Education, Marriage and Fertility: Long-Term Evidence from a Female Stipend Program in Bangladesh*

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Abstract

In 1994, Bangladesh introduced the Female Secondary School Stipend Program (FSSSP), which made secondary education free for girls residing in rural areas. This paper examines the long-term effects of the stipend program on education, marriage and fertility outcomes of women in Bangladesh. We find that the stipend significantly increased years of education for eligible girls by an average of 14 to 25 percent. These girls were more likely to get married later and have lower desired, and actual, fertility. They also showed greater autonomy in making decisions about household purchases, own health care and visiting relatives. They were more likely to work in formal sectors instead of agricultural and informal sectors. In addition, stipend eligible women were likely to marry more educated husbands who had better occupations and were closer in age to their own. These results imply that stipend programs can increase female empowerment through positive marriage market outcomes at low costs over the long-term.

Keywords: Stipend program, female education, age of marriage, marital match, fertility, Bangladesh

JEL: I25, J12, J13

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1. Introduction

Educating girls and young women is an important development objective, reflected, for example, in the United Nations Millennium Development Goals. Motivated by the potential long-term benefits of improving education levels, a number of developing countries have abolished school tuition fees, experimented with compulsory education laws and/or introduced stipend programs designed to increase educational attainment, particularly for girls. In this study, we examine the long-term effects of the Female Secondary School Stipend Program (FSSSP), which was introduced in Bangladesh in 1994 with the objective of improving rural girls' education. The program made secondary education free for girls residing in rural areas and provided a cash stipend for them.

Improved level of female education has been shown to affect many socioeconomic outcomes. First, it increases the age of marriage and reduce fertility (Breierova and Duflo, 2004; Currie and Moretti, 2003). This is partly because higher female education increases the opportunity cost of getting married early and having large families, leading women to have fewer children of higher quality (Becker and Lewis 1973). Increasing women's education also reduces child mortality and enhances other markers of child health (Breierova and Duflo, 2004; Strauss and Thomas, 1995). It improves knowledge of fertility choices, such as contraception use (Ashraf et al., 2014), and leads to better pregnancy behaviors (Grossman, 1972). Higher level of female education also enhances the postnuptial bargaining power of the wife vis-à-vis the husband in terms of intra-household bargaining power (Ashraf, 2009) and tipping bargaining power in favor of the wife changes household spending in ways that improve the health outcomes of children (Thomas, 1990). There is a robust, positive association between female education and higher levels of female autonomy and intra-household bargaining power including contraception use (Anderson and Eswaran, 2009; Ashraf, 2009; Ashraf et al., 2014; Bandiera et al., 2014).

In addition, higher human capital improves women's labor market options and opportunities outside the household. It provides women with an income stream that is a source of independence from their husbands. Interacting outside the home may also provide additional sources of information on issues such as family planning. In this sense, there is general consensus that female education, through broadening labor market opportunities and enhancing female empowerment, promotes economic development (Duflo, 2012).

Previous studies have examined the positive long-term effects of an increase in female education on marriage market outcomes (Aguero, and Bharadwaj, 2014; Bharadwaj, 2015). There is a rich literature in United States labor history, in particular, on the role of female

education in postponing marriage and improving the lot of many women (for example, see Goldin and Katz, 2002). We extend this literature through focusing on a developing country, Bangladesh, which has experienced important demographic changes over the course of the last few decades. The total fertility rate in Bangladesh declined from 4.6 in 1990 to 2.1 children in 2012. There has also been a significant increase in age at marriage of girls, particularly in rural areas. The mean age at marriage of girls increased from 14 years old in 1990 to 19 years old by 2010 (Bangladesh Bureau of Statistics, 2012). Use of contraception among married women aged 15-49, increased from 40 percent in 1991 to 61 percent in 2011. Over the same period, the adolescent fertility rate (births per 1,000 women aged 15-19) decreased from 168 to 82 (World Bank, 2014). By examining the link between the FSSSP and fertility, as well as marriage and employment outcomes for the woman, we contribute to understanding these demographic changes. This paper also looks at whether a woman's education is related to her partner's characteristics such as education through positive assortative mating (Behrman and Rosenzweig, 2002).

We compare rural girls who missed the stipend program marginally to those who receive the program because they meet the cut-off age. Since the differences between younger and (slightly) older girls could still drive the results, we use girls of the same age in urban areas, all of whom were ineligible, to control for the age effect. We focus on intent-to-treat effects which rely on a difference-in-difference method exploiting the geographic concentration and the introduction timing of the program. Our results show that girls who were eligible for the stipend received 1.2 years additional schooling, representing an average increase of 25 percent on the mean. Those girls who were eligible for the FSSSP got married on average between 0.11 and 0.17 years later for each year of exposure, desired 3 percent fewer children and had fertility rates that were 8-12 percent lower than the baseline. We find that eligible girls experienced greater self-empowerment and better labor market outcomes. In particular, those girls were able to make own decision about their health, going out of home to visit relatives and making purchases for own household goods. They were more likely to later work in formal sectors who would otherwise be working in the agricultural and informal sectors. In addition, those eligible for the stipend program were more likely to get married to highly educated men who were working in formal sectors and whose ages were closer to their own.

Our study extends the literature on the impact of conditional cash transfers and stipend programs in the sense that this is the first study to examine the long-term effects of stipend programs on marriage market outcomes in developing countries. Several countries in Latin

America implemented conditional cash transfer programs, such as Bolsa Familia in Brazil, PROGRESA-Oportunidades in Mexico, Familias en Acción in Colombia and Atención a Crisis in Nicaragua, however, evidence beyond direct effects on education is still scarce (see Stampini and Tornarolli, 2012 and Attanasio et al., 2010 for evaluation of conditional cash transfer on education). Short-term evaluation of programs targeting adolescent girls finds large gains associated with improved schooling outcomes. For example, Baird et al. (2010, 2011, and 2012) examine the effect of cash transfers in Malawi, designed to provide incentives to girls to remain in school, on early marriage, teenage pregnancy, self-reported sexual activity and HIV prevalence. Muralidharan and Prakash (2014) study the impact of providing school-aged girls with funds to purchase a bicycle to ride to school on female enrolment rates in the Indian state of Bihar. Bandiera et al. (2014) examine the effect of providing girls with vocational training on their engagement in income generating activities, cohabitation rates and teen pregnancies in Uganda. We study the stipend program almost two decades after it was introduced.[1] The FSSSP makes an interesting extension to the literature on conditional cash transfer and stipend programs. Compared to the cash transfers programs in Latin American, the FSSSP has been running longer; was implemented on a much larger scale and in a much poorer context; there were much larger gender disparities in enrolment rates at the baseline; and in both absolute terms, and as a proportion of household consumption, the actual transfers under the FSSSP were much smaller than what occurred in Latin America.

Overall, our estimates for the effect of the stipend program indicate that an increase in female education can have a significant impact on improving family planning and enhancing gender equality in developing countries. Our results are important given that key indicators of gender inequality, such as health, are persistent across generations (Bhalotra and Rawlings, 2011) and the gender inequality is reinforced by females marrying at a young age, which leads to high rates of fertility and infant mortality (Bhalotra and van Soest, 2008). The findings in this paper suggest that a relatively miniscule outlay via a stipend program can have large positive socioeconomic outcomes for individuals exposed to the program later in life.

2. Background and the FSSSP

[1] Baird et al. (2010, 2011, and 2012) and Bandiera et al. (2014) administer their follow up survey 12-24 months after the program was introduced. We use nationally representative surveys administered 10-17 years after the FSSSP was first introduced.

Primary school in Bangladesh, which spans from grade one to five, is free for all and it has been compulsory since 1990. Secondary education in Bangladesh begins in grade six and ends in grade 10. Higher secondary education, which is also referred to as college education, consists of grades 11 and 12. While primary school education in rural Bangladesh is dominated by public and NGO-run schools, secondary schools are largely non-government or private. At the primary level, about 80 percent of children in rural areas are enrolled in either public or NGO-run private schools. Non-government secondary schools, which are privately managed, receive most of their funding from the government. The government is responsible for meeting 90 percent of the salary cost of teachers in registered non-government schools and also allocates funds for maintenance and improvement of school infrastructure. Students in these secondary schools are required to pay a tuition fee, as well as other school fees such as examination fees.

