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IZA DP No. 11654

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ABSTRACT

My Choice: Female Contraceptive Use Autonomy in Bangladesh*

Previous research has examined the incidence and correlates of contraceptive use and of several dimensions of female autonomy but only rarely the intersection of the two: female contraceptive use autonomy (CUA). Using a nationally representative household survey for two cohorts of married women, I examine female CUA incidence and correlates in Bangladesh focusing on the role of education. Female CUA is found to differ substantially across cohorts, with women from the younger cohort being far more likely to have complete autonomy over contraceptive use than women from the older cohort. Detailed decompositions reveal that the improvement in education across cohorts is the main correlate of the improved generational CUA gap. Health knowledge, especially knowledge that the use of condoms can help avoid contracting HIV/AIDS, is found to be part of the transmission mechanism between female education and female CUA but also to additionally exert its own, additional influence on CUA. I also discuss the implications of the analysis conducted here for the specification of spousal education variables and geographic fixed effects for future related research.

JEL Classification: D13, I12, I21

Keywords: contraceptive use, female autonomy, spousal education differentials, gender norms, decomposition analysis, Bangladesh

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* I thank Tyler (Koffi) Dickovick, conference participants at the Annual Meeting of Population Association of America and at the Annual Conference of the European Society for Population Economics, and seminar participants at Aarhus University, Pontifícia Universidade Católica do Rio Grande do Sul, and University of Stirling for helpful comments and suggestions. Maitreyi Bordia Das provided substantial inputs on earlier versions of this paper, which are gratefully acknowledged—but ultimately (graciously!) insisted that I be the sole author of the final paper. The World Bank, Social Development, funded the initial background paper on which this article is based. The findings and interpretations here, however, are those of the author and should not be attributed to the World Bank or any of its member countries or affiliated institutions.

1. Introduction

Contraceptive use is one of the most important topics in the demographic literature. Its role in fertility decline and in women's empowerment is well established (Littlejohn, 2012; Manlove et al., 2012; Wilder, 2000) in both developed and developing countries (Beutelspacher, Martelo and Garcia, 2003; Bollen, Guilkey and Mroz, 1995; Magadi and Curtis, 2003). Yet, we know little about the pathways through which women make decisions about controlling their fertility. Previous research on the incidence and correlates of contraceptive use has established the importance of female education for the actual use of contraceptives (Ainsworth, Beegle, and Nyamete, 1996; Thomas and Maluccio, 1996). Previous research has also found evidence for female autonomy being a potentially important factor affecting contraceptive use (Mason and Smith, 2000; Kishor, 2000; Kritz et al., 2000).

Yet, significant knowledge gaps remain in our understanding of both contraceptive use and female autonomy. For instance, few previous studies have directly examined the pathways through which women decide on contraceptive use, in either developed or developing countries, though evidence is starting to emerge (Hanmer and Klugman, 2016; Khan, 2014). This is important because interventions towards female autonomy can have important implications for contraceptive use and conversely, policy makers planning programs to enhance contraceptive use need a good understanding of the pathways of contraceptive use.

But contraceptive use autonomy (CUA) also has intrinsic value as a part of women's more general empowerment. It is related to women's agency and, relatedly, Amartya Sen's notion of capabilities and functionings: when women have a say in contraceptive use, they are better able to engage in all aspects of the economy—for example, pursuing an education or being active in the labor market (Robeyns, 2003). Female CUA is also intrinsically important and valuable, of course, all by itself—and not only instrumentally relevant through increased participation of women in the economy.

Using the first, and to my knowledge only, comprehensive nationally representative household survey of gender norms and practices in Bangladesh, this paper addresses both these issues. I contribute to the previous literatures on contraceptive use and female autonomy, respectively, in several ways. First, I examine the intersection between the two; I do so by explicitly examining the incidence and correlates of female CUA directly—thereby effectively combining the two literatures. In so doing, I focus on the importance of female education for a

sample of two cohorts of married women, while also including additional potentially important factors such as female employment and socioeconomic status—and, in so doing, additionally examine potential interaction effects with husbands' education, in both relative and absolute terms. Second, I explore the possible causal mechanisms behind the established association between female education and female CUA (though initially pursuing an instrumental variables aiming at obtaining explicitly causal estimates ultimately proved fruitless due to frequently unbelievable and imprecise estimates, in turn stemming from a lack of suitable instruments for the application here). Specifically, I establish that health knowledge, especially knowledge of condoms being useful to avoid contracting HIV/AIDS, is both a (modest) part of the transmission mechanism between education and CUA but also exerts its own distinct, additional influence on CUA. Educated women are likely to be more aware of the role of condoms and their use if they have also been exposed to information about HIV/AIDS. Third, I decompose the gap into its component parts, revealing that improvements in education across cohorts—along with the associated improvements in health knowledge, here again especially as pertaining to the knowledge that the use of condoms can help avoid contracting HIV/AIDS—are important correlates of the generational CUA gap in Bangladesh in recent years.

In addition to examining the correlates of female CUA, I also ask what explains the observed CUA gaps across the two generations of Bangladeshi women. Here, women from the older cohort are found to have relatively less CUA than women from the younger cohort—and the substantial decrease in women who never went to school (or completed less than primary) in the younger generation turns out to be the main correlate of the explained part of this gap.

The remainder of this paper is structured as follows. I first provide the analytical framework for studying CUA in the case of Bangladesh. Next, I present the data and methods underlying the empirical analysis. I then present the results, before a final section concludes and provides policy recommendations.

2. Conceptual Framework

The conceptual framework for this analysis is based on an underlying model where the degree of female CUA is affected by a woman's own education, possibly that of her spouse, and other individual characteristics (e.g., age, religion, and region of residence). The main variable of interest in this analysis is education.

There are several pathways through which education interacts with female CUA.[1] First, education (the woman's own and/or that of her spouse) can lead to an increase in health knowledge and therefore increase the awareness of the usefulness of engaging in family planning in general. Second, education can affect the bargaining power of the woman: as it increases, she will be better able to ensure that her preferences towards contraception are adhered to. Research from the U.S. has found that this relationship between higher education and liberal attitudes is not necessarily a clear-cut one and is contingent upon a number of other factors and also has different effects for different categories of individuals (Kane and Kyyro, 2001). Other than the individual's own education, the household level "educatedness" may also have a bearing on the attitude of individuals to gender equality. The literature on "social influence" and "social learning" in changing perceptions of mortality and fertility points to a lag between actual and perceived changes (Montgomery and Casterline, 1996). Koenig et al. (2003) found in Bangladesh that when women's autonomy is an accepted part of the community culture, violence against women decreases, so one would expect that higher levels of aggregate education and individuals from more educated families, especially where female education is higher, would be more liberal in their attitudes to gender equality in education.

It is also possible that the relationship between a woman's education and her CUA depends on the husband's education in other ways. In particular, whether or not the woman has less, the same, or more education than the husband may likely affect the importance of female education for CUA. For example, it may be that a woman's bargaining power in the household increases when her education exceeds that of her husband—and vice versa when she has less education. On the other hand, especially in a more traditional—as far as gender roles are concerned—society such as Bangladesh, it may be that the woman's higher level of education is seen as a threat to the husband. In that case, having more education may be detrimental to the woman in terms of bargaining, including bargaining over contraceptive use. It is also possible that it instead is the absolute level of the husband's educational level that matters. For example, as the husband becomes more educated, he also might become more open to his wife's say in

[1] A large literature, starting with Manser and Brown (1980) and McElroy and Horney (1981), examines issues related to marriage and household decision-making. One of the main results from this literature is that the bargaining power over resources within the household depends on the opportunities outside of the household. While I will not model the bargaining process per se explicitly here, to the extent that bargaining power is correlated with a woman's education, labor market status, and labor earnings (if working) the analyses here will at least capture some elements of the bargaining structure within the household. For a review of family economics, including cooperative household models, see also Bergstrom (1996).

reproductive health matters. On the other hand, more education may mean that he gets more bargaining power, also due to the additional resources he is able to bring to the household from that education, which then could instead decrease female contraceptive autonomy. This has important implications for the empirical strategy, as well, by suggesting several angles for how the husband's education may be important for the woman's CUA, in addition to any direct influences. Certainly, in a society that is overwhelmingly patriarchal a woman's own views on educational equality may well be guided by her husband's view.

Additional potentially important factors affecting female contraceptive autonomy include age, religion, household wealth, and media exposure (radio listening). For the latter, it should be noted that in practice media content matters—not just exposure per se (La Ferrara et al., 2012). Finally, region of residence is an indicator of cultural norms, which have been found to be an important correlate of norms and attitudes (e.g., Mason et al, 1976). While the emphasis here is on the relationship between a woman's education and her CUA, at a minimum this suggests that geographical controls are important to estimate this relationship correctly.

3. Data and Methods

The World Bank Gender Norms Survey (WBGNS) 2006 is the first comprehensive nationally representative survey of gender norms and practices in Bangladesh. It is based on a sample of adults that include married women in the 15-25 and 45-59 year age ranges, married male heads of households in the 25-50 year age range, and 500 community leaders, such as Union Parishad (UP) members, Imams/Moulvis (religious leaders), primary school teachers and Madrasah teachers. The samples were drawn in two stages. Ninety-one clusters[2] were selected at the first stage as a subsample of the 361 clusters included in the Bangladesh Demographic and Health Survey (BDHS) of 2004. The second sampling stage selected one adult from each household. Opinion leaders were selected from among those who were resident in and around the cluster, having knowledge of and influences on the people of the cluster. On average, 49 adults and five to six opinion leaders were interviewed in each cluster. Out of the 49 adults interviewed in a cluster, roughly 16 were married women age 15-25, 16 were married women age 45-59 and 17 were married men age 25-50. Interviews were conducted in April-May 2006. Of the total

[2] A cluster is a census defined village that corresponds roughly to a mouza village in rural areas and a census block (part of a mohollah) in an urban area.

sample of 2,974 women, 99 answered "not applicable" to the question on CUA and are therefore excluded, bringing the effective initial estimation sample down to 2,875 women. Explanatory variables are missing for some observations, which cause a drop in sample sizes for the final/effective analyses samples of 27 observations (or less than one percent. The final, effective estimation sample thus consists of 2,848 women. Sample drops of these magnitudes do not seem to be a cause for concern regarding the representativeness of the estimation samples. The means and standard deviations for the analysis samples are reported in Table A1 in the Appendix.

The dependent variable is based on the responses to the question "To what extent would you say your preferences/opinions are (were) taken into consideration in making the following types of decision within your household" pertaining to the following two sub-questions, which I suggest together comprise two distinct dimensions of female CUA: "Whether to use contraception?" and "Type of contraception to use?" To simplify the analysis while still including both of these CUA dimensions, I construct a combined binary autonomy measure that takes the value of one if the woman answers "Always" to both questions. I choose the higher threshold and combine the two measures, suggesting that this can be interpreted as "perfect" (or "complete") female contraceptive autonomy within the household. The full measures, as well as the constructed binary measure and its component parts can be seen from Table 1 below. From the table, a little less than 30 percent of women consistently answers "Always" to both contraceptive autonomy questions, which therefore still ensures a substantial amount of variation for the subsequent analysis. In comparison, while somewhat smaller, this is in line with the results in Hanmer and Klugman (2016), who find that across the 37 developing countries in their sample for this question, 56 percent of women can ask their partner to use a condom. On the other hand, this is quite a bit higher than what was found in Khan (2014) for the case of Pakistan, which can also be considered quite traditional in terms of gender roles—and therefore at least somewhat comparable to Bangladesh in this context—where the incidence of "Strong Autonomy" regarding birth control use (despite some differences in the variable definitions roughly comparable to my "Always" grouping) is 4 percent.

[Table 1 about here]

Based on the theoretical literature on the pathways to change in attitudes about gender equality discussed previously, I use a rich set of explanatory variables. The focal explanatory variable is own education, which is created as a set of educational attainment dummy variables.

The six dummies are no education or less than primary (reference group); some primary; primary completed; some secondary; secondary completed; and tertiary. In addition to using levels of education (specified as a series of dummy variables) for educational attainment it is useful to also estimate the results using years of education completed as a measure of educational attainment. The reason for this is both that the number of years of education is a useful overall summary measure of education and also that this helps serve as a benchmark for future studies in this area. Additionally, I also include the husband's education in several different, alternative specifications: as a set of dummies (similar to the specification or the wife, discussed above), as the spousal ratio of years of schooling completed, and finally as the husband's years of schooling minus the wife's years of schooling.

Additional explanatory variables include current age and age at first marriage, a dummy variable for whether the woman listens to the radio regularly (as a proxy for information exposure, including exposure to health knowledge through public health messages on the radio), religion of the household head (indicator variable for Muslim household head),[3] a set of five dummies for which wealth quintile the household belongs to, an urban dummy, and geographical dummies (two flavors are used here: either a combination of a rural-urban dummy and a set of regional dummy variables or a full set of community fixed effects).

To try to uncover the mechanism between female education and female CUA, I also utilize the health knowledge collected as part of this survey. This is based on the responses to the following questions: (1) Is it harmful to drink 1-2 glasses of milk every day during pregnancy?; (2) Do men become physically weak even months after sterilization?; (3) Do you think that the first thin milk that comes out after a baby is born is good for the baby, harmful for the baby, or it doesn't matter?; (4) Is smoke from a wood/dung burning traditional chulha good for health, harmful for health, or do you think it doesn't really matter?; (5) When children have diarrhea, do you think that they should be given less to drink than usual, more drink than usual, about the same, or it doesn't matter?; (6) In which part of the menstrual cycle is a woman LEAST likely to get pregnant? and, finally, (7) Is there anything a person can do to avoid getting AIDS or the virus that causes AIDS? (where one of the possible answers is "Use condoms," which is the response I use for this health knowledge dimension). I then construct a set of binary

[3] Religion of the woman is not available, unfortunately, so I therefore have to implicitly assume that the religion of the woman is the same as that of the household head.

variables for answering correctly. Additionally, I construct a simple index summarizing a woman's overall health knowledge by summing across all seven variables, as given above. While these variables are not necessarily ideal measures of the relevant health knowledge at a minimum they serve as potentially useful proxies.

