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Subhasish Dey & Tanisha Ghosal

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Can Conditional Cash Transfer Defer Child Marriage? Impact of *Kanyashree Prakalpa* in West Bengal, India

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Tanisha Ghosal, University of Warwick
Subhasish Dey, University of Warwick

Abstract

This paper studies the impact of a conditional cash transfer program called Kanyashree Prakalpa (KP) in the Indian state of West Bengal that aimed to improve the status and well-being of girls by reducing incidence of child marriage and increasing the secondary or higher education of girls till at least 18 years of age. Using the data from multiple rounds of National Family Health Survey (NFHS), difference-in-differences and triple-difference are employed considering the younger cohort (exposed to the program) as the treated group, the older cohort (not exposed to the program) as the control group, and the neighbouring state of Jharkhand as a comparison state. The analysis suggests that the KP program has reduced the probability of child marriage by 6.7 percent and increased the probability of secondary or higher educational attainment by 6 percent. The study contributes to the scarce literature of the significant long-term impact of the KP program towards women's well-being and empowerment.

Key Words: *Kanyashree Prakalpa, West Bengal, Impact, Education, Child Marriage*
JEL Classification: I38, J12,
Corresponding Author: Dr. Subhasish Dey, Subhasish.dey@warwick.ac.uk

1. INTRODUCTION

1.1. BACKGROUND

Gender inequality has been a pervasive and long running phenomenon across several South Asian countries due to the deep-rooted patriarchal values and social norms. A traditionally and culturally ingrained parental preference for sons led to the rise of consistent discrimination against the girl child even before they are born. The introduction of prenatal screening technologies and extensive access to abortions led to the selective abortion of female foetuses (Westley & Choe, 2007). This phenomenon of persistent gender inequality was starkly brought into attention by the Nobel Laureate, Amartya Sen (1990) and termed it as Asia's "missing women". The incentives for parents to disinvest in the girl child emanated from the traditional belief of sons being the major source of financial support and caregivers for parents at their old age, the desire to continue the family name and the dowry system. Such preferences are reflected in the sex ratio[1] being still favourable to males.

Gender inequality reinforces several other consequences faced by girls, such as, lower access to education, labour market opportunities, political representation, and, even legal rights (Duflo, 2005). In cases where the girl child somehow manages to conquer health issues and acquires basic education, it is rare that they can escape child marriage[2] (UNICEF, South Asia). Child marriage has severe consequences that affect both women and the economy in multiple ways. Firstly, it affects labour market prospects by reducing the scope for formal education and labour market skills (Field & Ambrus, 2008). Secondly, it implies early motherhood and drive younger brides towards home production rather than personal development (Wang & Wang, 2017). Thirdly, it increases the risk for sexually transmitted diseases, cervical cancer, and obstetric fistulas (Nour, 2006). This perpetuates higher population growth, generational cycles of illiteracy and poor health, deepening poverty and staggering the economic growth. Socio economic exclusion of child brides for a lifetime leads to feminization of poverty. Thus, conquering child marriage can open up new avenues for girls to be empowered through increased education, better employment opportunities, improved health conditions, social-status and greater participation in household decisions (Dhamija & Roy Chowdhury, 2020).

[1] Sex ratio is defined as the number of females per 1000 males as adopted by the Census of India.
[2] Child marriage is defined as any formal marriage or informal union before the age of 18 as adopted by United Nations International Children's Emergency Fund (UNICEF).

Gender equality and women empowerment has been one of the most important goals (Goal number 3) among the 8 Millennium Development Goals (MDGs) of United Nations. Statistics compiled by UNICEF (2019) suggest among all the South Asian countries Bangladesh has the highest prevalence of child marriage (59%), followed by Nepal (40%), Afghanistan (35%), and India (27%). The largest number of girl child brides reside in India – one-third of the global total. To eradicate child marriage and to prohibit the solemnization of such marriages within Indian society, the Government of India enacted the Prohibition of Child Marriage Act, 2006. Despite the existence of the Act for several years, it had been a hard battle to fight in India because of its roots in traditional, cultural and religious protection. The presence of certain barriers like poverty, weak enforcement of laws, perceived low value of girls, and economic vulnerability further deteriorated the situation.

A major factor contributing to child marriage is the dowry system. In India, girls are often considered as a liability of the family and their work is not valued. Having an older unmarried daughter is an immense misfortune to Indian parents along with large social and economic costs (Bloch & Rao, 2002). Regardless of the Dowry Prohibition Act 1961, it is still a common system in many parts of India. The dowry payments increase with age and quality of the bride and the groom[3] which manifests the positive correlation between female education and dowry payments (Mertens & Chari, 2020). Parents prohibit their daughters from higher education to escape the burden of dowry payments (Zang & Chan, 1999). Thus, Indian parents prefer son to daughters as it increases the economic returns to sons whereas decreases the return to daughters (Alfano, 2017).

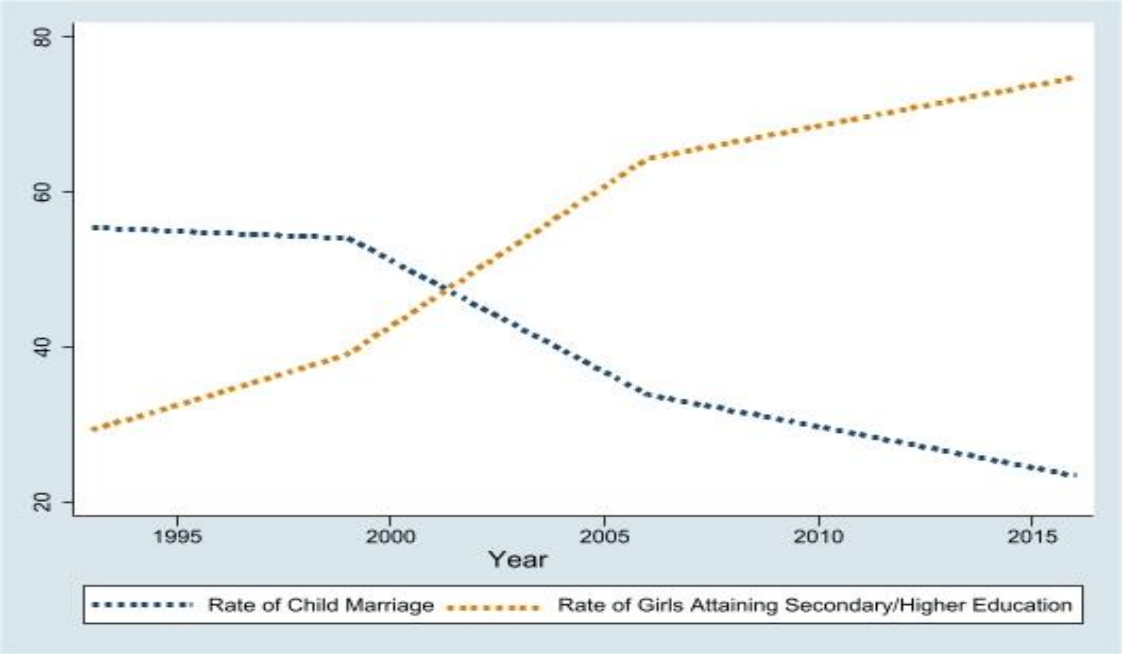
According to the reports presented by UNICEF India (2019), the national average of child marriage has declined from 47 percent in 2005-06 to 27 percent in 2015-16. But several states have rates much higher than the national average (27%), such as, Bihar (43%), West Bengal[4] (42%), Jharkhand (38%), Rajasthan (36%), Andhra Pradesh (34%), and Madhya Pradesh (33%). The girl child having limited or no education, belonging to poor households and residing in rural areas are at a major risk of early marriage. The percentage of girls exposed to child marriage drops from 47 percent to 29 percent as they move from primary to secondary

[3] Girls with greater ability are willing to pay more and boys with higher ability demand more dowry.
[4] West Bengal is referred as WB henceforth.

education and only 4 percent prevails among girls with further higher education. Secondary/higher education also enhances the labour market opportunities and policies encouraging education above middle level will improve wage work participation of girls (Kingdon & Unni; 2001). A study of 100 countries by World Bank suggests if secondary education increases by 1 percent, annual per capita income increases by 0.3 percent (UNGEI, 2004). This reflects that lack of female education calls for substantial economic and social costs. Thus, promoting secondary/higher education is a crucial part of development policies for empowering women and boosting economic growth.

Figure 1 depicts that secondary/higher education plays a key role in eradicating child marriage. Over the years, as the rate of girls attaining secondary/higher education increases (orange line) the rate of child marriage has decreased (blue line).

Figure 1 – Trends in Child Marriage and Secondary/Higher Education Rates of Girls in India



Notes: Data has been sourced from the four rounds of NFHS (1992-93, 1998-99, 2005-06 & 2015-16). The rate of child marriage and girls attaining secondary or higher education have been plotted over the years from 1992-93 to 2015-16.

1.2. CONTEXT AND PROGRAM DESCRIPTION

Primary education is completely subsidized in most Indian institutions, whereas secondary education is generally partly subsidized. In Indian scenario, secondary education also requires parental investments in coaching classes or private tuitions. Since the girl child is still neglected in many parts of India, parents mostly in rural household's face credit constraint, leading to little or no investment in the education of the girl child. Pro-male gender bias still exists in the household allocation of educational expenditure. Either daughters are not sent to secondary school or sent to fee-free government schools whereas sons are sent to private schools (Azam & Kingdon, 2013). In such scenarios conditional cash transfers (CCT) are of extensive use in incentivizing households to compensate for the opportunity cost of persistent education of girls who else would have been the victim of child marriage. The introduction of CCT programs to encourage secondary education is widespread among the Latin American countries like *Bolsa Familia* in Brazil and *PROGRESSA* in Mexico. However, over time, various programs are also being implemented in other parts of the world, especially in South Asia, where the prevalence of child marriage is highest. There has been a plethora of CCT schemes to enhance education and delay child marriage in India like *Bangaru Thali* in Andhra Pradesh (2013), *Ladli* in Delhi (2008), *Vidyalakkshmi* in Gujarat (2003), *Mukhya Mantri Kanya Vivah Yojana* in Bihar (2007), and *Apni Beti, Apni Dhan* in Haryana (1994). However, these schemes had limited impact as they do not require the girl child to remain in education till 18. Literature suggests that there is a strong link between education and child marriage of girls and they do not operate in isolation, rather in an interaction with the cultural and socioeconomic context (Field & Ambrus, 2008; Maertens, 2013).

According to District Level Household Survey (DLHS-3; 2007-08), WB ranked fifth highest in India in the prevalence of child marriage (54.7%) and the National Family Health Survey (NFHS 3; 2005-06) documented that attendance of girls in schools dropped from 85% in the age group of 6-10 years to 33% in the group of 15-17 years[5]. Considering such scenario, the government of WB, had come up with a much-needed intervention, called the Kanyashree Prakalpa (KP) in 2013, to improve the status and well-being of girls through the eradication of child marriage and increase in educational attainment of girls till at least 18 years of age. KP is the most prominent CCT program, especially to the socio-economically backward families

[5] This was reason for the implementation of the KP program.

(a family with annual income less than ₹ 1,20,000)[6]. It was implemented in two different components-

The first is an annual scholarship of ₹ 750 to be paid annually to the unmarried girls between 13-18 years of age. The second is a one-time grant of ₹25,000 to be paid to the girls on completion of 18 years, provided they are unmarried and engaged in some educational or occupational pursuit.

On July 28, 2017, the third component was announced to motivate girls for higher studies and to become self-independent. Girls pursuing a postgraduate degree in any university will be provided with a scholarship of ₹2500 per month for the Science stream and ₹2000 for Arts stream, irrespective of the marital status and the annual family income. However, the girls should be already enrolled in the first and second component and should have achieved 45% in the undergraduate degree. There is no age limit for this scheme. This dissertation will only consider the first and second component for studying the impact of the program because after the implementation of the third component, no national household level survey has been conducted in India that can measure its impact. The last survey was conducted in 2015-16.