The gender gap in schooling in the early 1990s was large. Only about one third of the total enrolees in secondary schools were girls in 1990, less than half the rate for boys. In 1991, 75 percent of girls aged 6 to 10 were enrolled in primary schools, but only 14 percent of girls aged 11 to 16 were enrolled in secondary schools. By comparison, 85 percent of primary school-age boys and 25 percent of secondary school-age boys were enrolled (World Bank, 2003). In 1991, only 5 percent of girls residing in rural areas completed the tenth grade, compared to 12 percent of boys (Khandker and Samad, 1996). In secondary schools, the dropout rate in the early 1990s was more than 60 percent with girls faring worse than boys (World Bank, 2002).

In order to address the gender inequality in secondary education, the Bangladesh government introduced the FSSSP for girls enrolled in secondary schools in 1994. The FSSSP was intended to cover bulk of the direct costs of education of all girls in rural areas who enter secondary school. Girls, but not boys, of secondary school age were eligible for a monthly sum, and additional payments for new books. In order to receive the stipend, a girl needed to satisfy three conditions: (i) a minimum of 75 percent attendance rate in school, (ii) at least a 45 percent test score in annual school exams, and (iii) remaining unmarried. The stipend varied between grades. In 1994, the annual stipends were equivalent to US$12 in Grade 6, US$13.50 in Grade 7, US$15 in Grade 8, US$30.25 in Grade 9 and US$36.25 in Grade 10. In addition, a book allowance in grade 9 and examination fee in grade 10 were available. It also covered the tuition fees which were directly paid to the school in which the student was enrolled. The cash stipend was paid directly to the girls in two annual instalments in the form of deposits into savings accounts in the nearest bank branch. The main objectives

of the FSSSPs were: a) to increase female enrolment and retention rates in secondary school; b) to enhance female employment opportunities; and c) delay the age at which girls married.

The FSSSP, which covered more than two million girls each year, was the flagship school program of the Bangladesh government in 1990s and 2000s, and it accounted a major share of the government's outlay for the secondary education of Bangladesh. Anecdotal evidence also suggests that there has been a marked increase in secondary school enrolment among girls in recent years. As can be seen from Figure 1, the growth of enrolment of girls in secondary schools has been considerably higher since the introduction of the FSSSP. The number of girls enrolled in secondary schools has exceeded the number of boys. According to the Bangladesh Bureau of Educational Information and Statistics (BANBEIS, 2013), at the secondary level, the male to female ratio in 1990 was 66:34, but, by 2012, it was 46:54. Khandker et al. (2003) show that in 1994, only 36 percent of female students who had been enrolled in grade 6 were retained in grade 10. By 1998, this proportion had increased to 59.2 percent. They find that girls' school enrolments in each of grades 6 to 10 increased since 1994, while the data did not show any such matching trend for boys' enrolments over the same period.

[Figure 1]

3. Empirical Strategy

The FSSSP was introduced in 1994 to reduce the cost of secondary education (grades 6-10) for rural girls across the country. The timing of introduction of the program generated exogenous variation in terms of the duration of exposure to the program for eligible girls, which is a key source of variation in our identification strategy. Girls enrolled in grades 6-10 were the target recipients of the stipend. However, the program was not introduced for all grades from its beginning. In 1994, only girls enrolled in grades 6 and 9 received a stipend; in 1995, girls enrolled in all grades, except grade 8, received a stipend, and since 1996 girls in all grades have received a stipend. Thus, girls who were enrolled in secondary school in grades 7-9 in 1994 received a stipend for two years only. The staggered introduction of the program, therefore, means that some girls received the full stipend for five years, some girls received a partial stipend for two years, and yet others, who were in grade 10 and above in 1994, received no stipend at all. We define three age cohorts, based on their eligibility for receiving the stipend:

i. Cohort 1: Girls who were born in, or after, 1983 were eligible to receive a stipend for the full five years of their secondary school education. They were 6-11 years old enrolled in primary school or in grade 6 of secondary school in 1994;
ii. Cohort 2: Girls who were born between 1980 and 1982 were eligible to receive a stipend for two years of their secondary school education. They were 12-14 years old enrolled in grades 7 to 9 in 1994; and
iii. Cohort 3: Girls who were born in 1979 or before. They were 15-23 years old and enrolled in grade 10 and above in 1994, and thus they were not eligible to receive the stipend. We set an upper bound of 23 years old in 1994 for cohort 3 because we are interested in focusing on girls who just missed out on the stipend.

If we were to compare cohorts 1 and 2 with cohort 3, the results could simply reflect differences in age cohorts as well as changes in commensurate educational policies over time. Hence, in addition to using girls in cohort 3, who just missed out on being eligible for the program, as a control, we take advantage of the fact that the program was not offered in urban areas, and we use urban girls corresponding to cohorts 1-3 inclusive as another control group.

Our identification strategy is thus two-pronged. First, it is based on the difference in eligibility between the cohorts of stipend-recipients and their immediately older female counterparts residing in rural areas. Second, since there could be other changes happening country wide, we use the corresponding urban cohorts (females residing in urban areas, aged 6-23 years old in 1994), who did not receive any stipend, to factor out any contemporaneous changes. Moreover, we control for the time trend by including separate birth-year dummies, age fixed effects as well as survey year dummies. We estimate the following reduced form equation to examine the effect of the FSSSP using a difference-in-difference strategy:

$$Y_i = \alpha_0 + \sum_{j=1}^{2} \beta_j Cohort_{ij} + \delta\, Rural_i + \sum_{j=1}^{2} \pi_j\, Cohort_{ij} \times Rural_i + \lambda X_i + v_i, \qquad (1)$$

where Y_i is the outcome variable of interest for individual woman *i*, such as years of schooling, fertility, age at marriage, occupation, age gap and spousal education.[2] *Rural* is a dummy variable indicating whether individual *i* resided in a rural area. $Cohort_{ij}$ *{j=1, 2}* represents dummy variables for cohorts 1 and 2 (base category is cohort 3). We are interested in estimating π_j, the coefficient representing interaction effects between *Rural* and the cohort

[2] Subscripts indicating survey year and geographic area (division) are omitted for simplicity.

dummies. The vector *X* includes the following set of controls: religion (Muslim or not), family type (an extended family as opposed to a nuclear family), wealth index (scale of 1-5; 5 is the richest), and an extensive set of fixed effects for (1) age, (2) birth year, (3) survey year, and (4) geographic area (division). We control for area fixed effects to absorb district differences and year fixed effects to capture any factors that are common to all districts within a given year. The standard errors are clustered by birth year×rural/urban level.

The coefficient estimate of π_1 reflects the effect of receiving the stipend for five years, after the overall changes in outcomes over time are accounted for by the $Cohort_1$ dummy variable. Based on the same reasoning, the estimate of π_2 represents the effect of receiving the stipend for two years. If the stipend program induces eligible girls to remain in school, get married at a later age and get married to a more highly educated husband, we expect π to have a positive sign, especially if the girl received the stipend for five years.

4. Data and Descriptive Statistics

We use the Bangladesh Demographic and Health Surveys (BDHS) data for the years 2004, 2007, and 2011. The BDHS is a nationally representative survey that covers the entire non-institutionalized population. The dataset covers 600 sample points (clustered at the thana level, which is the smallest tier of administration in Bangladesh) with up to 290 households selected under each cluster in both rural and urban areas throughout Bangladesh.

