

# ECONOMICS DEPARTMENT

## WORKING PAPER

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**Abstract of**  
**Teen Childbearing and Conservative Religious Communities**

The importance of neighborhood background characteristics on socioeconomic outcomes is uncertain because some dimensions of neighborhood quality such as social norms and social cohesion are difficult to measure. This paper shows that teen childbearing declines with increases in the fraction of a community's religious adherents who are Catholics or Conservative Protestants. This finding is not simply due to related differences in local economic costs and benefits or with unobserved family or individual characteristics. Instead the results reflect social norms about teen sexual activity. They indicate that policy choices should take account of the influence of norms on individual behavior.

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## **I. Introduction**

While the effects of family background on later socioeconomic status are firmly established, uncertainty remains about the relative importance of neighborhood effects. Some argue that the measured effects are largely due to unobserved family characteristics. Others point out that difficult-to-measure dimensions of neighborhood quality such as social norms and social cohesion may often be overlooked.

This paper supports the latter assertion. It shows that teen childbearing is correlated with the fraction of the community's religious adherents who are Catholic or who belong to Conservative Protestant denominations. This finding is not simply due to unobserved family or individual characteristics but instead may reflect social norms about teen sexual activity.

Clearly, denominational choices are not part of public policy discussions. However, at a general level, the results support claims that policy choices should take account of the tendency for individuals to substantially skew their behavior towards the norms of their social group. At a more specific level, the results can help explain why teen pregnancy prevention programs that explicitly exploit the nature of social interactions tend to be more successful than others.

## **II. Literature Review**

Previous empirical evidence about neighborhood characteristics and teen sexual behavior is mixed. Brooks-Gunn et al (1993) and Crane (1991) found that "good" neighborhoods as measured by the fraction of families with high incomes or the fraction of workers who held professional or managerial jobs significantly reduced the likelihood of teen out-of-wedlock childbearing. These findings were echoed in the estimated effects of neighborhood disadvantage, racial composition, and neighborhood disorganization reported by South and Crowder (1999), Sucoff and Upchurch (1998), and Upchurch et al (1999).

Three different interpretations have been used to account for estimated neighborhood effects. The first attributes these effects to economic costs and benefits of alternative choices. These include access to contraceptives and abortions (Kane and Staiger, 1996; and Lundberg and Plotnick, 1995), labor market opportunities measured by local area employment rates and average earnings and, and the generosity of transfer

payments for female-headed households (see An et al, 1993; Ribar, 1994; Rosenzweig, 1999; and Duncan and Hoffman, 1990).

A second interpretation of neighborhood effects hypothesizes that neighborhood characteristics (including some of the ones listed above) are proxies for community norms. “Attitudes and values are the pathways through which contextual factors [median family income and women’s employment status] influence individual behaviors” (Brewster, 1994; p. 421). “In neighborhoods marred by physical deterioration, threats of violence, and other stressors, the social processes that reinforce adult norms are severely circumscribed” (Upchurch et al, 1999; p. 929). “Our finding that neighborhood racial composition is associated with adolescent childbearing regardless of neighborhood socioeconomic status, provides indirect evidence that cultural norms are an important explanation of variation in rates of childbearing” (Sucoff and Upchurch, 1998; p. 582).

One potential source of norms is community religiosity. For example, Catholic doctrine and teaching include strict prohibitions against premarital sex (U.S. Catholic Conference, 1977) and, as a result, Catholic girls are less likely to be sexually active than others (see Cochran and Beeghley, 1991 and Petersen and Donnenwerth, 1997; Brewster et al, 1998). Similar disincentives hold for Conservative Protestant denominations (Brewster et al, 1998; Thornton and Camburn, 1987).