The program has received extensive international and national recognition. It has bagged the first position in the most prestigious award for public services, The United Nations Public Service Award 2017 in the category "Reaching the Poorest and Most Vulnerable through Inclusive Services and Participation"[7]. However, in spite of such recognition worldwide, the impact of the program has not been explicitly studied in the past literature and this motivates the analysis of this dissertation work.

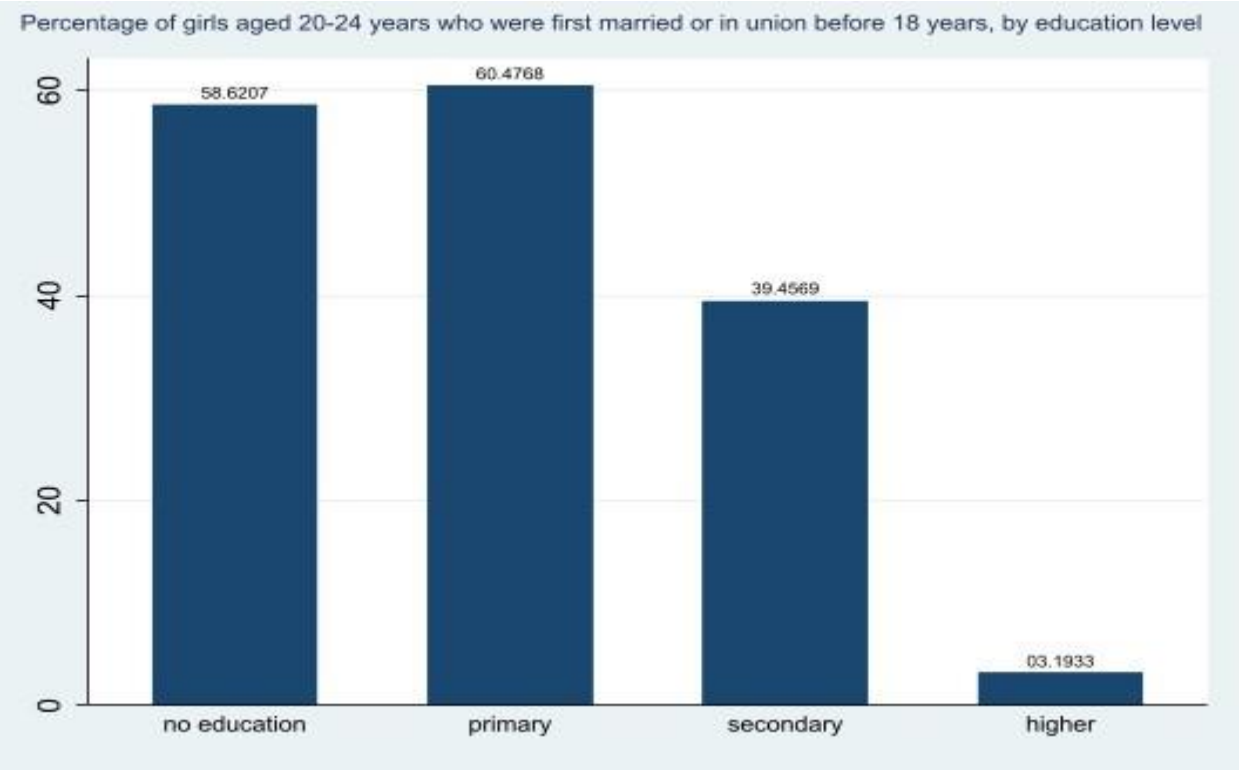
The components of KP provide incentive to encourage the eligible parents to avoid child marriage of their daughter by engaging them in secondary or higher education. On the other hand, parents know that if their daughter gets older then they have to pay more dowry. Therefore, for parents, acceptance of KP is always associated with an opportunity cost in terms of potentially higher dowry. For the parents, accepting KP would be an optimal choice only

[6] The complete information about the program has been obtained from https://wbkanyashree.gov.in/kp_4.0/index.php

[7] The program was ranked the best among the 552 social sector schemes which were nominated across 62 countries.

when endowment under KP outweighs the opportunity cost in terms of excess dowry. But for the government who provides KP has no perfect information about the choice of the parents and under this set up parents have better information than the government. Hence, by construction, KP needs to have an incentive compatibility condition between the government and the parents inbuilt within its design. This paper does not test whether this compatibility condition holds. Rather it assumes that if the condition holds and parents accept the program, then what would be its impact on child marriage and educational attainment of the girls of WB exposed to KP.

Figure 2: Percentage of Girls Exposed to Child Marriage by Education Level in West Bengal



Notes: Data has been sourced from third and fourth rounds of NFHS. The sample comprises of girls from West Bengal aged 20-24 years. The figure clearly indicates that the percentage of women exposed to child marriage is almost indifferent between those without any education and primary education. However, child marriage drops by 20% as girls make a transition to secondary education and it drastically reduces to 3% on achieving higher education.

1.3. RESEARCH QUESTION AND OBJECTIVE

The main objective of this study is to analyse the causal impact of the KP program on increasing secondary/higher educational attainment and reducing child marriage of the specific age cohort girl child of WB. Age at first cohabitation and highest level of educational attainment (primary, secondary or higher) of females in the age group 15-24 years will be used as the proxy for child marriage and educational attainment respectively. Differences-in-differences (DD) methodology will be utilized to examine the validity of the arguments stated above. But the main challenge of using this identification strategy is that any result of the DD estimate could simply reflect the broader trends and not completely due to the KP program. To address this issue, a Triple-difference (DDD) framework will be employed and the neighbouring state of WB, Jharkhand will be considered as the comparison state. Hence, the DDD estimation will be the main analysis of this paper. This dissertation will utilise a household survey data from National Family Health Survey (NFHS) waves three and four to study the pre and post impact of the KP program respectively. To the best of our knowledge, this will be the first study of the KP Program's impact on educational attainment and child marriage. This study will contribute to the scarce literature on the long-term significant impact of empowering girls through various channels and the relevance of such demographic policies in shaping human capital formation.

The main findings of the paper are twofold. First, due to KP, treated cohort has experienced an increase in the probability of attaining secondary or higher education by 6 percent. Second, the likelihood of getting married before 18 years of age (the legal age of marriage) has reduced by 6.7 percent for the treated cohort. Moreover, the results are consistent across different specifications and remains valid even after the placebo test.

The rest of the paper is organised as follows. Section 2 comprise the discussion of related topics in existing literature. Section 3 describes the data source and the variables used in this study. Section 4 outlines the identification strategy utilised while Section 5 portrays the results and corresponding discussions from the different strands of analyses. Finally, Section 6 will conclude with comments on the future scope of analysis.

2. LITERATURE REVIEW

This section will explore the wealth of existing literature on the main topic of research and the closely related topics thematically from different angles.

2.1. Importance of Education in Preventing Child Marriage

Educational attainment of women is influenced by factors like early marriage, parental background, and parental differential treatment of sons and daughters (Kingdon, 1998; Kingdon 2002). Field & Ambrus (2008) provides empirical evidence on the reduction of female education due to the institution of child marriage in developing countries. The paper uses data from rural Bangladesh and uses age of menarche as an instrumental variable to isolate the causal effect of the time of marriage. An increase in the delay of marriage by one year is associated with 0.22 year of extra schooling and 5.6 percent higher literacy. Maertens (2013) collects data from three villages in India and studies the aspirations parents have for their children regarding education. Educational aspirations for girls (39%) are lower compared to boys (71%) and it can be closely associated to the social norms of early marriage for girls. Estimates suggest that one- year increase in marriage age would increase educational aspirations for girls by 0.20 years.

2.2. Child Marriage and Intergenerational Impact

Child marriage curtails education of girls which reduces women's knowledge, bargaining power and preferences in household outcomes (Glewwe, 1999; Banerji et. al, 2013). The age at which the girl child enters the spousal household matters a lot because younger brides can advocate less for their preferences in the spousal household. This affects to an extent that men and women have different investment preferences on children's education and health (Beegle et. al, 2001; Maitra, 2004; Allendorf, 2007; Majlesi, 2016). Indeed, Caldwell et. al (1983) argued that certain men might demand younger brides due to this reason.

Chari et al. (2017) uses International Human Development Survey (IHDS) – 2005 data from India to establish the intergenerational impact of early marriage on a wide set of dependent variables - health and educational investments and outcomes, and to explain the underlying mechanisms. They use OLS and IV regression considering age at menarche as an instrumental variable for age at marriage[8] and includes individual, household and child – level controls. The regression further includes woman's age, district and caste fixed effects. The paper has some interesting findings which is in close link to this research work. The study reveals that one-year delay in woman's marriage increases the education of their children by 1.9 percent and the probability of being enrolled in a school by 3.1 percent on average. It further improves the reading and math scores of children by 2.3 percent and 3 percent respectively. The paper also claims that any policy that seek to defer early marriage, or increase educational attainment of girls by providing CCT[9] to unmarried girls will help more families and the society might benefit from the delayed marriage. Delprato et al. (2017) uses Demographic and Health Survey (DHS) data for 25-32 countries of Sub-Saharan Africa and employ OLS, IV, and pseudo-panel to study the intergenerational impact of early marriage on education. Results suggest that girls born to early married mothers are 6-11 percent more likely to never attend school, 1.6-1.7 percent to enter late and 3.3-5.1 percent less likely to finish primary education.

2.3. Child Gender and Parental Investments

Women in developing countries suffer far more than men in various dimensions. These patterns are especially marked in countries like India, where families have explicit inclination towards having sons over daughters (Pande & Astone, 2007). Using National Family Health Survey (NFHS) India, 1992-93 and using an ordered logit model, the paper shows that secondary or higher education of girls is strongly associated with weaker son preference, irrespective of the desired family size. Barcellos et al. (2014) proved that in rural India, families invest more in boys than girls. Their findings show that an infant boy received 15 percent better childcare than an infant girl and the difference is even larger for families with single boy child (30 percent). Jayachandran & Kuziemko (2011) use NFHS 1992-93, 1998-99 and 2005-06; utilises OLS to

[8] The instrumental variable is chosen following Field and Ambrus (2008) and Sekhri and Debnath (2014) and has been motivated by the sociologist and anthropologist observations made on Indian parents. It has been observed that Indian parents tend to get their daughters marry off as soon as they reach menarche.
[9] The paper mentions about a program in Haryana, India (Apni Beti, Apni Dhan) and Bangladesh's Female Stipend Program.

find that sons are breastfed 0.9 months more than girls due to their preference for future sons[10]. It leads to 8,000-21,000 "missing girls" every year which is due to the unintended consequence of a strong desire for sons in Indian families. Palloni (2017) uses a longitudinal dataset from Indonesia and strongly suggest that children born of their mother's preferred sex are healthier and receive more resources from the parents. Sex-selection and discrimination against the girl child has always been the tradition among most of the South Asian countries. However, it is crucial to bring in new demographic policies that might end such ill-treatment towards girl children and pave a pathway for their better life.

2.4. CCT and Its Impact on Educational Outcome and Child Marriage

Existing literature suggests that CCT can be beneficial in such scenarios where households underinvest in the human capital of the offspring, especially the girl child. Galor & Zeira (1993) establishes a link between the redistributive policies and increase in aggregate efficiency via reduced inequality. Baird et. al (2013) found that cash transfers create income effects thereby reducing the credit constraints. This conditionality brings in the substitution effect by decreasing the opportunity cost of schooling. Fiszbein & Schady (2009) studied that when there is incomplete information about the returns to education especially for the girl child, parents could make suboptimal decisions regarding the children's education.

Several studies have analysed the impact of CCT on enrolment and attendance. Garcia and Saavedra (2017), using 94 studies from 47 CCT programs, determine a positive impact on attendance in schools and enrollment in secondary education. Filmer & Schady (2008) evaluates a scholarship program[11] in Cambodia for girls making a transition from primary to secondary school. Enrolment and attendance of girls increase by 30-43 percent and have been the largest for households with poor socio-economic condition at baseline. Behrman et al. (2005) studies the impacts of the PROGRESA school subsidy program in rural Mexico and concludes that dropout rates of girls have reduced notably during the transition from primary to secondary school.

[10] This is because breastfeeding reduces a woman's fertility due to physiological reasons
[11] Japan Fund for Poverty Reduction (JFPR) program.

