

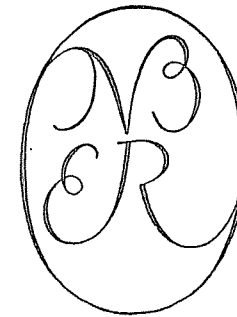
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Demographic
and Economic Change
in
Developed Countries

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drifted down to a position intermediate between their immediate pre- and postwar levels. The analysis in this paper does not readily explain these differences, but it does explain why birth rates in all these countries are well above levels predicted from their secular trends. The secular decline in child mortality and the secular increase in contraceptive knowledge were important causes of the secular decline in births. By 1945 the level of child mortality was so low that little room remained for a further improvement. Although contraceptive knowledge was not well spread throughout every layer of society, the room for its further improvement was also more limited than it had been. With the weakening of these forces, much of the steam behind the secular decline in birth rates has been removed. Positive forces like the growth in income are now opposed by weaker negative forces, and it is not too surprising that fertility has ceased to decline and even has risen in some countries.

Several recent studies of consumption have used a measure of family size as an independent variable along with measures of income and price.³⁵ This procedure is justifiable if family size were a random variable or completely determined by "non-economic" factors.³⁶ If, on the other hand, family size were partly determined by economic factors, this procedure would result in misleading estimates of the regression coefficients for the other independent variables. Thus, suppose family size were positively related to income, and food consumption varied with income only because family size did. The regression coefficient between food consumption and income, holding family size constant, would be zero, an incorrect estimate of the long-run effect of an increase in income on food consumption. One would not estimate the effect of income on gasoline consumption by finding the regression coefficient between gasoline consumption and income, holding the number of cars constant. For gasoline consumption might increase with income largely because the number of cars does, just as food consumption might increase because family size does. This discussion, brief as it is, should be sufficient to demonstrate that students of consumption economics need to pay more attention to the determinants of family size than they have in the past.

³⁵ See, for example, Theil, *op. cit.*, S. J. Prais and H. S. Houthakker, *The Analysis of Family Budgets*, Cambridge, Cambridge University Press, 1955. Measures of family size often include not only the inner core of parents and their children but also other relatives living in the same household. My discussion refers only to the inner core; a somewhat different discussion is required for "other relatives."

³⁶ Prais and Houthakker appear to believe that family size is determined by non-economic factors when they say "It might be thought that since household size is, in a sense, a noneconomic factor. . . ." *ibid.*, p. 88.

IV. Summary

This paper employs an economic framework to analyze the factors determining fertility. Children are viewed as a durable good, primarily a consumer's durable, which yields income, primarily psychic income, to parents. Fertility is determined by income, child costs, knowledge, uncertainty, and tastes. An increase in income and a decline in price would increase the demand for children, although it is necessary to distinguish between the quantity and quality of children demanded. The quality of children is directly related to the amount spent on them.

Each family must produce its own children since children cannot be bought or sold in the market place. This is why every uncertainty in the production of children (such as their sex) creates a corresponding uncertainty in consumption. It is also why the number of children in a family depends not only on its demand but also on its ability to produce or supply them. Some families are unable to produce as many children as they desire and some have to produce more than they desire. Therefore, actual fertility may diverge considerably from desired fertility.

I briefly explored some implications of this theory. For example, it may largely explain the postwar rise in fertility in Western nations, the relatively small cyclical fluctuation in fertility compared to that in other durables, some observed relations between the quantity and quality of children, and why rural women are more fertile than urban women.

I tested in more detail one important implication, namely that the number of children desired is directly related to income. Crude cross-sectional data show a negative relationship with income, but the crude data do not hold contraceptive knowledge constant. When it is held constant, a positive relationship appears. This view is supported by the positive correspondence between cyclical movements in income and fertility. The secular decline in fertility may also be consistent with a positive relationship since the secular decline in child mortality and the secular rise in both contraceptive knowledge and child costs could easily have offset the secular rise in income.

