

AN ECONOMIC ANALYSIS OF THE DEMAND FOR ABORTIONS

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This study uses an economic model of fertility control to estimate the demand for abortions. The results show that the fundamental law of demand holds for abortions, with the price elasticity of demand equal to $-.81$. Abortions are a normal good with an income elasticity of demand equal to $.79$. The demand for abortions is also positively related to the labor force participation of women and to being unmarried. Catholic religion, education and the poverty status of women were found to have no statistically significant impact on the demand for abortions.

I. INTRODUCTION

On 22 January 1973, the United States Supreme Court ruled in *Roe v. Wade* that states could not prohibit a woman from having an abortion, as long as it was done in the first three months of pregnancy. States could regulate, but not prohibit, second-trimester abortions and could prohibit abortions during the third trimester only.¹

The focus on abortions since the Supreme Court's decision has been primarily on moral and ethical issues. Research on the issue consists principally of numerical tabulations according to selected demographic characteristics (age, race, weeks of gestation, etc.) of the women obtaining abortions.² Absent are socioeconomic considerations explaining the demand for abortions.

This study empirically estimates the demand for abortions using the economic model of fertility control developed by Michael [1973]. The effect of many of the socioeconomic factors discussed by Michael should also be relevant in explaining the demand for abortions. Section II outlines the abortion demand model in terms of the general theory of fertility control. The third section examines the empirical results and the last section discusses the policy implications of the results.

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1. During the second trimester many states required all abortions to be performed in a hospital. In June 1983, the U.S. Supreme Court ruled that such state regulations did not advance maternal health and, therefore, were illegal.

2. Two exceptions are Deyak and Smith [1976] who estimated the benefits for women seeking abortions as a result of the 1973 Supreme Court ruling, and Coelen and McIntyre [1978] who analyzed the pronatalist and abortion policies in Hungary.

II. ABORTION DEMAND MODEL

Michael [1973, S132] argues that fertility control behavior can be explained within a household choice-theoretic framework in terms of a household production model. Michael's model suggests that a household's fertility control decision is based on a comparison of the costs and benefits associated with an additional child over time. The net cost simply represents a household's effective excess demand for children given prices, income level, level of production of complements and substitutes, etc. If the net cost is positive, a woman will engage in fertility control by purchasing and using goods and time inputs to reduce the probability of conception. One such good reducing the probability of conception to zero is abortion.

Household choices on abortions thus arise from the interaction of income, prices, and preferences. Abortion is a posterior decision—the decision by a woman who is pregnant not to have the child. Since abortion can be considered a method of contraception, the demand for abortions is modeled in terms of the explicit and opportunity costs at the time of the abortion decision [Coelen and McIntyre 1978].

The abortion demand equation to be estimated is³

$$A_i = b_0 + b_1P_i + b_2Y_i + b_3SNGL_i + b_4LFP_i + b_5CATH_i + b_6W + b_7M. \quad (1)$$

The dependent variable is the abortion rate (the number of abortions per thousand pregnancies) of women of childbearing age fifteen to forty-four in state i during the 1980 calendar year.⁴

The price of abortions (P) is the average cost of an abortion using a local anesthesia in nonhospital facilities performed the first twelve weeks in each state.⁵ Since abortions are not fundamentally different from other conventional goods and services one would expect the fundamental law of demand to hold.⁶ Income Y is the average income of women fifteen to forty-four years old and reflects the budget constraint.

Also relevant in an abortion decision is a woman's marital status. Unmarried women may have a greater demand for abortions since their outlays for an

3. The linear specification is preferable to the log-linear form since the linear form is a first-order approximation of an arbitrary demand function and it allows the elasticities of demand to vary along the demand curve rather than restricting them to a constant value. Equation (1) was estimated using the log-linear specification and the empirical results, which are available upon request, were qualitatively the same as those reported.

4. About 3 percent of all women of childbearing age obtained an abortion in 1980 [Alan Guttmacher Institute 1985].

5. Ninety-two percent of all abortions are done in the first trimester and 78 percent of all abortions are performed in a nonhospital facility [Alan Guttmacher Institute 1985].

