

## SOME ECONOMIC BENEFITS OF BIRTH PREVENTION

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The purpose of this study is to devise a procedure for estimating the average cost to the taxpayer of rearing a child from birth to entrance into the labor force and to propose a plan whereby payments could be made to women for not having children.

In many countries, social costs of childrearing are extensive; e.g., public expenditures on education, aid to dependent children, institutional care, etc. Such data are useful in determining the short-run economic benefits to the taxpayer resulting from public-sponsored birth control programs. These benefits refer only to savings for the taxpayer in the 25 years following a birth. A full analysis would have to include, in addition to the direct child-rearing costs, such considerations as: all future public costs incurred throughout the lifetime of a person rather than just the dependent years; the future tax revenue accruing to the state; the effect on wage levels, interest, economies or diseconomies of scale, and the growth of the Gross National Product (GNP). These factors are almost impossible to quantify at some future point in time for a large, growing and complex economy. Furthermore, numerous non-economic costs and benefits involving children obviously are present. Consequently, any policy on population growth is influenced by many noneconomic factors as well—social, political, psychological, esthetic. This paper will examine only the short-run economic costs

and benefits, and these are restricted to government-financed expenditures such as public education and welfare. Such data are relevant for a country once it has formed a decision about future population growth and the initiation of a birth control program.

The data presented here as an example of the procedure are estimates of the major public expenditures by age for the period around 1965 in the state of North Carolina. The costs comprise health, education and welfare, and refer to expenditures by federal, state and local governments. Education consists of elementary, high school, college and university expenditures. Health and welfare consist of Aid to Dependent Children, pre-natal and delivery care, and institutional care of health, correction and dependent children.<sup>1</sup>

No estimate is made of the marginal costs of children with respect to transportation, utilities and other social overhead capital. Although these cannot be readily estimated, they are not negative or zero. Also, the costs of food, clothing and shelter, when provided by the parents, have not been considered. Consequently, the costs to the government presented here are only a partial estimate of the total costs to society.

Table 1 gives the costs by age and type of expenditure for the survivors of a combined birth cohort of 1,000 males and females, white and nonwhite. The procedure used to estimate the costs is given in the Appendix.<sup>2</sup>

The present value of the total costs, discounted at five per cent, is \$3,187 per birth. This figure, then, is an estimate of the present value of the savings to the taxpayer in the 25 years immediately following the prevention of a birth. The costs were terminated at age 25 since most adults have begun work by that time. After people enter the labor force they begin paying taxes; and even prior to this time the government may derive economic benefits from additional children. Such factors were not considered quantitatively in this study. This figure does not in any way represent an attempt to place a dollar value on a human life; a human being is beyond any economic value. The amount can, however, be compared with the cost of a birth control program and the estimated number of births prevented in order to determine the "return" on such expenditures.

TABLE I. ANNUAL PUBLIC EXPENDITURES BY AGE AND TYPE FOR SURVIVORS OF 1,000 LIVE BIRTHS

Age	Life Table Population (1000 Births)	Education	Institutions	Child-Caring Institutions	Aid to Dependent Children	Total Costs*
Pre-Natal and Delivery						
0	1000	\$ 0	\$ 0	\$ 0	\$ 0	\$ 54,000
1	979	0	0	0	15,068	15,068
2	970	0	0	0	14,923	14,923
3	969	0	0	0	14,906	14,906
4	967	0	0	0	14,888	14,888
5	966	0	0	0	14,868	14,868
6	965	54,243	2,216	1,552	14,857	72,868
7	965	249,049	2,194	1,536	14,849	267,627
8	964	400,039	2,194	1,536	14,840	418,608
9	964	407,001	2,194	1,536	14,831	425,562
10	963	409,315	2,194	1,536	14,823	427,867
11	963	407,418	7,739	4,624	14,817	434,598
12	962	406,817	7,739	4,608	14,809	433,988
13	962	403,678	7,739	4,608	14,803	430,827
14	961	400,122	7,739	4,608	14,797	427,266
15	961	390,240	7,718	4,608	14,789	417,355
16	960	372,676	12,457	3,072	14,780	402,985
17	959	332,283	12,441	3,072	14,763	362,559
18	958	283,137	12,441	3,072	14,749	313,399
19	957	339,974	12,425	3,056		355,455
20	956	202,954	12,408			218,418
21	955	144,170	12,711			156,881
22	954	119,351	12,681			132,032
23	952	70,008	12,666			82,675
24	951	51,510	12,652			64,161
	950	44,105	12,637			56,742
Total		5,488,090	175,185	46,096	267,159	6,030,526†

\* Discrepancies are due to rounding.

† This total differs from the horizontal sum of the expenditures by type in that the \$54,000 for prenatal and delivery care is entered only in the column "Total Costs."

Source: See Statistical Sources\* and Appendix.