COMMENT

JAMES S. DUESENBERY, Harvard University

I. For many years economists have taken variations in rates of population growth, and in family size, as *data* which help to explain various economic phenomena but which cannot themselves be explained in terms of economic theory. Becker has done us a real service in bringing economic analysis to bear on the problem once more. He has not only worked out

the implications of traditional economic theory for demographic theory but has also gone some distance in testing those implications against the empirical data.

Becker argues that those couples with sufficient contraceptive knowledge to control births have to decide how many children to have. For most people, children produce certain satisfactions and have a net cost. In those circumstances we expect (with some qualifications) that the number of children per family will rise with income just as we expect the number of cars or chairs or cubic feet of housing space per family to rise with income. But just as in those cases we expect the quality of cars or chairs or houses to rise with income as well as the number, we also expect the quality of children to rise with income as well as the number. That is, we expect the children of the rich to be better housed, fed, and educated than those of the poor.

Becker then qualifies the argument by taking into account the fact that in some circumstances children may yield their parents a net income instead of having a net cost. In that case the theory of investment is relevant as well as the theory of consumption. He has brought in a number of other considerations which I need not review but which lead to only minor qualifications of his main arguments.

After reviewing the implications of economic theory, Becker then faces the fact that for many years the raw data on differential fertility have shown a fairly strong negative relationship between variations in income and variations in numbers of children per family. Moreover, until recently the average number of children per completed family has been declining although average family income has been rising secularly.

Becker maintains that the negative correlation between income and family size is due to the negative association between income and knowledge of contraceptive methods. I think that most of us would agree that differential knowledge does explain a large part of the apparent negative relation between income and family size.

The evidence of the Indianapolis study certainly supports that conclusion. Becker, however, tries to use the study to support his conclusion that there should be a positive association between income and family size. I must say that the evidence he cites did not strike me as exactly overwhelming.

The empirical evidence offers, I would say, rather ambiguous support for Becker's hypothesis. That may be because we have only a limited amount of the right kind of data but there are, I think, some reasons for thinking that Becker's theoretical case may not be so open and shut as

appears. Those reasons have to do with the nature of the "cost" of children and with the limitations on the possibility of substitution between quantity and quality of children.

II. Becker has taken the occasion to correct the simple-minded who fail to distinguish between the cost of children of given quality and expenditure per child. Now, of course, it is correct to regard changes in prices (or relative prices) of a given quality of a good as changes in the cost of that good and changes in amount or quality of the good purchased (at a given price schedule) as changes in expenditure not involving changes in cost. But not all of those who say that the cost of children rises with income are so simple-minded as Becker suggests, though their language may not be exact. What Leibenstein, for example, appears to mean is that the expenditure per child which the parents consider to be necessary rises with income.

Questions of semantics aside, there is an important substantive difference between Becker's approach and that taken by economists whose approach is, if he will excuse the expression, more sociological.

I used to tell my students that the difference between economics and sociology is very simple. Economics is all about how people make choices. Sociology is all about why they don't have any choices to make.

Becker assumes that any couple considers itself free to choose any combination it wishes of numbers of children and expenditure per child (prices of particular goods and services being given). I submit that a sociologist would take the view that given the educational level, occupation, region, and a few other factors, most couples would consider that they have a very narrow range of choice. To take only one example, I suggest that there is no one in the room, not even Becker, who considers himself free to choose either two children who go to university or four children who stop their education after high school. It may be said that that still leaves lots of room for variation, but I think it can be said that no one in this room considers seriously having, say, four children who attend third-rate colleges at low cost per head or three who attend better ones.

For this audience I need not go through the whole routine about roles, goals, values, and so on. It will be sufficient to remark that there is no area in which the sociological limitations of freedom of choice apply more strongly than to behavior in regard to bringing up children.

Effective freedom of choice between quantity and quality of children is also limited by more mundane and mechanical considerations. The principle of substitution which is at the basis of Becker's argument