Socioeconomic Determinants of Fertility in Thimphu City: The Effect of Baby Sitter

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Abstract

A study was carried out to ascertain the socio-economic determinants of fertility in Thimphu City. In particular, the purpose of the paper is to assess the impact of the availability of Baby Sitter on fertility measured as number of children in the family. The explanatory variables used in the study are: Age of the Respondent, Age at Marriage, Duration of Breastfeed in months, the factor of availability of Baby Sitter, Education Level, number of Work Hours, Duration of Separation from the Spouse, Income Level and the use of Contraception.

The research method used is quantitative with a structured questionnaire administered to a sample size of 150 married men and women who are both working in Thimphu City and within the age range of 15 to 49 years. The respondents are also living in Thimphu City itself and the sample comprised of 68% female and 32% male. A multiple linear regression is used to develop the econometric model of socio-economic determinants of fertility based on Bongaarts' Proximate Determinants of Fertility Model.

72% of the respondents agreed to the statement that they cannot go for more than two children because they cannot find baby sitter while only 14% disagreed to the same statement. The Age of the Respondent, Age at Marriage and the factor of availability of Baby Sitter are only the explanatory variables found to have statistical significance in determining the fertility in Thimphu City.

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Introduction

In Bhutan, with rapid modernization taking place in urban places such as Thimphu combined with rising cost of living, it has become costly for families to have higher number of children. Moreover, the nuclear family began to emerge in the urban places and with it the class of both the spouses working. Therefore, there is demand for baby sitter to look after the children in absence of grandparents in extended family who took care of the children. The problem has been compounded with those employees from neighboring countries mostly India working as baby sitters being evicted from the country. This probably led to decline in the fertility particularly in urban areas. Therefore, this paper attempts to study socio-economic determinants of fertility in Thimphu and whether the factor of availability of Baby Sitter (BS) has statistical significance in determining the fertility level in Thimphu City.

The natural increase was the main cause for the increase in population. However, the factors got complex in the contemporary period as several other factors influenced population either explicitly or implicitly. Education of the parents and the increasing cost of raising children influenced fertility to a great extent. Moreover, with rapid development in Bhutan, children as an additional labour input in the farm are disregarded, which existed in the traditional society in the past.

Education level and female labour force participation has definite implicit impact on the number of children born by women. According to Karakaya (2012) adult literacy rate, female work participation and proportion of people living in urban areas had significant statistical impact on the determination of fertility rate in the provinces of Turkey. As the spouses are literate and become aware, the tastes for children become different. Thus, various methods of family planning are adopted to control the children.

Total Fertility Rate has been constantly declining in Bhutan since 1991 from that of 6.1 to 3.6 in 2005. The decline was ascribed partly to increasing number of girls' enrollment in

schools and their work participation rate as per Gross National Happiness Commission (GNHC, 2010). With the introduction of parliamentary democracy in 2008, girls' enrollments in schools have significantly increased with every party pledging to achieve universal primary education through different strategies. According to Bhutan Living Standard Survey (BLSS) 2012 Report of National Statistis Bureau, the Female Primary Gross Attendance Ratio is 115.7% (BLSS 2012, Table A3.14) while Female Primary Net Attendance Ratio is 91.6% (BLSS 2012, Table A3.16)

Problem statement

Nuclear family began to emerge in urban areas such as Thimphu and both the spouses began to work to supplement the family income. Therefore, there is demand for baby sitter to look after the children in absence of grandparents in extended family who took care of the children. Moreover, with increasing living standard in Thimphu and with frequent occurrence of inflation, people could not simply afford higher number of children.

Prior to 2010, there were substantial numbers of illegal workers particularly from neighboring states of India working as baby sitters in urban areas such as Thimphu. According to APFA NEWS (2010), a total of 130 people were arrested in 2010 for illegally working as housemaids and baby sitters in the western districts including Thimphu. With such implementation of rules, working spouses were finding difficult to manage households and thus influenced the number of children they would have. Therefore, this study made an attempt to ascertain whether issue of baby sitter has real significant impact in determination of number of children in a family besides other socio-economic determinants.