Sen and Dutta (2018) is the only study that evaluated the impact of the KP program[12]. Using propensity score matching and difference-in-difference methodology results suggest heterogenous effects on school dropouts and general reduction in the age of marriage. Nanda et al. (2016) studies the impact of a CCT Program in India called 'Apni Beti, Apni Dhan' but found no significant improvement in child marriage and education of girls by using a quasi-experimental, mixed-methods design. The study further found that the cash received was used for marriage expenses and the recipients did not understand the main objective of the program.

From the wealth of literature discussed above, it can be concluded that a policy that provides CCT to parents who face credit-constraint to invest in their daughters would help to reduce gender inequalities within Indian households and boost economic growth. Several studies have stated that delay in marriage leads to significant impact on female health and education with certain studies focussing on its intergenerational impact. It can also be observed that there has been substantial literature on the impact of CCT programs on educational enrolment or learning outcomes. But there is very scarce literature that analyses a program that interlinks educational attainment and child marriage of girls. So, this paper contributes to the existing literature by studying the impact of such a CCT program, the Kanyashree Prakalpa (KP) on two broad indicators – child marriage and secondary/higher educational attainment of girls. It tries to discuss the way education of women helps to eradicate gender inequality, generate empowerment and promote economic growth.

[12] However, it is only a summary of the project that is available. There is no detailed report of the study.

3. DATA

3.1. DESCRIPTION OF DATA SOURCE

The main source of data is the Individual Records from the National Family Health Survey (NFHS). The greatest advantage of using this data source is that the KP program (2013) was rolled out between NFHS – 3 (2005-06) and NFHS-4 (2015-16). Thus, NFHS-3 is used as the baseline data and the NFHS – 4 as the endline data. NFHS is a nation-wide household level survey executed by International Institute for Population Studies (IIPS) Mumbai, India. These surveys are compiled by the DHS (Demographic and Health Surveys) comprising data on individuals, households, household members, women, men, and child records. Separate questionnaires are used for men, women and household specific information across a range of health, education, and development indicators. A sample size of 124,385 women (aged 15-49 years) from 109,041 households and 699,686 women (aged 15-49 years) from 601,509 households were interviewed in NFHS – 3 and NFHS – 4 respectively. As the different rounds of NFHS does not constitute a panel data, therefore there was no unique identifier to match them across the rounds. Thus, the data has been arranged and studied in a repeated cross-section structure. The random sampling technique, along with the large sample size ensures high statistical power, better precision of results and reliable statistical inference while interpreting the findings. Another great advantage of the NFHS-4 data set is that there is an appropriate lagged length of time for the policy evaluation; the survey started 2 years after the point when the policy was implemented in 2013.

Additionally, the District Level Household Survey (DLHS) will be used in this paper to test the parallel trends between the treated and the control group in WB and Jharkhand. DLHS data prior to the launch of the KP program (that is during the period 2004 to July, 2013) will be used for this parallel trend analysis and it is not used for estimating the treatment effects. The second (2003-04), third (2007-08) and fourth (2012-13) wave of DLHS has been utilized. DLHS is another nationally representative household survey carried out in India. It includes household socioeconomic characteristics and a record of all members in the household, their educational attainment, schooling status and information on marriage.

One of the probable questions that might arise is the reason behind choosing two different data sources for the estimation of treatment effects and the parallel trend tests. NFHS had three waves before the implementation of KP program – the first wave in 1992-93, second wave in 1998-99, and third wave in 2005-06. However, these three waves couldn't be used to test for

parallel trends because Jharkhand was formed in 2000 and was earlier a part of Bihar. On the other hand, DLHS cannot be used as the main source of data for estimating the treatment effects because it was last conducted in 2012-13. NFHS is the only household level survey that has been conducted in India after the implementation of KP program. A similar method has been adopted by Muralidharan & Prakash (2017).

3.2. DETERMINATION OF THE TREATED AND CONTROL COHORT

The KP program was given to girls who were aged 13-18 years in 2013 and girls above 18 years were not exposed to the program. The DD and DDD methodology require a treated and a control group. Since, this study utilizes NFHS-4 (2015-16) as the endline dataset so following Duflo (2001), girls aged 15-20 (younger cohort) in NFHS-4 are considered as the treated group (as they were aged 13-18 years in 2013) and girls aged 21-24 (older cohort) in NFHS-4 form the control group (as they were above 18 years; 19-22 years in 2013). During the data cleaning process, all girls aged above 24 years were dropped from the sample as this research is purely based on females aged 15-24 years. Additionally, all the states except WB and Jharkhand were dropped. This was done because the KP program was implemented only in WB and a neighbouring state, Jharkhand is considered as the close comparison state (the rationale behind this is described in the methodology section). The same process is also repeated for the baseline dataset (NFHS-3). Then the endline and baseline datasets are merged to form the final dataset which is used in this dissertation.

3.3. DETERMINATION OF OUTCOME VARIABLES

The first outcome variable, *education level attained* is a binary indicator which takes the value 1 if a girl has attained secondary/higher education and 0 otherwise. The second outcome variable, *child marriage* is also a binary indicator which takes the value 1 if the first age at cohabitation is below 18 years and 0 otherwise. Since this study considers the older cohort (girls aged 21-24 years) as the control group, it might appear that the control cohort will by default have a likelihood of higher marriage than the treated group (younger cohort; girls aged 15-20 years). In that case, control group might be considered as a *'bad control'* (Angrist & Pischke, 2008) because the treatment effect might not correctly measure the impact of the KP program. But one-point worth noting here is that, this study considers the probability of child marriage, that is if age at first cohabitation was below 18 years and *not* the probability of

marriage. It is obvious that older girls will have higher probability of marriage than younger girls. Hence, we try to look at the percentage of girls who had first cohabitation age below 18 years (child marriage) within the treated and the control group, and then analysed how it has changed due to the implementation of the KP program. It also tries to capture whether the percentage of girls attaining secondary/higher education within the treated group is higher than that of the control group.

3.4. DESCRIPTION OF VARIABLES

The two main dependent variables of interest are incidence of child marriage and education level attained by girls of WB. These have been chosen based on the fact that the main aim of the KP program is to ensure reduction in the probability of child marriage which is possible only if the girls continue education atleast till the legal age of marriage (18 years for girls). A set of control variables will be used to control for observed heterogeneity and less biased results. Individual and household level control variables include religion, place of residence (rural or urban), years lived at the place of residence, sex of household head, relationship to household head, household wealth index and exposure to domestic violence. Wealth Index determines a household's cumulative living standard. This is based on the data collected from the Household Questionnaire of the NFHS survey. The wealth index is calculated based on a household's ownership of the following assets: consumer goods like television, radio, refrigerator, bicycle, scooter and car; dwelling characteristics like flooring material; source of drinking water; toilet facilities; and all other factors relating to household wealth status. The Principal Component Analysis method was used to compute wealth scores and additionally, wealth quintiles were generated and assigned to rank each household from richest to poorest. Each asset was weighted by the sample weight to derive precise measures of the estimates. The descriptive statistics of all the variables used in the analysis is presented in Table 1 and 2.

Table 1: Descriptive Statistics of Baseline Dataset (NFHS-3)

Variables	Mean	Standard Deviation
Dependent Variables		
Education Level Attained	0.551	0.497
Child Marriage	0.388	0.487
Independent Variables		
Age	19.38	2.807
Age at first cohabitation	16.14	2.346
Rural/Urban Indicator	1.540	0.498
Years lived at the place of residence	52.87	45.26
Religion	4.007	15.72
Relation to Household Head	3.970	3.101
Sex of Household Head	1.133	0.339
Household Wealth	2.962	1.480
Exposed to Domestic Violence	0.580	0.498

Notes: The descriptive statistics in this table is generated from the third round of the NFHS survey. The means and standard deviations of the dependent variables, independent variables and all the covariates have been reported.

Table 2: Descriptive Statistics of Endline Dataset (NFHS-4)

Variables	Mean	Standard Deviation
Dependent Variables		
Education Level Attained	0.784	0.411
Child Marriage	0.282	0.450
Independent Variables		
Age	19.40	2.822
Age at first cohabitation	17.06	2.424
Rural/Urban Indicator	1.747	0.435
Years lived at the place of residence	36.72	41.90
Religion	7.987	24.27
Relation to Household Head	3.728	2.529
Sex of Household Head	1.113	0.317
Household Wealth	2.268	1.256
Exposed to Domestic Violence	0.0979	0.309

Notes: The descriptive statistics in this table is generated from the fourth round of the NFHS survey. The means and standard deviations of the dependent variables, independent variables and all the covariates have been reported.

4. IDENTIFICATION STRATEGY

4.1. EVALUATING THE IMPACT OF KP PROGRAM USING DIFFERENCE-IN-DIFFERENCES

The identification strategy of this study exploits the exogenous variation through the implementation of the KP program in WB. The program was implemented only for a specific age group of girls (13-18 years) and not on others. Thus, a quasi-experiment can be designed, allowing for a clean identification of the causal effect of the program on child marriage and education level attained by girls of WB, due to the exogenous policy variation. An econometric method that is generally used in quantitative research to causally infer questions related to demographic policies using observational study data, is known as, the difference-in-differences (DD). Following Duflo (2001) and considering NFHS-4 (2015-16) as the endline survey, the younger cohorts (15-20 years) who were exposed to the program when they were making a transition to secondary school as the treated group and the older cohorts (21-24 years) who were not exposed to the program during the transition, as the control group.[13] The first difference will compare the desired dependent variables across the two cohort of girls in WB. However, this difference is likely to be compromised due to several other changes occurring in WB over time and we cannot attribute this first difference as the impact of the KP program. To eliminate the impact of time trend on the results, the difference across the cohorts of WB using NFHS-4 (2015-16) will be compared with the same cohorts using NFHS-3 (2005-06). The DD equation to be estimated is as follows:

Equation 1:

$$y_{iht} = \beta_0 + \beta_1(Treat_{iht} \times Year_{iht}) + \beta_2 Treat_{iht} + \beta_3 Year_{iht} + X_{iht} + \gamma_h + \varepsilon_{iht}$$

where y is the dependent variable of interest corresponding to girl child i in household h and time t. $Treat$ is an indicator for the treatment group which take the value 1 for the treated group and 0 for the control group. $Year$ takes the value 1 for the endline survey data (NFHS-4) and 0 for the baseline survey data (NFHS-3). X comprises the individual and household level controls mentioned in Section 3. γ_h accounts for the household fixed effects to control for

[13] The KP program was implemented in 2013 and girls aged 13-18 years were exposed to the program. Since this study uses NFHS-4 (2015-16) as the endline survey data, girls aged 15-20 years in 2015 were exposed to the program as they were aged 13-18 years in 2013. Whereas, girls aged 21-24 years in 2015 were not exposed to the program as they were above 18 years in 2013.

spillovers across households that might drive the result. Any correlation with the error term ε_{iht} is adjusted for by clustering the standard errors at the household level. Since equation 1 is a linear probability model, hence all the coefficients measure the marginal effects in probability terms. The coefficients show the change in probability in percent. β_1 captures the impact of the KP program in this DD regression.

Table 3 – Interpretation of the Coefficients of the Linear Probability Model

	Treatment Group	Control Group	Difference
Pre-Policy	$\beta_0 + \beta_2$	β_0	β_2
Post-Policy	$\beta_0 + \beta_1 + \beta_2 + \beta_3$	$\beta_0 + \beta_3$	$\beta_1 + \beta_2$
Difference	$\beta_1 + \beta_3$	β_3	$\boldsymbol{\beta_1}$

4.2. PARALLEL TREND TESTS FOR DIFFERENCE-IN-DIFFERENCES

Parallel Trend is the key assumption behind the validity of the DD strategy which requires a parallel trend in the outcome variable before the treatment assignment. Usually a pre-treatment trend is generated to show that the treated and the control group behaved in a similar pattern before the implementation of the program such that any resulting changes in outcomes can be associated to the treatment. It has been widely used in studies assessing the impact of policy interventions on labour market outcomes (Wolfers, 2003) and educational outcomes (Muralidharan & Prakash, 2017). The test for parallel trend in this paper is conducted using the second, third and fourth wave of the District Level Household Survey (DLHS) data prior to the implementation of the KP program (2003-04 to 2012-13). The estimated equation for the parallel trend test is as follows:

Equation 2: $y_{iht} = \beta_0 + \beta_1(Treat_{iht} \times Year_{iht}) + \beta_2 Treat_{iht} + \beta_3 Year_{iht} + \varepsilon_{iht}$

where the symbols remain same as in equation 1 with the only difference being in the variable $Year$. The $Year$ variable indicates dummies for 2004, 2007, 2008 and 2013, with 2003 as the reference[14]. According to equation 2, we can hold the parallel trend assumption if β_1 is insignificant.