[Table 2 about here]

Turning to the descriptive analysis, CUA is seen to be much higher for the younger (36.7 percent) than the older (17.8 percent) cohort (Table 2). Further examining how the CUA gap across age cohorts varies with the education of the husband, Table 2 further reveals that the more education the wife has relative to the husband, the bigger the gap in CUA. That is, age matters more for CUA when the wife has more education. Conditioning on the husband's education, however, reveals that the age cohort gaps in CUA are greatest when the husband either has no education or has relatively high education (though for the highest level, namely tertiary education, the number of observations is quite low and the gap therefore imprecisely measured).

What might be the reason for these overwhelming differences in CUA across these two generations of women? The descriptive statistics (Appendix Table A1) hint at some possible answers. Most obviously, the younger cohort is far better educated, with only 23.8 percent belonging to the "No education" category, as compared with 64.7 percent for the older cohort. The same goes for spousal education, where the younger cohort also is consistently better off. Do these correlations hold up when other potentially important factors—such as employment status, earnings, and geographical location—are controlled for? That is the focus of the multivariate analysis, to which I now turn.

The conceptual framework discussed in the previous section suggests that own and spousal education can directly affect CUA through a mixture of empowerment / bargaining power and increased knowledge of the usefulness of using family planning methods more generally and also suggest additional factors that are potentially important for CUA.

The first part of the multivariate analysis will examine these relationships, using linear approximations of female CUA. The reason for this is that the linear probability model (LPM) yields a more robust alternative to the also widely used probit and logit models (both of which are founded on rather strong functional form assumptions) and also appears appropriate here for several other reasons, despite its potential shortcomings.[4] Hence, the LPM is the preferred

[4] While there may be some concern about using the LPM due to the possibility of the predicted probabilities falling

estimation method – but I also compare the results for the LPM with those obtained using the logit and probit models—as well as the ordered probit model for the full (five item) dependent variable—to check the robustness of results. Lastly, all the estimations will incorporate within-community correlation/clustering adjusted standard errors (Wooldridge, 2010) (which therefore also (implicitly) are robust (Huber, 1967; White, 1980)).

This initial part of the analysis will be done by first building up the models progressively, so as to examine especially the robustness of female education, as this is the focal explanatory variable of this paper—but also to establish which variables should be included in the subsequent analysis. For example, does the husband's education change the results and/or add to the explanatory power of the estimated models in practice?[5] One important issue here is also the level of aggregation of the geographical information included. Specifically, as an alternative to the aggregate geographical variables for urban-rural location and region of residence, I will introduce fixed effects for primary sampling units in order to examine whether the effect of education remains and the results stand up when only within-neighborhood-variation is used to identify the coefficient (see Kravdal, 2004). Specifically, if including fixed effects changes coefficients substantially, contextual factors are confounding the measured effects. This, in turn, would seem to indicate that it is then necessary to use these more disaggregated geographical controls in the analysis to obtain valid estimates of the education variables.

Another potentially important econometric issue here is that wives' and/or husbands' education may be endogenous. The main concern here is possible omitted variables bias. Preferences and ability, for example, are unobserved and at the same time also, at least to some extent, determine both educational attainment and female CUA. This has led researchers to follow two main instrumental variables (IV) strategies in recent years: either using as IVs (1) various combinations of time of year, birth cohort, and/or geographical area of birth dummies to capture variation in institutional factors relevant for human capital accumulations such as compulsory schooling laws or expansion of educational programs (Angrist and Krueger, 1991; Duflo, 2001) or (2) variables for proximity or exposure to educational institutions in the local

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outside the (0,1)-range and heteroskedasticity being present by default, it can be argued that the LPM still approximates the response probability well. This is particularly the case if (1) the main purpose is to estimate the partial effect of a given regressor on the response probability, averaged across the distribution of the other regressors, (2) most of the regressors are discrete and take on only a few values and/or (3) heteroskedasticity-robust standard errors are used in place of regular standard errors (Wooldridge, 2010). All three factors seem to work in favor of the LPM for the purposes of the application here.

[5] This is also related to the issue of endogeneity, to be discussed shortly.

area (Card, 2001). Since neither the geographical area of birth nor any information for proximity or exposure to educational institutions in the local area is available, this is unfortunately not a feasible strategy for this application.[6]

Since an IV estimation strategy is not feasible for this application, it seems particularly important to seek to strengthen the main (OLS) results by providing an additional identification strategy to specifically estimate the effects of female education on CUA. I therefore also pursue an identification strategy that matches on observables. This estimation method matches a treatment and a control group on observables[7] and then the treatment effect is estimated as the mean difference between the average effects between the matched samples (Rosenbaum and Rubin, 1983). "Treatment" for the application here refers to educational attainment, and so it is not obviously clear which treatment—or level of education—is relevant, so I decide to define several alternative treatment variables and then let that be an empirical question. Specifically, I define binary treatment variables for "Ever attending school," and for completing "Primary or more," "Above Primary," "Secondary or more," or "Tertiary" (and zero otherwise), and also a continuous measure of years of schooling.[8]

While examining the correlates of CUA for the full sample is likely to shed light on the importance of female education in this relationship, it is possible that the relationship differs—especially depending on the husband's education. In particular, whether or not the woman has less, the same, or more education than the husband may likely affect the importance of female education for CUA. For example, it may be that a woman's bargaining power in the household increases when her education exceeds that of her husband—and vice versa when she has less education. On the other hand, especially in a society with more traditional gender norms such as Bangladesh, a woman's higher relative status in the household in terms of her level of education can potentially be seen as a threat to the husband. Previous evidence supports this for various types of social status within the household, including earning and employment status—and for

[6] Experimenting with using available information on education and labor market conditions, and so on, in the community from the Community Questionnaire lead to unrealistically large coefficients in some cases, as well as to large standard errors and a general lack of statistically significance—the latter owing to a frequently weak first-stage (with low F-statistics for the identifying instruments). These results are therefore likely to suffer from the so-called "weak instruments problem" (Staiger and Stock, 1997). As a result I do not pursue the IV results in this paper (but they are available upon request).

[7] It here seems prudent to exclude labor market variables from the observables used in the matching procedure due to the endogeneity concerns of these variables—so that is also the approach taken here.

[8] See Appendix B in the Online Appendix for more details on this methodology.

both developed and developing countries (Bjelland, 2014; Erten and Keskin, Forthcoming; and Finnoff, 2012). In that case, having more education may be detrimental to the woman in terms of bargaining, including bargaining over contraceptive use. It is also possible that it instead is the absolute level of the husband's educational level that matters. For example, as the husband becomes more educated, he also might become more open to his wife's say in reproductive health matters. On the other hand, more education may mean that he gets more bargaining power, also due to the additional resources he is able to bring to the household from that education, which then could instead decrease female contraceptive autonomy. I therefore estimate the models separately for women with less than, the same as, and more education than their husband, as well as stratified for each level of the husband's education (none or less than primary, some primary, primary, and so on).

But what if we can actually establish a consistent correlation between the wife's education and her CUA? Is there any way to disentangle the possible transmission mechanism—or at least part of it? One possibility for exploring this further is from the assumption that education improves the woman's health knowledge. This can be examined along the lines of Mosley and Chen (1984). Specifically, if measures of health knowledge are introduced in the education-CUA relationship and health knowledge is an important part of the transmission mechanism, the estimated coefficient for the woman's education should decrease. If the estimated health knowledge coefficients are also both statistically and substantively significant (McCloskey and Ziliak, 1996; Miller and Rodgers, 2008), health knowledge additionally exerts its own, additional influence on CUA (that is, above and beyond that of education).[9] This would seem to particularly be the case for health knowledge directly related to reproductive health, such as knowledge that using condoms is effective against contracting HIV/AIDS. Fortunately, this dataset includes information on several aspects of objective health knowledge, including HIV/AIDS knowledge pertaining to condom use.

Again, my focus is on the relationship between female education and CUA but also on differences in the incidence of CUA and correlates across the two cohorts of married women surveyed for WBGNS 2006. In particular, if gender norms overall have become less rigid in

[9] If, on the other hand, the education coefficients only drop slightly but the health variable(s) retain both statistical and substantive significance this indicates that health knowledge is only a modest part of the transmission mechanism between female education and female CUA but also additionally exerts its own, additional influence on CUA (that is, above and beyond that of education).

recent years, then increases in education would also be more likely to be associated with a higher degree of female autonomy in contraception use for the younger cohort relative to the older cohort. In addition to examining the correlates of CUA, it would seem useful to push the analysis further, still, by examining the composition of the established CUA gaps across subgroups (younger vs. older cohorts) in more detail. The starting point is the estimated pooled regressions from the main analysis described previously, where the estimated raw gaps between the older and the younger cohorts are then subsequently decomposed into their main parts. This part of the analysis will be pursued as an Oaxaca-Blinder type decomposition.[10]

Lastly, it should be mentioned that the main results are also subjected to a range of sensitivity checks, in order to strengthen the overall believability of the main story emerging from this analysis. These range from examining the sensitivity of the results to (two particular potential issues regarding) the estimation sample, potential omitted variables bias, the estimation method, the definitions of the dependent variable and the income variable—as well as, lastly, examining whether multicollinearity might be an issue, especially in relation to the results for educational attainment

4. Results

This section reviews the results from the multivariate models of CUA as discussed in the previous section. Starting with building up the model, Table B1 in the Online Appendix reveals that CUA is consistently negatively associated with age, at about -0.6 percentage-points per year, even when controlling for all the other factors included. This again supports the existence of a strong intergenerational gap in CUA in Bangladesh. Hanmer and Klugman (2016) in their study of 37 countries find that each additional year is associated with an increase in the odds of not being able to ask for use of condom of a factor of 1.013, holding constant all other factors. Khan (2014) for the case of Pakistan here finds mixed results, with CUA increasing with age in some cases (though not always statistically significantly so).[11]

As variables are added, I note how the results change somewhat. Adding husbands' education, in particular (Model (4), Table B1, Online Appendix), totally drowns the importance of

[10] See Appendix B in the Online Appendix for more details on this methodology.
[11] Similar results are found in the related, previous study Khan and Awan (2011)—though CUA here is combined with the woman's say in having more children into a composite family planning decision making index, so that the dependent variable is less comparable to my dependent variable here.

the wife's education, both in substantive and statistical terms: the female education coefficients are now much smaller than before adding the husband's education—and also all statistically insignificant from zero. For the specification using years of schooling for the wife's education, the coefficient for the wife's years of schooling is more than halved and now statistically insignificant from zero (Model (4), Table B2, Online Appendix). As this is likely due to multicollinearity (examined in more detail later) coupled with assortative mating, one possible reaction to this might be to exclude husbands' education altogether. To still include the husband's education, if possible, however, I instead decide to pursue additional specifications in the subsequent analysis where the husband's education is included as (i) the relative spousal years of schooling (years of schooling of the husband divided by that of his wife) and (ii) the years of schooling of the husband minus those of his wife.

Starting with the specification where the husband's education is instead included as the ratio of the husband's years of schooling over the years of schooling of his wife, the results presented in Table B3 (Online Appendix) using dummy variables for the wife's education reveals that that specification, too, renders the wife's educational dummies statistically insignificant from zero—but now this is even the case *before* the spousal education ratio is added. This is easily explained by the estimation sample now being decreased by more than forty percent. So, even if the specification using years of schooling for the wife's education with community fixed effects (Model (5), Table B4, Online Appendix) retains both statistical and substantive significance, at a healthy 1.5 percentage points per year of schooling this also does not seem like a candidate for the preferred specification for this application.

Moving next to the specification where the husband's education is instead included as the years of schooling of the husband minus the years of schooling of his wife, the results presented in Table B5 (Online Appendix) using dummy variables for the wife's education reveals that for the specification with community fixed effects (Model (5)) now both the wife's and the husband's education variables are statistically, as well as substantively, significant. Having some primary education, for example, increases female CUA by 7.5 percentage-points—which is further relatively precisely measured, being statistically significant at 5 percent. The husband's (gap) education variable is less precisely measured, being statistically significant only at 10 percent, but at 0.005 still indicating the importance of the husband's education or female CUA—since each additional year of education (holding constant the wife's years of schooling) is associated with a 0.5 percentage-point increase in female CUA.

Notably, since using cluster fixed effects improves identification (and also changes the results, consistent with the results in Kravdal (2004)—thus implying that contextual factors are confounding the measured effects) I also decide to use enumeration area/cluster fixed effects in the subsequent analysis.[12] Model (5) from Tables B5 and B6 the Online Appendix is therefore my preferred model for the subsequent part of the analysis. It should be noted that both regional dummies and community fixed effects are jointly statistically significant, in turn indicating that cultural differences matter considerably for CUA.

Before continuing with discussing the results in more detail, the results for the preferred specification (Model (5)) using the two alternative specifications of female education in Tables B5 and B6, respectively, are combined and presented together in Table 3, below.

I note how for this preferred model women's education is strongly positively associated with female CUA—with estimated marginal effects of 7.5 percentage points for some primary, about 10 percentage points for some secondary, about 17 percentage points for secondary and about 24 percentage points for tertiary education (with no education being the reference/omitted group). Similarly, using years of schooling instead of levels of education completed reveals that each year of female education increases female CUA by 1.5 percentage-points, which again is a sizeable magnitude. Lastly, each additional year of education of the husband is associated with about 0.5 percentage point's increase in female CUA. It should be noted that most, if not all, of these substantively large, estimated coefficients are quite precisely measured, as well—being frequently statistically significant at five percent or better.

Estimating this instead in odds ratios[13] so as to facilitate more easily a comparison with the previous related literature, this corresponds to odds ratios of 1.66 for some primary, 1.49 for primary, 1.90 for some secondary, 2.75 for secondary, and 3.64 for tertiary. Similarly, if using the years of education specification, we get an odds ratio of 1.09 per additional year of schooling. The odds ratio for the husband's years of schooling – wife's years of schooling gap is about 1.04 (i.e., per year of additional schooling of the husband, holding constant the years of schooling of his wife). All these coefficients are statistically significant at five percent or higher.

[Table 3 about here]

[12] Except in the sensitivity analysis for logit, probit and ordered probit where I instead use regional fixed effects combined with an urban dummy due to collinearity issues.

[13] Due to collinearity between some of the cluster fixed effects and female CUA the sample size here drops to 2,784 observations.