Definition of key concept

Various authors define fertility differently, and use various measures to study fertility differentials using both cross-sectional and longitudinal data. Bhende and Kanitkar (2010, p.251) defined fertility as "the actual level of reproductive performance determined by social, cultural, psychological as well as economic

factors." The social, cultural, and economic factors have been particularly relevant in developing countries such as Bhutan for increased fertility. According to the United Nations as cited in Bhende and Kanitkar (2010, p.250), fertility "refers to the actual reproductive performance - whether applied to an individual or group." Pathak and Ram (2013, p.108) stated that, "Fertility is defined as the child bearing performance of women or a group of women measured in terms of the actual number of children born." Dinh (1997) defined fertility as the "number of children ever born." The study carried out by Mohapatra and Roy (2010), on work and fertility linkage in women in Bhubanesar city also measured fertility as the "number of live births in the family." Although various authors define fertility differerently, there is no significant discrepancy in their meaning. However, for this study, the definition of Mohapatra and Roy (2010, p.45), which states that fertility as the number of live births by an individual women will be used as this definition is more explicit and easily measurable for individual fertility studies. The other measures of fertility such as total fertility rate (TFR), gross reproductio rate (GRR) are difficult to measure and applies to a group.

Significance of the study

Although there are well established theories such as physiological, social and cultural factors affecting fertility (Bhende and Kanitkar, 2010), proximate determinants of fertility (Bongaarts, 1978) and Becker's Economic Theory of Fertility (1960) as cited in (Bhende and Kanitkar, 2010), which explains the determinants of fertility, all of those theories has explicitly not stated the impact of availability of baby sitter on fertility. Therefore, this paper attempted to bridge the knowledge gap by studying the impact of baby sitter on fertility. The statistical significance of its impact on fertility would also be explored besides just frequency distribution of the responses.

Objective

The main objective of the study is to find out what are the significant socio-economic determinants of fertility in Thimphu City from these explanatory variables such as Education Level (EL), Monthly Income (MI), Age at Marriage (AM), Factor of

Availability of baby sitter (BS), Age of the Respondent (AR), Numbers of usual hours of work done in a day (WH), Duration of Breastfeed in months (DB). The control variable is created through interaction variable using Young (computed binary variable called Young using Age as those younger than mean years of 34 years as young and the rest as old) and those who Do not Use Contraception. The other important objective is also to ascertain whether the factor of availability of BS has significant impact on fertility

Research question

Does the factor of availability of BS have statistical significance in determining the number of children in a family in Thimphu City?

Hypotheses

The hypotheses of this research are:

1. Null hypothesis: None of the independent variables viz. EL, MI, AM, Factor of Availability of BS, AR, WH, DB and; interaction variable Young and Do not Use Contraception is capable of predicting the Number of Children at 0.05 significance level
2. Alternative hypothesis: At least one of the independent variables is capable of predicting the number of children at 0.05 significance level.

Limitations of the study

1. Although the study population is those married couple who are both working in Thimphu city, the sampling technique applied is purposive sampling which is nonprobability sampling and thus the results applies only to the sample and not the population.
2. As the impact of availability of BS is studied for the first time, the use of Likert Scale to measure the factor of BS may not be an accurate or appropriate measurement.
3. The age limit for men is also set from the age 15 to 49 years although biologically men can become a father beyond 49

years.

Literature review

Throughout the world, the studies on the determinants of fertility have been largely explained through Demographic Transition Theory (Notestein, 1945). Mostly based on longitudinal data, the theory posited that change in fertility is determined by various socioeconomic factors. Similarly, using sample survey data, this theory was supported by Hirschman and Guest (1990) as reported in Dartanto (2013), that socioeconomic factors changes the fertility. Omran (2005) maintained that literacy, mortality and the desire for material wealth are some of the risk factors that affect fertility. Basically, the theory explains the changes of fertility and the population over time; however, it did not clearly explain as to what are the actual determinants of fertility.

Although the quantitative study of fertility has gained popularity in demographic research, however, there is limited credible research done in the South Asian region (Dartanto, 2013). Therefore, the paper will focus on the few articles available in the South Asian and Southeast region to evaluate and conceptualize the determinants of fertility in Bhutan.

According to Dartanto (2013), infant mortality was the principal factor in determining high fertility. He also found out that the demand for fertility follows the demand for goods which validates the Beckar's (1960) model of fertility. The explanatory variables that were used for his study included: female education, infant mortality rate, income per-capita, price and ratio of urban population to total population. The data used was the panel data which enabled the control of unobservable country-specific characteristics that may be correlated with fertility behavior. However, the standard error of the multi linear regression estimator to estimate the TFR is not given. Moreover, the collinearity statistics is also not mentioned as the independent variables such as income and education could be highly correlated.