4.3. EVALUATING THE IMPACT OF KP PROGRAM USING TRIPLE-DIFFERENCE (DDD)

While checking for the validity of the DD strategy using parallel trend test in the pre-treatment period, it has been observed that for one of the outcome variables; education level attained, the null hypothesis of parallel trends can be rejected at 5% and 10% level of significance. Thus, the DD estimate cannot be completely attributed to the KP program. One might also argue that there can be certain other unobserved factors like the general equilibrium effects or broader trends affecting the DD estimate. Thus, a DDD regression is employed to nullify any other broader trends that might bias our DD result. Following Muralidharan & Prakash (2017), a DDD regression is employed to obtain an unbiased impact of the KP program. The DD estimates from WB (as illustrated above) is compared with the DD estimate of Jharkhand. Jharkhand is chosen as a comparison state because among all the neighbouring states of WB, Jharkhand shares the longest border with WB[15] and also has a high incidence of child marriage. There are substantial similarities across these two states in terms of social, cultural and economic conditions. So, any general equilibrium effect or broader trends that affects the DD estimates of WB shall also affect the DD estimates of Jharkhand. Hence, a triple-difference of these two estimates will give the true impact of the KP program and is considered as the key analysis of this paper. The equation to be estimated is as follows:

[14] Considering 2003 as the reference year, the variable 'Year' takes the value 1 for 2004, 4 for 2007, 5 for 2008 and 10 for 2013. The KP program was implemented in October, 2013 and the survey ended in July, 2013.
[15] A district-wise map of India is attached in the Appendix I Figure 1 to clarify this statement further.

Equation 3:

$$y_{iht} = \beta_0 + \beta_1(Treat_{iht} \times Year_{iht} \times WB_{iht}) + \beta_2(Treat_{iht} \times Year_{iht}) + \beta_3(Treat_{iht} \times WB_{iht}) + \beta_4(WB_{iht} \times Year_{iht}) + \beta_5 Treat_{iht} + \beta_6 Year_{iht} + \beta_7 WB_{iht} + X_{iht} + \gamma_h + \varepsilon_{iht}$$

where the symbols remain same as in equation 1 with the addition of a new variable WB which is an indicator for any observation from WB. It takes the value 1 for observations from WB and 0 for observations from Jharkhand. This is also a linear probability model and all the coefficients measure the marginal effects in probability terms. β_1 measures the causal impact of KP program and is the main parameter of interest (DDD estimate).

4.4. PARALLEL TREND TESTS FOR TRIPLE-DIFFERENCE

The parallel trend tests for the validity of the triple-difference methodology is conducted using the DLHS second (2004) and third (2007 & 2008) wave data. The fourth wave of DLHS (2013) data was not used because Jharkhand was not included in the survey.[16] The equation to be estimated is as follows:

Equation 4:

$$y_{iht} = \beta_0 + \beta_1(Treat_{iht} \times Year_{iht} \times WB_{iht}) + \beta_2(Treat_{iht} \times Year_{iht}) + \beta_3(Treat_{iht} \times WB_{iht}) + \beta_4(WB_{iht} \times Year_{iht}) + \beta_5 Treat_{iht} + \beta_6 Year_{iht} + \beta_7 WB_{iht} + \varepsilon_{iht}$$

where the symbols remain same as in equation 3 with the only difference being in the variable $Year$. The $Year$ variable indicates dummies for 2004, 2007 and 2008, with 2003 as the reference.[17] According to equation 4, we can hold the parallel trend assumption if β_1 is insignificant.

We also did the balancing test on all the covariates used in the triple difference estimation and results are reported in the appendix XI (Table 25).

[16] DLHS-4 survey included only 21 states of India and none of the neighbouring states of WB was included.
[17] The Year variable takes the value 1 for 2004, 4 for 2007, and 5 for 2008 with 2003 as the reference.

5. RESULTS

5.1. EXPLORATORY ANALYSIS

A simple comparison of means between the treated and control sample of all the outcome variables and the covariates utilised in this analysis is conducted using a t-test. We test whether there is a statistically significant difference between the treatment and the control sample. In other words, the t-statistic of the outcome variable must be greater than or equal to the critical value of 1.96 at 95% confidence interval. There should not be any significant difference in the means of the covariates. However, it is found that along with the outcome variables, some of the covariates are also statistically significantly different. But this can be attributed to the fact that it is just a univariate analysis and nothing can be concluded based on these results. Several other factors like time trend or general economic changes might affect the treated and control sample which cannot be taken care of in this kind of analysis. Hence, this motivates the adoption of a multivariate regression analysis which is stated in the confirmatory result section.

Table 4 – Comparison of Means using T-Test for NFHS-4 (Endline) Dataset

	Mean of Control Sample	Mean of Treated Sample	Difference in Means	T-statistic
Child Marriage	0.383	0.221	0.161	23.1
Education Level Attained	0.692	0.841	-0.149	-23.35
Rural/Urban Indicator	1.736	1.754	-0.018	-2.7
Years lived in the place of residence	21.675	45.82	-24.145	-38.1
Religion	8.028	7.961	0.068	0.2
Relation to household Head	3.533	3.846	-0.0314	-7.9
Sex of household Head	1.113	1.113	-0.001	-0.1
Household Wealth	2.367	2.208	0.159	8.05
Exposed to domestic violence	0.112	0.09	0.021	4.45

Notes: A simple comparison of means of the treated and control sample via the t-test gives the values for the t-statistic for the dependent variables and all the covariates utilised in this paper.

Table 5 – Comparison of Means using T-Test for NFHS-3 (Baseline) Dataset

Variables	Mean of Control Sample	Mean of Treated Sample	Difference in Means	T-statistic
Child Marriage	0.483	0.332	0.151	9.3
Education Level Attained	0.512	0.575	-0.063	-3.75
Rural/Urban Indicator	1.514	1.556	-0.041	-2.45
Years lived in the place of residence	39.502	60.822	-21.32	-14.3
Religion	3.754	4.159	-0.405	-0.75
Relation to household Head	3.759	4.095	-0.336	-3.2
Sex of household Head	1.127	1.136	-0.009	-0.85
Household Wealth	3.036	2.918	0.117	2.35
Exposed to domestic violence	0.678	0.522	0.156	9.35

Notes: A simple comparison of means of the treated and control sample via the t-test gives the values for the t-statistic for the dependent variables and all the covariates utilised in this paper.

5.2. CONFIRMATORY ANALYSIS

5.2.1. IMPACT OF KP ON EDUCATIONAL ATTAINMENT

Difference-In-Differences Estimation

The DD estimates of the KP program, based on equation 1 are presented in Table 6. Since the outcome variables are binary[18], so results are reported as percentage change in probability. In table 6, the 'Treat' indicator which measures the difference in the outcome variable between the treatment and control group in the pre-treatment period is positive and significant. This implies that the control group (girls aged 21-24) was lagging behind in secondary/higher education than the treated group in the pre-treatment period. This justifies the adoption of the KP program. However, the main parameter of interest is the interaction term (Treat x Year) which shows a significant estimate of 10.6 percent without any controls. On adding individual

[18] The first outcome variable is education level =1 if the girl attains secondary/higher education and 0 otherwise. The second outcome variable is child marriage = 1 if age at first cohabitation is below 18 years and 0 otherwise.

and household level controls, the estimate increases to 12.4 percent, indicating that the KP program has increased the probability of girls attaining secondary/higher education by 12.4 percent. But this result does not correctly measure the impact of KP program because no parallel trend is observed between the treated and control group for this outcome variable. Hence, the triple-difference estimation is conducted and considered as the main result of the paper.

Table 6 – Difference-in-differences (DD) Estimate of the Impact of Being Exposed to the KP program on Education Level Attained

Dependent Variable: Education Level Attained			
Treated Group: 15-20 years Control Group: 21-24 years	(1)	(2)	(3)
Treat x Year	**0.106***** **(0.0219)**	**0.112***** **(0.0205)**	**0.124***** **(0.0181)**
Treat	0.0446** (0.0199)	0.0264 (0.0181)	0.0449*** (0.0155)
Year	0.135*** (0.0197)	0.205*** (0.0181)	0.233*** (0.0163)
Constant	0.568*** (0.0185)	0.657*** (0.0306)	-0.0682 (0.0445)
Observations	8,661	8,661	8,661
R-squared	0.062	0.088	0.224
Individual Controls	No	Yes	Yes
Household Controls	No	No	Yes

Notes: Column (1) comprises basic specifications, column (2) includes individual controls, and column (3) controls for both individual and household characteristics. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1. The Appendix II Table 15 shows the co-efficient on the control variables that are included as progressed from Column 1 to Column 3.

Triple-Difference Estimation

The DDD estimates of the impact of the KP program, based on equation 3 are presented in table 7. The triple-interaction term (Treat x Year x WB) measures the causal impact of the program and is our main parameter of interest. It suggests a program impact of 5.7 percent with no controls. However, on including individual-level controls provides a significant estimate of 6.28 percent, with further reduces to 6 percent on adding household level controls.

There are several points worth noting here. The double-interaction coefficients indicate insignificant results for (Treat x WB) variable because the time trend is not considered in the regression. The (Treat x Year) variable shows a positive and significant estimate but this regression includes the Jharkhand sample. Hence it indicates that certain factors other than KP has a positive impact on educational outcome. Thus, this substantiates our adoption of triple-difference for elimination of any broader trends that might give biased result. However, we find negative and significant co-efficient for (WB x year) but this is not worth considering as it does not include the treatment indicator. Thus, it can be concluded that the KP program has increased the probability of girls attaining secondary/higher education by 6 percent.

Table 7 – Triple-difference (DDD) Estimate of the Impact of Being Exposed to the KP program on Education Level Attained

Dependent Variable: Education Level Attained			
Treated Group: 15-20 years Control Group: 21-24 years	(1)	(2)	(3)
Treat x Year x WB	**0.0570***	**0.0628****	**0.0600****
	(0.0330)	**(0.0310)**	**(0.0269)**
Treat x Year	0.0492	0.0464	0.0628**
	(0.0307)	(0.0281)	(0.0246)
Treat x WB	-0.0550*	-0.0361	-0.0270
	(0.0315)	(0.0298)	(0.0260)
WB x Year	-0.148***	-0.0866***	-0.0812***
	(0.0278)	(0.0256)	(0.0217)
Treat	0.0996***	0.0663**	0.0693***
	(0.0301)	(0.0279)	(0.0242)
Year	0.284***	0.304***	0.312***
	(0.0253)	(0.0229)	(0.0213)
WB	0.167***	0.114***	0.0664***
	(0.0263)	(0.0240)	(0.0207)
Constant	0.400***	0.605***	-0.0418
	(0.0243)	(0.0250)	(0.0325)
Observations	20,899	20,899	20,899
R-squared	0.069	0.112	0.216
Individual Controls	No	Yes	Yes
Household Controls	No	No	Yes

Notes: Column (1) comprises basic specifications, column (2) includes individual controls, and column (3) controls for both individual and household characteristics. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1. The Appendix III Table 16 shows the co-efficient on the control variables that are included as progressed from Column 1 to Column 3.

5.2.2. IMPACT OF KP ON CHILD MARRIAGE

Difference-In-Differences Estimation

The DD estimates of the impact of the KP program, based on equation 1 are presented in Table 8. The coefficient of the "Treat" indicator is negative and significant. It implies that the girls aged 21-24 years now (control group) experienced higher rates of child marriage than the treated group (girls aged 15-20 now) in the pre-treatment period. This justifies the adoption of KP program. However, the main parameter of interest is the interaction term (Treat x Year), which is insignificant with no controls whereas on including the individual and household level controls it gives a significant estimate of 3.8 percent. Thus, the DD estimate indicates that KP program has reduced child marriage of girls in WB by 3.8 percent but this cannot be ascribed to be solely due to the KP program because several broader trends might bias our result. Hence, DDD will be examined further.