We limit our sample to females who were ever married and were aged 6-23 when the FSSSP was first introduced in 1994 (16-33 in 2004; 19-36 in 2007; and 23-40 in 2011). Table 1 presents the summary statistics of the variables used in the analysis. The first panel in Table 1 shows that about 37 percent of women in the sample were in cohort 1 and 24 percent would have received the stipend for five years as they resided in rural areas; 18 percent of women were in cohort 2 and 11 percent would have received the stipend for two years; and 64 percent of women lived in rural areas. The second panel shows statistics for individual characteristics, including individual's age, religion (Muslim or not), and education. The majority of women are Muslim (89 percent) and their average completed years of schooling were 4.83 years, which indicates that their average education level is slightly less than completion of primary school.

[Table 1]

The third panel presents marital and fertility variables. One notable statistic is the age at first marriage, which is one of our main outcomes of interest. The average age at first marriage among married women is 15.69 and by the average age of 17.74, these women had their first child. The average interval between marriage and birth of the first child was 2.1 years among the sample of women who were ever married. We break down these outcomes for each age at marriage to see what proportions of women were engaged in early marriage and childbearing. About half of the women included in the sample were married by age 15, and by the age of 18, close to 80 percent of them were married. Considering that the average age at grade 12 in higher secondary school is 17, it is likely that the educational opportunities for these women (who married early and experienced childbearing before age 18) would have been impeded as the women incurred family responsibilities at a relatively young age. The average number of children for each household is 2.42. Just under 60 percent of women had used contraception, while only 14 percent of women used contraception observable to their husbands.

The last panel shows husbands' characteristics. Husbands' education is slightly higher than that of the wives in the sample and their age is, on average, 9.2 years older than that of wives. Just over one-fifth of married women worked, while 98 percent of the husbands in the sample worked. More than a half of women and their husbands engaged in the agricultural or informal sectors as semi-skilled workers, such as rickshaw drivers, carpenters, domestic servants and factory workers.[3] Figure 2 depicts a histogram of two main outcome variables; age at first marriage and the age gap between husband and wife, showing that the high prevalence of early marriage and large age difference between spouses is not driven by a few outliers.

[Figure 2]

5. Results

5.1. Women's education

Table 2 reports the results for the effect of the FSSSP on education based on equation (1). The first column reports baseline results without including control variables and fixed effects. The last column adds a full set of controls including religion, wealth and family type as well as birth year, age, survey year and division fixed effects. While we find that these controls are

[3] The agricultural sector includes farmers, agricultural workers, fishermen and poultry-raising. Formal sector occupations include doctors, lawyers, dentists, accountants, businessmen, traders and imam/religious leaders.

significant predictors of outcome variables, their inclusion has little effect on our key regressors of interest: i.e., treatment effects of Cohort 1×rural and Cohort 2×rural. In column 6, for girls in cohort 1, exposure to the stipend program increases years of schooling by 1.21 years. This corresponds to 0.24 years for each year of exposure to the program or about 25 percent of the average years of schooling. For girls in cohort 2, participation in the FSSSP increases years of education by 0.66 years, corresponding to 0.33 years for each year of exposure or a 13.6 percent increase in the mean years of schooling. On an annualized basis, the effects of the FSSSP on additional schooling are very similar across both cohorts of girls exposed to the program.

Table 3 presents the results of women's education based on the indicators of key education categories. The FSSSP improves educational attainment for all education categories, but it does so to varying extents. In particular, column 2 shows that the FSSSP has the strongest effect on completion of primary school. The probability of completing primary school increases by 12.3 percentage points and 6.1 percentage points for cohort 1 and 2 if they reside in rural areas. This is because the stipend program is intended to promote secondary education among female students and they can only benefit from it after finishing primary school. Overall, the results in Tables 2 and 3 show that there is a large, and statistically significant, increase in educational attainment among eligible females resulting from the stipend program.

[Tables 2]

[Tables 3]

In Tables 2 and 3, we also report coefficient estimates for other control variables, although we avoid offering causal interpretations since these variables are likely to be endogenous to education. Among a few key variables, the results indicate that rural girls are, on average, less likely to attend school than their urban counterparts. The coefficient on *Rural* in Table 3 further indicates that this rural-urban difference in education is prominent at higher levels of education, particularly for those completing secondary school or beyond. The results also indicate that Muslim girls, on average, receive fewer years of education than non-Muslim girls, most of whom are Hindu. There is some survey evidence from India to suggest that Muslims place less value on education than Hindus, although one possible reason for this result is that Muslims expect lower rates of return to schooling (Bhalotra et al., 2008). The

coefficient on the wealth index is positive and significant, indicating that richer families are more likely to send girls to school as they can better afford school tuition fees. But it can also reflect reverse causality in that women with higher education currently have greater family wealth, possibly due to assortative matching or reflecting higher productivity in the labor market due to increased human capital.

5.2. Women's marriage, fertility, empowerment, and employment outcomes

Table 4 presents the results for the effect of the FSSSP on age at marriage, fertility and self-reported empowerment, evaluating the overall impact of the stipend program on various long-term outcomes. Column 1 shows that exposure to the FSSSP delays age at first marriage by 0.57 years or, on average, 0.11 years for each year of exposure for those in cohort 1, who received the stipend for five years. For girls in cohort 2, who received the stipend for two years, exposure to the FSSSP increases age at first marriage by 0.34 years, or 0.17 years for each year of exposure.[4] The results presented from columns 2 to 6 in Table 4 show fertility-related outcomes, including the use of contraceptives. Columns 2 and 3 indicate that participating in the stipend program leads to a reduction in fertility, both in the actual number and desired number of children regardless of whether eligible girls received full or partial stipends. These findings are broadly consistent with previous studies that have exploited exogenous variation in the implementation of compulsory education laws to identify the effect of education on fertility (for example, see Gunes, 2013; Osli and Long, 2008). The reduction in fertility is about 12 percent of the baseline for full-stipend cohorts and 8 percent for partial-stipend cohorts. In evaluating a more direct reproductive health intervention in Matlab, Bangladesh, Joshi and Schultz (2013) find that the treatment villages where better maternal and child health care and family planning programs were available experienced a decline in fertility of about 17 percent. Thus, the FSSSP appears to have smaller effects than programs directly targeted at lowering fertility, but the effects are still sizable.

[Table 4]

Exposure to the FSSSP increases age at first birth by 0.47 years, corresponding to 0.10 years for each year of exposure for cohort 1, and 0.30 years, corresponding to 0.15 years for each year of exposure for girls in cohort 2 (column 4). Given that the average return for each

[4] Field and Ambrus (2006) study the effect of early marriage on female education in Bangladesh and find that each additional year of delayed marriage is associated with 0.22 additional years of schooling.

year is higher for those who had two years of exposure than for those who had five years of exposure to the stipend program, the stipend program appears to exhibit decreasing returns to scale.

Following Black et al. (2011), we consider two mechanisms in explaining delayed age at first marriage and age at first birth; namely, the "incarceration effect" and "human capital effect." The incarceration effect indicates that girls in school are likely to delay their first pregnancy because it reduces time available to engage in non-school activities, such as marriage and sexual activity.[5] However, more educated women might have different perceptions about marriage compared to less educated women, and delay their marriage and decrease their fertility due to increased human capital. If the results in Table 4 reflect the incarceration effect, the stipend program should have little impact on behavior at ages beyond secondary education as the stipend program is targeted at girls in secondary schools. Table 5 shows that the stipend delayed marriage and first birth beyond age 15, the age at which one completes secondary schooling.

[Table 5]

Another indication that the effect of the stipend program does not merely reflect the incarceration effect is the fact that participating in the FSSSP has a small, but statistically significant, effect on the reduction in the *desired* number of children (column 3 in Table 4). The reduction in desired number of children is about 3 percent for females in both treatment groups. If the impact of the stipend program is solely due to the incarceration effect, we should not see any change in women's perception of marital outcomes. Our findings indicate that the stipend program plays a role in shaping women's perception due to increased human capital.