While the estimated effects are somewhat larger the importance of female education established here again corresponds well with the findings in Hanmer and Klugman (2016). The authors find that across the 37 developing countries in their sample for the question of whether a woman can ask for the use of a condom, the odds of not being able to ask for the use of a condom decrease by a factor of 0.652 for primary, a factor of 0.438 for secondary, and a factor of 0.288 for higher education (with no education being the reference category). Khan (2014) for the case of Pakistan similarly finds that more education consistently increases a woman's contraceptive use. For the ordered logit, for example, Khan (2014) finds a woman's CUA odds are 1.08 times larger if having completed 5 years of education, 1.32 times larger if having completed 8 years of education, 1.37 times larger if having completed 10-12 years of education, and 1.60 times larger if having completed more than 12 years of education.[14] Once again, my results here are in agreement with these findings, though they indicate a somewhat larger effect for education for the case of Bangladesh.

Before continuing with the analysis, it would be useful to pursue several sensitivity analyses for the main analysis—including examining the robustness of the results to (two particular potential issues regarding) the estimation sample, to the likely bias from unobservables, to the estimation method, and to the definitions of the dependent variable and the income variable—as well as, lastly, examining whether multicollinearity might be an issue, especially in relation to the results for educational attainment.[15] Related to the latter, I further pursued an alternative specification of husbands' education, namely adding the ratio of male/female schooling as an explanatory variable to the years of schooling specification.

For the first of these sensitivity analyses, I first note that the question on which the dependent variable of CUA is based includes "were taken into consideration"—rather than merely "are taken into consideration"—so that it would seem that the interpretation for the older women in the sample clearly relates to the time when contraceptive use were relevant to them (in the past), rather than to the present time where it may not be relevant (especially for women who are menopausal). It may still be possible to quibble, however, as to who we might think 45-59-year-old women have in mind when they are asked about whether their preferences with regard

[14] Similar results are obtained in the related, previous study Khan and Awan (2011) though the combination of CUA with the woman's say in having more children into a composite family planning decision making index once again makes the dependent variable less comparable to my dependent variable here.
[15] For brevity, the results tables are mostly not included here but are available upon request.

to contraceptive use are (were) taken into consideration in their household (again: "in their household," not necessarily in their own sexual relationships—though, again, that certainly still seems implied by the "were" in the phrasing of the question). One might conjecture that women in the older cohorts are making a statement about whether their own preferences are given consideration in the contraceptive use decisions of their sons and daughters-in-law that live in the same household while women in the younger cohort are having in mind their own sex life. If this is the case, pooling the two groups together for this kind of analysis would be inappropriate; indeed, there would then probably not be much of a story here about how education changed attitudes in the first place.

To examine this in more detail, I exclude observations for the old cohort, where there are also younger women living in the household—since in this case, it might be that the older women's statement is about whether their contraception preferences are being taken into account by the young people, rather than by her own husband. Adding to this is the fact that a large proportion of women in the older cohort are peri-menopausal or post-menopausal, so that they may not be worrying much about their own contraception. I choose 15-35 years of age as the range here (to not shrink the sample size below something that can actually be meaningfully estimated), so that older women living in households with women in this age range are excluded from the analysis. The results remain robust to the exclusion of these potentially problematic households. In fact, if anything, the education results are strengthened: the secondary education coefficient, for example, increases from 17.1 percentage-points to 21.5 percentage-points, while the years of schooling variable increases from 1.5 to 1.6 percentage-points (per year of additional schooling completed).

An additional examination regarding the estimation sample—and related also to the interpretation of the two questions underlying the definition of the dependent variable—starts from what is the main argument/result from this analysis, namely that education is driving the changes in CUA between the younger (15-25) and older (45- 59) women in the data examined here. One issue here is that education levels changed between the old and young generation so dramatically—along with many other factors, which remain unobserved. So, what we see might potentially just be general changes in the situation of Bangladeshi women over 30 years of age. Hence, if it can be shown that education matters among a more homogeneous group (say, perhaps especially among young women), the overall story that seems to be emerging here

would be strengthened. I therefore restricted the sample to women from the young (15-25 years of age) cohort, only. Not only are the results robust to this restriction but education is even more important for this more homogenous sample (though the increase is not massive). Indeed, considering the years of schooling specification, the estimated coefficient increases from 1.5 to 1.7 percentage-points (per additional year of schooling completed).

To examine the sensitivity of the results to potential omitted variables bias I follow the approach developed in Oster (2016), whereby the change in the R^2 when adding the control variables combined with assumptions of the proportionality between the bias from included and omitted explanatory variables is used to estimate bias corrected estimates (see Oster (2016) for more details on this approach). From this analysis, I find that if assuming proportionality between the bias from included and omitted explanatory variables the education coefficient from my preferred specification from Table 3 "disappears" statistically for the specification using dummy variables for educational attainment—while for the years of schooling specification the coefficient estimate decreases by a third, from 1.5 to 1.0 percentage-points (Table B7, Online Appendix). If assuming less than proportionality, so that the bias from the omitted variable(s) is less than for the included variables (as also justified in Oster, 2016), the coefficient estimates decrease far less and also maintain statistical significance in a few cases. In other words, the bias from omitted variables is not likely to make the main result "go away."

To examine the robustness of the results to the estimation method, I first estimate the model using both the logit and probit specification instead of OLS/LPM.[16] The results are very similar across the three estimation methods—thus supporting the use of the more robust LPM for this application.

Another dimension across which to examine the robustness of results is for the dependent variable (though the first of these sensitivity analyses also involves a different estimation method, as well). Here, I first estimate an ordered probit model, thus enabling utilization of all five categories of the dependent variable (while at the same time allowing the coefficients to differ across the categories of the dependent variable). These results are also fairly consistent with those of the LPM from before. Additionally, as the results reveal that education is more strongly associated with CUA for the "Always" category this in turn supports the choice of

[16] Due to collinearity issues—whereby some of the cluster fixed effects perfectly predict female CUA status—I here include the aggregate geographical variables instead, so as to make the models directly comparable with the LPM/OLS results.

"Always" as the threshold of the binary CUA measure.

The second sensitivity analysis regarding the dependent variable takes this issue a bit further by using different thresholds for the binary CUA variable from the main analysis. This analysis reveals that using instead "Always" combined with "Most of the time" or "Always" combined with both "Most of the time" and "Some of the time" decreases both the estimated education coefficients as well as their statistical significance substantially. Again, it can still be argued that the "Always" threshold is nevertheless a valid threshold to focus on, both for academic and policy reasons.

Including the wife's income as an explanatory variable may be problematic as income may be caused by education so that—to the extent that the coefficient estimates on the education variables can be interpreted as causal—the inclusion of this variable results in the coefficient estimates on education capturing only the partial causal effect. Relatedly, the coefficient estimate on the income variable is always zero for practical purposes and, thus, uninformative as far as female CUA is concerned. One counterpoint to this is that the main reason for including the wife's income is to at least simply control for a possible alternative channel of bargaining power to that of education—thus rendering the estimated education effect net of any possible bargaining effect from the wife's income. But the wife's income may still be endogenous to education. And so, to address this, I therefore also re-estimated the main regressions without the wife's income included as an explanatory variable. The results remain fairly robust, indicating that this is not much of an issue for the application here in practice. I nevertheless also pursued alternative specifications for the wife's income. When using the log of income, the coefficient becomes positive but remains statistically insignificant. Using a quadratic in income yields a positive linear term and a negative quadratic term, as might be expected. And though these are now marginally statistically significant (i.e., at 10 percent) the estimated coefficients are, once again, virtually zero for practical purposes.

Lastly, to examine the possible importance of multicollinearity—which also can help substantiate the omission of the husband's education from the analyses here—I utilize the two available tools for this, namely estimating the simple correlations and the VIF (Variance Inflation Factors) scores. It is not clear exactly "how high is high," though a simple correlation of 0.8 has been suggested as a cut-off for the presence of severe multicollinearity (Studenmund, 2010). While simple correlations are not the best measures of association among dummy

variables, from Table B8 the correlation between years of schooling of wives and husbands is substantial, at 0.653. For the VIF score, a VIF of 5 (Studenmund, 2010) or 10 (Wooldridge, 2009: 96-99) have been suggested as the (somewhat arbitrary) threshold for the presence of severe multicollinearity. From Table B9 in the Online Appendix, the years of schooling variables again both show indications of severe multicollinearity, as do several of the dummy education variables (at least according to the Studenmund (2010) cut-off). That suggests that multicollinearity, coupled with the issue of assortative mating, are responsible for the results for wives' and husbands' education variables from Tables B1 and B2 (Online Appendix) discussed earlier. Coupled, next, with the results obtained when including the spousal years of schooling gap it also (implicitly) highlights the importance of specifying the functional form of focal explanatory variables, especially in the presence of possible multicollinearity (for the application here further exacerbated by the likely presence of assortative mating).

To provide an alternative identification strategy and thereby potentially strengthen the results for the preferred model (Table 3)—especially in light of not being able to pursue a suitable IV identification strategy as discussed previously—I also estimate the treatment effect of female education using covariate matching. From the results reported in Table B10 (Online Appendix), first panel, while matching dampens the raw, unadjusted association between female education and female CUA, the matched treatment effect is still substantial in magnitude, though not always statistically significant (due especially to a low number of treated individuals at higher levels of education—and, thus, low statistical power at higher levels of education). The estimated treatment effect using "Ever attended school" as the treatment, for example, yields an estimated treatment effect ranging between about 6-8 percentage points for the Average Treatment Effect and between about 7-10 percentage points for the Average Treatment on the Treated.

Examining next the possibility of asymmetries in the associations with CUA depending, first, on the education gap between husband and wife, Table B11 (Online Appendix) reveals that the association between education vanishes when the wife has more education than the husband—but is quite strong if she has less or the same education, especially for higher levels of education. Labor earnings now are both substantively and statistically significant for the first time but only if the woman has the same amount of education as her husband—in which case each additional 1000 Taka earned are associated with an increase of 0.5 percentage point in her

CUA, thus indicating an interaction effect between income and education in this case.

Turning to the corresponding covariate matching results in Table B10 (Online Appendix) reveals again a higher association between education and female CUA if the wife has completed the same amount of education as the husband than if she has completed less—again indicating the importance of increased education in improving the relative bargaining position of the wife as pertaining to contraceptive use. For the sub-sample where the wife has more education than the husband, the impact estimates for female education are frequently negative and large, thus indicating that education can actually decrease female contraceptive autonomy in cases where women have more education than the husband. These latter estimates, however, are almost all very imprecisely measured and therefore also mostly statistically insignificant due to the few females in this group (and, thus, lack of statistical power)—all but one, at about minus 22 percentage points.

Next, I stratify the estimations by husbands' education. The motivation for this, again, is that the husband's absolute, rather than relative, education level may matter—for example, by more education making him more aware of the importance of contraception and inducing him to be more tolerant of his wife's inputs on domestic issues, including contraceptive use. And such inputs, in turn, are likely to increase as the wife has more education. From Tables B12 and B13 (Online Appendix) this seems to be the case: the estimated coefficients for female education are both larger and more precisely estimated when the husband has more education.

The corresponding estimated treatment effects for female education using instead covariate matching from Table B14 (Online Appendix) generally agree with the results for the LPM: the estimated education coefficients for female education are both larger and more precisely estimated when the husband has more education (except for the group with husbands with tertiary education—which is also very small, so that imprecisely measured estimates are indeed expected).

While I have now established a consistent positive association between female education and female CUA, I have not said much about the possible underlying mechanism. Following the framework laid out in Mosley and Chen (1984), however, it is possible to get a bit more into the underlying mechanism than just stopping with this established correlation. Specifically, I add variables capturing the health information from the survey discussed previously in the data section. The results from this are seen from Table B15 (with the results of the preferred model

(Model 5) from Table 3 included for comparison).

From the results in Table B15, including first the combined (score-) health knowledge index leads to a (modest) reduction in the estimated female education coefficients in all cases, of between 0.6 and 2.2 percentage points for the specification with education dummies, and a decrease of 0.2 percentage points per year of schooling for the specification using years of schooling. At the same time this variable itself is both substantively—at 2.4 percentage points—and statistically (though marginally) significant. In turn, this points towards health knowledge being a component of the transmission mechanism between female education and female CUA, even if a somewhat modest one. Can we be more specific than that? While multicollinearity here again is a potential issue, including all the individual variables of the health knowledge index simultaneously reveals that knowledge that the use of condoms can help avoid HIV/AIDS is one of the most important health knowledge factors among the seven dimensions included, both in substantive—at a large but not implausible 8.2 percentage points—and statistical terms, being quite precisely measured. The variable for (not subscribing to) the belief that men become physically weak after sterilization is also both statistically significant and sizeable, however.

Next, I examine the extent to which the observed[17] generational gap in CUA are attributable to changes in the observable characteristics, to changes in the responses to those characteristics, and to other factors—and, relatedly, to what extent the observed CUA gap is due to observable and unobservable characteristics. I therefore next turn to an Oaxaca (1971) – Blinder (1971) type decomposition, using the pooled regression (Neumark, 1988) for the decompositions. The reason for this is that "discrimination" is not really relevant for the analysis here, coupled with the intuitive appeal of the approach for the application here.[18]

The decomposition analysis has two parts. First, examining overall decompositions and, second, examining detailed decompositions, whereby the female CUA differential may be decomposed into the contributions from specific explanatory variables. The results from the overall decomposition are shown in the top part of Table B16 (Online Appendix). At 10.3 percentage points the unexplained[19] part of the overall cohort gap (18.9 percentage points) is slightly larger than the explained part (8.6 percentage points), though this also implies that a

[17] From the results in Table 2, and again from the results for the estimated coefficients for age in Table 3.
[18] The results are fairly robust to other decomposition approaches, including those put forth in Oaxaca (1973), Blinder (1973), Cotton (1988), and Reimers (1983).
[19] Again, this part is frequently interpreted as "discrimination" in decompositions of gender wage differentials, for example—but does not have that interpretation here. Rather, I suggest interpreting this simply as "disadvantage."

substantial fraction still can be explained by observed characteristics (depending on the specification of the "absence of disadvantage" model). Hence, a substantial part of the difference in CUA across the two cohorts can be explained by the change in observable characteristics, while an even larger part cannot be explained. One might interpret the latter as changes in CUA in the society over time more generally.

