irrespective of when they are paid, however, fertility-related benefits induce parents to substitute quantity for quality – in other words, to have more children, and spend less money or time on each of them.⁵ This may be countered using education subsidies. Since both kinds of subsidy cost tax-payer's money, however, using them together is an expensive way to foster fertility and human capital formation.

A more cost-effective policy is to introduce pension benefits contingent on the total earning capacity of the pensioner's own children (Cigno et al., 2003b). An element of that was present in *Kindererziehungszeiten* until the requirement that a parent should give up work to qualify for the benefit was removed. The length of time that a parent stays out of the labour market following the birth of a child is, in fact, a measure (albeit a very crude one) of the amount of time that the parent spends with the child. Conditioning pension benefits on this, however, rewards only one of the inputs into the making of a successful citizen, and will consequently distort parental choice. Furthermore, it does not take account of the quality of parental attention.

A policy proposal and some policy simulations.

My proposal is to set up two parallel pension schemes, each one designed to break even over the long run:

⁵ The point appears to have been made for the first time in Cigno (1986).

1. A conventional Bismarck-type scheme, where individual benefits depend on individual contributions, with some adjustment for equity and insurance purposes.
2. A scheme offering benefits conditional on the earning potential of the pensioner's own children,⁶ again with adjustments for equity⁷ and insurance.

Unlike a conventional pay-as-you-go scheme (where there is no connection between the amount a pensioner takes out, and the amount his children put in the common pool), scheme 2 contains an incentive to maximise the collective earning capacity of one's own offspring. Couples and individuals should be free to combine schemes 1 and 2 any way they like, and thus to allocate their time between earning money and producing future earning capacity in accordance with their comparative advantages.

To illustrate the effects of this proposal, and compare them with those of alternative policies, I will now report some of the simulations in Cigno and Werding (2007). These were carried out using the econometric model of West Germany in Cigno et al. (2003a). The latter was estimated using aggregate data relating to the 1960-95 period, the longest for which the relevant information is available for West Germany separately from the rest of the country. The model allows for possible cross-links between saving and fertility, and for the increase in the effectiveness of birth control that followed the introduction of the contraceptive pill in the late 1960s.⁸

As elsewhere in Western Europe, fertility in West Germany fell sharply after the baby boom from about 2.5 in 1965 to about 1.35 in 1975, and then oscillated around this low level. Figure 2 shows what happened to the TFR over the last decade and a half of the estimation period. For the subsequent years until 2020, it shows what would have happened under alternative policy scenarios. The latter differ with regard to the evolution of pension coverage, of the forced intergenerational transfers implied by a pension fund deficit or surplus, and of the child benefit rate.

Pension coverage is measured by the ratio of pension payments, at constant prices, to the number of persons aged 65 (the statutory age of retirement) or over. Variations in this ratio reflect changes in longevity, in the *effective* age of retirement, in the monetary amount of the benefit in the first year after retirement, and in the method used to uprate this benefit in subsequent years. The forced intergenerational transfer is measured by the difference between pension payments and pension contributions, expressed as a percentage of the latter.⁹ The child benefit rate includes all

⁶ Potential rather than actual because the children too, may want to withdraw from the labour market for a period to raise children

⁷ A redistributive element is desirable not only for the usual reasons, but also to stop parents pushing their children into the more lucrative occupations irrespective of personal inclination.

⁸ Consistently with the hypothesis that reproduction is a voluntary act, the study finds that this improvement in birth control technology has made fertility more responsive to the policy variables.

⁹ In the long run, a deficit or surplus in the pension fund current account tends to translate into a surplus or deficit in the generational account.

fertility-related cash payments and tax allowances, again at constant prices. The alternative policy scenarios are as follows.

S1. Pension coverage grows, on average, at the same rate (2% a year) as over the estimation period. The forced intergenerational transfer, and the child benefit rate are held constant at their 1995 level.

S6. Pension coverage declines on average by 2% a year. The forced intergenerational transfer is held constant. The child benefit rate increases by 1.2% a year from its 1995 level.

APS. Pension coverage is the actual one until 2001, the one implied by the 2001 pension reform from then on. The forced intergenerational transfer is held constant. The child benefit rate increases by 1.2% a year from its 1995 level.

FRP. Pension coverage falls faster than in either **S6** or **APS**. This is achieved by making it more difficult to retire before the statutory age,¹⁰ and by indexing pension benefits to consumer prices instead of wages minus pension contributions as is current practice.¹¹ The forced intergenerational transfer is held constant. The child benefit rate increases by 1.2% a year. The clause that a parent should actually withdraw from the labour market in order to qualify for *Kindererziehungszeiten* is reintroduced, but the maximum number of years for which the parent can be credited with this notional pension contribution is increased from 3 to 18.