About 59 percent of women in the sample reported using some form of contraception.[6] Among those who currently use contraceptive methods, the pill was the most common method (49 percent), followed by injection (17 percent) and condom (9.7 percent). The pill and injection represent concealable methods while condom use is not. The FSSSP has little, or no, impact on the overall likelihood of using any contraceptive methods (column 5 in Table 4). However, treated women who received the full five years of the stipend were 2.7

[5] Jacob and Lefgren (2003) discuss the incarceration effect in the context of education. Black et al. (2011) use the term in the context of teen fertility.

[6] The types of contraceptive methods included in the BDHS are the pill, IUD, injection, condom, female sterilization, male sterilization, abstinence, withdrawal, implant and other.

percentage points more likely to use contraception that is observable to their husband; namely, condoms or male sterilization, as well as abstinence or withdrawal.[7] This result implies that the FSSSP allows women to use more observable actions to control their fertility, facilitating female empowerment. For example, Ashraf et al. (2012) show that the extent to which contraception methods are observable is an important measure of household bargaining.

The final column in Table 4 shows the results for female empowerment. We create an index of empowerment using three questions available in the BDHS. The BDHS asks questions related to female autonomy, such as which person usually decides on (1) the respondent's health care, (2) large purchases in the respondent's household; and (3) visits to family or relatives.[8] Correlations across these three measures are high, ranging from 0.5 to 0.62. Thus we use a factor analysis to create an index.[9] The factor loadings and correlation matrices between the empowerment index and three variables depicting autonomy are shown in appendix Tables A1 and A2. The empowerment index has mean 0 and standard deviation of 0.84. The results suggest that the stipend program has improved self-empowerment by about 0.05 standard deviations among those women who received the full stipend for five years. The results for the role of education in increasing female empowerment are consistent with previous findings for Brazil (La Ferrara et al., 2012) and India (Jensen and Oster, 2009).

Table 6 shows female employment outcomes. The stipend program had no apparent effect on the likelihood of women working (column 1). However, there is some suggestive evidence that the program induced a change in job characteristics. Eligible women were more likely to work in the formal sector and less likely to work in either the agricultural sector or informal sector. In the last column of Table 6, we show that the FSSSP is associated with an increase in women having a bank account, which could indicate greater financial literacy or independence (the information is available for 2011 only). Having a bank account might also imply being involved in the labor force and higher bargaining power within the household.

[Table 6]

[7] Abstinence and withdrawal are likely to be observable to husbands if women refuse having sex for birth control purposes. However, one can define visible contraceptive methods in a more stringent way by excluding abstinence and withdrawal and including only condom use and male sterilization. When we use this alternative definition, the point estimate for *Cohort 1×Rural* falls from 0.027 to 0.020, but remains statistically significant at 1%.

[8] There are more variables that potentially measure female autonomy available in one or two years of data, but only these three variables are available in all three years of the BDHS data.

[9] See Pitt et al. (2006) for a more detailed description of the factor analysis used in a similar context of creating an index for empowerment.

5.3. Spousal outcomes

Table 7 presents results for husbands' characteristics. Column 1 suggests that eligible women were more likely to marry highly educated partners. On average, schooling of husbands of women eligible for the program was 0.85 years (16 percent) higher than that of husbands of non-eligible women. Note that the coefficient for women's education in Table 2 is greater than that for husband's education, implying that the gap between spouse's educational attainments decreased, which is consistent with positive educational assortative mating.

[Table 7]

The remaining columns in Table 7 show the effects of the stipend program on the age gap between spouses and husband's occupation. The program has altered the stereotype that women in Bangladesh marry much older men. We find that higher education has encouraged women to marry partners much closer to their own age (column 2). Figure 2 depicts a large age difference between spouses in Bangladesh. The mean was 9.2 years (Table 1). Due to the program, the age gap between spouses has decreased by 0.436 years or, on average, by 4.7 percent among spouses in rural areas. Our result is consistent with Mansour and McKinnish (2014) who show that educational attainment and age differences among couples are inversely related.

Columns 3 to 5 in Table 7 present results for husbands' labor supply and occupation. Almost all husbands in the BDHS are reported to work, thus we examine only the type of occupation they are employed. The program reduced the likelihood that women married men who worked in the agricultural or informal sectors, while it increased the probability of husbands working in the formal sector by 6.9 percentage points for girls in cohort 1 and 8.4 percentage points for girls in cohort 2.

6. Robustness Checks

As a first robust check, we control for division-specific time effects to account for any region-specific effects, such as geographic shocks over different periods or time trends. Table 8 re-estimates our main results reported in Tables 2, 4 and 6 for the two treatment effects, but controls for a division-specific time fixed effects (Panel A). The results are almost identical to the results reported in the previous tables.

[Table 8]

Another potential concern with the main results is about the age gap between the oldest girls in the control (cohort 3) and the youngest girls receiving the full stipend (cohort 1). One might be worried that the age difference is too large to be a meaningful comparison. To test whether the previous results are sensitive to the age of those cohorts, we re-estimate the main specifications using a narrower age range. To do so, we eliminate from the sample the youngest girls (bottom two years) in cohort 1 and the oldest girls (top two years) in cohort 3. By restricting the sample to a narrower age range, the age of the affected cohorts should be more comparable to the older cohort who already finished secondary schooling at the time of the program introduction. Panel B in Table 8 presents the results. Now the sample consists of girls born between 1973-1987, compared to the original sample born between 1971-1989. The results are almost identical to the main findings. The last panel shows that our main results are robust to the addition of division-specific time fixed effects and using sample of more narrow age cohorts. [11]

As a final robustness check, we also examine the effect of the FSSSP including rural males of the same cohorts as additional controls. As the FSSSP did not provide benefits to males, it should have no direct effect on education of males of the same age as affected females. If the FSSSP confers any benefits to male siblings of a stipend recipient, for example, because of a relaxation of resource constraints on the family, we are likely to estimate the lower bound of the true effect of the FSSSP. We restrict our sample to *rural only*, but include both males and females, and run following regressions, using the same age restriction as before:

$$Educ_i = \alpha_0 + \sum_{j=1}^{2} \beta_j Cohort_{ji} + \delta\, Female_i + \sum_{j=1}^{2} \pi_j\, Cohort_{ji} \times Female_i + \lambda X_i + v_i, \quad (2)$$

where the dependent variable is years of education, *Cohort* and *X* are as defined in Section 3, and *Female* is a dummy variable indicating the individual is female. Due to data availability, we use education as the only dependent variable.[12] The results using the sample of rural men and women are reported in Table 9, progressively controlling for more variables. We find that

[11] The estimates for other outcomes that are not reported in Table 8 but included in the previous tables are robust to these three specifications. The results are available on request.

[12] Education is the only outcome variable that is common to an unbiased sample of women and men in the BDHS. Other outcome variables, such as age at first marriage, are only available for a small number of men.

the FSSSP had a statistically significant positive effect on education of rural girls in cohorts 1 and 2, which is of a similar magnitude to that when urban girls were used as a control group.

[Table 9]

7. Conclusion

The main objective of this paper is to examine the long-run effects of the FSSSP on fertility and marital outcomes for those women who received the full, or partial, stipend for secondary schooling. We take advantage of the fact that the introduction of the FSSSP generated exogenous variation in geographic concentration and duration of exposure to the program for girls of secondary school age at the time of its introduction. Our main finding is that the FSSSP significantly increased years of schooling for female students by 0.66 to 1.21 years and that girls exposed to the program married later and had lower desired, and actual, fertility. Stipend-eligible women also married more educated husbands who had a better occupation and who were closer in age to their own age.

Our results provide evidence of one important policy-induced avenue through which there has been a decline in fertility, and in particular adolescent fertility, in Bangladesh over the last two decades. In this sense, our findings help to explain the channels through which demographic transition in Bangladesh has occurred. This study suggests that the short-term decline in fertility from remaining in school is sustained in the longer term.