While the overall decomposition helped illuminate how CUA differs across the two cohorts of Bangladeshi women examined here, detailed decompositions may yield additional insights. Specifically, this analysis will allow pinpointing exactly which explanatory variables contribute most to the estimated gap in CUA. Again, in interpreting the signs of a given coefficient here, a positive sign implies that the explanatory variable in question hurts the disadvantaged group (that is, women from the older cohort, which have the relatively less favorable degree of CUA, as well as less favorable individual characteristics—including educational attainment).

The results from the detailed decompositions reveal that the effects from specific individual explanatory variables do in fact "drown" in the aggregated explained part reported earlier. Considering own education, it is not the difference in educational attainment among the higher levels of education that matters in explaining the difference in the CUA gaps across cohorts (these are frequently insignificant, in magnitude as well as statistically) as much as the fact that the older cohort has a greater share of women who have not completed any level of education: having a larger share of the "no education completed" group is what really hurts the older cohort, in terms of their less favorable degree of CUA. Similar to what was the case for explaining CUA overall, knowing that condoms can protect against HIV also helps explaining the cohort gap of CUA—though it is far less important than not being part of the "no education group" (2.4 percentage-points vs. 10.8 percentage-points). Most other variables are either statistically or substantively insignificant—or both.

5. Conclusion

Using a recent household survey for two cohorts of married women, this paper examines female CUA incidence and correlates in Bangladesh, focusing on the role of education. Female CUA is found to differ substantially across cohorts, with younger women being far more likely to have complete autonomy over contraceptive use than women from the older cohort. Examining the

correlates of female CUA, the woman's own education is found to be a strong correlate of female CUA, both in substantive and statistical terms. Pursuing a detailed decomposition, the explained part of the CUA gap is almost exclusively accounted for by the decrease in the "no education" group from the older to the younger cohort. In sum, more than anything else, it is the improvement in education for the younger cohort relative to the older cohort that is associated with the improvement in the generational CUA gap in Bangladesh in recent years. Lastly, health knowledge, especially knowledge that the use of condoms can help avoid contracting HIV/AIDS, is found to be part of the transmission mechanism between female education and female CUA, although a modest one. Health knowledge, again especially knowledge that the use of condoms can help avoid contracting HIV/AIDS, is also found to exert its own distinct and additional (that is, above and beyond that of education) influence on CUA.

These results have important policy implications in Bangladesh, which has seen a dramatic decline in fertility over the last thirty years. This has often been attributed to a strong family planning program and high prevalence of contraceptive use. It is important, however, to make sure that these gains solidify and do not slip through the cracks due to complacency. In consolidating these gains, a few things deserve mention. First, it appears that female CUA is only weakly linked to a wider range of observable characteristics in Bangladesh. Second, among the observable factors that seem to promote female contraceptive autonomy in Bangladesh, education and health knowledge—especially regarding reproductive health in terms of the usefulness of condoms to protect against contracting HIV/AIDS—seems to be the most important. Further, as revealed by the decomposition analyses, it is not so much having high levels of education that matters for female contraceptive autonomy. Rather, it is having completed at least some education. This improved female CUA may come about through increased bargaining power or simply from increased knowledge about the usefulness of family planning.

These results also have important implications for future related research. While including a full set of spousal educational dummy variables for educational attainment at first seemed to suggest that husband's education does not matter—or, similarly, that women's education did not matter once their husbands' educational attainment was controlled for—such a conclusion was found to be a hasty one. Instead, the combination of multicollinearity and assortative mating—for this dataset/application in particular, though this likely also holds more

generally for related research—was found to be the main reason why it initially seemed hard, if not impossible, to tease out both of the spousal education effects simultaneously. Coupling this with the results obtained when including the husband's education in alternative specifications (first, as a ratio and next as a spousal years of education completed differential) the analysis conducted here also (implicitly) highlights the importance of specifying the functional form of focal explanatory variables appropriately, especially in the presence of possible multicollinearity (for the application here further exacerbated by the likely presence of assortative mating). This is especially true since economic theory will typically only suggest that a given variable (here, education) is important and give the direction of a given relationship—but not the explicit functional form with which the variable will be part of that relationship.

Similarly, the finding of the estimated results changing when incorporating fixed effects at a more disaggregated level, inspired by and consistent with Kravdal (2004), suggests that researchers should pay (even more) attention to the use of an appropriate level of geographical fixed effects, relative to the application at hand.[20]

[20] It is of course not always the case that more disaggregated geographical fixed effects are necessarily better: the number of comparisons may become "too thin" at some point, potentially leading to both unreliable as well as imprecisely measured estimated coefficients.

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Table 1. Contraceptive Use/Type Autonomy Prevalence:

	Use:	Type:	Use & Type, combined:
Full measure:			
Always	29.2	29.9	
Most of the time	22.6	21.6	
Some of the time	12.6	12.2	
Rarely	10.6	10.1	
Never	25.0	26.3	
	100	100	
Binary measure:			
Yes	29.2	29.9	28.2
No	70.8	70.1	71.9

Notes: N = 2,848. Calculations incorporate sampling weights.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

Table 2. Raw/Unadjusted CUA Gaps across Two Cohorts of Women: Full Sample, By Spousal Education Gap, and By Husband's Educational Attainment

	Full sample:	By Spousal Education Gap:			By Husband's Educational Attainment:					
		Wife less:	Wife same:	Wife more:	None:	Some primary:	Primary:	Some secondary:	Secondary:	Tertiary:
Across cohorts:										
Younger cohort	0.367***	0.379***	0.354***	0.374***	0.349***	0.339***	0.324***	0.390***	0.451***	0.351***
	[0.032]	[0.035]	[0.039]	[0.042]	[0.043]	[0.045]	[0.041]	[0.042]	[0.048]	[0.075]
Older cohort	0.178***	0.205***	0.159***	0.162***	0.130***	0.186***	0.234***	0.195***	0.250***	0.293***
	[0.020]	[0.031]	[0.022]	[0.039]	[0.020]	[0.039]	[0.058]	[0.044]	[0.046]	[0.065]
Difference	0.189***	0.174***	0.196***	0.212***	0.219***	0.153***	0.090	0.195***	0.201***	0.057
	[0.026]	[0.042]	[0.035]	[0.058]	[0.036]	[0.049]	[0.068]	[0.055]	[0.055]	[0.092]
N	2,848	956	1,313	579	1,112	417	296	547	351	125

Notes: Dependent variable: One if wife's preference whether to use contraception and which type to use was always followed, zero otherwise. Values in brackets are within-community correlation/clustering adjusted standard errors (Wooldridge, 2010) (and are therefore also (implicitly) robust (Huber, 1967; White, 1980)). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

Table 3. Female CUA Regressions: Preferred Model, Using Two Alternative Specifications for Women's Educational Attainment (Pooled Sample, Linear Probability Model)

	Variable(s) Used for Educational Attainment:	
	Dummy variables:	Years of schooling:
Some primary	0.075**	
	[0.032]	
Primary	0.056*	
	[0.033]	
Some secondary	0.097***	
	[0.030]	
Secondary	0.171***	
	[0.049]	
Tertiary	0.237**	
	[0.094]	
Years of schooling		0.015***
		[0.003]
Husband's – wife's years of schooling	0.005*	0.006**
	[0.003]	[0.003]
Age	-0.006***	-0.006***
	[0.001]	[0.001]
Age at first marriage	-0.002	-0.002
	[0.004]	[0.004]
Islam	-0.017	-0.013
	[0.054]	[0.054]
Working	-0.008	-0.007
	[0.035]	[0.035]
Income primary job (1000s Taka)	0	0
	[0.000]	[0.000]
Listens to radio frequently	0.005	0.006
	[0.029]	[0.029]
Asset quintile 2	0.005	0.005
	[0.028]	[0.028]
Asset quintile 3	-0.019	-0.022
	[0.034]	[0.034]
Asset quintile 4	0.01	0.006
	[0.032]	[0.032]
Asset quintile 5	0.038	0.034
	[0.038]	[0.038]
Constant	0.375***	0.376***
	[0.096]	[0.093]

R^2	0.229	0.229
N	2,848	2,848

Notes: Dependent variable: One if wife's preference whether to use contraception and which type to use was always followed, zero otherwise. Values in brackets are within-community correlation/clustering adjusted standard errors (Wooldridge, 2010) (and therefore also (implicitly) robust (Huber, 1967; White, 1980)) and also include community fixed effects. Reference groups are "None" (education), "Lowest asset score decile" (poverty/wealth). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent. See Online Appendix for additional specifications.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

APPENDIX: DESCRIPTIVE STATISTICS (MEANS AND STANDARD DEVIATIONS)—FOR THE FULL SAMPLE AND ACROSS COHORTS

Table A1. Descriptive Statistics: Means and Standard Deviations

	Full sample	*Across cohorts:*	
		Older	*Younger*
Dependent variable:			
Contraceptive use autonomy	0.292	0.19	0.377
	[0.455]	[0.392]	[0.485]
Explanatory variables (incl. Oaxaca grouping variables):			
Age	34.213	49.643	21.532
	[14.426]	[4.151]	[2.894]
Age at first marriage	14.731	14.23	15.142
	[2.743]	[3.124]	[2.307]
Older cohort	0.451	1.000	0.000
	[0.498]	[0.000]	[0.000]
Islam	0.922	0.906	0.934
	[0.269]	[0.292]	[0.248]
Health knowledge:			
Milk drinking during pregnancy	0.884	0.899	0.871
	[0.320]	[0.301]	[0.335]
Physical weakness of men after sterilization	0.187	0.169	0.201

	[0.390]	[0.375]	[0.401]
Goodness of the first (thin) milk for the baby	0.97	0.965	0.974
	[0.171]	[0.183]	[0.161]
Goodness of smoke from wood/dung burning	0.853	0.857	0.851
	[0.354]	[0.351]	[0.357]
Treatment of diarrhea in children, re water intake	0.782	0.744	0.812
	[0.413]	[0.436]	[0.391]
Menstruation, re "safe period"	0.411	0.354	0.457
	[0.492]	[0.478]	[0.498]
Using condoms can help avoid HIV/AIDS	0.21	0.091	0.308
	[0.408]	[0.288]	[0.462]
Combined (score-) health knowledge index	4.296	4.08	4.474
	[1.175]	[1.134]	[1.178]
Spousal education gap:			
Wife has less education than husband	0.329	0.407	0.265
	[0.470]	[0.492]	[0.442]
Wife has same education as husband	0.469	0.515	0.431
	[0.499]	[0.500]	[0.495]
Wife has more education than husband	0.202	0.078	0.304
	[0.401]	[0.268]	[0.460]
Husband's / wife's years of schooling	1.077	1.511	0.911
	[0.951]	[1.236]	[0.755]
Husband's – wife's years of schooling	0.818	1.905	-0.076
	[3.660]	[3.499]	[3.548]
Wife's education:			
None or below primary	0.422	0.647	0.238
	[0.494]	[0.478]	[0.426]
Some primary	0.156	0.137	0.172
	[0.363]	[0.344]	[0.377]
Primary	0.122	0.077	0.159
	[0.328]	[0.267]	[0.366]
Some secondary	0.221	0.091	0.329
	[0.415]	[0.287]	[0.470]
Secondary	0.066	0.036	0.091
	[0.248]	[0.185]	[0.288]
Tertiary	0.012	0.013	0.011
	[0.110]	[0.114]	[0.106]
Years of schooling	3.673	2.047	5.010
	[3.876]	[3.422]	[3.713]
Husband's education:			
None or below primary	0.401	0.489	0.329
	[0.490]	[0.500]	[0.470]
Some primary	0.135	0.114	0.151

	[0.341]	[0.318]	[0.359]
Primary	0.105	0.091	0.116
	[0.306]	[0.288]	[0.320]
Some secondary	0.188	0.131	0.235
	[0.391]	[0.338]	[0.424]
Secondary	0.119	0.118	0.12
	[0.324]	[0.323]	[0.325]
Tertiary	0.052	0.056	0.048
	[0.222]	[0.231]	[0.214]
Labor market variables:			
Working	0.137	0.141	0.134
	[0.344]	[0.348]	[0.341]
Income (1000s Taka)	1.57	1.369	1.735
	[18.979]	[8.084]	[24.550]
Radio listening:			
Listens to radio frequently	0.261	0.213	0.3
	[0.439]	[0.410]	[0.458]
Geographical variables:			
Urban	0.488	0.483	0.492
	[0.500]	[0.500]	[0.500]
Barisal	0.066	0.071	0.062
	[0.248]	[0.257]	[0.241]
Chittagong	0.164	0.173	0.157
	[0.371]	[0.378]	[0.364]
Dhaka	0.312	0.315	0.31
	[0.463]	[0.465]	[0.462]
Khulna	0.126	0.12	0.131
	[0.332]	[0.325]	[0.337]
Rajshahi	0.265	0.247	0.28
	[0.442]	[0.431]	[0.449]
Sylhet	0.066	0.074	0.06
	[0.249]	[0.262]	[0.237]
N	2848	1321	1527

Notes: Calculations incorporate sampling weights and also adjust for within-community correlation/clustering (Wooldridge, 2010).
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

ONLINE APPENDIX:

My Choice: Female Contraceptive Use Autonomy in Bangladesh

APPENDIX A: ADDITIONAL DETAILS ON THE ECONOMETRIC METHODOLOGY

Box A1. Details for Matching on Observables Strategy

There are several different ways to conduct the matching in practice.

For the application here I use Mahalanobis covariate matching which is based on the Mahalanobis distance to match participant and treatment individuals[21] and has the attractive property that it reduces differences in covariates within matched pairs in all directions (Imbens, 2004: 15). To avoid sample drops due to collinarity, similar to the main analysis, I use OLS (LPM) to estimate the propensity scores from the first stage of the matching process.

The match is then based on the closest non-participant ("nearest neighbor"—or "neighbors," if using instead a weighted average of more than one "close" non-participant). I use one and three neighbors, to further robustify the results to this choice, and use all the explanatory variables (except for education and labor market variables—since the latter are likely affected by the treatment considered here, namely wives' education) in the match. The estimated treatment effects increase (and remain statistically significant) if these variables are added to the matching procedure, so it is prudent to exclude them—which is therefore what I do here. Due to collinearity issues I use regional fixed effects combined with an urban dummy (instead of community fixed effects) for this part of the analysis.