According to Dinh (1997), education has an important impact

on determining fertility in Vietnam. He also found out that husband's characteristics play as vital role as that of wife in influencing the level of fertility. The independent variables used in his study were: age, length of marriage, education, type of residence and sector of employment. The study used different regression models such as OLS, Ordered-logit model, and Poisson model and found that there were no significant differences in the coefficients of the independent variables. However, the impact of these variables were separately studied for both the spouses in which the impact of one of the spouse would influence the other. The study was based on the model of microeconomic approach to fertility. He defined fertility as "the number of children ever born."

The model of Kingsley Davis and Judith Blake (1956) classifies "intermediate variables" based on social, cultural and economic factors. In total, there are eleven variables which are broadly classified under three categories, such as: (i) Intercourse variables, (ii) Conception variables and (iii) Gestation variables (Bhende and Kanitkar, Principles of population studies, 2010). However, none of these eleven variables have explecitly stated the effect of the availability of BS on fertility. The intermediate variables model led to the development of the model of "proximate determinants of fertility" (John Bongaarts 1978). This model is also termed as "intermediate fertility varaibles" such as marriage, contraception, lactation and induced abortion (Bongaarts, 1978). The model has been used among populations of different countries or subgroup of populations within the same country.

According to Akmam (2002), education was found to be the most important factor in determining fertility in Bangladesh. Although the affects was indirect or through other intermediate affects, a significant inverse relationship between education and fertility was observed. In addition, fertility is determined by the supply of children, the demand for children and the material and non-material costs of fertility regulation (Bulatao and Lee 1983) as cited in Akman, (2002). A study conducted in 33 predominantly Muslim countries found that socioeconomic

conditions are the main causes of high fertility rates (Yurtseven, 2015). Furthermore, he observed an inverse relationship between economic development and fertility rates. As noted by Becker (1981) in Yurtseven (2015), higer education level and women's labour force participation rate lowers the fertility. This may be because there is increasing opportunity cost involved with higher level of education and work. In Bangladesh, a decline in fertility has been associated with women's role in household decision making and control over resources which measures autonomy of the wormen (Amin and Lloyd, 2002).

According to Tayaraman, Mishra and Arnold (2009), parity and family sex-composition were strongly related to fertility desires in South Asia. In general, although, women desiring to have another children decreased with each parity, there is preferance for boys. 51% of women in Nepal with two daughters wanted to have another child compared to with only 6% of women who already had two sons (Tayaraman, Mishra, and Arnold, 2009). As reported by Mohapatra and Roy (2010), in their study of work and fertility linkage of 140 women in Bhubaneswar city, education, age at marriage and income had negative relationship to fertility while work hours had positive relationship. This positive relationship between work hours and fertility is argued from the incompatibility of work role rather than the work itself and suggested that Indian women are capable of handling worklife balance. Their study adopted OLS regression model. The dependent varaible was live birth while independent variables were: individual income, family income, working hour, educational qualification and age at marriage. Income (both indivudual and family income) and educational qualification were found to be the most significant predictors for the live birth in sample study of 140 women in Bhubaneswar city.

From the literature review the dependant variables identified are: Level of Education, Monthly Income, Age at Marriage, Age of the Respondent, Numbers of usual hours work done in a day and duration of Breastfeed. The factor of availability of BS and the interaction variable of those younger than 34 years and do

not use Contraception is introduced to the model to study their effect in determining the fertility.

Method

Research design

A quantitative approach design is used for this study to build the econometric socio-economic fertility model. A structured questionnaire is exclusively used comprising of both open ended and closed ended questions. A five scale Likert scale questions is also adopted to particularly capture the responses on the availability of baby sitter and its impact on the fertility.

Study population

The target population for this consists of all married couples who are both working and within the age of 15-49 years living in Thimphu city. Although the legal age for marriage in Bhutan is from 18 years and above, the lower limit is considered from 15 years because it is internationally accepted age limit in Demography and in Bhutan also there are cases of women giving birth from the age 15 years. For instance, 2.9% of the women in Thimphu gave live birth according to Bhutan Multiple Indicator Survey Report (NSB 2010, p.107).