Such religiosity may be converted to norms for communities as a whole if the moral constraints apply not just to individual members of a specific religious body but also to others who associate with those members. Stark (1996) argues for discarding “the assumption that religion is primarily an individual trait”. He contends that “what counts is not only whether a particular person is religious, but whether this religiousness is, or is not ratified by the social environment. The idea here is that religion is empowered to produce conformity to norms only as it is sustained through interaction and is accepted by the majority as a valid basis for action.”

Unlike economic costs and benefits represented by other neighborhood characteristics, a distinctive feature of religious norms is that they are age-specific. Given that older women are much more likely to be married, childbearing is desirable rather than taboo among most women in their twenties. In fact, in the 1950s and 1960s, Catholic and Conservative Protestant women averaged more children than other denominations or non-religious women (Westoff, Potter, and Sagi, 1964 and Marcum, 1981). In some cases, this trend has

continued. A study of Providence, Rhode Island in 1967 and 1980 showed Catholic rates remained higher than Protestant rates (Williams and Zimmer, 1990). One potential explanation is that the relatively high proportion of Catholics in the population reinforced the high fertility norms of the 1970s. In general, however, higher fertility among Catholics and Conservative Protestants have disappeared (Mosher, Williams and Johnson, 1992). Taken as a whole, this research suggests that religiously motivated norms against childbearing would apply primarily to adolescents and to not older women.

The last interpretation of neighborhood effects is that they are spurious. Hogan and Kitagawa (1985) found only marginally significant effects of neighborhood quality on black teen pregnancy when controlling for a standard set of family background characteristics. Furthermore, these effects became insignificant when the analysis added parental control of dating. Ginther, Haveman, and Wolfe (2000) showed that the percent of persons who were white, the percent of households with high incomes, the percent of households with low incomes, and the percent of female heads seemed to have large significant effects on teen nonmarital births. These effects disappeared, however, when an extensive list of family background variables was included in the analysis. Evans et al (1992) and Plotnick and Hoffman (1999) also reported insignificant neighborhood effects on out-of-wedlock childbearing when noncausal relationships were eliminated by using fixed-effects analysis or by treating neighborhood effects as endogenous.

### **III. Empirical Analysis**

#### **A. Data and Basic Results**

This paper estimates the effects of community religiosity as measured by the percentage Catholic and the percentage Conservative Protestant and provides evidence that the reported effects are due to community norms. The analysis uses data for women ages 14-20 in 1979 taken from the National Longitudinal Study of Youth (NLSY). The NLSY is a nationally representative panel of individuals ages 14-22 begun in 1979. Sample members were interviewed annually to determine information about schooling, work, and other experiences<sup>1</sup>. The individual data from the NLSY was merged with data on the county in which the individual resided in 1979. The county data included the fraction of religious adherents who were Catholic (i.e. Catholic adherents/total adherents) and the fraction of religious adherents who were Conservative Protestants (i.e.

Conservative Protestants/total adherents). This data came from the 1980 Survey of Churches and Church Membership collected by the Glenmary Research Center (Quinn et al, 1982).

While religious norms sanction premarital sexual activity, the choice of the dependent variable for this analysis is not obvious. Data on teen intercourse and pregnancy before marriage could be used to test the hypotheses about religiosity and premarital sexual activity. Such data may, however, contain measurement errors since many unmarried girls who are sexually active at young ages would be unwilling to report accurately (see Furstenberg et al, 1987). Non-marital childbearing is also not ideal since, according to Akerlof, Yellen, and Katz (1996), over 40 percent of the premaritally conceived births between 1980 and 1984 were resolved by marriage. These measurement error problems would be especially important in communities that more actively sanction teen pre-marital sexual activity. Because of these problems, this paper focuses on teen childbearing (marital and non-marital) as a measure of premarital conceptions<sup>2</sup>. More specifically, the variable for teen childbearing is based on the age at first birth reported in 1985 when respondents were 20-26 years old. Because this variable overstates premarital conceptions, any estimated effects will be lower bounds of the true effects of religiosity on this outcome. In addition, this behavior can be more easily analyzed for the same women when they are in their twenties.