6. Abortion rates and prices were obtained from the Alan Guttmacher Institute [1985], which is a research foundation affiliated with Planned Parenthood. Each year the Guttmacher Institute does a national survey of abortion providers and the services they offer. The survey produces the most complete available information about abortions in the U.S. and in each state, and the results are summarized by the U.S. Department of Commerce in the *Statistical Abstract of the United States*.

additional child are higher than married women.⁷ Married women (spouse present) are more likely to have lower outlays for childbearing and childrearing (due to shared household responsibilities, and because of economies of scale, as well as greater productivity of time and information with additional children) than unmarried women.⁷ The variable *SNGL* is the percentage of women fifteen to forty-four who are unmarried and its predicted effect is positive.

Women in the labor force, regardless of marital status, have a greater opportunity cost of an additional child than women not in the labor force and should have a greater demand for abortions. This may reflect, in part, a greater aspiration for material goods or longer time horizon (i.e., a greater weight attached to a future unwanted outcome) as well as a greater value of time. The predicted effect of *LFP*, the labor force participation rate of women fifteen to forty-four, is positive.⁸

An additional determinant of the demand for abortions is demographic differences in tastes or preferences. One such taste factor is religion. Religious faith and affiliation are powerful forces in influencing household choices. The Roman Catholic Church strongly disapproves of abortion and imposes severe psychological sanctions against women having an abortion. The Church's disapproval likely increases the subjective costs of abortions for Catholics and lowers their demand for them. The variable *CATH* is the percentage of Catholic population in each state.⁹

Most fertility studies typically assume constant cross-section tastes across groups or populations. While it is likely that tastes change slowly over time, such an assumption appears doubtful when cross-section differences across women in different states are of particular interest. Hamermesh and Soss [1974] argue that the degree of social stability, social ties, and social norms of states in the far West is substantially different from that in other regions. Some anomie in western states might foster a greater tendency by households to have abortions. To control for the possibility of differential tastes, a dummy variable equal to one for states in the far West (California, Oregon, Washington, Nevada, Arizona and Hawaii) is included.

In 1980, the use of federal funds to provide abortions for indigent women under the Medicaid program was severely restricted. However, fourteen states continued to provide Medicaid abortions at their own expense. As a conse-

7. In 1980, 50.5 percent of all married women (spouse present) had at least one child, versus 14.2 percent for unmarried women [U.S. Bureau of the Census 1983].

8. The variables in equation (1) are restricted to women since the production of children is done exclusively by women and, as noted by De Tray [1973], methods of fertility regulation are generally controlled by women. One might argue that the independent variables should be the characteristics of pregnant women, not all fertile women. Since abortion is a quasi-method of contraception there is no bias in the estimated coefficients; the explicit and opportunity costs at the time of the abortion decision are the same for fertile and for pregnant women.

9. The data on all economic variables were obtained from the U.S. Bureau of the Census, State Reports, Detailed Characteristics [1983]. The data on Catholic membership by state are from Churches and Church Membership in the United States, a census commissioned by the National Council of Churches [Johnson, Picard and Quinn 1974].

quence one would expect the demand for abortions to be greater in these states since cost is not a consideration in the utilization of abortion services. The variable M is a dummy variable equal to one for the fourteen states that continued Medicaid funding.¹⁰

III. EMPIRICAL RESULTS

Since the price of abortions is determined simultaneously with the abortion rate, equation (1) was estimated using two-stage least squares.¹¹ The variables exogenous to equation (1) are the average hospital cost per day, number of hospitals, number of abortion clinics and number of physicians per 100,000 population in each state.¹² The two-stage least-squares regression results of equation (1) (absolute value of t-statistics in parentheses) are

$$A = -207.780 - .942P + .031Y + 4.194SNGL + 4.456LFP \\ (1.42) \quad (3.22) \quad (3.31) \quad (1.74) \quad (2.57) \\ + 18.287W + 1.207CATH + 43.775M, \quad R^2 = .77. \quad (2) \\ (1.74) \quad (1.50) \quad (2.12)$$

The empirical results provide substantial support for the a priori expectations of the abortion demand model.¹³ The price of abortions is negative and significantly different from zero at the .05 level of significance. The significant inverse relationship between the price of abortions and the abortion rate confirms that the fundamental law of demand is applicable to abortions. Income is positive and statistically significantly different from zero at the .01 level of significance, which suggests that abortions are normal goods with respect to income.¹⁴ Both $SNGL$ and LFP are significantly positive which is consistent with the hypothesis that women in the labor force and unmarried

10. Alaska, California, Colorado, Georgia, Hawaii, Maryland, Michigan, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Washington, and West Virginia.