Sampling

The purposive sampling technique is used as the population under study is unknown and hence frame is not available. The sample comprises of those married men and women whose spouses are also working. The sampling unit comprises from civil servants, corporate employees, private business and own account workers.

The sample size is arrived at using Cochran's infinite equation to determine the sample size for unknown population (Kothari, 2004).

$$n = \frac{Z^2 pq}{e^2}$$

where Z= The value of variance at a confidence level
p= sample proportion
q=1-p
e= Acceptance error

Thus, taking 50% sample proportion at 95% confidence level with 8% of confidence interval, the sample size is computed to be

n= $((1.96)^2 * 0.5(1-0.5))/ (0.08)^2$

Data collection methods and instruments

The primary data is collected through structured questionnaire from those men and women who are working and whose spouse is also working. The majority of the data is collected through survey and few through online google survey for those with internet access. There were only few people who responded to the online survey.

Data analysis

A Likert scale is used to measure the effect of factor of availability of BS to the fertility. The data generated from the survey questionnaire is analyzed using SPSS and Microsoft Excel. The Microsoft Excel is basically used as worksheet to prepare the data for analysis in the SPSS and also to prepare graphs and charts. The econometric model of socioeconomic determinants of fertility is constructed using Multiple Linear Regression. The test of Collinearity Statistics is done for the independent variables so as to correct the model and remove some independent variables if there is existence of Multicollinearity. The Pearson's Bivariate Correlations between the variables is also conducted besides the descriptive statistics, such as measures of central tendency and measures of variations.

Results and discussions

Overall, 53% (see Table 1) of the respondents strongly agreed to the statements that they cannot go for more than two children because they cannot find baby sitter.

Table 1. Agreement to the Statement that you cannot go for more than two children because you cannot find Baby Sitter

Agreement on Baby Sitter		Frequency	Percent	Valid Percent
Valid	Strongly Disagree	8	5.3	5.4
	Disagree	12	8.0	8.1
	Neither Agree nor Disagree	21	14.0	14.2
	Agree	27	18.0	18.2
	Strongly Agree	80	53.3	54.1
	Total	148	98.7	100.0
Missing		2	1.3	
Total		150	100.0	

Only 8 respondents of the total 148 which comes to 5.4% strongly disagreed to the statement while 14.2% neither agreed nor disagreed to the statement. Overall, 72.29% agreed to the statement (sum of Agree and Strongly Agree) while only 13.52% (sum of Strongly Disagree and Disagree) disagreed to the statement.

In terms of comparison across different educational level, Undergraduate had responded the highest on Strongly Agree with 45% while those with Masters or PhD the lowest with 15% (see Table 2). Those with Secondary and Masters or PhD equally scored the lowest on Strongly Disagree with 14.3% while again Undergraduate also responded the highest on Strongly Disagree with 42.9%.

Table 2. Agreement to the Statement by Different Level of Education

Agreement on Baby Sitter	Level of education						Total
	NE	P	S	D	U	M/ PhD	
Strongly Disagree	0.0%	0.0%	14.3%	28.6%	42.9%	14.3%	100%
Disagree	0.0%	0.0%	33.3%	16.7%	33.3%	16.7%	100%
Neither Agree nor Disagree	0.0%	0.0%	23.8%	19.0%	52.4%	4.8%	100%
Agree	0.0%	0.0%	37.0%	18.5%	44.4%	0.0%	100%
Strongly Agree	0.0%	0.0%	18.8%	21.3%	45.0%	15.0%	100%

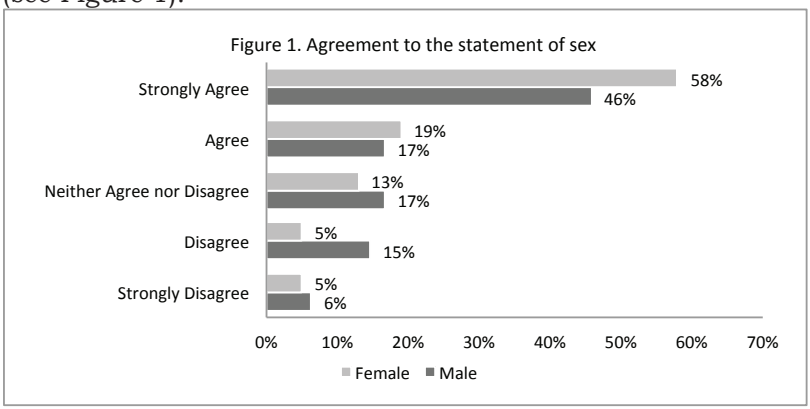
Note: NE= no education; P=primary; S=secondary; D=diploma; U=undergraduate; M=masters