An important policy implication of our finding is that stipend programs, such as the FSSSP in Bangladesh, can have considerable impact on marital and fertility outcomes at low costs over the long-term. In a setting with initial low levels of education and high prevalence of early marriages, even a modest transfer can have a large impact on improving the socioeconomic status of women later in life, given that the actual transfers made via the FSSSP were much smaller in both absolute and relative terms than the more-often studied conditional cash transfer programs in Latin America. As such, our results should be of value when designing similar programs for other countries.

References

Aguero, J.M. and P. Bharadwaj (2014). Do the more educated know more about health? Evidence from schooling and HIV knowledge in Zimbabwe. *Economic Development and Cultural Change* 62(3): 489-517.

Anderson, S. and M. Eswaran (2009). What determines female autonomy? Evidence from Bangladesh. *Journal of Development Economics* 90: 179-191.

Ashraf, N. (2009). Spousal control and intra-household decision making: An experimental study in the Philippines. *American Economic Review* 99: 1245-1277.

Ashraf, N., E. Field and J. Lee (2014). Household bargaining and excess fertility: An experimental study in Zambia. *American Economic Review* 104: 2210-2237.

Attanasio, O., E. Fitzsimons, A. Gomez, M. I. Gutierrez, C. Meghir and A. Mesnard (2010). Children's Schooling and Work in the Presence of a Conditional Cash Transfer Program in Rural Colombia. *Economic Development and Cultural Change* 58(2), 181-210.

Baird, S., E. Chirwa, C. McIntosh and B. Özler (2010). The short-term impacts of a schooling conditional cash transfer program on the sexual behavior of young women. *Health Economics* 19: 55–68.

Baird, S., C. McIntosh and B. Özler (2011). Cash or condition? Evidence from a cash transfer experiment. *Quarterly Journal of Economics* 126(4): 1709-1753.

Baird, S., R. S. Garfen, C. McIntosh and B. Özler. (2012). Effect of a cash transfer programme for schooling on prevalence of HIV and herpes simplex type 2 in Malawi: A cluster randomised trial. *Lancet* 379: 1320-1329.

BANBEIS (2013). Secondary School Dropout Survey. Dhaka, Bangladesh Bureau of Educational Information and Statistics (BANBEIS), Ministry of Education.

Bandiera, O., N. Buehren, R. Burgess, M. Goldstein, S. Gulesci, I. Rasul and M. Sulaiman (2014). Women's empowerment in action: Evidence from a randomized control trial in Africa. Manuscript, LSE.

Bangladesh Bureau of Statistics, BBS (2012). Statistical Pocket Book of Bangladesh. Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka: Statistics Division.

Becker, G. and H. G. Lewis (1973). On the interaction between the quantity abd quality of children. *Journal of Political Economy* 81: S279-S288.

Behrman, J. R. and M. R. Rosenzweig (2002). Does increasing women's schooling raise the schooling of the next generation? *American Economic Review* 92(1): 323-334.

Bhalotra, S., A. Langer, F. Stewart and B. Zamora (2008). What lies behind persistent Muslim/Hindu inequalities in India? CRISE Working Paper. Centre for Research on Inequality, Human Security and Inequality, Oxford.

Bhalotra, S. and S. Rawlings (2011). Intergenerational persistence in health in developing countries: The penalty of gender inequality? *Journal of Public Economics* 95: 283-299.

Bhalotra, S. and A. van Soest (2008). Birth spacing, fertility and neonatal mortality in India: Dynamics, frailty and fecundity. *Journal of Econometrics* 143: 274-290.

Bharadwaj, P. (2015). Impact of changes in marriage law: Implications for fertility and school enrollment. *Journal of Human Resources.* in press.

Black, S., P. J. Devereux and K. G. Salvanes (2008). Staying in the classroom and out of the maternity ward? The effect of compulsory schooling laws on teenage births. *The Economic Journal* 118: 1025-1054.

Bransia, B., S. Klasen and M. Ziegler (2013). Gender inequality in social institutions and gendered development outcomes. *World Development* 45: 252-268.

Breierova, L and E. Duflo (2004). The Impact of Education on Fertility and Child Mortality: Do Fathers Really Matter Less Than Mothers? NBER Working Paper No. 10513.

Currie, J. and E. Moretti (2003). Mother's education and the intergenerational transmission of human capital: evidence from college openings. *Quarterly Journal of Economics* 118(4): 1495-1532.

Duflo, E. (2012). Women empowerment and economic development. *Journal of Economic Literature* 50(4): 1051-79.

Field, E. and A. Ambrus (2006). Early marriage and female schooling in Bangladesh. *Journal of Political Economy* 116: 881-930.

Goldin, C. and L. Katz (2001). The power of the pill: Oral contraceptives and women's career and marriage decisions. *Journal of Political Economy* 110: 730-770.

Grossman, M. (1972). On the concept of health capital and demand for health. *Journal of Political Economy* 80(2): 223-255.

Gunes, P.M. (2013). The impact of female education on fertility: Evidence from Turkey. Grand Challenges Canada Working Paper Series GCC 13-01.

Jacob, B. A. and L. Lefgren (2003). Are idle hands the devil's workshop? Incapacitation, concentration, and juvenile crime. *American Economic Review* 93(5): 1560-1577.

Jensen, R. and E. Oster (2009). The power of TV: Cable television and women's status in India. *Quarterly Journal of Economics* 124(3): 1057-1094.

Joshi, S. and P. Schultz (2013). Family planning and women's and children's health: long-term consequences of an outreach program in Matlab, Bangladesh. *Demography* 50:149-180.

Khandker, S. R. and H. A. Samad (1996). Education achievements and school efficiency in rural Bangladesh. Washington, D.C.: World Bank.

Khandker, S. R., M. M. Pitt and N. Fuwa (2003). Subsidy to promote girls' secondary education: the female stipend program in Bangladesh. Washington, D.C.: World Bank.

La Ferrara, E., A. Chong and S. Duryea (2012). Soap operas and fertility: Evidence from Brazil. *American Economic Journal: Applied Economics* 4(4): 1-31.

Mansour, H. and T. McKinnish (2014). Who marries differently aged spouses? Ability, education, occupation, earnings and appearance. *Review of Economics and Statistics* 96: 577-580.

Muralidharan, K. and N. Prakash (2014). Cycling to school: Increasing secondary school enrollment for girls in India. Manuscript, UC San Diego and University of Connecticut.

Osli, U. O. and B. T. Long (2008). Does female schooling reduce fertility? Evidence from Nigeria. *Journal of Development Economics* 87(1): 57-75.

Pitt, M. M., S. R. Khandker and J. Cartwright (2006). Empowering women with micro finance: evidence from Bangladesh. *Economic Development and Cultural Change* 54(4): 791-831.

Stampini, M. and L. Tornarolli (2012). The growth of conditional cash transfers in Latin America and the Caribbean: Did they go too far? IZA Policy Paper, No. 49.