11. In order to test the possibility that the residual variance decreased with the size of a state's female population, a Goldfeld-Quandt [1965] procedure was utilized on equation (1). The result showed that the calculated F-value did not exceed the critical F-value at the .05 level of significance and hence the null hypothesis of homoscedasticity could not be rejected.

12. These variables were incorporated in the two-stage least-squares estimates of the supply equation (absolute value of t-statistics in parentheses):

$$P = 196.963 + .137A + .475COST - .164HOSP \\ (5.54) \quad (1.65) \quad (4.19) \quad (1.85) \\ + .095CLINIC - .776PHY - 58.403W + 9.465M. \\ (.79) \quad (2.24) \quad (2.69) \quad (.64)$$

13. Equation (1) was also estimated with the number of abortions per thousand live births and the number of abortions per thousand women of childbearing age fifteen to forty-four. The empirical results were qualitatively the same as those reported in the text. Also adding the percentage of nonwhite women fifteen to forty-four to equation (1) found the regression coefficient on race was not significantly different from zero and the estimated coefficients of the other variables in equation (1) remained virtually identical to the estimates presented. The complete empirical results are available upon request.

14. These latter results are consistent with Deyak and Smith [1976] who found that the abortion rate was inversely related to travel costs (a proxy for the price of abortion services) and the percentage of women with incomes under \$3000. They also found neither age or education had a statistically significant effect on the abortion rate.

women, due to the greater explicit and implicit cost of childbearing, have a greater demand for abortions. Women have eighteen more abortions per thousand pregnancies in western states and forty-four more abortions per thousand pregnancies in Medicaid states.

A somewhat surprising result is that the percentage of a state's Catholic population does not have a statistically significant influence on the demand for abortions. One possible explanation is that Catholic women do not uniformly support the official position of the Catholic Church against abortions. The Harris and Gallup Opinion polls in 1979 found that 74 percent of those surveyed believe that a woman who is no more than three months pregnant should have the right to decide whether or not she wants to have an abortion [Alan Guttmacher Institute 1985]. Assuming these surveys are representative, the results suggest that Catholic women do not necessarily view abortion as an unacceptable means of fertility control merely because of the Catholic Church's opposition.

Michael [1973, S137-41] argues that education operating through several different channels may have an influence on a household's fertility control decision. Education may reduce the demand for abortions by increasing the knowledge about effective contraceptive techniques. On the other hand, education may also increase the demand for abortions since it raises the opportunity cost of a household's time and, if children are time-intensive relative to other goods purchased, increases the relative price of an additional child [Becker 1965; Willis 1973]. To provide additional evidence on the effect of education, equation (1) was re-estimated with the percentage of women in each state aged fifteen to forty-four who have completed twelve years of school added to equation (1). The effect of education was negative but not statistically significantly different from zero. The estimated coefficients of all the other variables remained virtually identical to the previous estimates reported.¹⁵

Bernstam and Swan [1986] contend that the Aid to Families with Dependent Children (AFDC) subsidy is an incentive for poor women to have children. If their contention is correct then the estimated coefficient of income in equation (1) would be biased upwards since the AFDC subsidy is income related. Poor women are subsidized relative to rich women, which increases the number of abortions of high income women relative to low income women. In order to test for this possibility equation (1) was re-estimated with the percentage of women in each state aged fifteen to forty-four in poverty added to equation (1). The empirical results showed that the percentage of women in poverty was not statistically significantly different from zero. The estimated coefficients of all the other variables remained virtually identical to the previous estimates presented.¹⁶ Thus the empirical results remain robust with respect to the adjustment for education and for the presence of women in poverty.

An important practical question to economists is how sensitive the demand

15. The complete empirical results are available upon request.

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for abortions is to changes in any of the economic variables in the demand function. The estimated elasticities are computed at the sample mean.¹⁷ The price elasticity of demand for abortions is $-.81$, which is consistent with other studies that have found that the price elasticity of demand for health services is inelastic [Klarman 1965]. The positive elasticity with respect to income is $.79$ and shows the abortion is a normal good.¹⁸ The labor force elasticity of demand is 1.10 , while the unmarried women elasticity of demand is $.57$.