Summary statistics for all variables used in the analysis are listed in Table 1. It shows that the mean age at first intercourse was approximately 18, about twenty percent of the sample gave birth as teenagers, and about 51 percent of the sample gave birth in their twenties. Table 1 also shows that about 30 percent of entire sample were Catholic<sup>3</sup> and 3 percent were Conservative Protestants as of 1979. Sample members lived in counties where 42 percent of adherents were Catholics and 6 percent were Conservative Protestants.

This analysis understates the prevalence of Conservative Protestants since many such denominations did not provide data for the 1980 Glenmary Survey or were not separated listed in the NLSY survey. The specific denominations identified as Conservative Protestants for this analysis are listed in the Appendix (see Roof and McKinney, 1987 for definitions of Conservative Protestants). Similar to Brewster et al (1998), Baptists were not included among Conservative Protestant congregations due to heterogeneity in beliefs and practices.

Fundamentalist Protestants made up 5 percent of the white sample and 11 percent of the black sample in the Brewster et al data.

Column 1 of Table 2 reports the teen childbearing results using probit<sup>4</sup>. The results are largely consistent with those from other studies. More highly educated parents, white-collar fathers, residence in a household that received magazines (during the individual's adolescence) and residence in counties with large fractions of college-educated workers were all correlated with significantly lower chances of teen childbearing. African-Americans averaged significantly higher teen birth rates<sup>5</sup>.

The results in Table 2 are also consistent with previous research about the effects of religiosity. They show that Catholic or Conservative Protestant girls and girls who frequently attended church were less likely to give birth as teens. The  $-0.187$  coefficient implies 4.5 percentage points lower teen birth rates for Catholics and Conservative Protestants than for others<sup>6</sup>. The  $-0.006$  coefficient for church attendance amounted to 1.5 percentage points lower for each additional 10 weeks.

Table 2 also shows that individuals in communities with larger fractions of Catholics or Conservative Protestants were less likely to give birth as teens *ceteris paribus*. The  $-0.885$  and  $-2.177$  probit coefficients indicate that each 10 percentage point difference in county fraction Catholic and county fraction Conservative Protestant would change teen birth rates by about 2 and 5 percentage points respectively<sup>7</sup>.

These community religiosity effects do not apply just for Catholics and Conservative Protestants. If separate coefficients are estimated, the result for the county Catholic percentage for Catholics was  $-1.036$  (0.413) and the result for those who were neither Catholic nor Conservative Protestant was  $-0.841$  (0.264). If Conservative Protestants were omitted from the analysis the coefficient for the county fraction Conservative Protestant would equal  $-2.270$  (0.873)<sup>8</sup>. Too few Conservative Protestants were in the sample to estimate a separate coefficient for this group.

The Conservative Protestant fraction coefficient reported in column 1 of Table 2 is more than twice as large as the Catholic fraction coefficient. The larger Conservative Protestant effect may occur because, as indicated earlier, the fraction of Conservative Protestants used in this paper understates the total fraction. Each percentage point change may actually represent larger changes in the total proportion.

On the other hand, the larger effect may result from behavioral differences between Catholics and Conservative Protestants. Petersen and Donnenwerth (1997) reported that traditional beliefs about premarital sex declined substantially for Catholics between 1972 and 1993. Conservative Protestants who attended church frequently did not correspondingly change their attitudes. Iannoccone (1992) argued that strict churches rationally require conformity to a distinct morality and lifestyle. Therefore, holding constant the total fraction of religious adherents, more individuals may be constrained by community moral directives in largely Conservative Protestant than in Catholic communities.