CFP. Pension coverage is reduced, and the child benefit rate increased as in **FRP**. The pension benefits paid under the *Kindererziehungszeiten* scheme are related to the earning capacity of the pensioner's own children, rather than to average earnings in the pensioner's own contemporaries as in **FRP**. The deficit of the pension fund current account is transformed from a collective benefit for all current pensioners into an individual benefit for the pensioner whose children are currently paying taxes and pension contributions, and it is thus made endogenous.

S1 is a continuation of the 1960-95 policies. Figure 2 shows that this would have resulted in a continuation of the downward fertility trend experienced in the last two and a half decades. **S6** hypothesizes that the government relies exclusively on lower pension benefits, and higher child benefits, to induce people to have more children. This would have caused a sharp inversion of

¹⁰ As a result, the average age of retirement rises to 65 by the year 2010.

¹¹ This indexation method, introduced in Germany in the year 2000 and later abandoned, is less favourable than the one actually in force because it does not take account of real wage growth.

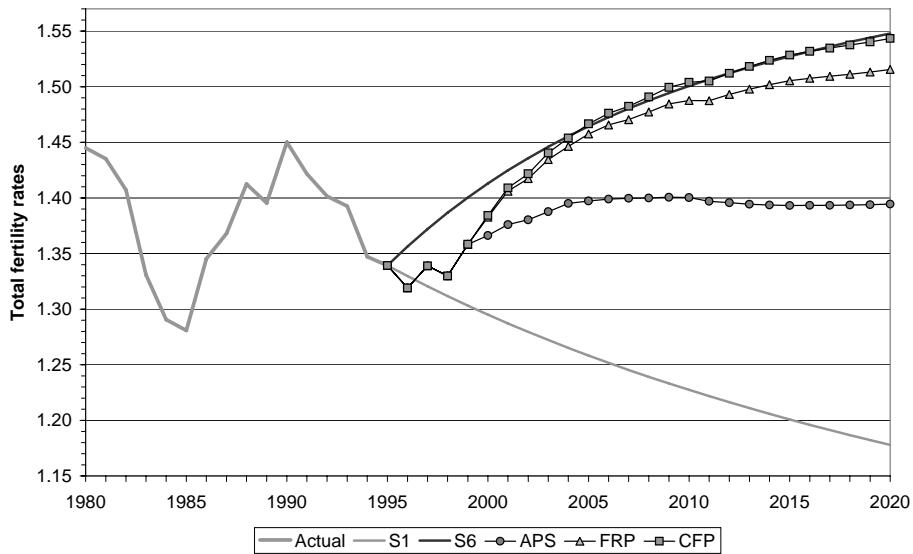


Figure 2. TFR in West Germany. Source: Cigno and Werding (2007)

tendency, that would have brought the TFR back up to its 1972 level by 2020. **APS** describes what was actually done until 2001, and what will be, or would have been, done from then on if the political decisions taken in that year are or were put into practice. This would have brought about a more modest recovery than **S6**. **FRP** hypothesizes more radical pension reform than **APS**. In particular, it re-introduces the incentive for parents to spend time with their children. This would have led to a recovery of TFR more robust than in **APS**, but still less robust than in **S6**. **CFP** approximates my own proposal, and would have led to faster fertility recovery than **FRP**. In this scenario, the TFR would have reached the same level as in the **S6** scenario by about 2005.

The policies under consideration affect not only fertility, but also voluntary saving. Presumably, they affect human capital investment too, but we do not have estimates of that. **S1** would have driven household saving up sharply from its 1995 level. **APS** and **FRP** would have led to a more moderate increase. **S6** and **CFP** would have reduced saving slightly. Although the model is silent on the subject, and evidence from other sources is contradictory,¹² productivity can be expected to grow faster in **S1**, which entails an increasing capital-labour ratio, and **CFP**, which entails a modest decline of that ratio, but an increase in human capital investment, than in any of the other scenarios, all of which imply a rapidly decreasing capital-labour ratio, and less human capital investment. Unlike **S1**, however, **CFP** would not pay for this increase in human capital investment with a reduction in fertility.

It may thus be possible to reform a pension system so that the incentive for couples and individuals to have children, and invest in their future earning capacity, is restored. As well as resolving the financial problems of the system itself, this would make the economy at large more efficient.

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¹² As already mentioned, Ehrlich and Zhong (1998) estimate that cutting pensions would raise productivity growth, Zhang and Zhang (2004) that it would reduce it.

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