Table 8 – Difference-in-differences (DD) Estimate of the Impact of Being Exposed to the KP program on Child Marriage

Dependent Variable: Child Marriage			
Treated group: 15-20 years Control group: 21-24 years	(1)	(2)	(3)
Treat x Year	**-0.000790**	**-0.0258***	**-0.0378****
	(0.0211)	**(0.0154)**	**(0.0159)**
Treat	-0.123***	-0.0541***	-0.0556***
	(0.0189)	(0.0127)	(0.0121)
Year	-0.0240	-0.196***	-0.179***
	(0.0153)	(0.0133)	(0.0154)
Constant	0.425***	0.420***	0.741***
	(0.0137)	(0.0242)	(0.0422)
Observations	8,661	8,661	8,661
R-squared	0.017	0.149	0.173
Individual Controls	No	Yes	Yes
Household Controls	No	No	Yes

Notes: Column (1) comprises basic specifications, column (2) includes individual controls, and column (3) controls for both individual and household characteristics. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1. The Appendix IV Table 17 shows the co-efficient on the control variables that are included as progressed from Column 1 to Column 3.

Triple-Difference Estimation

The DDD estimates of the impact of the KP program, based on equation 3 are presented in table 9. The triple-interaction term (Treat x Year x WB) measures the causal impact of the program. It suggests a program impact of 3.05 percent with no controls but it is insignificant. On including individual-level controls provides a significant estimate of 6.7 percent, with no further change on adding household level controls.

There are several points worth noting here. The double-interaction coefficients indicate insignificant results for (Treat x Year) and (Treat x WB) variables. In the first case the regression includes the Jharkhand sample and the KP program will not show significant result as it was implemented only in WB. In the second case the time trend is not considered in the regression. However, we find significant co-efficient for (WB x year) but this is not worth considering as it does not include the treatment indicator. Thus, it can be concluded that the KP program has reduced child marriage in WB by 6.7 percent.

Table 9 – Triple-difference (DDD) Estimate of the Impact of Being Exposed to the KP program on Child Marriage

Dependent Variable: Child Marriage			
Treated Group: 15-20 years Control Group: 21-24 years	(1)	(2)	(3)
Treat x Year x WB	**-0.0305**	**-0.0677****	**-0.0669****
	(0.0358)	**(0.0341)**	**(0.0333)**
Treat x Year	0.0297	0.0410	0.0280
	(0.0306)	(0.0307)	(0.0294)
Treat x WB	0.0864***	0.0406	0.0375
	(0.0323)	(0.0314)	(0.0302)
WB x year	0.204***	0.0615**	0.0587**
	(0.0292)	(0.0283)	(0.0277)
Treat	-0.209***	-0.0937***	-0.0884***
	(0.0289)	(0.0295)	(0.0282)
Year	-0.228***	-0.254***	-0.228***
	(0.0276)	(0.0274)	(0.0274)
WB	-0.175***	-0.0816***	-0.0620**
	(0.0271)	(0.0269)	(0.0260)
Constant	0.600***	0.511***	0.756***
	(0.0260)	(0.0282)	(0.0350)
Observations	20,899	20,899	20,899
R-squared	0.044	0.205	0.221
Individual Controls	No	Yes	Yes
Household Controls	No	No	Yes

Notes: Column (1) comprises basic specifications, column (2) includes individual controls, and column (3) controls for both individual and household characteristics. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1. The Appendix V Table 18 shows the co-efficient on the control variables that are included as progressed from Column 1 to Column 3.

5.3. VALIDITY CHECKS FOR DD AND DDD STRATEGY

5.3.1. PARALLEL TREND TEST FOR DIFFERENCE-IN-DIFFERENCES

Considering equation 2, the null hypothesis of parallel trends for our first outcome variable, education level attained is rejected at 10% and 5% level of significance, whereas at 1% level it cannot be rejected. The interaction term (Treat x Year) is positive and significant. Hence, the DD estimate for education level attained cannot be completely attributed to the KP program. This brings in the necessity of the DDD regression.

However, for the second outcome variable, child marriage, there is no reason to reject the null hypothesis of parallel trends at 10% level of significance. The interaction term is insignificant and close to 0. Thus, it can be inferred that the DD estimate for child marriage is solely due to the KP program. However, one might argue that there might be certain other unobserved factors like the general equilibrium effects leading to a biased DD estimate. Thus, a DDD regression is employed to nullify any other broader trends that might bias our result. The results are presented in Table 10.

5.3.2. PARALLEL TREND TEST FOR TRIPLE-DIFFERENCE

Considering equation 4, the null hypothesis of parallel trend cannot be rejected for both the outcome variables: education level attained and child marriage at 10% level of significance. The triple interaction term (Treat x Year x WB) is insignificant and close to 0 in both cases. Thus, this research considers the DDD as the main estimation strategy. The results are presented in Table 11.

Table 10 – Testing Parallel Trends Assumption for Difference-in-differences (DD)

Panel A: Dependent Variable – Education Level Attained	
Treat x Year	**0.008****
	(0.003)
Treat	-0.090***
	(0.015)
Year	-0.000
	(0.004)
Constant	0.631***
	(0.013)
Observations	15,797
R-squared	0.004
Panel B: Dependent Variable – Child Marriage	
Treat x Year	**-0.005**
	(0.004)
Treat	0.215***
	(0.015)
Year	-0.018***
	(0.007)
Constant	0.650***
	(0.020)
Observations	15,797
R-squared	0.067

Notes: The analysis uses DLHS data prior to the implementation of the KP program (2004 through 2013). Panel A tests for parallel trends in the treated and control group of the first outcome variable; education level attained and Panel B for the second outcome variable; child marriage. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1.

Table 11 – Testing Parallel Trends Assumption for Triple-difference (DDD)

Panel A: Dependent Variable: Education Level Attained	
Treat x Year x WB	**-0.004**
	(0.006)
Treat x Year	0.003
	(0.004)
Treat x WB	-0.011
	(0.022)
Year x WB	-0.007*
	(0.004)
Treat	-0.059***
	(0.014)
Year	-0.012***
	(0.003)
WB	-0.161***
	(0.015)
Constant	0.841***
	(0.009)
Observations	22,944
R-squared	0.052
Panel B: Dependent Variable: Child Marriage	
Treat x Year x WB	**0.007**
	(0.006)
Treat x Year	-0.012***
	(0.004)
Treat x WB	-0.006
	(0.022)
Year x WB	-0.004
	(0.005)
Treat	0.209***
	(0.015)
Year	-0.022***
	(0.003)
WB	0.013
	(0.017)
Constant	0.659***
	(0.013)
Observations	22,944
R-squared	0.055

Notes: The analysis uses DLHS data prior to the implementation of the KP program (2004 through 2008). Panel A tests for parallel trends in the treated and control group of the first outcome variable; education level attained and Panel B for the second outcome variable; child marriage. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1.

5.4. ROBUSTNESS CHECKS

5.4.1. PLACEBO TESTS

While results in Table 7 and 9 strongly suggest a positive causal impact of the KP program on the secondary/higher education level attained by girls of WB and a negative causal impact on child marriage, placebo tests are conducted to demonstrate that the effect of the program 'does not exist' when "it should not exist". The test is conducted using two methods, namely assigning placebo treatment and control groups and creating placebo outcomes.

PLACEBO TREATMENT TEST-

The alternative treatment and control groups are created by considering the girls aged 21 years as the treatment group and girls aged 22-24 as the control group. Since girls aged 21 years is just one year above the original treated group (15-20), they are exposed to all other factors that might affect the girls exposed to KP program in comparable ways. However, they were not eligible for the program, which makes them an ideal group for the placebo test. A DDD estimation is once again run on these 'false treatment groups' and theoretically, this should have an insignificant treatment effect due to the noise created by shuffling the treated and control groups. If a significant non-zero estimate is obtained from the placebo law, it can be concluded that our previous findings are biased which dampens the validity of the DDD methodology. The results are presented in Table 12 and 13.[19]

PLACEBO OUTCOME TEST –

The placebo outcome test is carried out by choosing a suitable false outcome, such that, it is highly unlikely to be affected by the KP, considering the treatment and control group to be the same as the original one. A DDD estimation is once again run on the false placebo outcome and it should have an insignificant treatment effect thereby validating the utilisation of DDD estimation for the main analysis. In this study, the following placebo outcomes are chosen: age of household head, type of toilet facility, number of household members, type of cooking fuel used. The results are presented in Table 14.

[19] Another method is also adopted for the placebo test. The alternative treated and control group is created by the assignment of odd identification number to the treated group and even identification numbers to the control group. The result is presented in Appendix VIII and IX.

An additional analysis has been done using selected cohort of girls as the alternative treatment group to study the effectiveness of the program. Results are presented in Appendix X.

Table 12 – Effect of Placebo Treatment on Education Level Attained

Dependent Variable: Education Level Attained			
Treated Group – 21 years Control Group – 22-24 years	(1)	(2)	(3)
Treat x Year x WB	**-0.00270**	**0.0153**	**0.0393**
	(0.0694)	**(0.0638)**	**(0.0520)**
Treat x Year	0.0371	0.0211	-0.0127
	(0.0554)	(0.0511)	(0.0419)
Treat x WB	-0.0164	-0.0270	-0.0672
	(0.0612)	(0.0551)	(0.0450)
WB x Year	-0.149***	-0.0887***	-0.0911***
	(0.0335)	(0.0329)	(0.0278)
Treat	0.0559	0.0629	0.0986**
	(0.0521)	(0.0468)	(0.0377)
Year	0.277***	0.308***	0.336***
	(0.0313)	(0.0288)	(0.0255)
WB	0.174***	0.117***	0.0684**
	(0.0322)	(0.0305)	(0.0263)
Constant	0.384***	0.658***	-0.208***
	(0.0303)	(0.0318)	(0.0428)
Observations	7,865	7,865	7,865
R-squared	0.031	0.089	0.240
Individual Controls	No	Yes	Yes
Household Controls	No	No	Yes

Notes: Column (1) comprises basic specifications, column (2) includes individual controls, and column (3) controls for both individual and household characteristics. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1. The Appendix VI Table 19 shows the co-efficient on the control variables that are included as progressed from Column 1 to Column 3.

Table 13 – Effect of Placebo Treatment on Child Marriage

Dependent Variable: Child Marriage			
Treated Group: 21 years Control Group: 22-24 years	(1)	(2)	(3)
Treat x Year x WB	**0.0208**	**-0.00981**	**-0.0238**
	(0.0788)	**(0.0659)**	**(0.0615)**
Treat x Year	-0.0891	-0.0629	-0.0499
	(0.0586)	(0.0524)	(0.0494)
Treat x WB	-0.0316	-0.00732	0.0164
	(0.0711)	(0.0597)	(0.0548)
WB x Year	0.197***	0.0869***	0.0880***
	(0.0332)	(0.0323)	(0.0310)
Treat	0.0383	0.0259	0.0103
	(0.0522)	(0.0468)	(0.0443)
Year	-0.205***	-0.239***	-0.219***
	(0.0300)	(0.0285)	(0.0283)
WB	-0.165***	-0.0925***	-0.0713**
	(0.0312)	(0.0306)	(0.0290)
Constant	0.589***	0.434***	0.831***
	(0.0281)	(0.0324)	(0.0462)
Observations	7,865	7,865	7,865
R-squared	0.014	0.113	0.142
Individual Controls	No	Yes	Yes
Household Controls	No	No	Yes

Notes: Column (1) comprises basic specifications, column (2) includes individual controls, and column (3) controls for both individual and household characteristics. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1. The Appendix VII Table 20 shows the co-efficient on the control variables that are included as progressed from Column 1 to Column 3.

It can be observed from Table 12 and 13 that there was no significant impact of the KP program on education level attained and child marriage when the false treatment group is considered. Thus, we are confident that the estimates presented in Tables 7 and 9 can be interpreted as the causal impact of being exposed to the KP program.