### **B. Interpretation of Results**

As indicated earlier, the effects of community religiosity could be accounted for by local area differences in economic costs and benefits, by norms, or by spurious correlation. Age-specific effects distinguish the norms explanations from the others. Childbearing is regarded as undesirable for unmarried teens but as expected behavior for married older women. Column 2 of Table 2 reports the childbearing results for the same women when they were in their twenties rather than in their teens. More specifically, the variable for childbearing between 20 and 29 was based on the age of the individual's children reported in 1992 when respondents were 30-36 years old. Column 2 shows that parents' schooling and occupation variables had similar, though somewhat smaller, effects on childbearing for ages 20-29 than on teen births. In contrast, neither church attendance nor Catholics/Conservative Protestant denomination was statistically significant. In fact, both point estimates were positive. The moral directives that constrained adolescent behavior do not apply when the individuals become older. Consistent with this observation, neither county fraction Catholic nor the county fraction Conservative Protestant had significant negative effects on childbearing for ages 20-29<sup>9</sup>. The coefficients were large, negative, and significant for these *same* women when they were teens.

Economic costs and benefits could account for the correlation between community religiosity and teen childbearing reported in Table 2. If communities with large numbers of Catholics and/or Conservative Protestants differ from other communities along such dimensions (e.g. restrictions on purchasing contraceptives and availability of abortions), then these costs and benefits may be the true source of variations in teen behavior.



This paper reduces this source of omitted-variables bias in two ways. It controls for state-level unobservables by including state dummies in the analysis. The results, therefore, show the effects of differences in county fraction Catholic and Conservative Protestant within the same state. In addition, a variety of socioeconomic county-level variables (such as the unemployment rate, the average size of Aid to Families with Dependent Children payments, the percentage of female-headed families, the fraction of the population that was poor, the fraction of the population that was black, and average county income) had no large or significant effects of teen childbearing or on the sizes of the Catholic or Conservative Protestant adherents coefficients. The results here are similar to those in Ginther, Haveman, and Wolfe (2000). They showed that the effects of variety of neighborhood characteristics measuring the costs and benefits disappeared when an extensive list of family background variables was included in the analysis.

It is unlikely that other cost differences across communities would bias the results here. In a related paper, Lundberg and Plotnick (1995) analyzed the effects of county level variables measuring costs of contraception for a sample of NLSY women similar to those included here. These variables include availabilities of family planning services for teenage women, family planning services for Medicaid-eligible women, and general family planning services. Lundberg and Plotnick found that these costs had no effects on childbearing holding constant (as does Table 2 through state fixed-effects) statewide restrictions on public funding for abortion or the sale of contraceptives.

In the absence of omitted community characteristics, the results may still be spurious if left-out individual or family variables are correlated with community religiosity. For example, parents who actively monitor their children's behavior may also more often live in Catholic/Conservative Protestant religious communities. Similarly, parental willingness to adhere to religious strictures may be correlated with denomination and with residence in Catholic/Conservative Protestant communities. In this case, the parents' monitoring, attitudes, and other individual or family unobserved variables rather than the community characteristics may account for lower teen childbearing.

Unobserved family characteristics are not likely to account for the observed effects in part because the fractions Catholic or Conservative Protestant were measured at the county rather than at the neighborhood level.

Dissatisfaction with neighborhood characteristics is often resolved by choosing a different neighborhood in the same county. For example, among residential moves within state between 1975 and 1980, over 70 percent occurred within the same county<sup>10</sup>. Selection bias problems are, therefore, less likely for the county than for the neighborhood level.

Given the insignificant coefficients of county fractions Catholic and Conservative Protestant for childbearing during ages 20-29 in Table 2, the possible sources of any remaining bias due to unobserved individual or family characteristics are limited to variables that alter teen but not later childbearing. The effects of such variables can be reduced by including age at first intercourse in the analysis. The same unobservables that affect teen childbearing (e.g. parent's monitoring behavior, reported parental understanding and support, perceived neighborhood safety, physical condition, and social relations, see Upchurch et al, 1999; Hogan et al, 1985) would also affect age at the first intercourse. Moreover, the results including age at first intercourse may understate the reduced-form effects of community religiosity since changes in age at first intercourse may be one of the avenues through which community religiosity alters teen childbearing.