TABLE 2. DISCOUNTED VALUE OF EXPENDITURES PER BIRTH\*

<i>Year Following Birth</i>	<i>Value</i>
1	\$379
2	313
3	318
4	319
5	325
6	324
7	322
8	319
9	311
10	301
11	271
12	233
13	265
14	163
15	117
16	98
17	62
18	48
19	43

\* Costs have been discounted at five per cent and shifted up so that the large payments begin immediately. The payments for years two to seven following a birth are discounted and shifted to year one; pre-natal and delivery costs are added to year one also. Year one refers to the first year following the birth when the child's age is zero. Thereafter each payment is discounted and shifted up six years.

*Source:* Table 1

These data can also be used to determine how much society can afford to pay a woman for not having a baby. In other words, society could spend this amount on birth prevention and incur no additional cost to the taxpayer. Table 2 gives the annual costs per birth from Table 1 after they have been discounted at five per cent and shifted up so that the large payments begin immediately. The payments for years two to seven (year two refers to the second year following the nonbirth) are discounted and shifted to year one. Thereafter each payment is discounted and shifted up six years. This schedule, therefore, represents a series of payments that could be made annually to a woman who successfully prevents a birth.

To administer a program of this type, one must establish a norm representing the number of births expected without a birth control program. The "normal" number is then compared with the actual number produced by a woman or group of women participating

**TABLE 3. UNITED STATES BIRTH PROBABILITIES FOR 1964, BY AGE AND PARITY\* (PER 1,000 WOMEN)**

Age	Parity		
	2	3	4
15-19	334	367	—
20-24	237	244	284
25-29	161	158	176
30-34	86	90	103
35-39	33	41	54
40-44	7	10	16

\* Given two previous children, i.e., a parity of two, .334 is the annual probability of a third child for a woman aged 15-19.

Source: United States Department of Health, Education and Welfare, National Center for Health Statistics, *Vital Statistics of the United States 1964*, Vol. 1, *Natality*, Table 1-15.

in such a program. These payments would necessarily have to be limited to groups of women who would ordinarily have more children than the "norm." If not, individual women who had already decided they would have no more children could participate in the programs in larger numbers.

As an example of how such a system might operate, assume that the participants are restricted to those women who have at least two living children, have a family income of less than \$3,000 annually, or are eligible for welfare payments. Then the national data on the probability of a birth rate by age and parity (see Table 3) could be used as the "norm" to determine the number of births prevented annually by a woman who might enter the program.

For example, assume that over a three-year period one birth was prevented according to the national data. At the end of that period the woman would be receiving an amount equal to the annual expenditures which the governments would have made on the child had the birth not been prevented. For each of the initial three years that she was participating in such a program she could be receiving a portion of the ultimate amount. For example, if the national probability of a birth is .33 each year given her age and parity, she could receive one-third of the total the first year, two-thirds the second, and the full amount the third year.<sup>3</sup>

If this woman had a child at the end of the three-year period,

however, payments would have been made and no birth would have been prevented although the birth may have been postponed. In such cases, the loss to the taxpayers could be compensated by deducting the amount paid her from the amount to be paid to other women who successfully prevent births. The loss would thus be borne by the group of participants. If the woman wished to re-enter the program, she would begin receiving payments for successful birth prevention only after an amount equal to the initial loss to the group had been accumulated in the payments fund.

The use of national data on all income groups as the "norm" will understate the number of prevented births and therefore understate the benefits to society. In other words, data for the lowest income group would undoubtedly show higher birth probabilities than national data based on all income groups. Consequently, the actual number of births prevented by low-income participants in this program would be greater.

In addition, the annual payments shown in Table 2 are further understated for those participants on welfare. The figures in Table 2 are based on the proportion of the total population under 18 years of age receiving Aid to Dependent Children and publicly financed prenatal and delivery care, which is 5.4 per cent. If, however, an additional birth would be publicly financed and the child thereafter could be expected to receive Aid to Dependent Children, an additional \$946 is required for delivery and the annual costs are raised by about \$270 for aid payments. These children, however, have a less than average high school and college enrollment pattern so expenditures after about age 16 would be less than the state average.

It is also noteworthy that the per person expenditures in North Carolina on education and welfare are low compared to those of other states. Comparable data for such states as California or New York would show much larger savings to the taxpayers. Finally, children from low-income, high-fertility homes will also tend to earn low incomes and have relatively large families. Therefore, it seems very likely that the tax revenue provided by such individuals would be less than the cost to the state of providing the necessary social services including the future education of their children. It

follows from this that a birth prevented in a low-income family will very likely provide additional direct savings to the taxpayers beyond the 25 years immediately following the nonbirth.

Since the payments indicated in Table 2 are an underestimate, the surplus could be used for investment in children already born and currently at a disadvantage with respect to educational opportunities. Such expenditures would raise the Gross National Product just as investment in physical capital would.