Table 14 suggests that the treatment had no significant effect on all the four placebo outcomes. Hence, this again emphasizes the validity of the identification strategy employed in this study.

Table 14 – Effect of the Treatment on the Placebo Outcomes

Treated group: 15-20 years Control Group: 21-24 years	(1) Age of household head	(2) Type of toilet facility	(3) Number of household members	(4) Type of cooking fuel
Treat x Year x WB	**0.833**	**-1.848**	**-0.282**	**-2.354**
	(1.197)	**(1.729)**	**(0.229)**	**(1.860)**
Treat x Year	-0.165	0.529	0.112	0.0186
	(0.942)	(1.450)	(0.217)	(1.562)
Treat x WB	-0.322	2.694*	0.253	3.481*
	(1.127)	(1.605)	(0.223)	(1.770)
WB x year	-1.342	3.530***	0.621***	3.035**
	(0.934)	(1.291)	(0.232)	(1.463)
Treat	1.963**	-1.659	-0.136	-1.978
	(0.873)	(1.396)	(0.213)	(1.506)
Year	1.168	-1.828*	-0.932***	-1.953
	(0.750)	(1.059)	(0.221)	(1.184)
WB	0.984	-8.543***	-1.178***	-2.925**
	(0.861)	(1.252)	(0.229)	(1.455)
Constant	44.82***	31.77***	7.201***	14.85***
	(0.679)	(1.041)	(0.223)	(1.164)
Observations	20,899	20,899	20,899	20,899
R-squared	0.005	0.016	0.016	0.002

Notes: Column (1), (2), (3) and (4) represents the four placebo outcomes – age of household head, type of toilet facility, number of household members and type of cooking fuel respectively. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1.

6. CONCLUSION

The KP program in WB has been one of the transformative policy initiatives for paving the pathway towards women empowerment in the past decade. The paper utilises a DDD identification strategy and a large household-level survey data to empirically examine whether the program has had a causal impact on child marriage and attainment of secondary/higher education of girls in WB. The results suggest that probability of the attainment of secondary/higher education of girls has increased by 6 percent and child marriage has reduced by 6.7 percent. The paper finds robust evidence to suggest that the program has succeeded in achieving its objective as results remain persistent and stable across specification, methodology, and different treatment and control groups that were selected.

Duflo (2012) says that women empowerment and economic development are closely linked to each other. She states "In my view, to bring equity among men and women, the most desirable goal will be to take policy actions that favour women at the expense of men, and that must necessarily continue for a very long time". Kabeer & Natali (2013) claims that gender equality particularly through education and employment generates more consistent and robust economic growth than that economic growth contributes to gender equality. Kalsi (2017) finds a rise in the survival of higher birth order girls if local political seats are reserved for women because exposure of female leaders changes the human beliefs. Thus, to ensure gender equality and the greater pie of economic growth for women, women empowerment is necessary. KP is such a transformative policy for women empowerment. It has transformed the constraint faced by parents into an opportunity for investment in their girl child.

Engaging women in higher education not only eradicates child marriage, but also leads to better labour market opportunity, lower exposure to domestic violence, greater recognition within family and in the society, reduction in sex-selection and breaking the inter-generational cycles of illiteracy, poor health and poverty. Thus, this research and its findings have tried to throw light on the long run impact of the policy undertaken by the government of WB towards reducing gender inequalities, achieving women empowerment, and boosting economic growth.

One of the most probable extensions that can be made to this study is the inclusion of the third component of the KP program which will facilitate to examine the program impact towards economic growth to a much larger extent because it particularly focuses on the postgraduate studies. Another possible extension can be the study of the effect of KP program on factors caused due to child marriage like employment opportunities, maternal mortality, teenage pregnancy, and child mortality. Hence, this paper provides the incentive to examine the implications of the KP program and other similar policies using different contexts.

REFERENCES

Alfano, M. (2017). Daughters, dowries, deliveries: The effect of marital payments on fertility choices in India. *Journal of Development Economics*, *125*, 89-104.

Allendorf, K. (2007). Do women's land rights promote empowerment and child health in Nepal?. *World development*, *35*(11), 1975-1988.

Angrist, J. D., & Pischke, J. S. (2008). *Mostly harmless econometrics: An empiricist's companion*. Princeton university press.

Azam, M., & Kingdon, G. G. (2013). Are girls the fairer sex in India? Revisiting intra-household allocation of education expenditure. *World Development*, *42*, 143-164.

Baird, S., Ferreira, F. H., Özler, B., & Woolcock, M. (2013). Relative effectiveness of conditional and unconditional cash transfers for schooling outcomes in developing countries: a systematic review. *Campbell systematic reviews*, *9*(1), 1-124.

Banerji, R., Berry, J., & Shotland, M. (2013). The impact of mother literacy and participation programs on child learning: Evidence from a randomized evaluation in India. *Cambridge, MA: Abdul Latif Jameel Poverty Action Lab (J-PAL)*.

Barcellos, S. H., Carvalho, L. S., & Lleras-Muney, A. (2014). Child gender and parental investments in India: Are boys and girls treated differently?. *American Economic Journal: Applied Economics*, *6*(1), 157-89.

Beaman, L., Chattopadhyay, R., Duflo, E., Pande, R., & Topalova, P. (2009). Powerful women: does exposure reduce bias?. *The Quarterly journal of economics*, *124*(4), 1497-1540.

Beegle, K., Frankenberg, E., & Thomas, D. (2001). Bargaining power within couples and use of prenatal and delivery care in Indonesia. *Studies in family planning*, *32*(2), 130-146.

Behrman, J. R., Sengupta, P., & Todd, P. (2005). Progressing through PROGRESA: An impact assessment of a school subsidy experiment in rural Mexico. *Economic development and cultural change*, *54*(1), 237-275.

Bloch, F., & Rao, V. (2002). Terror as a bargaining instrument: A case study of dowry violence in rural India. *American Economic Review*, *92*(4), 1029-1043.

Caldwell, J. C., Reddy, P. H., & Caldwell, P. (1983). The causes of marriage change in South India. *Population studies*, *37*(3), 343-361.

Cameron, A. C., & Trivedi, P. K. (2005). *Microeconometrics: methods and applications*. Cambridge university press.

Chari, A. V., Heath, R., Maertens, A., & Fatima, F. (2017). The causal effect of maternal age at marriage on child wellbeing: Evidence from India. *Journal of Development Economics*, *127*, 42-55.

Delprato, M., Akyeampong, K., & Dunne, M. (2017). Intergenerational education effects of early marriage in Sub-Saharan Africa. *World Development*, *91*, 173-192.

Dhamija, G., & Roychowdhury, P. (2020). Age at Marriage and Women's Labour Market Outcomes in India. *Journal of International Development*, *32*(3), 342-374.

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

Duflo, E. (2005). Gender equality in development. *BREAD Policy Paper*, *11*(4).

Duflo, E. (2001). Schooling and labor market consequences of school construction in Indonesia: Evidence from an unusual policy experiment. *American economic review*, *91*(4), 795-813.

Field, E., & Ambrus, A. (2008). Early marriage, age of menarche, and female schooling attainment in Bangladesh. *Journal of political Economy*, *116*(5), 881-930.

Filmer, D., & Schady, N. (2008). Getting girls into school: Evidence from a scholarship program in Cambodia. *Economic development and cultural change*, *56*(3), 581-617.

Fiszbein, A., & Schady, N. R. (2009). *Conditional cash transfers: reducing present and future poverty*. The World Bank.

Galor, O., & Zeira, J. (1993). Income distribution and macroeconomics. *The review of economic studies*, *60*(1), 35-52.

Glewwe, P. (1999). Why does mother's schooling raise child health in developing countries? Evidence from Morocco. *Journal of human resources*, 124-159.

Jayachandran, S., & Kuziemko, I. (2011). Why do mothers breastfeed girls less than boys? Evidence and implications for child health in India. *The Quarterly journal of economics*, *126*(3), 1485-1538.

Kabeer, N. (2016). Gender equality, economic growth, and women's agency: the "endless variety" and "monotonous similarity" of patriarchal constraints. *Feminist Economics*, *22*(1), 295-321.

Kabeer, N., & Natali, L. (2013). Gender equality and economic growth: is there a win-win?. *IDS Working Papers*, *2013*(417), 1-58.

Kabeer, N. (2005). Gender equality and women's empowerment: A critical analysis of the third millennium development goal 1. *Gender & Development*, *13*(1), 13-24.

Kabeer, N. (1998). Education is my daughter's future. *Index on Censorship*, *27*(3), 154-160.

Kalsi, P. (2017). Seeing is believing-can increasing the number of female leaders reduce sex selection in rural India?. *Journal of Development Economics*, *126*, 1-18.

Kingdon, G. G. (2002). The gender gap in educational attainment in India: How much can be explained?. *Journal of Development Studies*, *39*(2), 25-53.

Kingdon, G. G. (1998). Does the labour market explain lower female schooling in India?. *The Journal of Development Studies*, *35*(1), 39-65.

Maertens, A., & Chari, A. V. (2020). What's Your Child Worth? An Analysis of Expected Dowry Payments in Rural India. *World Development*, *130*, 104927.

Maertens, A. (2013). Social norms and aspirations: Age of marriage and education in rural India. *World Development*, *47*, 1-15.

Maitra, P. (2004). Parental bargaining, health inputs and child mortality in India. *Journal of health economics*, *23*(2), 259-291.

Majlesi, K. (2016). Labor market opportunities and women's decision making power within households. *Journal of Development Economics*, *119*, 34-47.

Muralidharan, K., & Prakash, N. (2017). Cycling to school: Increasing secondary school enrollment for girls in India. *American Economic Journal: Applied Economics*, *9*(3), 321-50.

Nanda, P., Das, P., & Datta, N. (2016). Making change with cash? Impact of a conditional cash transfer program on girls' education in India. *Impact on Marriage: Program Assessment of Conditional Cash Transfers*.

Nour, N. M. (2006). Health consequences of child marriage in Africa. *Emerging infectious diseases*, *12*(11), 1644.

Pande, R. P., & Astone, N. M. (2007). Explaining son preference in rural India: the independent role of structural versus individual factors. *Population Research and Policy Review*, *26*(1), 1-29.

Palloni, G. (2017). Childhood health and the wantedness of male and female children. *Journal of Development Economics*, *126*, 19-32.

Sen, A. (1990). More than 100 million women are missing. *The New York review of books*, *37*(20), 61-66.

UNICEF (2014). Ending Child Marriage: Progress and Prospects. UNICEF, New York. Retrieved from https://www.unicef.org/media/files/Child_Marriage_Report_7_17_LR..pdf

UNICEF, South Asia. (2015). Gender Equality. UNICEF, New York. Retrieved from https://www.unicef.org/rosa/what-we-do/gender-equality

UNICEF (2019). Ending Child Marriage: A profile of progress in India. UNICEF, New York. Retrieved from https://www.unicef.org/india/reports/ending-child-marriage-profile-progress-india

Wang, C., & Wang, L. (2017). Knot yet: minimum marriage age law, marriage delay, and earnings. *Journal of Population Economics*, *30*(3), 771-804.

Westley, S. B., & Choe, M. K. (2007). How does son preference affect populations in Asia? *East-West Center, Asia Pacific Issues, 84*, 1–12.