Column 3 of Table 2 shows that the log likelihood changes from  $-1612.5$  to  $-1335.2$  when age at first intercourse is included in the analysis. This variable is, therefore, not merely condensing the effects of already included variables but, in fact, incorporates the influence of omitted childbearing determinants. Column 3 also shows that, including age at first intercourse, the coefficients for African-American, church attendance and Catholic/Conservative denomination were substantially smaller than in column 1 and were no longer statistically significant. The decline of these coefficients to insignificantly different from zero suggests that any spurious correlation captured by these variables in column 1 (as well as the true effects) was eliminated with age at first intercourse included in the analysis.

Even though adding age at first intercourse substantially reduced the effects of unobservables correlated with race and individual religiosity, the coefficients of the Catholic and Conservative Protestant adherence fractions were only slightly smaller than they were in column 1. The  $-0.809$  and  $-1.907$  probit coefficients imply that each 10 percentage point difference in county fraction Catholic and county fraction Conservative Protestant would change teen childbearing by about 1.5 and 4 percentage points respectively. The contrast

between the reduction in the effects of race and individual religiosity and the rough constancy of the community religiosity effects suggests that the latter are not mainly driven by unobserved variables.

Summarizing the results of this paper shows that higher community religiosity as measured by county fractions of Catholics and Conservative Protestants reduce teen childbearing. Overall, the age differences and other results are consistent with norms interpretation of the effects.

### **C. Discussion**

Decisions about denomination are well outside the purview of public policy. Nonetheless these results may have important policy implications. At a general level, the results support claims that policy choices should take account of the influence of norms on individual behavior. Becker and Murphy (2001) contended that complementarities between norms and individual behavior result in multiplier effects. As a result, social forces can severely constrain individual choice much more than the individual changes in costs and benefits. Similarly, Coleman (1988) argued that an “obvious solution to [declining human capital embodied in each successive generation] is substitution of some sort of formal organization for the voluntary and spontaneous social organization that has been in the past the major source of social capital [e.g. norms] available to the young”.

At a more specific level, the results suggest that some public policies and interventions to reduce teen childbearing may be more successful than others precisely because they alter social norms about acceptable behavior for those groups especially at-risk for unproductive behavior. Kirby (2001) summarized the evaluations of 250 programs aimed at reducing teen pregnancy and childbearing. These programs included school curricular-based programs, sex and HIV education programs for parents and families, clinic or school-based programs to provide reproductive health care, and a variety of others. Among the distinguishing characteristics of successful programs, he reported that effective “programs strive to go far beyond the cognitive level; they focus on recognizing social influences, changing individual values, changing group norms, and perceptions of those norms”.

Similarly, Loury (1999) finds that, among intervention programs to limit second births among welfare mothers, only home visitation by nurses consistently resulted in fewer subsequent births. Evaluations of the

program attribute part of its success of the program to unambiguous normative messages that becoming pregnant again was not desirable. Another part of the success of the program was attributed to empathetic relationship that the nurses explicitly developed with the mother and other family members. The program's outcome contrasts with the negligible impact of other approaches which relied on direct or indirect monetary incentives to avoid future pregnancies and of the typical case management approach which simply provided information about birth control and which included only limited contact between case workers and clients. These approaches do not directly alter perceptions of acceptable behavior.

#### **IV. Conclusion**

This paper shows that communities with larger fractions of Catholics and Conservative Protestants have lower rates of teen childbearing. The paper also presents evidence that the measured effects result from conforming to community norms rather than from spurious correlation with unobservables or differences in economic costs and benefits. This research suggests that the array of community variables that may affect individuals extends beyond the standard measures of community socioeconomic characteristics. It provides evidence in favor of policy interventions that explicitly seek to alter attitudes and norms rather than relying solely on providing information or structuring financial incentives to elicit desired behavior.