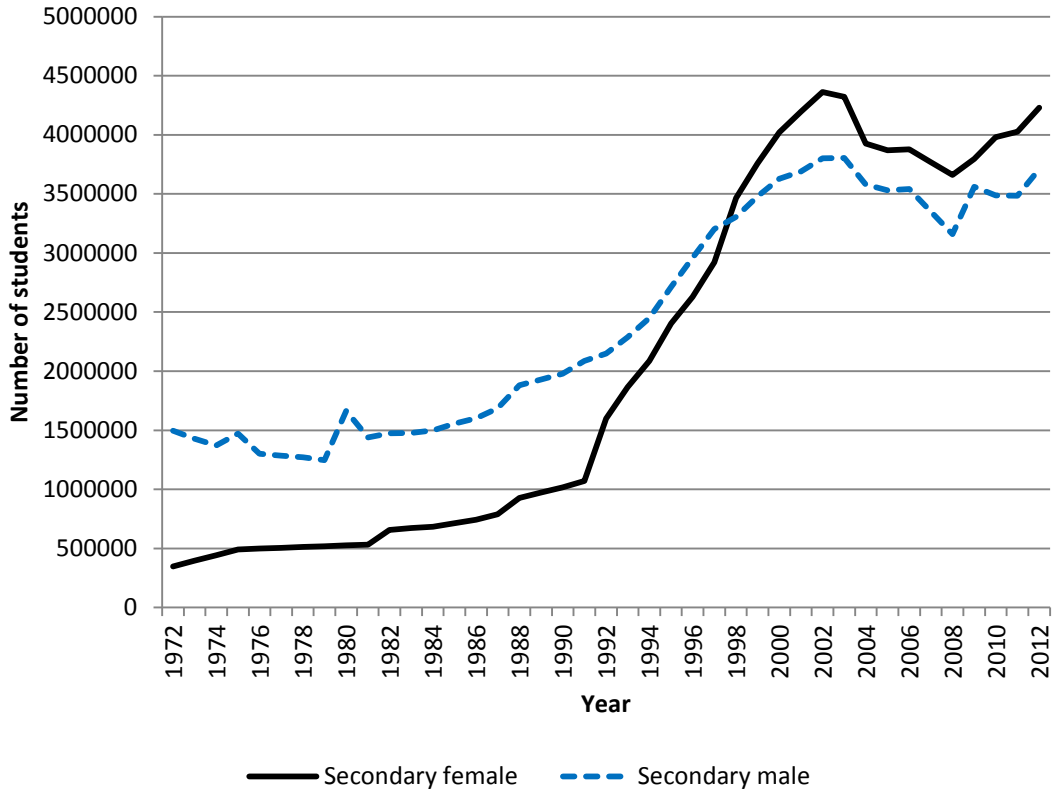
Strauss, J. and D. Thomas (1995). Human resources: empirical modeling of household and family decisions. In J. Behrman and T.N. Srinivasan (Eds.) *Handbook of Development Economics,* Vol. 3A, Amsterdam: Elsevier.

Thomas, D. (1990). Intra-household resource allocation: an Inferential approach. *Journal of Human Resources* 25: 635-664.

World Bank (2002). Implementation Completion Report (IDA 24690) on a Credit to the Peoples' Republic of Bangladesh for a Female Secondary School Assistance Project. Washington, D.C.: World Bank.

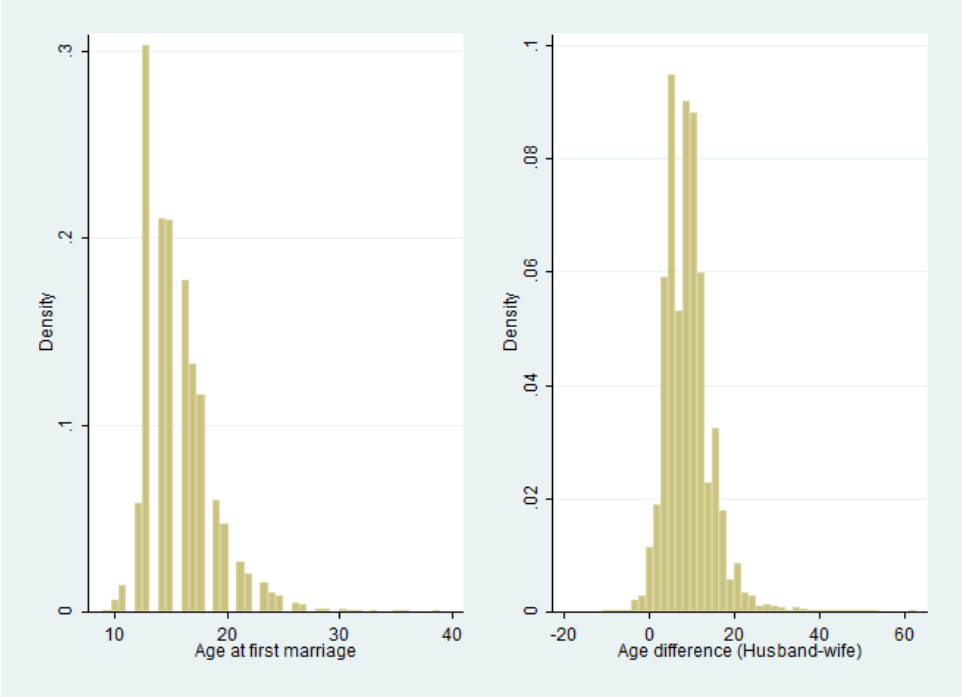
World Bank (2014). World Development Indicators. Washington, D.C.: World Bank.

Figure 1: Secondary enrolment by gender, 1972-2012



Source: BANBEIS 2012, Ministry of Education, Dhaka, BANBEIS-Educational database.

Figure 2: Distribution of age at first marriage and age gap



Source: Bangladesh Demographic and Health Surveys, 2004, 2007 and 2011.

Table 1: Summary Statistics

Variables	Mean	Std. Dev.	Min	Max
Cohort 1 (received full stipend for 5 years)	0.37	0.48	0	1
Cohort 2 (received partial stipend for 2 years)	0.18	0.38	0	1
Cohort 1 × Rural	0.24	0.43	0	1
Cohort 2 × Rural	0.11	0.32	0	1
Rural	0.64	0.48	0	1
Wealth index (Scale of 1-5; 5 is the richest)	3.17	1.45	1	5
Extended family (vs. nuclear family)	0.49	0.50	0	1
Individual Characteristics				
Age (years)	27.89	5.77	16	40
Religion (Muslim = 1)	0.89	0.31	0	1
Wife's education (years)	4.83	4.23	0	18
Marital and Fertility Outcomes				
Age at first marriage (years)	15.69	2.99	9	39
Age at first child born (years)	17.74	3.13	12	40
Fertility (number of children)	2.42	1.55	0	14
Desired number of children	2.25	0.69	0	10
Contraceptive use (yes = 1)	0.59	0.49	0	1
Use of contraception observable to husband	0.14	0.35	0	1
Wife's Employment Variables				
Whether wife works	0.22	0.42	0	1
Whether wife works in agricultural sector	0.07	0.25	0	1
Whether wife works in informal sector	0.06	0.23	0	1
Whether wife works in formal sector	0.10	0.30	0	1
Whether wife has a bank account	0.33	0.47	0	1
Husband's Characteristics and Employment Variables				
Husband's Education (years)	5.20	4.89	0	19
Husband age	37.10	7.79	16	95
Age gap (Husband age - wife age)	9.21	5.41	-11	63
Whether husband works in agricultural sector	0.26	0.44	0	1
Whether husband works in informal sector	0.36	0.48	0	1
Whether husband works in formal sector	0.38	0.49	0	1

Note: Bangladesh Demographic and Health Surveys, 2004, 2007 and 2011. Samples are restricted to ever married women. Number of observation is 24329 except 'desired number of children' (N=23958), 'age at first child born' (N=22397), and 'whether wife has a bank account' (N=10425, available in BDHS 2011 only).