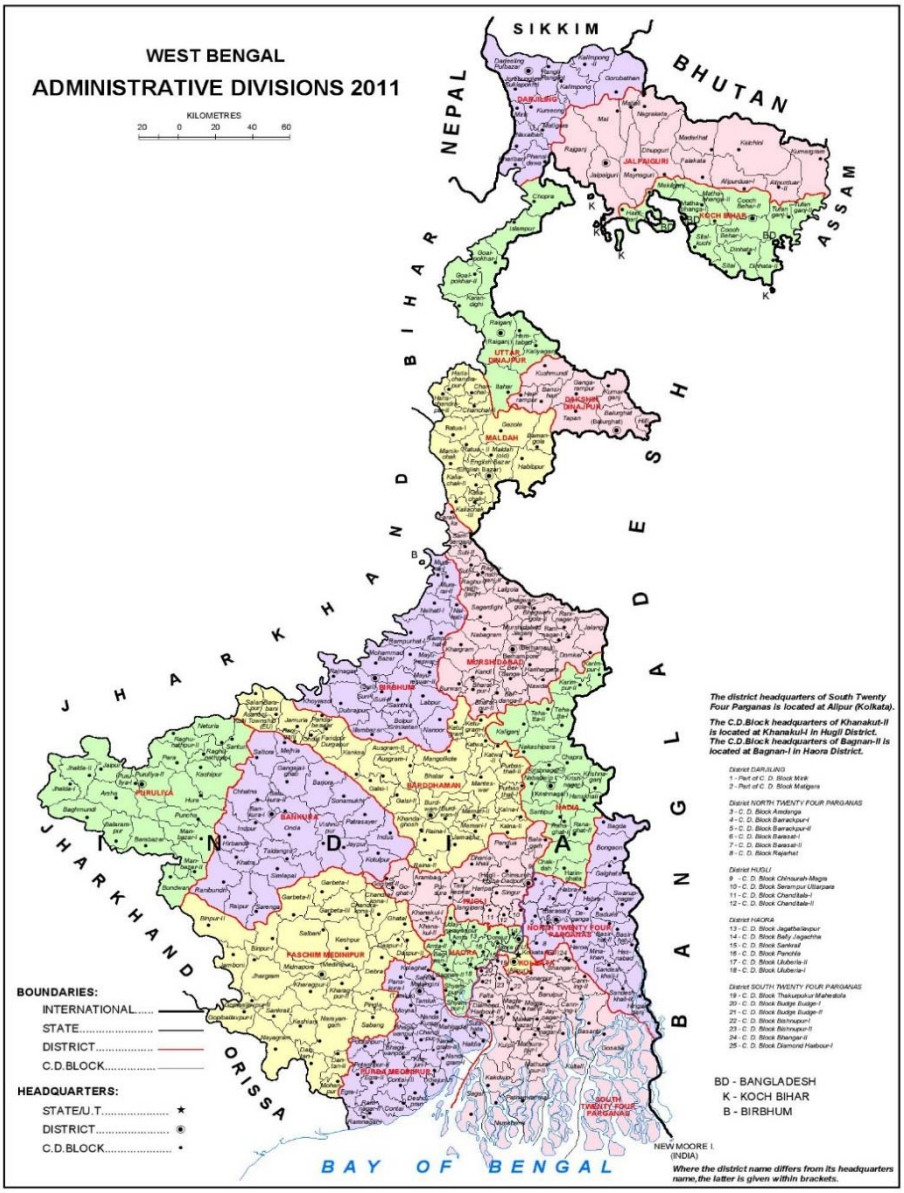
Wolfers, J. (2006). Did unilateral divorce laws raise divorce rates? A reconciliation and new results. *American Economic Review*, *96*(5), 1802-1820.

Zhang, J., & Chan, W. (1999). Dowry and Wife's Welfare: A Theoretical and Empirical Analysis. *Journal of Political Economy*, *107*(4), 786-808.

APPENDICES

Appendix I

Figure 1



Notes: The Map of West Bengal is obtained from Census of India, 2011. It can be clearly identified that among all the neighbouring states, Jharkhand shares the maximum border with West Bengal. Hence this justifies the adoption of Jharkhand as the control state along with the incidence of high rates of child marriage while utilising triple-difference estimation.

Appendix II

Table 15 – Difference-in-differences (DD) Estimate of the Impact of Being Exposed to the KP program on Education Level Attained (with all covariates)

Dependent Variable: Education Level Attained			
Treated Group: 15-20 years Control Group: 21-24 years	(1)	(2)	(3)
Treat x Year	0.106***	0.112***	0.124***
	(0.0219)	(0.0205)	(0.0181)
Treat	0.0446**	0.0264	0.0449***
	(0.0199)	(0.0181)	(0.0155)
Year	0.135***	0.205***	0.233***
	(0.0197)	(0.0181)	(0.0163)
Rural/Urban Indicator		-0.106***	0.108***
		(0.0128)	(0.0129)
Years lived at the place of residence		0.00130***	0.00105***
		(0.000133)	(0.000117)
Religion		4.93e-05	0.000104
		(0.000380)	(0.000383)
Relationship to household Head		0.00192	-0.00591***
		(0.00180)	(0.00166)
Household Wealth			0.154***
			(0.00485)
Household Head Sex			-0.0352**
			(0.0143)
Exposed to Domestic Violence			-0.0169
			(0.0123)
Constant	0.568***	0.657***	-0.0682
	(0.0185)	(0.0306)	(0.0445)
Observations	8,661	8,661	8,661
R-squared	0.062	0.088	0.224
Individual Controls	No	Yes	Yes
Household Controls	No	No	Yes

Notes: Column (1) comprises basic specifications, column (2) includes individual controls, and column (3) controls for both individual and household characteristics. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1.

Appendix III

Table 16 – Triple-difference (DDD) Estimate of the Impact of Being Exposed to the KP program on Education Level Attained (with all covariates)

Dependent Variable: Education Level Attained			
Treated Group: 15-20 years Control Group: 21-24 years	(1)	(2)	(3)
Treat x Year x WB	0.0570*	0.0628**	0.0600**
	(0.0330)	(0.0310)	(0.0269)
Treat x Year	0.0492	0.0464	0.0628**
	(0.0307)	(0.0281)	(0.0246)
Treat x WB	-0.0550*	-0.0361	-0.0270
	(0.0315)	(0.0298)	(0.0260)
WB x Year	-0.148***	-0.0866***	-0.0812***
	(0.0278)	(0.0256)	(0.0217)
Treat	0.0996***	0.0663**	0.0693***
	(0.0301)	(0.0279)	(0.0242)
Year	0.284***	0.304***	0.312***
	(0.0253)	(0.0229)	(0.0213)
WB	0.167***	0.114***	0.0664***
	(0.0263)	(0.0240)	(0.0207)
Rural/Urban Indicator		-0.148***	0.0726***
		(0.00804)	(0.00860)
Years lived at the place of residence		0.00122***	0.00107***
		(7.72e-05)	(6.94e-05)
Religion		-0.000927***	-0.000165
		(0.000153)	(0.000144)
Relationship to Household Head		0.00282**	-0.00332***
		(0.00115)	(0.00101)
Household Wealth			0.136***
			(0.00339)
Household Head Sex			-0.0259***
			(0.00918)
Exposed to Domestic Violence			-0.0198**
			(0.00871)
Constant	0.400***	0.605***	-0.0418
	(0.0243)	(0.0250)	(0.0325)
Observations	20,899	20,899	20,899
R-squared	0.069	0.112	0.216
Individual Controls	No	Yes	Yes
Household Controls	No	No	Yes

Notes: Column (1) comprises basic specifications, column (2) includes individual controls, and column (3) controls for both individual and household characteristics. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1.

Appendix IV

Table 17 – Difference-in-differences (DD) Estimate of the Impact of Being Exposed to the KP program on Child Marriage (With all covariates)

Dependent Variable: Child Marriage			
Treated Group: 15-20 years Control Group: 21-24 years	(1)	(2)	(3)
Treat x Year	-0.000790	-0.0258*	-0.0378**
	(0.0211)	(0.0154)	(0.0159)
Treat	-0.123***	-0.0541***	-0.0556***
	(0.0189)	(0.0127)	(0.0121)
Year	-0.0240	-0.196***	-0.179***
	(0.0153)	(0.0133)	(0.0154)
Rural/Urban Indicator		0.159***	0.0643***
		(0.0107)	(0.0132)
Years lived at the place of residence		-0.00407***	-0.00389***
		(0.000127)	(0.000123)
Religion		5.08e-05	3.96e-05
		(0.000461)	(0.000449)
Relationship to household Head		-0.0115***	-0.00759***
		(0.00192)	(0.00195)
Household Wealth			-0.0666***
			(0.00451)
Household Head Sex			-0.0209
			(0.0148)
Exposed to Domestic Violence			0.0544***
			(0.0128)
Constant	0.425***	0.420***	0.741***
	(0.0137)	(0.0242)	(0.0422)
Observations	8,661	8,661	8,661
R-squared	0.017	0.149	0.173
Individual Controls	No	Yes	Yes
Household Controls	No	No	Yes

Notes: Column (1) comprises basic specifications, column (2) includes individual controls, and column (3) controls for both individual and household characteristics. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1.

Appendix V

Table 18 – Triple-difference (DDD) Estimate of the Impact of Being Exposed to the KP program on Child Marriage (With all covariates)

Dependent Variable: Child Marriage			
Treated Group: 15-20 years Control Group: 21-24 years	(1)	(2)	(3)
Treat x Year x WB	-0.0305	-0.0677**	-0.0669**
	(0.0358)	(0.0341)	(0.0333)
Treat x Year	0.0297	0.0410	0.0280
	(0.0306)	(0.0307)	(0.0294)
Treat x WB	0.0864***	0.0406	0.0375
	(0.0323)	(0.0314)	(0.0302)
WB x Year	0.204***	0.0615**	0.0587**
	(0.0292)	(0.0283)	(0.0277)
Treat	-0.209***	-0.0937***	-0.0884***
	(0.0289)	(0.0295)	(0.0282)
Year	-0.228***	-0.254***	-0.228***
	(0.0276)	(0.0274)	(0.0274)
WB	-0.175***	-0.0816***	-0.0620**
	(0.0271)	(0.0269)	(0.0260)
Rural/Urban Indicator		0.152***	0.0652***
		(0.00620)	(0.00771)
Years lived at the place of residence		-0.00411***	-0.00400***
		(8.17e-05)	(7.98e-05)
Religion		-0.000535***	-0.000833***
		(0.000108)	(0.000111)
Relationship to household Head		-0.0105***	-0.00770***
		(0.00117)	(0.00114)
Household Wealth			-0.0529***
			(0.00288)
Household Head Sex			-0.0158*
			(0.00918)
Exposed to Domestic Violence			0.0564***
			(0.00845)
Constant	0.600***	0.511***	0.756***
	(0.0260)	(0.0282)	(0.0350)
Observations	20,899	20,899	20,899
R-squared	0.044	0.205	0.221
Individual Controls	No	Yes	Yes
Household Controls	No	No	Yes

Notes: Column (1) comprises basic specifications, column (2) includes individual controls, and column (3) controls for both individual and household characteristics. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1.

Appendix VI

Table 19 – Effect of Placebo Treatment on Education Level Attained (With all covariates)

Dependent Variable: Education Level Attained			
Treatment Group: 21 years Control Group: 22-24 years	(1)	(2)	(3)
Treat x Year x WB	-0.00270	0.0153	0.0393
	(0.0694)	(0.0638)	(0.0520)
Treat x Year	0.0371	0.0211	-0.0127
	(0.0554)	(0.0511)	(0.0419)
Treat x WB	-0.0164	-0.0270	-0.0672
	(0.0612)	(0.0551)	(0.0450)
WB x Year	-0.149***	-0.0887***	-0.0911***
	(0.0335)	(0.0329)	(0.0278)
Treat	0.0559	0.0629	0.0986**
	(0.0521)	(0.0468)	(0.0377)
Year	0.277***	0.308***	0.336***
	(0.0313)	(0.0288)	(0.0255)
WB	0.174***	0.117***	0.0684**
	(0.0322)	(0.0305)	(0.0263)
Rural/Urban Indicator		-0.207***	0.0765***
		(0.0124)	(0.0134)
Years lived at the place of residence		0.000922***	0.000654***
		(0.000139)	(0.000127)
Religion		-0.000935***	5.69e-05
		(0.000244)	(0.000233)
Relation to Household Head		0.0119***	0.00323*
		(0.00198)	(0.00180)
Household Head Sex			-0.0155
			(0.0143)
Household Wealth			0.174***
			(0.00456)
Exposed to Domestic Violence			-0.00934
			(0.0122)
Constant	0.384***	0.658***	-0.208***
	(0.0303)	(0.0318)	(0.0428)
Observations	7,865	7,865	7,865
R-squared	0.031	0.089	0.240
Individual Controls	No	Yes	Yes
Household Controls	No	No	Yes

Notes: Column (1) comprises basic specifications, column (2) includes individual controls, and column (3) controls for both individual and household characteristics. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1.