The estimations implement the robust analytical standard errors proposed by Abadie and Imbens (2006) to correct for possible heteroskedasticity and also impose common support by excluding participant observations whose propensity scores are higher than the maximum or less than the minimum covariate values of the comparison group (as also suggested by Rosenbaum and Rubin, 1983).

[21] For details on Mahalanobis matching, see for example Rosenbaum and Rubin (1985).

Box A2. Details for Oaxaca-Blinder Decomposition Strategy

Specifically, the decomposition analysis examines to what extent the observed contraceptive use autonomy across cohorts is attributable to observable/explained and unobservable/unexplained characteristics (the so-called "two-fold decomposition"), where the unexplained part is often treated as discrimination in the literatures on gender and racial earnings gaps.

Here, while age is an intrinsic characteristic, 'discrimination' does not appear relevant for this analysis. I suggest, therefore, to instead interpret the group in question (older women) as a disadvantaged group, as far as contraceptive use autonomy is concerned (as based on the descriptive statistics from Online Appendix A), rather than any specific conditions relating to this two group per se.

While one might then suggest basing the decompositions on the prevailing contraceptive use autonomy structure of the advantaged group[22] (the young cohort), as also revealed by the existence of a substantial "raw" contraceptive use autonomy gap in the analysis, I use the pooled regression (Neumark, 1988) for the decompositions. The reason for this is that "discrimination" is not really relevant for the analysis here, coupled with the intuitive appeal of the approach for the application here. Again, the results are fairly robust to other decomposition approaches, including those put forth in Oaxaca (1973), Blinder (1973), Cotton (1988), and Reimers (1983).

The standard errors of the decompositions are computed using the Delta method by applying the procedure detailed in Jann (2008) and also incorporate within-community correlation/clustering adjusted standard errors (Wooldridge, 2010) (and therefore also (implicitly) robust (Huber, 1967; White, 1980)).

In addition to examining the overall composition of the established contraceptive use autonomy gap I also perform a detailed decomposition, whereby it is possible to see which explanatory variable(s) contribute the most to the overall contraceptive use autonomy gap.

However, while the overall decompositions are always identified, the results for categorical variables in detailed decompositions depend on the choice of the reference category (Oaxaca and Ransom 1999). The solution to this problem that is pursued here is to apply the deviation contrast transformation to the estimates before conducting the decomposition (Yun 2005).

Similar to the OLS regressions, the decomposition estimations also all allow for arbitrary heteroskedasticity (Huber, 1967; White, 1980).

[22] See Oaxaca (1973), Blinder (1973), Cotton (1988), Reimers (1983), and Neumark (1988) for alternative approaches.

APPENDIX B: ADDITIONAL RESULTS & TABLES

Table B1. Female Contraceptive Use Autonomy Regressions Ia: Building Up The Model Using Dummy Variables for Educational Attainment for Specification with "Less, Same, More" Gender Education Gap Measure (Pooled Sample, Linear Probability Model)

	Model (1): Core specification: Only the "least endogenous" variables included:	*Model (2): Adding religion + woman's own education + gender gap:*	*Model (3): Adding work status, income & radio listening:*	*Model (4): Adding husband's education:*	*Model (5): Adding cluster FEs instead of the more aggregate geographical variables:*
Some primary		0.073**	0.073**	0.051	0.073**
		[0.033]	[0.033]	[0.037]	[0.035]
Primary		0.080**	0.081**	0.045	0.044
		[0.035]	[0.035]	[0.045]	[0.042]
Some secondary		0.068**	0.069**	0.012	0.066
		[0.032]	[0.033]	[0.053]	[0.048]
Secondary		0.127***	0.128**	0.035	0.087
		[0.047]	[0.049]	[0.076]	[0.079]
Tertiary		0.139	0.137	0.015	0.113
		[0.096]	[0.095]	[0.139]	[0.139]
Husband, some primary				-0.018	-0.007
				[0.034]	[0.034]
Husband, primary				0.015	-0.011
				[0.039]	[0.036]
Husband, some secondary				0.057	0.013
				[0.050]	[0.051]
Husband, secondary				0.103*	0.091
				[0.058]	[0.059]
Husband, tertiary				0.123	0.137
				[0.093]	[0.094]
Wife has less education		0.004	0.004	-0.032	-0.019
		[0.022]	[0.022]	[0.040]	[0.039]
Wife has more education		-0.023	-0.022	0.015	-0.025
		[0.026]	[0.026]	[0.028]	[0.029]
Age	-0.007***	-0.006***	-0.006***	-0.006***	-0.006***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Age at first marriage	-0.001	-0.004	-0.004	-0.004	-0.002
	[0.003]	[0.004]	[0.004]	[0.004]	[0.004]

Islam		-0.033	-0.032	-0.032	-0.018
		[0.056]	[0.056]	[0.057]	[0.053]
Working			0.017	0.017	-0.01
			[0.035]	[0.034]	[0.035]
Income primary job (1000s Taka)			0	0	0
			[0.000]	[0.000]	[0.000]
Listens to radio frequently			0.034	0.035	0.005
			[0.029]	[0.028]	[0.028]
Asset quintile 2	0.025	0.02	0.019	0.017	0.005
	[0.031]	[0.032]	[0.032]	[0.031]	[0.028]
Asset quintile 3	0.008	-0.005	-0.008	-0.011	-0.02
	[0.036]	[0.038]	[0.038]	[0.038]	[0.034]
Asset quintile 4	0.044	0.02	0.016	0.012	0.006
	[0.030]	[0.032]	[0.033]	[0.033]	[0.032]
Asset quintile 5	0.094**	0.045	0.038	0.027	0.032
	[0.036]	[0.040]	[0.040]	[0.040]	[0.039]
Urban	-0.034	-0.031	-0.029	-0.027	
	[0.036]	[0.036]	[0.036]	[0.036]	
Barisal	-0.128***	-0.145***	-0.143***	-0.141***	
	[0.042]	[0.044]	[0.044]	[0.046]	
Chittagong	0.098	0.097	0.094	0.099	
	[0.071]	[0.072]	[0.072]	[0.071]	
Khulna	0.117**	0.109**	0.108**	0.111**	
	[0.050]	[0.050]	[0.050]	[0.050]	
Rajshahi	-0.101**	-0.097**	-0.094**	-0.095**	
	[0.046]	[0.046]	[0.046]	[0.045]	
Sylhet	0.300***	0.311***	0.312***	0.322***	
	[0.033]	[0.033]	[0.034]	[0.034]	
Constant	0.496***	0.522***	0.508***	0.518***	0.404***
	[0.080]	[0.102]	[0.101]	[0.101]	[0.096]
R^2	0.115	0.12	0.121	0.123	0.232
N	2,848	2,848	2,848	2,848	2,848

Notes: Dependent variable: One if wife's preference whether to use contraception and which type to use was always followed, zero otherwise. Values in brackets are within-community correlation/clustering adjusted standard errors (Wooldridge, 2010) (and therefore also (implicitly) robust (Huber, 1967; White, 1980)). Estimations also incorporate sampling weights. Reference groups are "None" (education), "Lowest asset score decile" (poverty/wealth), "Dhaka" (region). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

Table B2. Female Contraceptive Use Autonomy Regressions Ib: Building Up The Model Using Years of Schooling for Educational Attainment for Specification with "Less, Same, More" Gender Education Gap Measure (Pooled Sample, Linear Probability Model)

	Model (1): Core specification: Only the "least endogenous" variables included:	*Model (2): Adding religion + woman's own education + gender gap:*	*Model (3): Adding work status, income & radio listening:*	*Model (4): Adding husband's education:*	*Model (5): Adding cluster FEs instead of the more aggregate geographical variables:*
Years of schooling		0.010***	0.010***	0.004	0.007
		[0.004]	[0.004]	[0.006]	[0.006]
Husband's years of schooling				0.008	0.008*
				[0.005]	[0.005]
Wife has less education		0.011	0.012	-0.025	-0.028
		[0.022]	[0.022]	[0.035]	[0.034]
Wife has more education		-0.01	-0.009	0.02	-0.007
		[0.027]	[0.027]	[0.028]	[0.029]
Age	-0.007***	-0.006***	-0.006***	-0.006***	-0.006***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Age at first marriage	-0.001	-0.005	-0.005	-0.005	-0.002
	[0.003]	[0.004]	[0.004]	[0.004]	[0.004]
Islam		-0.032	-0.03	-0.031	-0.015
		[0.057]	[0.057]	[0.056]	[0.054]
Working			0.016	0.017	-0.009
			[0.034]	[0.034]	[0.035]
Income primary job (1000s Taka)			0	0	0
			[0.000]	[0.000]	[0.000]
Listens to radio frequently			0.034	0.034	0.006
			[0.029]	[0.029]	[0.029]
Asset quintile 2	0.025	0.019	0.019	0.018	0.005
	[0.031]	[0.032]	[0.032]	[0.031]	[0.028]
Asset quintile 3	0.008	-0.005	-0.008	-0.011	-0.023
	[0.036]	[0.038]	[0.038]	[0.038]	[0.034]
Asset quintile 4	0.044	0.02	0.015	0.011	0.005
	[0.030]	[0.032]	[0.033]	[0.032]	[0.031]
Asset quintile 5	0.094**	0.041	0.034	0.025	0.032
	[0.036]	[0.041]	[0.040]	[0.038]	[0.038]
Urban	-0.034	-0.031	-0.029	-0.029	
	[0.036]	[0.036]	[0.036]	[0.036]	
Barisal	-0.128***	-0.141***	-0.139***	-0.141***	
	[0.042]	[0.044]	[0.044]	[0.045]	

Chittagong	0.098	0.098	0.096	0.096	
	[0.071]	[0.072]	[0.072]	[0.072]	
Khulna	0.117**	0.112**	0.111**	0.111**	
	[0.050]	[0.050]	[0.049]	[0.049]	
Rajshahi	-0.101**	-0.098**	-0.095**	-0.095**	
	[0.046]	[0.046]	[0.046]	[0.046]	
Sylhet	0.300***	0.316***	0.318***	0.321***	
	[0.033]	[0.033]	[0.034]	[0.034]	
Constant	0.496***	0.533***	0.520***	0.525***	0.389***
	[0.080]	[0.102]	[0.101]	[0.100]	[0.096]
R^2	0.115	0.119	0.12	0.121	0.229
N	2,848	2,848	2,848	2,848	2,848

Notes: Dependent variable: One if wife's preference whether to use contraception and which type to use was always followed, zero otherwise. Values in brackets are within-community correlation/clustering adjusted standard errors (Wooldridge, 2010) (and therefore also (implicitly) robust (Huber, 1967; White, 1980)). Estimations also incorporate sampling weights. Reference groups are "Lowest asset score decile" (poverty/wealth), "Dhaka" (region). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

Table B3. Female Contraceptive Use Autonomy Regressions IIa: Building Up The Model Using Dummy Variables for Educational Attainment for Specification with Ratio Gender Education Gap Measure – and Therefore Excluding Husband's Education and Education Gap Dummies (Pooled Sample, Linear Probability Model)

	Model (1): Core specification: Only the "least endogenous" variables included:	*Model (2): Adding religion + woman's own education + gender gap:*	*Model (3): Adding work status, income & radio listening:*	*Model (4): Adding husband's education:*	*Model (5): Adding cluster FEs instead of the more aggregate geographical variables:*
Primary		0.011	0.012	0.016	-0.011
		[0.037]	[0.037]	[0.036]	[0.038]
Some secondary		-0.005	-0.004	0.001	0.034
		[0.029]	[0.029]	[0.030]	[0.032]
Secondary		0.044	0.042	0.046	0.103*
		[0.050]	[0.050]	[0.050]	[0.057]
Tertiary		0.063	0.05	0.058	0.152*
		[0.091]	[0.086]	[0.086]	[0.090]
Husband's/wife's years of schooling				0.009	0.013
				[0.014]	[0.014]
Age	-0.006***	-0.006***	-0.006***	-0.006***	-0.005***

	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Age at first marriage	-0.004	-0.006	-0.007	-0.007	-0.005
	[0.005]	[0.005]	[0.005]	[0.005]	[0.006]
Islam		-0.074	-0.064	-0.065	-0.008
		[0.067]	[0.066]	[0.067]	[0.071]
Working			0.064	0.066	0.048
			[0.046]	[0.047]	[0.051]
Income primary job (1000s Taka)			0	0	0
			[0.000]	[0.000]	[0.000]
Listens to radio frequently			0.045	0.045	0.019
			[0.037]	[0.037]	[0.037]
Asset quintile 2	0.004	0.005	0.005	0.004	-0.029
	[0.046]	[0.048]	[0.050]	[0.049]	[0.050]
Asset quintile 3	-0.045	-0.045	-0.046	-0.049	-0.076
	[0.052]	[0.052]	[0.054]	[0.053]	[0.052]
Asset quintile 4	0.018	0.017	0.017	0.012	0.011
	[0.051]	[0.050]	[0.052]	[0.052]	[0.053]
Asset quintile 5	0.079	0.067	0.064	0.058	0.041
	[0.052]	[0.053]	[0.054]	[0.054]	[0.056]
Urban	-0.053	-0.054	-0.05	-0.05	
	[0.041]	[0.041]	[0.040]	[0.041]	
Barisal	-0.153***	-0.148***	-0.144***	-0.145***	
	[0.045]	[0.044]	[0.045]	[0.045]	
Chittagong	0.12	0.119	0.118	0.117	
	[0.082]	[0.082]	[0.083]	[0.083]	
Khulna	0.135**	0.130**	0.129**	0.129**	
	[0.062]	[0.063]	[0.061]	[0.061]	
Rajshahi	-0.123**	-0.116**	-0.113**	-0.112**	
	[0.053]	[0.052]	[0.051]	[0.052]	
Sylhet	0.297***	0.308***	0.315***	0.314***	
	[0.045]	[0.047]	[0.047]	[0.046]	
Constant	0.568***	0.666***	0.642***	0.639***	1.019***
	[0.110]	[0.135]	[0.135]	[0.136]	[0.145]
R^2	0.101	0.104	0.108	0.108	0.235
N	1,683	1,683	1,683	1,683	1,683