Table 2: Effect of the FSSSP on Women's Education (Year)

	(1) Education	(2) Education	(3) Education	(4) Education	(5) Education	(6) Education
Cohort 1 × Rural	1.431	1.209	1.189	1.215	1.216	1.210
	(0.275)***	(0.287)***	(0.071)***	(0.074)***	(0.073)***	(0.071)***
Cohort 2 × Rural	0.655	0.681	0.671	0.679	0.678	0.662
	(0.266)**	(0.267)**	(0.074)***	(0.073)***	(0.072)***	(0.070)***
Cohort 1	0.852	0.925	2.191	2.153	1.103	1.036
	(0.181)***	(0.194)***	(0.080)***	(0.259)***	(0.235)***	(0.213)***
Cohort 2	0.561	0.472	1.185	2.335	1.053	1.035
	(0.178)***	(0.183)**	(0.069)***	(0.205)***	(0.210)***	(0.188)***
Rural	-2.528	-0.443	-0.431	-0.439	-0.428	-0.423
	(0.237)***	(0.254)*	(0.060)***	(0.059)***	(0.060)***	(0.061)***
Muslim		-0.504	-0.525	-0.504	-0.511	-0.583
		(0.105)***	(0.103)***	(0.103)***	(0.104)***	(0.097)***
Wealth Index		1.506	1.512	1.507	1.508	1.526
		(0.040)***	(0.040)***	(0.039)***	(0.040)***	(0.041)***
Extended family		0.490	0.457	0.511	0.506	0.501
		(0.067)***	(0.067)***	(0.071)***	(0.071)***	(0.069)***
Birth year FE	No	No	Yes	Yes	Yes	Yes
Age FE	No	No	No	Yes	Yes	Yes
Year FE	No	No	No	No	Yes	Yes
Division FE	No	No	No	No	No	Yes
Constant	5.625	-0.248	-0.979	-3.180	-1.634	-0.630
	(0.174)***	(0.219)	(0.178)***	(0.446)***	(0.217)***	(0.209)***
Observations	24329	24329	24329	24329	24329	24329
R-squared	0.086	0.317	0.325	0.329	0.330	0.345

Note: Robust standard errors are clustered by birth year×rural/urban level and are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3: Effect of the FSSSP on Women's Education (Based on education category)

	(1) Having education at all	(2) Completion of primary school	(3) Completion of secondary school	(4) Completion of higher studies
Cohort 1 × Rural	0.104	0.123	0.051	0.057
	(0.008)***	(0.010)***	(0.007)***	(0.007)***
Cohort 2 × Rural	0.050	0.061	0.025	0.028
	(0.007)***	(0.010)***	(0.009)**	(0.008)***
Cohort 1	0.164	0.136	-0.006	-0.035
	(0.020)***	(0.020)***	(0.021)	(0.019)*
Cohort 2	0.160	0.122	0.016	0.004
	(0.015)***	(0.017)***	(0.018)	(0.016)
Rural	-0.004	0.009	-0.067	-0.068
	(0.010)	(0.007)	(0.007)***	(0.007)***
Muslim	-0.028	-0.057	-0.033	-0.022
	(0.009)***	(0.012)***	(0.008)***	(0.007)***
Wealth Index	0.115	0.163	0.080	0.056
	(0.006)***	(0.004)***	(0.005)***	(0.004)***
Extended family	0.023	0.048	0.035	0.026
	(0.007)***	(0.007)***	(0.006)***	(0.004)***
Constant	0.315	-0.072	-0.123	-0.070
	(0.019)***	(0.021)***	(0.024)***	(0.024)***
Observations	24329	24329	24329	24329
R-squared	0.212	0.278	0.161	0.120

Note: Women's birth year, age, year, and division fixed effects are controlled. Robust standard errors are clustered by birth year×rural/urban level and are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Effect of the FSSSP on Women's Marriage and Fertility Outcomes

	(1) Age at first marriage	(2) Number of children	(3) Desired number of children	(4) Age at first birth	(5) Use of contraception	(6) Use of contra. observable by husband	(7) Women's empowerment
Cohort 1 × Rural	0.577	-0.287	-0.067	0.476	-0.007	0.027	0.038
	(0.073)***	(0.031)***	(0.013)***	(0.084)***	(0.009)	(0.007)***	(0.013)***
Cohort 2 × Rural	0.339	-0.196	-0.050	0.303	-0.014	-0.005	-0.028
	(0.077)***	(0.028)***	(0.015)***	(0.064)***	(0.010)	(0.011)	(0.029)
Cohort 1	-0.508	-1.831	-0.151	-2.218	-0.058	-0.040	-0.311
	(0.162)***	(0.068)***	(0.027)***	(0.146)***	(0.023)**	(0.016)**	(0.040)***
Cohort 2	-0.449	-1.446	-0.115	-1.098	-0.046	0.010	-0.207
	(0.144)***	(0.041)***	(0.021)***	(0.205)***	(0.017)***	(0.012)	(0.052)***
Rural	-0.545	0.271	0.141	-0.384	-0.045	-0.042	-0.054
	(0.069)***	(0.030)***	(0.008)***	(0.069)***	(0.007)***	(0.005)***	(0.015)***
Muslim	-0.991	0.437	0.225	-0.868	-0.091	-0.004	0.157
	(0.082)***	(0.042)***	(0.011)***	(0.068)***	(0.011)***	(0.009)	(0.020)***
Wealth Index	0.502	-0.229	-0.051	0.421	0.013	0.028	0.011
	(0.028)***	(0.011)***	(0.003)***	(0.029)***	(0.002)***	(0.002)***	(0.005)**
Extended family	0.654	-0.187	-0.009	0.640	-0.089	-0.008	-0.007
	(0.059)***	(0.018)***	(0.009)	(0.073)***	(0.008)***	(0.005)	(0.011)
Observations	24329	24329	23958	22397	24329	24329	23792
R-squared	0.138	0.385	0.102	0.113	0.061	0.035	0.032

Note: Women's birth year, age, year, and division fixed effects are controlled. Robust standard errors are clustered by birth year×rural/urban level and are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Effect of the FSSSP on Age at First Marriage and Birth

	(1) Age 14	(2) Age 16	(3) Age 18	(4) Age 20	(5) Age 22
			Panel A: Married by		
Cohort 1 × Rural	-0.034	-0.046	-0.048	-0.053	-0.041
	(0.008)***	(0.008)***	(0.009)***	(0.007)***	(0.006)***
Cohort 2 × Rural	-0.028	-0.023	-0.020	-0.017	-0.027
	(0.009)***	(0.006)***	(0.009)**	(0.009)*	(0.008)***
Observations	24329	24329	24329	24329	24329
R-squared	0.086	0.120	0.098	0.072	0.050
Mean dependent variable	0.413	0.683	0.857	0.932	0.965
			Panel B: First birth by		
Cohort 1 × Rural	0.002	0.012	-0.028	-0.028	-0.029
	(0.005)	(0.012)	(0.010)**	(0.010)**	(0.009)***
Cohort 2 × Rural	0.010	-0.006	-0.015	-0.007	-0.008
	(0.005)*	(0.007)	(0.011)	(0.011)	(0.012)
Observations	24329	24329	24329	24329	24329
R-squared	0.019	0.055	0.071	0.071	0.079
Mean dependent variable	0.113	0.366	0.609	0.770	0.849

Note: Women's birth year, age, year and division fixed effects are controlled. Robust standard errors are clustered by birth year×rural/urban level and are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 6: Effect of the FSSSP on Women's Occupation

	(1) Work	(2) Work in agricultural sector	(3) Work in informal sector	(4) Work in formal sector	(5) Having bank account
Cohort 1 × Rural	-0.018	-0.028	-0.001	0.012	0.058
	(0.011)	(0.006)***	(0.005)	(0.004)**	(0.014)***
Cohort 2 × Rural	-0.013	-0.005	-0.015	0.008	0.062
	(0.010)	(0.006)	(0.006)**	(0.005)	(0.018)***
Cohort 1	-0.069	-0.011	-0.022	-0.036	-0.037
	(0.032)**	(0.031)	(0.014)	(0.012)***	(0.026)
Cohort 2	-0.070	-0.025	-0.014	-0.033	-0.026
	(0.026)**	(0.021)	(0.011)	(0.011)***	(0.026)
Rural	-0.077	0.041	-0.052	-0.067	0.022
	(0.011)***	(0.007)***	(0.005)***	(0.003)***	(0.010)**
Muslim	-0.061	-0.031	-0.006	-0.024	0.031
	(0.014)***	(0.008)***	(0.006)	(0.007)***	(0.013)**
Wealth Index	-0.034	-0.023	-0.022	0.011	0.189
	(0.003)***	(0.002)***	(0.003)***	(0.002)***	(0.003)***
Extended family	-0.025	-0.014	-0.007	-0.003	0.041
	(0.006)***	(0.003)***	(0.003)**	(0.004)	(0.009)***
Observations	24329	24329	24329	24329	10425
R-squared	0.068	0.091	0.033	0.030	0.323

Note: Women's birth year, age, year and division fixed effects are controlled. Robust standard errors are clustered by birth year×rural/urban level and are reported in parentheses. Information on whether the woman has a bank account (Column 5) is available only in 2011 BDHS. *** p<0.01, ** p<0.05, * p<0.1.

