Rush Limbaugh and the Oral Contraceptive Mandate

Why He Injected Himself into the Debate About a Medication He Will Never Have the Good Fortune to Use

Eliana Rae Eitches

3/27/2012

In the entirety of the debate regarding President Obama's health care plan mandate that all employers, including religious employers, provide free contraception for their employees as a part of their health plan, the most polarizing remark was made by Rush Limbaugh, a conservative pundit decrying women that wished to, putting it mildly, have premarital relations on the government's credit card. Rush Limbaugh, as a man, will never use oral contraceptives, so what made him feel the need to insert himself into the debate? Religious groups entered the debate to protect the natural reproductive system, and the Catholic Church[i] is vocal in its opposition to the mandate. In the House of Representatives, many Republicans are lobbying for more exemptions for religious employers.[ii] Of individuals identifying as Republican only 11% support the oral contraceptive provision,[iii] a statistic likely influenced by the strong correlation between religion and party affiliation (48% of self-identified "very religious Americans" identify as "Republicans/Leaners."[iv] Party affiliation is also impacted by race, with 52% of all white, non-Hispanic voters identifying as "Republicans/Leaners" versus 39% of "Democrats/Leaners," and by education level, with 44% of college-educated individuals identifying as "Republicans/Leaners" while 48% identify as "Democrats/Leaners."[v]

Party affiliation likely influences whether an individual supports oral contraceptive provision of the Obama health care plan; concurrently, it is also likely that an individual's opinion about oral contraceptives influences their party decision. A "Woman's Rights" advocate will tend to support oral contraceptive use and, as a result of divergent party platforms on that issue, be more likely to support the Democratic Party. Accordingly, the gender gap in support for the oral contraceptive provision, with 46% of women aligning with the Obama Administration versus 37% of men,[vi] may be representative of the gender gap in oral contraceptive support. Those that approve of pre-marital sex despite knowledge its consequences will be inclined to support oral contraceptive use and its health care provision as it prevents of the consequences – namely children.

This paper proposes that the relationship between party affiliation and oral contraceptive support is endogenous – each variable simultaneously alters expression of the other. Furthermore, it supposes that an individual's self-identified religious intensity also impacts the expression of both party affiliation and oral contraceptive support. Race and education level, though, are postulated to affect party affiliation yet have no significant relationship with oral contraceptive support. Gender and approval of pre-marital relations will likely influence oral contraceptive support, not party affiliation. The causal flow diagram, in Appendix A, details the propositioned relationships between the two endogenous variables and the five exogenous variables. Rush, thus, was influenced by his maleness, his religiosity, his race, his education level, and his lofty sense of morality when decided to alert the public to his dislike of oral contraceptive use.

The unit of analysis is on the individual level for this paper. As the 2010 General Social Survey (GSS) is a thorough multistage probability sample at the block level, the GSS data set information can be used to estimate opinion of individuals in United States. GSS question wordings, frequency distributions, and recoding specifics for every variable are located in Appendix B. Race of individual (var: racew) is a recoding of GSS "race" where 0 indicates "non-white" and 1 indicates "white." Education level of an individual (var: eduyr) is a recoding GSS variable "educ," dropping missing data, with values ranging from 0 "no formal schooling" to 20 "20 years of schooling." Political ideology (var: consv) recodes GSS variable "polviews" to start at 0, representing the spectrum from "extremely liberal" to "extremely conservative." Religiosity (var: religy) recodes GSS variable "reliten," religious intensity of an individual as indicated by strength of self-identification as member of religious group, from 0 "no religion" to 3 "strong religion." Support for oral contraceptives availability (var: brctl) recodes GSS variable "pillok," concerning approval of the pill for teenagers 14-16 without parental consent to start at

0 instead of 1, with responses ranging from 0 "strongly agree" that the pill is acceptable to 3 "strongly disagree." Gender (var :males) is a recode of GSS variable "sex," an individual's gender, with female recoded 0 and males coded 1. Belief in the acceptability of premarital sexual relations (var:adosex) is a recoded GSS variable "teensex," probing an individual's belief whether it is morally wrong for a teenager aged 14-16 to engage in premarital sex, that reversed the order of GSS responses and started responses at 0 "never wrong," ending with 3 "always wrong." Age ranges 14-16 were chosen to aggregate the most extreme supporters in oral contraceptives because many believe in minimum age parameters for acceptable sexual activity such that birth control should not be available for those below that threshold.