**Appendix**

Conservative Protestant Denominations:

Glenmary data

- Assemblies of God
- Berean Fundamental Church
- Bible Church of Christ
- Churches of Christ
- Congregational Holiness Church
- Fire Baptized Holines Church
- Pentecostal Free Will Baptist
- Pentecostal Holiness
- Seventh Day Adventist
- United Church of Christ
- Miscellaneous Evangelical Congregations

NLSY data

- Apostolic Pentecostal
- Assembly of God
- Church of Christ
- Evangelical
- Evangelical Congregational
- Pentecostal Assembly of God
- Pentecostal Free Will Baptist
- Pentecostal Holiness
- Pilgrim Holiness
- Seventh Day Adventist
- United Holiness
- Witness Holiness
- Fundamental

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Teen Childbearing	17
<b>Table 1. Means and Standard Deviations of</b>	<b>Selected Variables</b>
Whether gave birth during ages 13-19 (0-1 dummy variable measured as of 1985)	0.209 (0.406)
Whether gave birth during ages 20-29 (0-1 dummy variable measured as of 1992)	0.513 (0.500)
Age at first intercourse (in years measured as of 1983)	17.899 (2.299)
Catholic (0-1 dummy variable)	0.303 (0.460)
Conservative Protestant (0-1 dummy variable)	0.026 (0.158)
Mother - highest grade completed (in years)	10.970 (3.644)
Don't know mother's schooling (0-1 dummy variable)	0.047 (0.212)
Father - highest grade completed (in years)	10.487 (4.944)
Don't know father's schooling (0-1 dummy variable)	0.106 (0.308)
Father - professional worker (0-1 dummy variable)	0.234 (0.423)
Father - clerical worker (0-1 dummy variable)	0.082 (0.275)
Number of siblings	3.413 (2.332)
Female-headed family at age 14 (0-1 dummy variable)	0.133 (0.339)
<b>Table 1. (cont.)</b>	
Household regularly received magazines when	0.648

Teen Childbearing respondent was age 14 (0-1 dummy variable)	18 (0.478)
African-American (0-1 dummy variable)	0.145 (0.352)
Urban residence at age 14 (0-1 dummy variable)	0.777 (0.416)
Weeks attended church in past year	23.144 (25.325)
County - percent attended college	10.348 (4.205)
County - percent of religious adherents who were Catholics (measured as of 1980 by Glenmary survey)	0.418 (0.255)
County - percent of religious adherents who were Conservative Protestant (measured as of 1980 by Glenmary survey)	0.062 (0.046)
Number of observations	3693

All variables were taken from the 1979 NLSY data  
unless otherwise indicated

Standard deviations are in parentheses.

**Table 2. Probit Childbearing Estimates**

<b>Explanatory variables</b>	<b>Ages 13-19</b>	<b>Ages 20-24</b>	<b>Ages 13-19</b>
Mother - highest grade completed (in years)	-0.060 (0.012)	-0.021 (0.012)	-0.076 (0.014)
Father - highest grade completed (in years)	-0.034 (0.011)	-0.028 (0.010)	-0.042 (0.012)
Father - professional worker (0-1 dummy variable)	-0.242 (0.093)	-0.179 (0.073)	-0.182 (0.103)
Father - clerical worker (0-1 dummy variable)	-0.264 (0.135)	-0.019 (0.100)	-0.272 (0.146)
Number of siblings	0.014 (0.012)	0.006 (0.011)	-0.0002 (0.013)
Female-headed family at age 14 (0-1 dummy variable)	0.045 (0.075)	0.082 (0.072)	-0.017 (0.083)
Household regularly received magazines when respondent was age 14 (0-1 dummy variable)	-0.332 (0.063)	0.044 (0.057)	-0.294 (0.070)
African-American (0-1 dummy variable)	0.268 (0.072)	-0.039 (0.064)	0.133 (0.079)
Urban residence at age 14 (0-1 dummy variable)	0.025 (0.076)	0.086 (0.064)	0.040 (0.083)
County - percent attended college	-0.017 (0.008)	0.003 (0.007)	-0.018 (0.009)