IV. POLICY IMPLICATIONS

Many opponents of abortion have attempted, through the political process, to limit or prohibit legal abortions. The estimated demand equation provides the likely impact of such actions.

One policy proposal has been to prohibit all Medicaid-financed abortions. The results suggest that forbidding all Medicaid-financed abortions would, everything else constant, have resulted in a reduction of forty-four abortions per thousand pregnancies or equivalently a 17.5 percent drop in the 1980 abortion rate. In 1980 there were approximately 1.5 million abortions performed. This would imply that prohibiting all Medicaid financed abortions would result in 262,500 less abortions being consumed.

A second proposal is to prohibit all abortions constitutionally. This would not eliminate all abortions since a possible alternative to a legal abortion is an illegally obtained abortion. Making abortions illegal, however, would raise the total price. Assuming that the illegal price was 50 percent higher than the prevailing 1980 market price and using the estimated price elasticity of demand of $-.81$ suggests that, *ceteris paribus*, the abortion rate would decrease by 40.5 percent. Applying this latter figure to the 1980 total of 1.5 million abortions performed implies that making abortions illegal would have reduced the number of abortions consumed by 607,500. If the illegal price were 75 percent higher than the 1980 market price, the reduction in the number of abortions consumed would be 911,250; if the illegal price were 100 percent higher, the drop in the number of abortions consumed would be 1,215,500.

Future trends in the abortion rate will be determined by changes in many factors not discussed in this study, such as sexual behavior patterns, availability of contraceptive services, and the perceived risks of contraceptive methods. However, the projected secular increase in the income and labor force participation of women combined with a decline in marriage rates and increase in divorce rates suggests, based on the empirical results, an increase in abortion rates in the United States. The annual increases in the abortion rate are likely to be small but persistent.

17. The mean and standard deviation (in parentheses) for the dependent variable and explanatory variables in equation (1) are A: 250.898 (87.847); P: 213.64 (43.15); Y: 6407.3 (936.338); SNGL: 34.158 (3.956); LFP: 61.99 (4.602); CATH: 20.022 (13.806); W: .12 (.3249); M: .28 (.0448).

18. These results cannot be compared with those of Deyak and Smith [1976] or Coelen and McIntyre [1978] since neither study provided sample means for their price or income variables.

REFERENCES

- Alan Guttmacher Institute. *Abortion Services in the United States, Each State and Metropolitan Area, 1981-1982*. New York: The Alan Guttmacher Institute, 1985.
- Becker, Gary S. "A Theory of the Allocation of Time." *Economic Journal*, September 1965, 493-517.
- Bernstam, Mikhail and Peter Swan. "In Production of Children as Claims on the State: A Comprehensive Labor Market Approach to Illegitimacy in the United States, 1960-1980." Hoover Institution, 1986.
- Coelen, Stephen P. and Robert J. McIntyre. "An Econometric Model of Pronatalist and Abortion Policies." *Journal of Political Economy*, December 1978, 1077-1101.
- De Tray, Dennis. "Child Quality and the Demand for Children." *Journal of Political Economy*, March/April 1973, S70-95.
- Deyak, Timothy A. and V. Kerry Smith. "The Economic Value of Statute Reform: The Case of Liberalized Abortion." *Journal of Political Economy*, February 1976, 83-99.
- Goldfeld, Steven M. and Richard E. Quandt. "Some Tests for Homoscedasticity." *Journal of the American Statistical Association*, September 1965, 539-47.
- Hamermesh, Daniel S. and Neal M. Soss. "An Economic Theory of Suicide." *Journal of Political Economy*, January/February 1974, 83-98.
- Johnson, Douglas W., Paul R. Picard, and Bernard Quinn. *Churches and Church Membership in the United States*. Washington, D.C.: Glenmary Research Center, 1974.
- Klarman, Herbert E. *The Economics of Health*. New York: Columbia University Press, 1965.
- Michael, Robert T. "Education and the Derived Demand for Children." *Journal of Political Economy*, March/April 1973, S128-64.
- U.S. Bureau of the Census. *State Reports, Detailed Characteristics: 1980*. Washington, D.C.: Government Printing Office, 1983.
- Willis, Robert J. "A New Approach to the Economic Theory of Fertility Behavior." *Journal of Political Economy*, March/April 1973, S14-64.