It is envisaged that as exogenous variables racew or religy increase, endogenous variable consv will fall, but an increase in the exogenous variable eduyr will materialize as a decrease in consv. Additionally, increases in the exogenous variables religy, males, or adosex are assumed to influence increases in the endogenous variable brctl. Thus, it appears that the exogenous variables will maintain a unidirectional causal relationship with their corresponding endogenous variable. Unidirectional causal path relationships, where the dependent variable is acted on by independent variables but not vice versa, are standard in "single-equation models." If the goal of an experimental model is to test hypotheses about the how the world functions with representative sample data, then a model wherein a dependent variable is unable to exert influence on other variables will result in unrealistic inferences and defeat the purpose of the statistical analysis. Accordingly, the "simultaneous-equation model" is more realistic mode in that it permits two-way relationships between variables. The structural equations for the endogenous variables, in Appendix C, illustrate the theory of the paper.

The simultaneous-equation model has two distinct forms: recursive and non-recursive. The recursive model has two primary assumptions: 1) the endogenous variables maintain a unidirectional causal relationship and 2) the disturbance term in one equation is uncorrelated with all other disturbance terms. Although these assumptions are unrealistic, they ensure the model is always identifiable and fits the classical assumptions of the ordinary least squares regression (OLS). Typically, OLS is not appropriate for the simultaneous-equation model because correlated disturbance terms result in biased parameter estimators. As recursive models mandate uncorrelated disturbance terms, and a disturbance term is given by the variance in an endogenous variable unaccounted for by the causal effects of its exogenous variables, unidirectional causal relationship between endogenous variables are assumed to be unidirectional to ensure uncorrelated disturbance terms (Appendix D). OLS can be performed on equation separately, producing unbiased estimators of each endogenous variable.

The theorized relationship between brctl and consv violates recursive model assumptions, so the non-recursive structural equation model is adopted as it allows for overlapping disturbance terms and, resultantly, endogeniety. Both endogenous variables manifest as an individual's expression of some aspect of their political ideology; as self-identified political ideology is a byproduct of the individual's unique socialization experiences, many variables involved in the development of individual political ideology are interdependent. The unique nature of social science variables, with myriad of variables inherent in their formulation, will produce large disturbance terms in the absence of sufficient explanatory variables and likely unexpected correlations between variables within the model; therefore, in such a model, disturbance term correlation may be unavoidable and endogenous variables may be greater in number than predicted such that individual causal effects cannot be distinguished. An examination the model's correlation matrix (Appendix E) illustrates the interconnected web between and reciprocal causality of social science variables. Although no correlations are high enough to indicate multicollinearity at this stage, the two completely predetermined variables, racew and males, have correlations

with exogenous variables; thus, the causal chain becomes more complicated than first theorized.

Correlation matrices, though, cannot separate direction of correlation between variables nor effect of each variable in a causal chain. In the model of the paper, the magnitude of the causal effects between brctl and consv are probably uneven (consv should effect brctl more so than brctl on consv), but their relationship still confers a continuous causal loop resulting from an exogenous variable causing changes in one endogenous variable, thereby affecting change in the other, further causing change in the first. This complex loop muddles the magnitude of causal effects between endogenous variables as they vary at differing points in time dependent on expression of exogenous variables in the model. A structural equation dissected into a reduced-form equation, which express an endogenous variable as a function of the exogenous variables in the model and its disturbance term to attempt to isolate individual causal effects. If it is possible to determine the causal effects for an endogenous variable, the structural equation for that variable is said to be "identified" and the structural parameters estimable; if the effects are not quantifiable, the structural equation is "unidentified" or "unidentified." Identified equations fall into two categories: "just-identified," unique numerical structural parameters can be found, or "over-identified," multiple possible structural parameters can be found as a result of extraneous variables in the structural equation. The order condition of identification states that in a given simultaneous-equation model, where the number of equations equals the number of endogenous variables (M), a structural equation must exclude at least M-1 of all variables in the model, both endogenous and exogenous, from its equation to be identified; excluding M-1 indicates "just-identification," while excluding greater than M-1 indicates "over-identification." In the equations for brctl and consv, there are three exogenous variables and one endogenous variable, indicating two exogenous variables are excluded in each equation; therefore, as M-1=1, both equations are over-identified.