The data is analyzed by the category of sex to find out the gender difference in responses to the statement. Out of the total responses on Strongly Agree, 72.5% was responded by the female while only 27.5 % was responded by male (see table 3). The response of the female was significantly higher than that of male and this could be due to the general practice that female bear more burden in raising children than man. In contrast, again response to the Strongly Disagree was significantly higher for female with 62.5% while it was just 37.5 % for male. This contrasting result could be due to composition of the sample that female comprises 68% of the sample while the rest only 32% is comprised of male.

Table 3. Agreement to the Statement by Sex

Agreement on Baby Sitter	Sex		Total
	Male	Female	
Strongly Disagree	37.5%	62.5%	100.0%
Disagree	58.3%	41.7%	100.0%
Neither Agree nor Disagree	38.1%	61.9%	100.0%
Agree	29.6%	70.4%	100.0%
Strongly Agree	27.5%	72.5%	100.0%

Therefore, an analysis of how female and male rate themselves is carried out. Out of the total female, 58% responded to the Strongly Agree while only 5% responded to the Strongly Disagree (see Figure 1).



13% of the female responded to the neither Neither Agree nor Disagree against 17% of the male. Male responded slightly lower than female to the Strongly Agree category with 46% while the response to the Strongly Disagree was almost identical with 6% only. In general, the type or response was same for male and female with highest percentage to the Strongly Agree and a decreasing trend towards that of Strongly Disagree except male where the response on Agree and Neither Agree nor Disagree was equal with 17%.

The questions were asked as to whether they would like to have more than two children and if not what was the reason for not desiring to have more than two children. Majority of the respondents (65%) said that they would not like to have more than two children while little over one-third (35%) of the sample reported that they would like to have more than two children.

81.3% of those with the highest level of education (Masters/ PhD) responded that they would not like to have more than two children (see Table 4) while it was the maximum with 43.3% for Diploma level who said they would like to have more than two children. Generally, higher the level of education, higher is the percentage point of respondents who said that they would not like to have more than two children except with Diploma which is slightly lower than the Secondary. This finding from the sample confirms to the findings of Mohapatra and Roy (2010) where their regression equation had negative significant beta coefficient for level of education measured in number of years in school.

Table 4. Desire to Have More than Two Children by Education Level

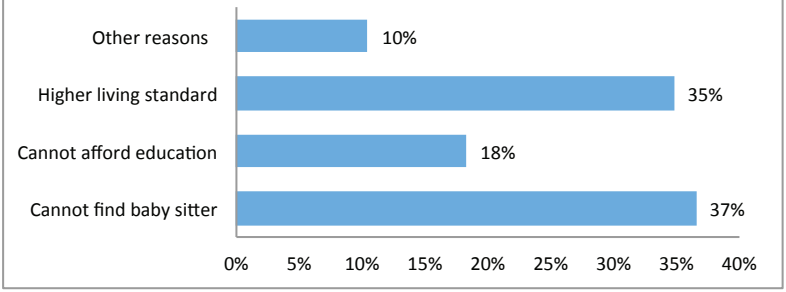
Like to have more than 2 children	Level of education					
	NE	P	S	D	U	M/ PhD
Yes	0.0%	0.0%	37.1%	43.3%	32.4%	18.8%
No	0.0%	0.0%	62.9%	56.7%	67.6%	81.3%
Total	0.0%	0.0%	100.0%	100.0%	100.0%	100%

Note: NE= no education; P=primary; S=secondary; D=diploma; U=undergraduate; M=masters

37% of the respondents said that they do not like to have more than two children because they cannot find baby sitter while 35% and 18% responded Higher Living Standard and Cannot Afford Education respectively as the reason (see Figure 2). The