Notes: Dependent variable: One if wife's preference whether to use contraception and which type to use was always followed, zero otherwise. Values in brackets are within-community correlation/clustering adjusted standard errors (Wooldridge, 2010) (and therefore also (implicitly) robust (Huber, 1967; White, 1980)). Estimations also incorporate sampling weights. Reference groups are "Primary" (education), "Lowest asset score decile" (poverty/wealth), "Dhaka" (region). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

Table B4. Female Contraceptive Use Autonomy Regressions IIb: Building Up The Model Using Years of Schooling for Educational Attainment for Specification with Ratio Gender Education Gap Measure – and Therefore Excluding Husband's Education and Education Gap Dummies (Pooled Sample, Linear Probability Model)

	Model (1): Core specification: Only the "least endogenous" variables included:	*Model (2): Adding religion + woman's own education + gender gap:*	*Model (3): Adding work status, income & radio listening:*	*Model (4): Adding husband's education:*	*Model (5): Adding cluster FEs instead of the more aggregate geographical variables:*
Years of schooling		0.006	0.006	0.007	0.015**
		[0.005]	[0.005]	[0.005]	[0.006]
Husband's/wife's years of schooling				0.013	0.018
				[0.014]	[0.015]
Age	-0.006***	-0.006***	-0.006***	-0.006***	-0.005***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Age at first marriage	-0.004	-0.007	-0.007	-0.008	-0.006
	[0.005]	[0.005]	[0.005]	[0.005]	[0.006]
Islam		-0.072	-0.063	-0.064	-0.005
		[0.067]	[0.066]	[0.067]	[0.070]
Working			0.065	0.066	0.047
			[0.046]	[0.046]	[0.051]
Income primary job (1000s Taka)			0	0	0
			[0.000]	[0.000]	[0.000]
Listens to radio frequently			0.045	0.045	0.021
			[0.037]	[0.037]	[0.037]
Asset quintile 2	0.004	0.002	0.001	0	-0.032
	[0.046]	[0.047]	[0.049]	[0.049]	[0.049]
Asset quintile 3	-0.045	-0.05	-0.051	-0.056	-0.083
	[0.052]	[0.052]	[0.054]	[0.053]	[0.051]
Asset quintile 4	0.018	0.009	0.009	0.003	0.002
	[0.051]	[0.051]	[0.053]	[0.052]	[0.053]
Asset quintile 5	0.079	0.056	0.053	0.044	0.031
	[0.052]	[0.054]	[0.055]	[0.054]	[0.056]
Urban	-0.053	-0.052	-0.049	-0.048	
	[0.041]	[0.041]	[0.041]	[0.041]	
Barisal	-0.153***	-0.150***	-0.146***	-0.148***	
	[0.045]	[0.044]	[0.045]	[0.045]	
Chittagong	0.12	0.12	0.119	0.118	
	[0.082]	[0.083]	[0.083]	[0.083]	
Khulna	0.135**	0.130**	0.129**	0.129**	

	[0.062]	[0.063]	[0.062]	[0.062]	
Rajshahi	-0.123**	-0.118**	-0.114**	-0.113**	
	[0.053]	[0.052]	[0.052]	[0.052]	
Sylhet	0.297***	0.310***	0.317***	0.317***	
	[0.045]	[0.048]	[0.049]	[0.048]	
Constant	0.568***	0.640***	0.620***	0.616***	0.971***
	[0.110]	[0.136]	[0.135]	[0.135]	[0.146]
R^2	0.101	0.104	0.107	0.108	0.236
N	1,683	1,683	1,683	1,683	1,683

Notes: Dependent variable: One if wife's preference whether to use contraception and which type to use was always followed, zero otherwise. Values in brackets are within-community correlation/clustering adjusted standard errors (Wooldridge, 2010) (and therefore also (implicitly) robust (Huber, 1967; White, 1980)). Estimations also incorporate sampling weights. Reference groups are "Lowest asset score decile" (poverty/wealth), "Dhaka" (region). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

Table B5. Female Contraceptive Use Autonomy Regressions IIIa: Building Up The Model Using Dummy Variables for Educational Attainment for Specification with Years of Schooling Gender Education Gap Measure – and Therefore Excluding Husband's Education and Education Gap Dummies (Pooled Sample, Linear Probability Model)

	Model (1): Core specification: Only the "least endogenous" variables included:	*Model (2): Adding religion + woman's own education + gender gap:*	*Model (3): Adding work status, income & radio listening:*	*Model (4): Adding husband's education:*	*Model (5): Adding cluster FEs instead of the more aggregate geographical variables:*
Some primary		0.064**	0.065**	0.069**	0.075**
		[0.031]	[0.031]	[0.032]	[0.032]
Primary		0.070**	0.072**	0.079**	0.056*
		[0.035]	[0.035]	[0.035]	[0.033]
Some secondary		0.058*	0.059*	0.070**	0.097***
		[0.030]	[0.031]	[0.031]	[0.030]
Secondary		0.119***	0.120**	0.128***	0.171***
		[0.045]	[0.046]	[0.047]	[0.049]
Tertiary		0.127	0.125	0.143	0.237**
		[0.094]	[0.093]	[0.092]	[0.094]
Husband's – wife's years of schooling				0.003	0.005*
				[0.003]	[0.003]
Age	-0.007***	-0.006***	-0.006***	-0.006***	-0.006***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]

Age at first marriage	-0.001	-0.004	-0.004	-0.004	-0.002
	[0.003]	[0.004]	[0.004]	[0.004]	[0.004]
Islam		-0.033	-0.031	-0.031	-0.017
		[0.056]	[0.056]	[0.056]	[0.054]
Working			0.017	0.018	-0.008
			[0.034]	[0.034]	[0.035]
Income primary job (1000s Taka)			0	0	0
			[0.000]	[0.000]	[0.000]
Listens to radio frequently			0.034	0.034	0.005
			[0.029]	[0.029]	[0.029]
Asset quintile 2	0.025	0.02	0.019	0.018	0.005
	[0.031]	[0.032]	[0.032]	[0.032]	[0.028]
Asset quintile 3	0.008	-0.003	-0.006	-0.009	-0.019
	[0.036]	[0.038]	[0.038]	[0.038]	[0.034]
Asset quintile 4	0.044	0.025	0.02	0.014	0.01
	[0.030]	[0.030]	[0.032]	[0.033]	[0.032]
Asset quintile 5	0.094**	0.051	0.044	0.034	0.038
	[0.036]	[0.038]	[0.038]	[0.039]	[0.038]
Urban	-0.034	-0.031	-0.029	-0.029	
	[0.036]	[0.036]	[0.036]	[0.036]	
Barisal	-0.128***	-0.141***	-0.139***	-0.143***	
	[0.042]	[0.043]	[0.043]	[0.044]	
Chittagong	0.098	0.096	0.094	0.094	
	[0.071]	[0.072]	[0.071]	[0.072]	
Khulna	0.117**	0.109**	0.108**	0.108**	
	[0.050]	[0.050]	[0.049]	[0.049]	
Rajshahi	-0.101**	-0.098**	-0.095**	-0.094**	
	[0.046]	[0.045]	[0.046]	[0.046]	
Sylhet	0.300***	0.310***	0.312***	0.314***	
	[0.033]	[0.033]	[0.034]	[0.034]	
Constant	0.496***	0.515***	0.500***	0.507***	0.375***
	[0.080]	[0.101]	[0.100]	[0.099]	[0.096]
R^2	0.115	0.12	0.121	0.121	0.229
N	2,848	2,848	2,848	2,848	2,848

Notes: Dependent variable: One if wife's preference whether to use contraception and which type to use was always followed, zero otherwise. Values in brackets are within-community correlation/clustering adjusted standard errors (Wooldridge, 2010) (and therefore also (implicitly) robust (Huber, 1967; White, 1980)). Estimations also incorporate sampling weights. Reference groups are "None" (education), "Lowest asset score decile" (poverty/wealth), "Dhaka" (region). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

Table B6. Female Contraceptive Use Autonomy Regressions IIIb: Building Up The Model Using Years of Schooling for Educational Attainment for Specification with Years of Schooling Gender Education Gap Measure – and Therefore Excluding Husband's Education and Education Gap Dummies (Pooled Sample, Linear Probability Model)

	Model (1): Core specification: Only the "least endogenous" variables included:	*Model (2): Adding religion + woman's own education + gender gap:*	*Model (3): Adding work status, income & radio listening:*	*Model (4): Adding husband's education:*	*Model (5): Adding cluster FEs instead of the more aggregate geographical variables:*
Years of schooling		0.010***	0.010***	0.011***	0.015***
		[0.003]	[0.004]	[0.004]	[0.003]
Husband's – wife's years of schooling				0.004	0.006**
				[0.003]	[0.003]
Age	-0.007***	-0.006***	-0.006***	-0.006***	-0.006***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Age at first marriage	-0.001	-0.004	-0.005	-0.005	-0.002
	[0.003]	[0.004]	[0.004]	[0.004]	[0.004]
Islam		-0.032	-0.03	-0.03	-0.013
		[0.056]	[0.056]	[0.057]	[0.054]
Working			0.016	0.017	-0.007
			[0.034]	[0.034]	[0.035]
Income primary job (1000s Taka)			0	0	0
			[0.000]	[0.000]	[0.000]
Listens to radio frequently			0.034	0.034	0.006
			[0.029]	[0.029]	[0.029]
Asset quintile 2	0.025	0.02	0.019	0.018	0.005
	[0.031]	[0.032]	[0.032]	[0.031]	[0.028]
Asset quintile 3	0.008	-0.004	-0.007	-0.01	-0.022
	[0.036]	[0.038]	[0.038]	[0.038]	[0.034]
Asset quintile 4	0.044	0.023	0.018	0.012	0.006
	[0.030]	[0.030]	[0.032]	[0.032]	[0.032]
Asset quintile 5	0.094**	0.046	0.039	0.026	0.034
	[0.036]	[0.039]	[0.039]	[0.039]	[0.038]
Urban	-0.034	-0.031	-0.029	-0.029	
	[0.036]	[0.036]	[0.036]	[0.036]	
Barisal	-0.128***	-0.139***	-0.137***	-0.141***	
	[0.042]	[0.043]	[0.044]	[0.044]	
Chittagong	0.098	0.098	0.096	0.096	
	[0.071]	[0.072]	[0.072]	[0.072]	
Khulna	0.117**	0.111**	0.111**	0.111**	

	[0.050]	[0.050]	[0.049]	[0.049]	
Rajshahi	-0.101**	-0.099**	-0.096**	-0.094**	
	[0.046]	[0.046]	[0.046]	[0.046]	
Sylhet	0.300***	0.315***	0.317***	0.319***	
	[0.033]	[0.033]	[0.034]	[0.034]	
Constant	0.496***	0.529***	0.516***	0.525***	0.376***
	[0.080]	[0.100]	[0.099]	[0.099]	[0.093]
R^2	0.115	0.119	0.12	0.121	0.229
N	2,848	2,848	2,848	2,848	2,848

Notes: Dependent variable: One if wife's preference whether to use contraception and which type to use was always followed, zero otherwise. Values in brackets are within-community correlation/clustering adjusted standard errors (Wooldridge, 2010) (and therefore also (implicitly) robust (Huber, 1967; White, 1980)). Estimations also incorporate sampling weights. Reference groups are "Lowest asset score decile" (poverty/wealth), "Dhaka" (region). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

Table B7. Female Contraceptive Use Autonomy Regressions: Oster (2016) Bias Correction for Preferred Model from Table 3 with Wife's Education Variables Concentrated Instead Into a Single 'Treatment Variable' (Full Sample, Linear Probability Model)

	Years of schooling	*Some primary or more*	*Primary or more*	*Some secondary or more*	*Secondary or more*	*Tertiary*
Regression estimate	0.015***	0.077***	0.052**	0.064**	0.097**	0.101
(uncorrected)	[0.003]	[0.025]	[0.022]	[0.024]	[0.045]	[0.094]
Bias corrected impact	0.010**	0.026	0.002	0.031	0.085	0.119
estimate I ($\delta = 1.0$)	[0.004]	[0.034]	[0.029]	[0.034]	[0.055]	[0.101]
Bias corrected impact	0.013***	0.055**	0.030	0.049	0.092*	0.110
estimate II ($\delta = 0.5$)	[0.004]	[0.025]	[0.025]	[0.031]	[0.055]	[0.111]
	0.229	0.226	0.224	0.225	0.224	0.223
N	2,848	2,848	2,848	2,848	2,848	2,848

Notes: Dependent variable: One if wife's preference whether to use contraception and which type to use was always followed, zero otherwise. Values in brackets are within-community correlation/clustering adjusted standard errors (Wooldridge, 2010) (and therefore also (implicitly) robust (Huber, 1967; White, 1980)). Estimations also incorporate sampling weights. Standard errors of bias corrected impacts are bootstrapped using 100 bootstrap replications. The analysis uses the recommended R-max of 1.3 times the R^2 from the uncorrected regression suggested in Oster (2016). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

Table B8. The Simple Correlation Coefficients of Spousal Educational Attainment

	Wife's education:					
	Years of schooling	Some primary	Primary	Some secondary	Secondary	Tertiary
Husband's education:						
Years of schooling	0.653***	-0.083***	0.038	0.285***	0.432***	0.254***
Some primary	-0.071**	0.150***	0.010	-0.024	-0.098***	-0.044**
Primary	-0.008	-0.010	0.104***	0.023	-0.063***	0.038**
Some secondary	0.195***	0.005	0.054**	0.265***	-0.052**	-0.049**
Secondary	0.297***	-0.062***	0.022	0.138***	0.268***	0.005
Tertiary	0.417***	-0.087***	-0.064**	-0.002	0.410***	0.400***

Notes: Values in brackets are within-community correlation/clustering adjusted standard errors (Wooldridge, 2010) (and therefore also (implicitly) robust (Huber, 1967; White, 1980)). Estimations incorporate sampling weights. *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

Table B9. Variance Inflation Factors for the Two Specifications of Educational Attainment Variables Where Husband's Education is Included in Levels