Identification is a necessary condition for a successful regression. In a non-recursive simultaneous-equation model, the endogenous variables are assumed to correlate such that their error terms correlate as well. Correlated disturbance terms violate OLS assumptions because simultaneity bias causes erroneously high correlations and produces biased estimators: as causal loop mandates part of brctl's expression results from changes in consv, regressing brctl on consv is equivalent to regressing part of consv on itself. In a model expected to display endogeniety, OLS estimators are immediately suspect (Appendix F) and cannot be used to make inferences until proven indistinguishable from parameter estimators derived from a two-stage least squares regression (2SLS), a method equipped to handle simultaneous-equation models. A 2SLS regression first creates a "proxy" variable, highly correlated with an endogenous variable but uncorrelated with the disturbance term, to remove violations of OLS assumptions, and then regresses a structural equation after substituting the proxy variable for the problematic endogenous variable to obtain parameter estimations of the structural equation.

The first step of 2SLS is to create a proxy variable that approximates an endogenous within the model. A reduced-form equation gives an endogenous variable as a function of all exogenous variables to account for as much of the causal effect caused by other endogenous variables without correlating with their disturbance terms; exogenous variables are uncorrelated with disturbance terms because, by definition, their explanatory variables lie outside the model (if not, they would be endogenous variables). Proxy variables do not violate OLS assumptions, and reduced-form coefficients are reliable estimators of reduced-form parameters. With the aforementioned issue surrounding social science endogenous variables calculated with only a handful of explanatory variables and possible unforeseen endogenous relationships, the correlation between endogenous and exogenous variables may be statistically significant yet offer little information regarding overall

causality of an endogenous variable. Ergo, reduced-form equation regressions will possess a low R^2, denoting that an endogenous variable is closely correlated with the original disturbance terms and not the exogenous variables in the model such that the proxy variable is unable to accurately predict the endogenous variable.

Regressing consv on the exogenous variables of the model gives the equation of the proxy variable (Appendix G). The low R^2 value, .1481, indicates that the estimation of consv is not a good approximation of consv. However, all variables except eduyr are statistically significant at the α=.05 level, such that the parameters of the proxy variable for consv may accurately represent consv's relationships with the variables in the model. The low R^2 (0.1447) for the regression of brctl's reduced form equation to attain its proxy variable puts its regression equation's validity indo doubt (Appendix H). The regression matrix for the proxy brctl reveals a curious pattern: the only statistically significant (α=.05) exogenous variables are religy (t=6.20), adosex (t=5.33), and males (t= 2.53), all variables expected to have direct effects on brctl in the theory of the paper. Of the statistically significant variables, only religy was theorized to impact consv; this possibly indicates that consv's effect on brctl is actually caused by religy, so that consv is not an endogenous variable in the model.

The *F*-statistic of both proxy regressions (F_{Pconv}= 20.03, F_{Pbrctl}= 19.49) is statistically significant with 95% confidence, indicating statistical significance in the 1st OLS step. The second step of 2SLS is a regression of each structural equation after replacing endogenous, error correlated variables with their proxy variables (Appendix I). The regression matrix provides parameters for consv's structural equation; however, the results immediately seem suspicious. With t=4.39 (at α=.05 confidence), the brctl is the only statistically significant parameter (b=1.31) in consv's structural equation; however, the unstandardized β for the relationship is given as .9796715, a value indicating that a one unit change in brctl causes almost an entire standard deviation change in consv, an artificially high value. As large disturbance terms are found for both consv and brctl, the exogenous variables were unable to explain a significant portion of the endogenous variables; resultantly, the proxy variable essentially assumed the role of disturbance term given by the 1st stage equation instead of approximating values of its endogenous variable. Correlating disturbance terms of the structural equation and of the 1st stage equation results in multicollinearity during the 2nd stage of SLS because of the causality problem inherent in ideologically-oriented endogenous variables. In comparison to OLS regression, shown by the Hausman Specification Test (Appendix J) to result in structural parameter estimations statistically indistinguishable from 2SLS estimations, multicollinearity bias manifested as an increase in standard errors in 2SLS, a decrease in statistical significance of both parameters and model, and a decrease in estimated coefficients (for all variables except brctl).