Table 7: Effect of the FSSSP on Husband's Characteristics

	(1) Husband's education (year)	(2) Age gap	(3) Work in agricultural sector	(4) Work in informal sector	(5) Work in formal sector
Cohort 1 × Rural	0.858	-0.436	-0.060	-0.013	0.069
	(0.067)***	(0.096)***	(0.010)***	(0.010)	(0.011)***
Cohort 2 × Rural	0.544	-0.572	-0.057	-0.037	0.084
	(0.060)***	(0.098)***	(0.006)***	(0.009)***	(0.010)***
Cohort 1	-0.059	1.126	-0.015	0.076	-0.048
	(0.208)	(0.275)***	(0.023)	(0.031)**	(0.031)
Cohort 2	0.138	1.197	0.004	0.066	-0.064
	(0.154)	(0.214)***	(0.016)	(0.024)**	(0.025)**
Rural	-0.398	0.383	0.208	-0.110	-0.106
	(0.070)***	(0.108)***	(0.008)***	(0.008)***	(0.008)***
Muslim	-0.673	-0.142	-0.003	0.057	-0.065
	(0.085)***	(0.139)	(0.009)	(0.010)***	(0.011)***
Wealth Index	1.827	-0.080	-0.070	-0.017	0.085
	(0.035)***	(0.046)*	(0.003)***	(0.003)***	(0.003)***
Extended family	0.521	-0.404	0.003	-0.030	0.021
	(0.077)***	(0.080)***	(0.006)	(0.007)***	(0.006)***
Observations	24329	24329	24329	24329	24329
R-squared	0.321	0.014	0.157	0.074	0.118

Note: Age gap is husband's age minus woman's age. Women's birth year, age, year, and division fixed effects are controlled. Robust standard errors are clustered by birth year×rural/urban level and are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 8: Robustness Checks with Division-specific Time Fixed Effects and Narrowed Age Cohorts

	(1) Education	(2) Age at first marriage	(3) Number of children	(4) Age at first birth	(5) Women's empowerment	(6) Women at formal sector	(7) Husband's education	(8) Age gap	(9) Husband at formal sector
Panel A: Controlling for division-specific time fixed effects									
Cohort 1 × Rural	1.203	0.577	-0.287	0.483	0.036	0.011	0.849	-0.433	0.069
	(0.069)***	(0.072)***	(0.031)***	(0.084)***	(0.013)***	(0.004)**	(0.065)***	(0.097)***	(0.011)***
Cohort 2 × Rural	0.670	0.334	-0.199	0.308	-0.031	0.009	0.556	-0.571	0.084
	(0.069)***	(0.077)***	(0.028)***	(0.066)***	(0.029)	(0.005)	(0.059)***	(0.099)***	(0.010)***
Observations	24329	24329	24329	22397	23792	24329	24329	24329	24329
R-squared	0.347	0.140	0.386	0.114	0.034	0.031	0.324	0.015	0.120
Panel B: Sample of narrowed age cohorts									
$\widehat{\text{Cohort}}$ 1 × Rural	1.114	0.564	-0.268	0.432	0.027	0.011	0.848	-0.468	0.066
	(0.075)***	(0.081)***	(0.038)***	(0.091)***	(0.012)**	(0.005)*	(0.078)***	(0.107)***	(0.012)***
$\widehat{\text{Cohort}}$ 2 × Rural	0.674	0.397	-0.202	0.316	-0.038	0.010	0.579	-0.648	0.079
	(0.075)***	(0.087)***	(0.034)***	(0.058)***	(0.029)	(0.005)*	(0.075)***	(0.099)***	(0.010)***
Observations	18925	18925	18925	17682	18541	18925	18925	18925	18925
R-squared	0.345	0.146	0.335	0.114	0.026	0.032	0.328	0.015	0.115
Panel C: Controlling for division-specific time fixed effects with sample of narrowed age cohorts									
$\widehat{\text{Cohort}}$ 1 × Rural	1.113	0.565	-0.270	0.437	0.026	0.011	0.850	-0.463	0.067
	(0.076)***	(0.080)***	(0.039)***	(0.090)***	(0.013)**	(0.005)*	(0.078)***	(0.108)***	(0.012)***
$\widehat{\text{Cohort}}$ 2 × Rural	0.685	0.392	-0.205	0.321	-0.040	0.010	0.593	-0.650	0.080
	(0.075)***	(0.087)***	(0.034)***	(0.060)***	(0.029)	(0.005)*	(0.074)***	(0.099)***	(0.010)***
Observations	18925	18925	18925	17682	18541	18925	18925	18925	18925
R-squared	0.348	0.148	0.337	0.115	0.029	0.033	0.331	0.016	0.118

Note: $\widehat{\text{Cohort}}$ 1 and $\widehat{\text{Cohort}}$ 2 represent narrowed age groups. $\widehat{\text{Cohort}}$ 1 (receiving full stipend) consists of women aged 25-28 years, $\widehat{\text{Cohort}}$ 2 (receiving partial stipend) is 29-31 years old, and the control group is 32-38 years old in 2011. Age gap is husband's age minus woman's age. Regressions also include the full set of controls as in Table 2. Women's birth year, age, year, and division fixed effects are also controlled. Robust standard errors are clustered by birth year×rural/urban level and are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 9: Effect of the FSSSP on Education (year) Using Rural Males as a Control

	(1) Education	(2) Education	(3) Education	(4) Education	(5) Education	(6) Education
Cohort 1 × Female	1.430	1.455	1.480	1.483	1.493	1.497
	(0.277)***	(0.249)***	(0.213)***	(0.135)***	(0.129)***	(0.130)***
Cohort 2 × Female	0.810	0.805	0.791	0.813	0.815	0.829
	(0.288)***	(0.222)***	(0.179)***	(0.114)***	(0.113)***	(0.119)***
Cohort 1	1.077	0.797	0.877	-0.654	0.840	0.786
	(0.154)***	(0.103)***	(0.120)***	(0.215)***	(0.365)**	(0.360)**
Cohort 2	0.516	0.404	0.419	-0.393	1.119	1.039
	(0.207)**	(0.110)***	(0.113)***	(0.144)**	(0.262)***	(0.252)***
Rural	-1.471	-1.396	-1.429	-1.438	-1.444	-1.448
	(0.228)***	(0.203)***	(0.158)***	(0.080)***	(0.077)***	(0.075)***
Wealth Index		1.513	1.516	1.521	1.520	1.536
		(0.033)***	(0.032)***	(0.031)***	(0.031)***	(0.031)***
Extended family		0.296	0.295	0.297	0.296	0.304
		(0.059)***	(0.059)***	(0.060)***	(0.060)***	(0.058)***
Birth year FE	No	No	Yes	Yes	Yes	Yes
Age FE	No	No	No	Yes	Yes	Yes
Year FE	No	No	No	No	Yes	Yes
Division FE	No	No	No	No	No	Yes
Observations	34389	34389	34389	34389	34389	34389
R-squared	0.056	0.304	0.307	0.312	0.313	0.322

Note: Robust standard errors are clustered by birth year×rural/urban level and are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Appendix Table A1: Factor loadings used in creating women empowerment index

	Factor
Women usually decides on own health care (1 = yes, 0 = no)	0.64
Women usually decides on large household purchases (1 = yes, 0 = no)	0.74
Women usually decides on visits to family or relatives (1 = yes, 0 = no)	0.73

Appendix Table A2: Correlation between empowerment index and decision variables

	Empowerment index	Health care	Large purchase	Visits Family
Empowerment index	1			
Women usually decides on own health care	0.76	1		
Women usually decides on large household purchases	0.88	0.52	1	
Women usually decides on visits to family or relatives	0.86	0.50	0.61	1