Education dummies:		*Years of schooling:*	
Variable	VIF	Variable	VIF
Husband Secondary	6.2	Husband years of schooling	7.5
Husband Tertiary	5.9	Wife years of schooling	5.7
Wife Some secondary	5.3	Wife has less education	2.8
Husband Some secondary	5.0	Asset quintile 5	2.4
Wife Secondary	4.3	Wife has more education	2.0
Wife has less education	3.8	Asset quintile 4	1.9
Wife has more education	2.6	Asset quintile 3	1.7
Asset quintile 5	2.5	Asset quintile 2	1.6
Wife Tertiary	2.4	Rajshahi	1.4
Wife Primary	2.4	Age	1.4
Husband Primary	2.3	Age at first marriage	1.4
Wife Some primary	2.0	Chittagong	1.3
Asset quintile 4	1.9	Khulna	1.3
Husband Some Primary	1.9	Sylhet	1.2
Asset quintile 3	1.7	Barisal	1.2
Asset quintile 2	1.6	Listen to radio frequently	1.1
Age	1.5	Working	1.1
Rajshahi	1.4	Islam	1.1
Age at first marriage	1.4	Urban	1.1
Chittagong	1.3	Income primary job (1000s Taka)	1.1
Khulna	1.3		

Sylhet	1.2		
Barisal	1.2		
Working	1.1		
Listens to radio frequently	1.1		
Urban	1.1		
Income primary job (1000s Taka)	1.1		
Islam	1.1		
Mean VIF	2.4	Mean VIF	2.0

Table B10. Female Contraceptive Use Autonomy Regressions: Covariate Matching Treatment Effects from Wife's Own Education, Full Sample & By Spousal Education Gap

Treatment variable:	*Ever attended school:*		*Primary and above:*		*Some Secondary and above:*		*Secondary and above:*		*Tertiary:*	
Number of neighbors:	*1:*	*3:*	*1:*	*3:*	*1:*	*3:*	*1:*	*3:*	*1:*	*3:*
Full sample:										
Unadjusted	0.132***	0.132***	0.125***	0.125***	0.113***	0.113***	0.109***	0.109***	0.058	0.058
	[0.017]	[0.017]	[0.017]	[0.017]	[0.019]	[0.019]	[0.033]	[0.033]	[0.092]	[0.092]
ATE	0.058***	0.084***	0.068***	0.094***	0.062**	0.059***	0.097**	0.064	-0.040	-0.023
	[0.021]	[0.019]	[0.025]	[0.021]	[0.028]	[0.023]	[0.046]	[0.045]	[0.125]	[0.109]
ATT	0.071***	0.098***	0.029	0.070***	0.033	0.037	0.059	0.046	0.12	0.093
	[0.026]	[0.022]	[0.031]	[0.024]	[0.028]	[0.024]	[0.057]	[0.046]	[0.16]	[0.114]
N	2,848	2,848	2,848	2,848	2,848	2,848	2,848	2,848	2,848	2,848
Wife less education:										
Unadjusted	0.085***	0.085***	0.084***	0.084***	0.115***	0.115***	0.032	0.032		
	[0.030]	[0.030]	[0.030]	[0.030]	[0.035]	[0.035]	[0.061]	[0.061]		
ATE	0.066	0.086**	0.076*	0.077**	0.08	0.112*	0.027	-0.018		
	[0.045]	[0.038]	[0.043]	[0.036]	[0.069]	[0.058]	[0.119]	[0.096]		
ATT	0.076	0.095**	0.126**	0.088**	0.059	0.102*	-0.054	-0.018		
	[0.055]	[0.043]	[0.056]	[0.043]	[0.074]	[0.061]	[0.106]	[0.097]		
N	956	956	956	956	956	956	956	956		
Wife same education:										
Unadjusted	0.159***	0.159***	0.174***	0.174***	0.174***	0.174***	0.178***	0.178***	0.152	0.152
	[0.025]	[0.025]	[0.026]	[0.026]	[0.027]	[0.027]	[0.044]	[0.044]	[0.099]	[0.099]
ATE	0.084**	0.072**	0.057	0.098***	0.048	0.085**	0.174***	0.143***	0.011	0.028
	[0.04]	[0.032]	[0.044]	[0.035]	[0.046]	[0.038]	[0.063]	[0.054]	[0.149]	[0.131]
ATT	0.1***	0.095***	0.0879	0.138***	0.073	0.104***	0.153**	0.153***	0.19	0.175
	[0.0376]	[0.034]	[0.054]	[0.039]	[0.048]	[0.040]	[0.061]	[0.053]	[0.143]	[0.117]
N	1,313	1,313	1,313	1,313	1,313	1,313	1,313	1,313	1,313	1,313
Wife more education:										
Unadjusted			0.039	0.039	-0.029	-0.029	0.058	0.058	-0.367	-0.367
			[0.044]	[0.044]	[0.040]	[0.040]	[0.089]	[0.089]	[0.241]	[0.241]
ATE			-0.018	0.0291	-0.071	-0.049	-0.096	0.011	-0.283	-0.296

	[0.058]	[0.048]	[0.049]	[0.042]	[0.168]	[0.124]	[0.063]	[0.061]
ATT	-0.058	0.01	-0.082	-0.069	0.125	0.097	0	-0.222**
	[0.07]	[0.055]	[0.066]	[0.048]	[0.141]	[0.119]	[0.236]	[0.111]
N	579	579	579	579	579	579	579	579

Notes: Dependent variable: One if wife's preference whether to use contraception and which type to use was always followed, zero otherwise. Terms in brackets are robust analytical Abadie and Imbens (2006) standard errors. Estimations also incorporate sampling weights and adjust for within-community correlation/clustering (Wooldridge, 2010). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

Table B11. Female Contraceptive Use Autonomy Regressions: LPM, Full Sample and Stratified By Spousal Education Gap

	Using education dummies for women's education:				*Using years of schooling for women's education:*			
	Stratified by Spousal Education Gap:				*Stratified by Spousal Education Gap:*			
	Full sample:	*Wife less:*	*Wife same:*	*Wife more:*	*Full sample:*	*Wife less:*	*Wife same:*	*Wife more:*
Some primary	0.068**	0.097	0.041					
	[0.031]	[0.068]	[0.059]					
Primary	0.045	0.066	-0.093	0.016				
	[0.034]	[0.049]	[0.070]	[0.072]				
Some secondary	0.079***	0.179***	0.092**	-0.033				
	[0.029]	[0.067]	[0.046]	[0.064]				
Secondary	0.156***	0.133*	0.178*	0.162				
	[0.048]	[0.080]	[0.095]	[0.131]				
Tertiary	0.205**		0.208**	-0.157				
	[0.095]		[0.094]	[0.172]				
Years of schooling					0.012***	0.017**	0.013**	0.001
					[0.003]	[0.007]	[0.005]	[0.010]
Age	-0.006***	-0.006***	-0.006***	-0.010***	-0.006***	-0.006***	-0.006***	-0.010***
	[0.001]	[0.002]	[0.001]	[0.002]	[0.001]	[0.002]	[0.001]	[0.002]
Age at first marriage	-0.001	-0.004	-0.003	-0.008	-0.001	-0.005	-0.003	-0.007
	[0.004]	[0.008]	[0.005]	[0.012]	[0.004]	[0.008]	[0.006]	[0.012]
Islam	-0.02	-0.022	-0.01	0.028	-0.017	-0.007	-0.019	0.008
	[0.054]	[0.062]	[0.111]	[0.139]	[0.054]	[0.062]	[0.111]	[0.153]
Working	-0.01	-0.038	-0.03	-0.074	-0.009	-0.041	-0.027	-0.073
	[0.035]	[0.072]	[0.051]	[0.082]	[0.035]	[0.073]	[0.051]	[0.082]
Income primary job (1000s Taka)	0	0	0.005***	-0.003	0	0	0.005***	-0.003
	[0.000]	[0.000]	[0.002]	[0.007]	[0.000]	[0.000]	[0.002]	[0.006]
Listens to radio frequently	0.006	0.036	0.047	-0.088	0.006	0.036	0.047	-0.09
	[0.029]	[0.032]	[0.041]	[0.064]	[0.029]	[0.032]	[0.042]	[0.064]
Asset quintile 2	0.007	0.019	-0.011	0.009	0.007	0.021	-0.009	0
	[0.029]	[0.047]	[0.038]	[0.059]	[0.028]	[0.048]	[0.037]	[0.060]
Asset quintile 3	-0.015	-0.002	-0.023	-0.032	-0.017	0	-0.025	-0.037
	[0.034]	[0.054]	[0.048]	[0.076]	[0.034]	[0.054]	[0.047]	[0.075]
Asset quintile 4	0.019	-0.011	0.028	-0.061	0.017	-0.006	0.022	-0.072
	[0.031]	[0.067]	[0.047]	[0.079]	[0.031]	[0.068]	[0.046]	[0.081]
Asset quintile 5	0.053	0.057	0.005	-0.031	0.052	0.06	0.018	0.002
	[0.038]	[0.064]	[0.065]	[0.096]	[0.038]	[0.061]	[0.061]	[0.091]
Constant	0.367***	1.168***	0.448***	0.412	0.364***	1.157***	0.407**	0.423
	[0.098]	[0.152]	[0.156]	[0.271]	[0.096]	[0.151]	[0.164]	[0.273]
R^2	0.228	0.267	0.291	0.341	0.227	0.263	0.285	0.335
N	2,848	956	1,313	579	2,848	956	1,313	579

Notes: Dependent variable: One if wife's preference whether to use contraception and which type to use was always followed, zero otherwise. Values in brackets are within-community correlation/clustering adjusted standard errors (Wooldridge, 2010) (and therefore also (implicitly) robust (Huber, 1967; White, 1980)). Estimations also incorporate sampling weights and include community fixed effects. Reference groups are "None" (education), "Lowest asset score decile" (poverty/wealth). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

Table B12. Female Contraceptive Use Autonomy Regressions: LPM, Stratified By Husband's Educational Attainment (Using Dummy Variables for Women's Education)

	None:	*Some Primary:*	*Primary:*	*Some Secondary:*	*Secondary:*	*Tertiary:*
Some primary	0.032	0.141*	0.064	0.071	0.366**	0.452***
	[0.036]	[0.075]	[0.147]	[0.080]	[0.154]	[0.166]
Primary	-0.019	0.196**	-0.108	0.087	0.148	0.282
	[0.067]	[0.076]	[0.119]	[0.070]	[0.107]	[0.495]
Some secondary	-0.021	0.119	-0.162	0.174**	0.200*	0.796***
	[0.069]	[0.101]	[0.153]	[0.076]	[0.113]	[0.270]
Secondary	0.184***	0.23	0.003	0.359***	0.229*	0.653***
	[0.060]	[0.157]	[0.252]	[0.136]	[0.129]	[0.181]
Tertiary				0.09	0.073	0.562*
				[0.149]	[0.205]	[0.289]
Age	-0.008***	-0.003	-0.005*	-0.005**	-0.010***	0.002
	[0.001]	[0.002]	[0.003]	[0.002]	[0.002]	[0.003]
Age at first marriage	-0.001	-0.005	0.007	-0.001	-0.030***	0.001
	[0.006]	[0.014]	[0.009]	[0.011]	[0.010]	[0.042]
Islam	0.077	-0.086	-0.009	0.054	-0.266**	0.349
	[0.076]	[0.110]	[0.145]	[0.164]	[0.114]	[0.284]
Working	-0.09	0.014	0.166	0.113	0.135	-0.043
	[0.055]	[0.110]	[0.205]	[0.079]	[0.188]	[0.170]
Income primary job (1000s Taka)	0.004	-0.013	-0.025	-0.008	0.004	0.005
	[0.006]	[0.010]	[0.020]	[0.005]	[0.005]	[0.004]
Listens to radio frequently	-0.018	-0.121*	-0.068	0.069	-0.041	0.188
	[0.042]	[0.063]	[0.114]	[0.051]	[0.088]	[0.169]
Asset quintile 2	0.006	0.025	0.092	-0.124	0.184	5.482
	[0.033]	[0.094]	[0.138]	[0.075]	[0.163]	[3.348]
Asset quintile 3	0.022	0.136	-0.05	-0.136	0.082	
	[0.049]	[0.086]	[0.107]	[0.086]	[0.202]	
Asset quintile 4	0.006	0.119	-0.026	-0.007	0.174	-0.054
	[0.040]	[0.085]	[0.109]	[0.107]	[0.188]	[0.213]
Asset quintile 5	-0.067	-0.026	-0.139	0.06	0.251	0.145
	[0.059]	[0.138]	[0.145]	[0.101]	[0.196]	[0.220]
Constant	0.296**	0.114	0.985***	1.065***	0.461**	-6.697**
	[0.140]	[0.309]	[0.308]	[0.278]	[0.206]	[3.063]
R^2	0.28	0.424	0.358	0.407	0.488	0.548
N	1,112	417	296	547	351	125

Notes: Dependent variable: One if wife's preference whether to use contraception and which type to use was always followed, zero otherwise. Values in brackets are within-community correlation/clustering adjusted standard errors (Wooldridge, 2010) (and therefore also (implicitly) robust (Huber, 1967; White, 1980)). Estimations also incorporate sampling weights and include community fixed effects. Reference groups are "None" (education), "Lowest asset score decile" (poverty/wealth). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

Table B13. Female Contraceptive Use Autonomy Regressions: LPM, Stratified By Husband's Educational Attainment (Using Years of Schooling for Women's Education)