The regression matrix approximating the structural equation for brctl (Appendix I) displays two statistically significant parameters: religy (t=2.32, b=.1648) and adosex (t=2.09, b=.1865). Consv (t=1.23, b=.248) and males (t=1.37, b=.1429) do not have a statistically significant relationship with brctl, a surprising result that conflicts with the theoretical suppositions of this paper. In the OLS regression matrix for brctl, consv (t=4.07, b=.123) and males (t=2.14, b=.18) are statistically significant while religy (t=5.17, b=.2018) and adosex (t=4.42, b=.231458) are more statistically significant than in 2SLS estimations. The Hausman Specification test for brctl (Appendix K), though, indicates that brctl is an endogenous variable at the α=.05 level; therefore, 2SLS parameter estimations are preferred to OLS estimations because 2SLS estimates are more consistent and less biased than OLS estimates. Additionally, *t*-test results will be more accurate for 2SLS estimators; ergo, the theory of the paper cannot hold as neither males nor consv have a statistically significant relationship with brctl.

If brctl is correlated and has a simultaneous relationship with consv, but consv lacks endogeniety, then it must be assumed (as alluded to in Appendix E) that an exogenous variable affecting brctl has a simultaneous relationship with consv. Thus, we conclude consv and one of brctl's regressors are the endogenous variables in the model, and both have an exogenous relationship with brctl. Comparing the OLS results to the 2SLS results (Appendix L), the standard errors of 2SLS are notably larger for 2SLS estimators across both endogenous variables. Within consv, difference in the parameter for brctl across regressions is -1.040894, indicating, holding all other variables at 0, an individual moves an entire level of birth control support degree when changing method of estimation; however, perhaps this is accounted for in the almost equivalent difference in the constant term in the opposite direction, 0.982391. For brctl, the changes between religy, adosex, and males are moderate but ultimately are too small to confer any tangible effect on expression within one standard error. Aside for the coefficient term (negative in 2SLS regression), all hypothesized directions of causality were correct for brctl in both regressions. For consv, OLS directions all proved consistent with the hypothesis, but religiosity became negative in the 2SLS regression, a peculiar result wholly inconsistent with real-world observations. Within one standard error, the differences in brctl's parameter estimations are great for consv, the regression constant, and religy; therefore, it's plausible to assume that 2SLS estimates may be less biased – and more consistent - for the statistically significant regressors.

Thus, interpreting the 2SLS equation for brctl elucidates that a the maximum change in brctl possible by religy is .494475, .4287333 for adosex, 0.1864645 for gender, 1.490412 for consv, and -0.1339744 for the constant term: religious, anti-premarital-sex supporting, "extremely conservative," male will have a brctl amounts in brctl=2.4661104, signifying that a specific portion of the variables are missing that account for the remaining part of brctl, representing unexplained variance. OLS interpretation for consv offers 3.0256864 as the maximum causal relationship with education level, but 3.0256864 is more than brctl's maximum value such that the OLS is a biased estimator: race results in a maximum of .46852 of change in brctl, with education level causally effecting a maximum of .55684 units, .827193 accounted for by birth control support, 1.7299734 by religion, 0.46852 by whiteness, and 2.223319 by the constant. This means that the same woman as before, except not self-identified as "extremely conservative" will have such an extreme distaste that her distaste could exceed the bounds of possible distaste. As religious intensity seems to be the biggest predictor of birth control opposition and republicanism, Obama would be best off if he banished all religious zealots to an island where they could not infect public opinion. But, even from a desert island, Rush Limbaugh will still somehow, perhaps by tin can and string, find a way to inject his personal opinion into the public debate, no matter how unjustified or incorrect he may be.

[i] http://www.usatoday.com/news/religion/story/2012-03-19/obama-catholic-birth-control/53667954/1

[ii] http://www.nytimes.com/2012/03/16/us/politics/house-republicans-hesitate-on-birth-control-mandate.html

[iii] http://www.gallup.com/poll/152963/contraception-debate-divides-americans-including-women.aspx

[iv] http://www.gallup.com/poll/148274/Religious-Americans-Align-GOP.aspx

[v] http://pewresearch.org/pubs/2067/2012-electorate-partisan-affiliations-gop-gains-white-voters

[vi] http://www.upi.com/Top_News/US/2012/02/28/Poll-Gender-gap-on-birth-control/UPI-36691330450359/