Appendix VII

Table 20 – Effect of Placebo Treatment on Child Marriage (With all covariates)

Dependent Variable: Child Marriage			
Treated Group: 21 years Control Group: 22-24 years	(1)	(2)	(3)
Treat x Year x WB	0.0208	-0.00981	-0.0238
	(0.0788)	(0.0659)	(0.0615)
Treat x Year	-0.0891	-0.0629	-0.0499
	(0.0586)	(0.0524)	(0.0494)
Treat x WB	-0.0316	-0.00732	0.0164
	(0.0711)	(0.0597)	(0.0548)
WB x Year	0.197***	0.0869***	0.0880***
	(0.0332)	(0.0323)	(0.0310)
Treat	0.0383	0.0259	0.0103
	(0.0522)	(0.0468)	(0.0443)
Year	-0.205***	-0.239***	-0.219***
	(0.0300)	(0.0285)	(0.0283)
WB	-0.165***	-0.0925***	-0.0713**
	(0.0312)	(0.0306)	(0.0290)
Rural/Urban Indicator		0.190***	0.0657***
		(0.0106)	(0.0141)
Years lived at the place of residence		-0.00292***	-0.00273***
		(0.000124)	(0.000121)
Religion		-0.000799***	-0.00120***
		(0.000203)	(0.000211)
Relation to Household Head		-0.0172***	-0.0129***
		(0.00197)	(0.00205)
Household Head Sex			-0.0484***
			(0.0174)
Household Wealth			-0.0751***
			(0.00525)
Exposed to Domestic Violence			0.0574***
			(0.0141)
Constant	0.589***	0.434***	0.831***
	(0.0281)	(0.0324)	(0.0462)
Observations	7,865	7,865	7,865
R-squared	0.014	0.113	0.142
Individual Controls	No	Yes	Yes
Household Controls	No	No	Yes

Notes: Column (1) comprises basic specifications, column (2) includes individual controls, and column (3) controls for both individual and household characteristics. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1.

Appendix VIII

Table 21 – Effect of Placebo Treatment on Education Level Attained using Odd Id as the Treated Group and Even ID as the Control Group (With all covariates)

Dependent Variable: Education Level Attained			
Treatment Group: Odd ID Control Group: Even ID	(1)	(2)	(3)
Treat x Year x WB	0.0136	0.0100	0.0120
	(0.0264)	(0.0242)	(0.0218)
Treat x Year	-0.0252	-0.0193	-0.0154
	(0.0235)	(0.0216)	(0.0193)
Treat x WB	-0.00223	-0.000977	-0.00205
	(0.0244)	(0.0214)	(0.0188)
WB x Year	-0.124***	-0.0449**	-0.0412**
	(0.0247)	(0.0225)	(0.0195)
Treat	0.0199	0.0166	0.0121
	(0.0235)	(0.0214)	(0.0190)
Year	0.328***	0.343***	0.357***
	(0.0192)	(0.0176)	(0.0169)
WB	0.134***	0.0885***	0.0477**
	(0.0232)	(0.0212)	(0.0191)
Rural/Urban Indicator		-0.142***	0.0731***
		(0.00798)	(0.00863)
Years lived at the place of residence		0.00157***	0.00147***
		(7.48e-05)	(6.81e-05)
Religion		-0.000961***	-0.000227
		(0.000153)	(0.000145)
Relation to Household Head		0.00406***	-0.00170*
		(0.00114)	(0.00102)
Household Sex			-0.0275***
			(0.00931)
Household Wealth			0.132***
			(0.00346)
Exposed to Domestic Violence			-0.0224**
			(0.00860)
Constant	0.453***	0.608***	-0.0152
	(0.0188)	(0.0217)	(0.0303)
Observations	20,899	20,899	20,899
R-squared	0.046	0.097	0.196
Individual Controls	No	Yes	Yes
Household Controls	No	No	Yes

Notes: The treatment group comprise individuals with odd id and individuals with even id forms the control group. Column (1) comprises basic specifications, column (2) includes individual controls, and column (3) controls for both individual and household characteristics. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1. No significant result is obtained on the treatment after shuffling the treatment and control group. Thus, the validity of the triple-difference strategy is once again proved.

Appendix IX

Table 22 – Effect of Placebo Treatment on Child Marriage using Odd Id as the Treated Group and Even ID as the Control Group (With all covariates)

Dependent Variable: Child Marriage			
Treatment Group: Odd ID Control Group: Even ID	(1)	(2)	(3)
Treat x Year x WB	0.0261	0.0366	0.0314
	(0.0304)	(0.0242)	(0.0244)
Treat x Year	0.0105	-0.00717	-0.00601
	(0.0240)	(0.0203)	(0.0194)
Treat x WB	-0.0306	-0.0354	-0.0313
	(0.0288)	(0.0234)	(0.0236)
WB x Year	0.176***	-0.00366	-0.00339
	(0.0253)	(0.0182)	(0.0186)
Treat	-0.00233	0.00853	0.00825
	(0.0226)	(0.0191)	(0.0182)
Year	-0.216***	-0.225***	-0.206***
	(0.0210)	(0.0148)	(0.0151)
WB	-0.105***	-0.0362**	-0.0212
	(0.0243)	(0.0167)	(0.0167)
Rural/Urban Indicator		0.149***	0.0647***
		(0.00620)	(0.00773)
Years lived at the place of residence		-0.00430***	-0.00422***
		(7.21e-05)	(7.07e-05)
Religion		-0.000518***	-0.000802***
		(0.000108)	(0.000112)
Relation to Household Head		-0.0112***	-0.00858***
		(0.00120)	(0.00118)
Household Sex			-0.0148
			(0.00920)
Household Wealth			-0.0507***
			(0.00293)
Exposed to Domestic Violence			0.0594***
			(0.00849)
Constant	0.469***	0.465***	0.701***
	(0.0201)	(0.0192)	(0.0267)
Observations	20,899	20,899	20,899
R-squared	0.015	0.201	0.216
Individual Controls	No	Yes	Yes
Household Controls	No	No	Yes

Notes: The treatment group comprise individuals with odd id and individuals with even id forms the control group. Column (1) comprises basic specifications, column (2) includes individual controls, and column (3) controls for both individual and household characteristics. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1. No significant result is obtained on the treatment after shuffling the treatment and control group. Thus, the validity of the triple-difference strategy is once again proved.

Appendix X

IMPACT OF KP ON ALTERNATIVE TREATMENT GROUP

As an extension to the analysis conducted in this paper, an additional attempt has been made to study the impact of KP more closely by selecting some stated cohort of girls from the complete treatment group without changing the control group. From the discussion of the paper it has been observed that majority of girls are refrained from education during their transition from primary to secondary education and instead gets married. To eliminate this practice, the KP program was implemented on girls aged 13 years and above (till 18 years) because the transition to secondary education (class VIII) generally happens at the age of 13-14 years. So, at first we consider the new treated group as girls aged 15-16 years[20] with control group same as before (21-24 years) and try to analyse the impact of KP program on them. Second, the treated group has been narrowed down to check whether the program shows any significant impact on some selected cohort of girls within the whole sample exposed to the program. The rationale behind such an adoption was to examine the effectiveness of the program.

Results from Panel A in Table 23 and 24 clearly indicates that KP program has a large significant impact on girls making a transition to secondary education for both the outcome variables. The probability of girls attaining secondary education has increased by 8.2 percent and that of child marriage has reduced by 12.6 percent. The results obtained from other treated cohorts (Panel B & C) have also remained stable and significant throughout. It can be inferred that the program has succeeded to a large extent in reducing the opportunity cost faced by parents while investing on a girl child and also had a strong impact on improving the status and well-being of the girls of WB.

[20] Since NFHS-4 (2015) is used as the endline dataset so girls aged 13-14 years in 2013 is of 15-16 years in 2015.

Table 23 – Triple-difference Impact of KP on Education Level Attained using Alternative Treatment Group

	(1)	(2)	(3)
Panel A: Treatment = 15 & 16, Control = 21-24			
Treat x Year x WB	0.0627	0.0727*	0.0822**
	(0.0414)	(0.0394)	(0.0344)
Observations	12,095	12,095	12,095
Panel B: Treatment = 16 & 20, Control = 21-24			
Treat x Year x WB	0.0942**	0.0878**	0.0785**
	(0.0430)	(0.0396)	(0.0355)
Observations	12,395	12,395	12,395
Panel C: Treatment = 15,16,19,20, Control = 21-24			
Treat x Year x WB	0.0676*	0.0648*	0.0591**
	(0.0361)	(0.0345)	(0.0289)
Observations	16,437	16,437	16,437
Individual Controls	No	Yes	Yes
Household Controls	No	No	Yes

Notes: Column (1) comprises basic specifications, column (2) includes individual controls, and column (3) controls for both individual and household characteristics. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1.

Table 24 – Triple-difference Impact of KP on Child Marriage using Alternative Treatment Group

	(1)	(2)	(3)
Panel A: Treatment = 15 & 16, Control = 21-24			
Treat x Year x WB	-0.0748	-0.121***	-0.126***
	(0.0460)	(0.0405)	(0.0385)
Observations	12,095	12,095	12,095
Panel B: Treatment = 16 & 20, Control = 21-24			
Treat x Year x WB	-0.0947*	-0.101**	-0.0996**
	(0.0540)	(0.0478)	(0.0468)
Observations	12,395	12,395	12,395
Panel C: Treatment = 15,16,19,20, Control = 21-24			
Treat x Year x WB	-0.0611	-0.0818**	-0.0799**
	(0.0419)	(0.0386)	(0.0378)
Observations	16,437	16,437	16,437
Individual Controls	No	Yes	Yes
Household Controls	No	No	Yes

Notes: Column (1) comprises basic specifications, column (2) includes individual controls, and column (3) controls for both individual and household characteristics. Robust standard errors are clustered at the household level and presented in the parenthesis, where ***p<0.01, **p<0.05 and *p<0.1.

Appendix XI:

Table 25. Balancing test on all covariates under triple difference estimation.

Variables	(1) Religion	(2) Relation to Household Head	(3) Household Head Sex	(4) Household Wealth	(5) Exposure to Domestic Violence	(6) Rural or Urban Indicator	(7) Years lived at the place of residence
Treat x Year x WB	0.582	0.224	-0.0357	0.101	-0.00720	-0.0586*	-11.88***
	(1.735)	(0.213)	(0.0245)	(0.116)	(0.0319)	(0.0335)	(3.665)
Treat x Year	-1.123	-0.183	0.00840	-0.124	0.140***	0.0178	4.021
	(1.722)	(0.149)	(0.0173)	(0.104)	(0.0308)	(0.0296)	(2.512)
Treat x WB	-0.854	-0.262	0.0158	-0.178	0.0103	0.0611*	-8.100**
	(1.683)	(0.205)	(0.0239)	(0.111)	(0.0313)	(0.0327)	(3.624)
WB x Year	0.841	-0.187	-0.0399**	-0.377***	0.0226	0.177***	-27.87***
	(1.406)	(0.153)	(0.0192)	(0.0986)	(0.0206)	(0.0324)	(2.588)
Treat	0.951	0.511***	-0.000895	0.00238	-0.163***	0.000116	26.74***
	(1.684)	(0.150)	(0.0171)	(0.0999)	(0.0307)	(0.0286)	(2.491)
Year	1.883	-0.0968	0.0122	-0.325***	-0.581***	0.105***	-2.434
	(1.373)	(0.128)	(0.0148)	(0.0855)	(0.0224)	(0.0252)	(2.166)
WB	-7.237***	0.204	0.0391**	0.700***	-0.0207	-0.169***	16.84***
	(1.246)	(0.156)	(0.0186)	(0.0933)	(0.0207)	(0.0312)	(2.652)
Constant	8.572***	3.623***	1.101***	2.570***	0.692***	1.627***	28.29***
	(1.241)	(0.125)	(0.0149)	(0.0813)	(0.0225)	(0.0242)	(2.112)
Observations	20,899	20,899	20,899	20,899	20,899	20,899	20,899
R-squared	0.024	0.005	0.002	0.060	0.225	0.035	0.161