	None:	*Some Primary:*	*Primary:*	*Some Secondary:*	*Secondary:*	*Tertiary:*
Years of schooling	0.001	0.016	-0.016	0.029***	0.014	-0.035
	[0.007]	[0.012]	[0.016]	[0.008]	[0.011]	[0.022]
Age	-0.008***	-0.004	-0.004	-0.004*	-0.009***	0
	[0.001]	[0.002]	[0.003]	[0.002]	[0.002]	[0.003]
Age at first marriage	-0.001	-0.004	0.007	-0.003	-0.033***	0.013
	[0.006]	[0.014]	[0.009]	[0.011]	[0.010]	[0.031]
Islam	0.082	-0.091	0.024	0.054	-0.226*	0.365
	[0.076]	[0.112]	[0.148]	[0.172]	[0.117]	[0.236]
Working	-0.089	0.021	0.179	0.103	0.142	-0.029
	[0.054]	[0.110]	[0.207]	[0.077]	[0.198]	[0.122]
Income primary job (1000s Taka)	0.004	-0.015	-0.027	-0.008*	0.004	0.006
	[0.006]	[0.010]	[0.020]	[0.004]	[0.005]	[0.004]
Listens to radio frequently	-0.021	-0.129**	-0.06	0.07	-0.024	0.22
	[0.042]	[0.063]	[0.115]	[0.050]	[0.090]	[0.186]
Asset quintile 2	0.005	0.038	0.082	-0.132*	0.152	0.299
	[0.034]	[0.098]	[0.139]	[0.076]	[0.190]	[0.314]
Asset quintile 3	0.02	0.156*	-0.046	-0.148*	0.091	
	[0.049]	[0.082]	[0.110]	[0.087]	[0.226]	
Asset quintile 4	0.007	0.133	-0.022	-0.03	0.166	-0.193
	[0.041]	[0.087]	[0.116]	[0.103]	[0.210]	[0.204]
Asset quintile 5	-0.063	-0.002	-0.115	0.047	0.227	0.021
	[0.059]	[0.136]	[0.141]	[0.099]	[0.222]	[0.204]
Constant	0.288**	0.107	1.012***	1.039***	0.536**	-0.557
	[0.138]	[0.305]	[0.240]	[0.263]	[0.208]	[0.378]
R^2	0.279	0.414	0.349	0.41	0.469	0.531
N	1,112	417	296	547	351	125

Notes: Dependent variable: One if wife's preference whether to use contraception and which type to use was always followed, zero otherwise. Values in brackets are within-community correlation/clustering adjusted standard errors (Wooldridge, 2010) (and therefore also (implicitly) robust (Huber, 1967; White, 1980)). Estimations also incorporate sampling weights and include community fixed effects. Reference groups are "None" (education), "Lowest asset score decile" (poverty/wealth). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

Table B14. Female Contraceptive Use Autonomy Regressions: Covariate Matching Treatment Effects from Wife's Own Education, Stratified By Husband's Educational Attainment

Treatment variable:	*Ever attended school:*		*Primary and above:*		*Some Secondary and above:*		*Secondary and above:*		*Tertiary:*	
Number of neighbors:	*1:*	*3:*	*1:*	*3:*	*1:*	*3:*	*1:*	*3:*	*1:*	*3:*
Husband's Education:										
None:										
Unadjusted	0.126***	0.126***	0.103***	0.103***	0.062	0.062				
	[0.028]	[0.028]	[0.036]	[0.036]	[0.049]	[0.049]				
ATE	0.067*	0.075**	0.090	0.091*	0.043	0.082				
	[0.039]	[0.035]	[0.055]	[0.048]	[0.073]	[0.063]				
ATT	0.096**	0.059*	0.017	-0.002	-0.024	0.000				
	[0.042]	[0.033]	[0.064]	[0.050]	[0.078]	[0.066]				

N	1,112	1,112	1,112	1,112	1,112	1,112				
Some Primary:										
Unadjusted	0.143***	0.143***	0.198***	0.198***	0.101*	0.101*				
	[0.047]	[0.047]	[0.048]	[0.048]	[0.057]	[0.057]				
ATE	0.119**	0.128***	0.137**	0.171***	0.071	0.075				
	[0.059]	[0.049]	[0.066]	[0.054]	[0.073]	[0.060]				
ATT	0.132*	0.135**	0.099	0.177***	0.096	0.100				
	[0.071]	[0.055]	[0.077]	[0.057]	[0.079]	[0.061]				
N	417	417	417	417	417	417				
Primary:										
Unadjusted	0.007	0.007	-0.011	-0.011	-0.032	-0.032	0.067	0.067		
	[0.057]	[0.057]	[0.055]	[0.055]	[0.064]	[0.064]	[0.213]	[0.213]		
ATE	0.054	0.012	0.004	0.011	0.000	-0.067	0.129	0.129		
	[0.068]	[0.061]	[0.075]	[0.068]	[0.088]	[0.077]	[0.262]	[0.273]		
ATT	0.041	-0.006	-0.009	-0.003	-0.014	-0.068	0.200	0.067		
	[0.074]	[0.067]	[0.096]	[0.081]	[0.086]	[0.080]	[0.316]	[0.262]		
N	296	296	296	296	296	296	296	296		
Some Secondary:										
Unadjusted	0.162***	0.162***	0.151***	0.151***	0.151***	0.151***	0.187*	0.187*		
	[0.053]	[0.053]	[0.042]	[0.042]	[0.039]	[0.039]	[0.106]	[0.106]		
ATE	0.067	0.096**	0.132***	0.098***	0.094**	0.087**	0.036	0.101		
	[0.047]	[0.049]	[0.041]	[0.038]	[0.046]	[0.041]	[0.112]	[0.108]		
ATT	0.053	0.092*	0.131***	0.101***	0.105*	0.077*	-0.050	0.050		
	[0.051]	[0.052]	[0.043]	[0.039]	[0.055]	[0.044]	[0.166]	[0.129]		
N	547	547	547	547	547	547	547	547		
Secondary:										
Unadjusted	0.184**	0.184**	0.123**	0.123**	0.138**	0.138**	0.066	0.066	-0.385	-0.385
	[0.080]	[0.080]	[0.062]	[0.062]	[0.053]	[0.053]	[0.059]	[0.059]	[0.282]	[0.282]
ATE	0.178**	0.145*	0.138*	0.111*	0.077	0.117**	0.096	0.031	-0.111	-0.185
	[0.086]	[0.082]	[0.079]	[0.066]	[0.065]	[0.054]	[0.075]	[0.064]	[0.176]	[0.185]
ATT	0.207**	0.152*	0.213**	0.132*	0.068	0.128**	0.089	0.042	0.000	-0.222
	[0.089]	[0.083]	[0.093]	[0.071]	[0.071]	[0.055]	[0.087]	[0.075]	[0.236]	[0.222]
N	351	351	351	351	351	351	351	351	351	351
Tertiary:										
Unadjusted			-0.098	-0.098	0.032	0.032	0.051	0.051	0.111	0.111
			[0.185]	[0.185]	[0.139]	[0.139]	[0.090]	[0.090]	[0.113]	[0.113]
ATE			-0.333	-0.139	0.078	0.026	-0.076	-0.040	0.110	0.040
			[0.417]	[0.364]	0.213]	[0.221]	[0.113]	[0.092]	[0.150]	[0.134]
ATT			-0.375	-0.167	0.136	0.053	-0.172	-0.081	0.167	0.074
			[0.468]	[0.381]	0.214]	[0.224]	[0.118]	[0.089]	[0.176]	[0.147]
N			125	125	125	125	125	125	125	125

Notes: Dependent variable: One if wife's preference whether to use contraception and which type to use was always followed, zero otherwise. Terms in brackets are robust analytical Abadie and Imbens (2006) standard errors. Estimations also incorporate sampling weights and adjust for within-community correlation/clustering (Wooldridge, 2010). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

Table B15. Female Contraceptive Use Autonomy Regressions: Uncovering the Mechanism By Adding Health Knowledge (LPM, Pooled Sample)

	Using education dummies for women's education:			*Using years of schooling for women's education:*		
	Benchmark specification (preferred model from Table 3)	*Adding combined (score-) health knowledge index*	*Instead adding individual health variables*	*Benchmark specification (preferred model from Table 3)*	*Adding combined (score-) health knowledge index*	*Instead adding individual health variables*
Some primary	0.075**	0.069**	0.066**			
	[0.032]	[0.031]	[0.031]			
Primary	0.056*	0.048	0.048			
	[0.033]	[0.033]	[0.033]			
Some secondary	0.097***	0.085***	0.074**			
	[0.030]	[0.032]	[0.033]			
Secondary	0.171***	0.152***	0.139***			
	[0.049]	[0.052]	[0.050]			
Tertiary	0.237**	0.215**	0.200*			
	[0.094]	[0.097]	[0.101]			
Years of schooling				0.015***	0.013***	0.012***
				[0.003]	[0.004]	[0.004]
Husband's – wife's years of schooling	0.005*	0.005*	0.004	0.006**	0.005*	0.005*
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
Combined (score-) health knowledge index		0.024*			0.024*	
		[0.013]			[0.013]	
Milk drinking during pregnancy			0.007			0.007
			[0.034]			[0.034]
Physical weakness of men after sterilization			0.065*			0.066*
			[0.035]			[0.035]
Goodness of the first (thin) milk for the baby			-0.019			-0.02
			[0.048]			[0.046]
Goodness of smoke from wood/dung burning			-0.002			-0.003
			[0.037]			[0.037]
Treatment of diarrhea in children, re water intake			0.04			0.04
			[0.034]			[0.034]
Menstruation, re "safe period"			-0.017			-0.017
			[0.027]			[0.027]
Using condoms can help avoid HIV/AIDS			0.082**			0.080**
			[0.031]			[0.031]
Age	-0.006***	-0.006***	-0.005***	-0.006***	-0.006***	-0.005***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Age at first marriage	-0.002	-0.002	-0.003	-0.002	-0.002	-0.003
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
Islam	-0.017	-0.012	-0.012	-0.013	-0.008	-0.008
	[0.054]	[0.053]	[0.053]	[0.054]	[0.053]	[0.053]
Working	-0.008	-0.01	-0.008	-0.007	-0.01	-0.007
	[0.035]	[0.036]	[0.035]	[0.035]	[0.036]	[0.035]
Income primary job (1000s Taka)	0	0	0	0	0	0
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Listens to radio frequently	0.005	0.006	0.003	0.006	0.006	0.004
	[0.029]	[0.028]	[0.027]	[0.029]	[0.028]	[0.027]
Asset quintile 2	0.005	0.002	0.002	0.005	0.001	0.001
	[0.028]	[0.028]	[0.028]	[0.028]	[0.028]	[0.028]
Asset quintile 3	-0.019	-0.023	-0.024	-0.022	-0.026	-0.026

	[0.034]	[0.034]	[0.034]	[0.034]	[0.034]	[0.034]
Asset quintile 4	0.01	0.004	-0.002	0.006	0.001	-0.006
	[0.032]	[0.033]	[0.033]	[0.032]	[0.032]	[0.033]
Asset quintile 5	0.038	0.029	0.024	0.034	0.025	0.021
	[0.038]	[0.039]	[0.039]	[0.038]	[0.039]	[0.039]
Constant	0.375***	0.272**	0.364***	0.376***	0.272**	0.366***
	[0.096]	[0.119]	[0.118]	[0.093]	[0.117]	[0.116]
R^2	0.229	0.232	0.238	0.229	0.232	0.238
N	2,848	2,848	2,848	2,848	2,848	2,848

Notes: Dependent variable: One if wife's preference whether to use contraception and which type to use was always followed, zero otherwise. Values in brackets are within-community correlation/clustering adjusted standard errors (Wooldridge, 2010) (and therefore also (implicitly) robust (Huber, 1967; White, 1980)). Estimations also incorporate sampling weights and include community fixed effects. Reference groups are "None" (education), "Lowest asset score decile" (poverty/wealth). *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

Table B16. Total Gap and Overall and Detailed Decompositions of Contraceptive Use Autonomy across Two Cohorts of Women (Using the Pooled Regression Model (Neumark, 1988) for the Decomposition)

		Explained	Unexplained
Total gap:	0.189***	0.086***	0.103***
	[0.026]	[0.014]	[0.023]

	Aggregated education and health knowledge:		*Disaggregated education and health knowledge:*	
	Explained	Unexplained	Explained	Unexplained
Education (own, combined)	0.063***	-0.114		
	[0.011]	[0.098]		
None or below primary			0.108***	-0.084
			[0.041]	[0.082]
Some primary			-0.005	-0.013
			[0.005]	[0.016]
Primary			-0.013	-0.002
			[0.009]	[0.014]
Some secondary			-0.025	-0.016
			[0.023]	[0.030]
Secondary			-0.002	0.001
			[0.005]	[0.008]
Tertiary			0	0
			[0.000]	[0.003]
Husband – wife's years of schooling	-0.005	-0.007	-0.005	-0.007
	[0.006]	[0.007]	[0.006]	[0.007]
Health knowledge (combined)	0.028***	0.132		
	[0.008]	[0.113]		
Milk drinking during pregnancy			0	-0.04
			[0.001]	[0.059]

Physical weakness of men			0.002	0.077*
after sterilization			[0.002]	[0.041]
Goodness of the first			0	-0.099
(thin) milk for the baby			[0.000]	[0.080]
Goodness of smoke from			0	0.154***
wood/dung burning			[0.000]	[0.040]
Treatment of diarrhea in			0.003	0.028
children, re water intake			[0.002]	[0.045]
Menstruation, re "safe			-0.001	-0.019
period"			[0.003]	[0.025]
Using condoms can help			0.024***	0.03
avoid HIV/AIDS			[0.007]	[0.039]
Age at first marriage	0	-0.128	0	-0.128
	[0.004]	[0.103]	[0.004]	[0.103]
Islam	0	0.042	0	0.042
	[0.001]	[0.082]	[0.001]	[0.082]
Working	0	-0.007	0	-0.007
	[0.000]	[0.011]	[0.000]	[0.011]
Income primary job	0	-0.004	0	-0.004
(1000s Taka)	[0.000]	[0.003]	[0.000]	[0.003]
Radio listening	0.002	0	0.002	0
	[0.002]	[0.011]	[0.002]	[0.011]
Wealth	0.004	-0.02	0.004	-0.02
	[0.002]	[0.044]	[0.002]	[0.044]
Location	-0.007	-0.136***	-0.007	-0.136***
	[0.010]	[0.043]	[0.010]	[0.043]
Total	0.086***	0.103***	0.086***	0.103***
	[0.014]	[0.023]	[0.014]	[0.023]
Constant		0.343		0.343
		[0.233]		[0.233]
N	2,848	2,848	2,848	2,848

Notes: Dependent variable: One if wife's preference whether to use contraception and which type to use was always followed, zero otherwise. The standard errors of the decompositions are computed using the Delta method by applying the procedure detailed in Jann (2008) and also incorporate within-community correlation/clustering adjusted standard errors (Wooldridge, 2010) (and therefore also (implicitly) robust (Huber, 1967; White, 1980)). Estimations also incorporate sampling weights and include community fixed effects. *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: World Bank Survey on Gender Norms in Bangladesh (2006).

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