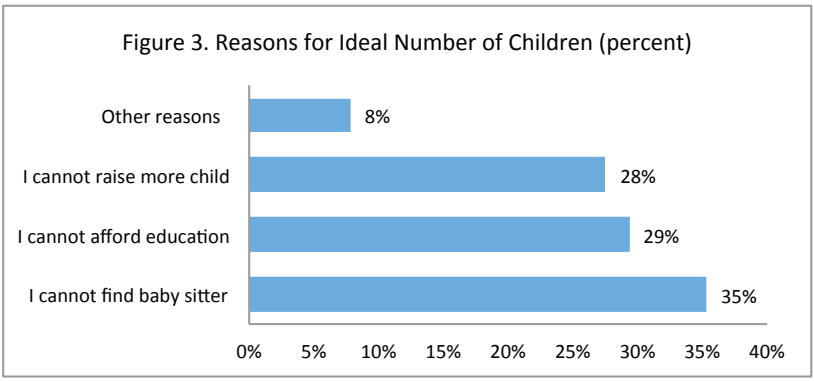
rest 10% of the respondents cited other reasons which consist of reasons such as health and small family being happy family as other reasons.

Figure 2. Reasons for not liking to have more tha two children (in percent)



Although majority of the respondents said two children as their ideal number of children, there were various reasons for particular number of children ranging from one to five children as their ideal number of children. The reason that one cannot find baby sitter was the highest with 35% (see Figure 3) followed by not being able to afford education with 29% which is closely followed by not being able to raise more child (28%). The other reasons than those cited was the least with 8% only and the reasons were similar to that of other reasons in not liking to have more than two children.

Figure 3. Reasons for Ideal Number of Children (percent)



The duration of separation from spouse in a month was categorized into five categories based on the number of days of separation from spouse; Never (zero days of separation), Occasional (1 through 7 days), Frequently (8 through 14 days), Most of the time (15 through 29 days) and, Always (30 days or entire month). Both male and female respondents had Occasional separation from the spouse as the highest percentage with 56.3% and 41.6% (see Table 5) respectively. In the male category, none of the respondents said that they were always separated from spouse while in the female category, 6.9% said that they were always separated from their spouse. However, those female who said that they were always separated from their spouse were the lowest.

Table 5. Duration of Separation from Spouse

Sex	Duration of separation from spouse					Total
	Never	Occa-sional	Freq-uently	Most of the time	Always	
Male	29.2%	56.3%	10.4%	4.2%	0.0%	100%
Female	16.8%	41.6%	18.8%	15.8%	6.9%	100%

Econometric model of multiple linear regressions

The econometric model of the determinants of the fertility was developed using multiple linear regression. The dependent variable is the Fertility (F) while the independent variables considered to develop the model are: Age of the respondent (AR), Age at first Marriage (AM), Duration of Breastfeed in months (DB), Factor of availability of Baby Sitter (BS), Education Level (EL), usual Number of Work Hours in a day (WH), Duration of separation in days in a month (DS), Monthly Income Level converted to log (IL), Use of Contraception (UCont), Not use of Contraception (NCont) and the interaction variable of those who do not use contraception and young in which young is considered as those younger than mean age of 34 years of the sample (NCont*Young) created as control variable in the model. Thus the model is represented as

$$Y = \propto_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \cdots . \beta_{11} X_{11} + \varepsilon \ldots\ldots . . equation\ 1$$

$$Where\ Y = \text{F},\ \propto_0 = Intercept, X_1 = AR,\ X_2 = AM,\ X_3 = DB,\ X_4 = BS,\ X_5 = EL,$$
$$X_6 = WH,\ X_7 = DS,\ X_8 = IL,\ X_9 = UCont.,\ X_{10} = NCont.,\ X_{11} = NCont * Young$$

Although the model accounts for 32% of the variance (see Table 6), however, the model is fit at 95% confidence level as P = 0.000 (see Table 7) which is less than the α = 0.05 Therefore, the null hypothesis of that none of the independent variables is capable of predicting fertility is rejected.

Table 6: Summary of the econometric model of determinants of fertility

Model Summary[b]			
R	R Square	Adjusted R Square	Std. Error of the Estimate
0.619a	0.383	0.320	0.611

a. Predictors: (Constant), NCont*Young, DS, DB, Log Income, AR, agreement on BS, No of WH, EL, AR, Use contraception
b. Dependent Variable: No of Children

As the model is fit, an individual variable is analyzed as to find out which of those is capable of predicting fertility at 95% of confidence level. By looking at the p values of each independent variables (see Table 8), one can infer that, only three independent variables such as AR, AM and BS are statistically significant while rest of the explanatory variables are not even significant at 90 confidence level. The AR and AM are even significant at 99% of confidence level.