This scheme is not to be interpreted as an effort to eliminate the poor. That is why a woman would be required to have at least two children to be eligible. If women have children and no income, payments are made to them through Aid to Dependent Children or other kinds of welfare programs. This scheme would give such women more income without the additional children. Welfare payments, therefore, could no longer be regarded, however incorrectly, as primarily an incentive to have children. The proposed payments should be interpreted as an effort to enable families to have more time and money to spend on the existing children who, as a consequence, will have a greater likelihood of leaving the ranks of the poor. For example, such a program would enable the children already born to receive: 1. more food, clothing and shelter; 2. more medical and dental care; 3. more personal attention from the parents; 4. formal education for a more extensive period. In other words, it would enable the children of the poor to receive during the school-age years some of the benefits enjoyed by the children of the middle class. These expenditures, therefore, can be regarded as an investment in people and they involve no additional cost to the taxpayer.

## APPENDIX

*Prenatal and Delivery Costs.* These refer to public expenditures on all prenatal and delivery care for the medically indigent. J. F. Hulka, Department of Maternal and Child Health, University of North Carolina, estimates the total cost at \$1,000 in North Carolina. It is assumed that 5.4 per cent of all births are publicly financed. This is the same as the percentage of children receiving Aid to Dependent Children payments in 1960.

*Life Table.* Survival rates are based on weighted averages of four life tables for North Carolina, 1959–1961 period—white male and white female, non-white male and nonwhite female. The weights used are the 1960 proportions of the total population for each sex and color group.

*School Costs.* The number in school at each age is based on the 1960 census proportions enrolled in public schools in North Carolina. The costs are estimates of 1965–1966 operating costs and capital costs. Available data on operating costs exclusive of those for higher education are presented in the aggregate for elementary and secondary schools. Capital costs for this level are the per student, average annual capital expenditures for the period of 1952–1962 adjusted for price changes to equal 1965 dollars. The total cost (operating plus capital) equals \$439 per student on the elementary and secondary level.

Operating costs for higher education are a weighted average of operating costs per full-time equivalent student for each public college and university branch. The number of students enrolled at each school determines the weighting. Per student capital costs are the average annual expenditure by the state for the period of 1947–1962 adjusted for price changes to equal 1965 dollars. The total figure for operating and capital costs for higher education is \$1,290 per student.

*Institutional Costs.* These refer to institutions caring for delinquents, physically and mentally handicapped children, and correctional institutions. Here again the per person 1965–1966 cost is a weighted average of all these institutions according to their costs and the number residing in each. The average varies by age group and ranges from \$1,500 to \$2,300. The costs are the per person appropriation by the state legislature for operating and capital expenditures. The proportion of the population by age in these institutions is based on 1960 census data.

*Institutional Costs of Child Caring.* Child-caring institutions are operated by churches and private organizations and receive only partial state support. The full cost was included in the calculations, however, as the state portion



of the total could not be estimated. In addition, the total expenditure is small relative to other institutional costs. The proportion of the population by age in such institutions is based on 1960 census data. The cost per child is estimated at \$1,600 for 1965–1966 on the basis of comparable state costs in similar types of institutions.

*Aid to Dependent Children.* The average annual payment per child in this program was \$285 for 1965–1966. The proportion of the population under age 18 in this program is assumed to be the same as for 1960—5.4 per cent.

## REFERENCES

<sup>1</sup> The costs of the annual expenditures on child welfare, apart from the Aid to Dependent Children, have not been included. The other figures were provided by Betty Gibson, Department of Public Welfare, State of North Carolina, and they amount to \$3,299,743. But when these costs are allocated on a per person basis for the total population under age 18, they are less than two dollars annually. Several other minimal per person types of expenditures such as county public health programs are also excluded since the data were not readily available and would not substantially affect the total. Therefore, the total cost to the taxpayer is underestimated.

<sup>2</sup> Statistical sources: Hamilton, C. Horace, *NORTH CAROLINA ABRIDGED LIFE TABLES, BY COLOR AND SEX, 1959–1961*, Raleigh, University of North Carolina, 1964; United States Bureau of the Census, *CENSUS OF THE POPULATION, 1960: SCHOOL ENROLLMENT, PC(2)-5A*, and *INMATES OF INSTITUTIONS, PC(2)-8A*, and *CHARACTERISTICS OF THE POPULATION*, Part 35, North Carolina, Table 16, Washington, United States Government Printing Office; *ANALYSIS OF CURRENT EXPENDITURES BY SOURCE OF FUNDS, 1965–1966*, Raleigh, Department of Statistical Services, State of North Carolina; *THE BUDGET FOR THE BIENNIUM, JULY 1, 1965 TO JUNE 30, 1967*, Volumes 1, 2, 3, 4, Raleigh, State of North Carolina.

<sup>3</sup> Edward Pohlman has suggested that payments be proposed for postponement of the first birth as a means to reduce family size and provide additional economic gains for young married couples. He also suggested consideration of a minimum age before payments begin. Such a requirement would deter a woman from having the required number of children as soon as possible to be eligible for payments. However, this might exclude women from the program who at a very early age had a large number of children and are capable of having many more. One may undoubtedly find many variations of the program outlined in this paper.

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