Table 2. (cont)

**Ages****Ages****Ages**

Teen Childbearing	20 <b>13-19</b>	<b>20-24</b>	<b>13-19</b>
Weeks attended church in past year	-0.006 (0.001)	0.0001 (0.001)	-0.0003 (0.001)
Conservative Protestant or Catholic (0-1 dummy variable)	-0.187 (0.072)	0.056 (0.060)	-0.109 (0.079)
County - percent of religious adherents who were Catholics (measured as of 1980 by Glenmary survey)	-0.885 (0.215)	-0.138 (0.189)	-0.809 (0.240)
County - percent of religious adherents who were Conservative Protestant (measured as of 1980 by Glenmary survey)	-2.177 (0.865)	-0.001 (0.717)	-1.907 (0.941)
Age at first intercourse	-	-	-0.337 (0.018)
Intercept	1.190 (0.237)	0.587 (0.212)	7.112 (0.427)
Log likelihood	-1612.5	-2479.9	-1335.2
$\chi^2$	518.8	111.6	709.4

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Standard errors are in parentheses. Other variables included in the analysis were dummy variables for don't know mother's schooling and don't know father's schooling, and dummy variables for state of residence as of 1979.

<sup>1</sup>The entire sample of NLSY females for this age group with nonzero 1993 weights equals 3743. Fifty observations were dropped because they could not be matched with the Glenmary data.

<sup>2</sup> This measure is not without problems. Catholic and Conservative Protestant girls may be less likely to have premarital sex than others (see Cochran and Beeghley, 1991 and Petersen and Donnenwerth, 1997) but more likely to become pregnant and give birth if they do (Brewster et al, 1998 and Thornton and Camburn, 1989).

<sup>3</sup> This is slightly higher than figures from national samples of adults of 28 percent in 1985. See Greeley (1989).

<sup>4</sup> Using ordinary least squares or methods designed for dichotomous dependent variables such as logit yields similar results.

<sup>5</sup> In other work, the large significant coefficient for African-Americans is often interpreted as capturing the effects of unmeasured variables correlated with race that also alter teen childbearing (Sucoff and Upchurch, 1998; Hogan and Kitagawa, 1985; Brewster, 1994).

<sup>6</sup> Separate estimates for the two denominational groups were  $-0.189$  (0.074) for Catholics and  $-0.169$  (0.205) for Conservative Protestants. Although the point estimates are similar, the coefficient for Conservative Protestants is not precisely estimated because of the small sample size. Other variables included in the analysis were dummy variables for the state of residence, number of siblings, female-headed family, and urban residence. The last three were not significant. They are left in for comparability with related research work.

<sup>7</sup> One alternative measure of community religiosity is percentage of all adherents in the county. This variable had a small and insignificant effect on teen childbearing  $-0.0010$  (0.0046). Results of percent Catholic and percent Conservative Protestants for non-marital childbearing are similar to those in column (1). However, the coefficients are less precisely estimated at  $-0.703$  (0.260) for the percentage Catholic and  $-1.740$  (1.155) for the percentage Conservative Protestant.

<sup>8</sup> The coefficient for county percent Conservative Protestant is larger than the coefficient for the whole sample in column 1 of Table 2. This suggests that the coefficient is actually lower for Conservative Protestant

than for others. The coefficient would be measured with considerable error given the small size of the Conservative Protestant sample.

<sup>9</sup> This is not just an artifact of the effect on religiosity on teen births. Results are similar if the sample excludes women who gave birth as teens.

<sup>10</sup> U.S. Bureau of the Census. County and City Data Book, p. 2. Evans et al (1992) make a similar argument to justify using metropolitan area variables as instruments for the percentage of students in the respondent's school who were economically disadvantaged.