Table 7. ANOVA analysis

ANOVA[a]					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	22.931	10	2.293	6.141	0.000b
Residual	36.969	99	0.373		
Total	59.900	109			

a. Dependent Variable: No of Children
b. Predictors: (Constant), NCont*Young, DS, DB, Log Income, AR, Agreement on BS, No of WH, EL, AR, Use contraception

Therefore, the equation to predict the fertility would be

$$Y = \alpha_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_5 X_5 + \varepsilon \ldots\ldots equation\ 2$$

$$Y = 3.450 + 0.055AR + -0.093AM + -0.133BS + \varepsilon \ldots\ldots equation\ 3$$

Table 8. Regression Coefficients

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	3.450	1.293		2.667	0.009
AR	0.055	0.014	0.359	3.825	0.000
AM	-0.093	0.023	-0.335	-3.995	0.000
DB	0.002	0.006	0.025	0.296	0.768
BS	-0.133	0.055	-0.204	-2.405	0.018
EL	-0.062	0.039	-0.137	-1.581	0.117
WH	-0.031	0.034	-0.075	-0.897	0.372
DS	0.005	0.007	0.060	0.721	0.472
IL	0.106	0.292	0.032	0.364	0.717
Ucont	-0.043	0.166	-0.026	-0.257	0.798
NCont* Young	-0.289	0.264	-0.113	-1.098	0.275

a. Dependent Variable: No of children

There is no existence of multicollinearity between the independent variables as variance inflation factor (VIF) is less than 10 and the tolerance is greater than 0.10 for all the explanatory variables (see Table 9).

Table 9. Test of Collinearity

Model	Collinearity Statistics	
	Tolerance	VIF
AR	0.707	1.414
AM	0.887	1.128
DB	0.860	1.163
BS	0.866	1.154
EL	0.826	1.211
WH	0.891	1.123
DS	0.915	1.093
IL	0.792	1.262
Ucont	0.611	1.636
NCont*Young	0.591	1.692

Fertility and age of respondent

The Age of the Respondent as an explanatory variable has positive coefficient of 0.055 with a standard error of 0.014. This finding confirms with the Theoretical Maximum Fertility which states that "a woman would get 37 children, if she gave birth to a child every ten months over a period of 31 years" (Bhende and Kanitkar 2010, p. 255). This basically implies that as the age of the women increases the fertility level also increases. According to Thomlinson (1965) as cited in Bhende and Kanitkar (2010), a woman would produce a total of 25 children even if she gave birth every 15 months during her entire reproductive period.

Fertility and age at marriage

The Age at Marriage has negative coefficient of 0.093 which is further consolidated by strong negative correlation which is statistically significant even at 99% of confidence level.

Mohapatra and Roy (2010), also had negative coefficent of 0.068 with a standard error of 0.025 in his study of work and fertility (measured in number of live birth) linkage in women in Bhubaneswar city. According to Bhende and Kanitkar (2010), age at marriage plays an important roles in determining fertility levels and differentials. They argued that lower level of fertility in Europe prior to the Industrial Revolution was due to higher age at marriage. Davis (1956) as cited in Bhende and Kanitkar (2010) also argued that postponement of marriage was one of the ways in which Japan attempted to reduce fertility rates. According to Yurtseven (2015), the age at marriage did not have statistical significane in his study of socio-economic determinants of fertility in muslim countries but had a negative coefficient.

Fertility and factor of availability of baby sitter

The factor of availability of BS also has negative coefficient of 0.133 with a standard error of 0.055. There is a strong positive correlation between Fertility and AR while a strong negative correlation between Fertility and AM and Fertility and factor of availability of BS (see Table 10). These variables are also statistically significant in determining the fertility in this econometric model. Although there is strong negative correlation between Fertility and EL, the variable of EL is not statistically significant in determining the Fertility. Similarly, the interaction variable which is those who do not use contraception and are young also showed strong negative correlation with the Fertility but did not have predicting power of Fertility which is statistically significant.

Table 10. Pearson's bivariate correlations between the variables

	AR	DB	EL	MI	Ucont	NCont* Young	Ncont	DS	WH	BS	AM
NC	0.41**	0.10	-0.25**	-0.01	-0.04	-0.23**	0.04	0.16	-0.06	-0.23**	-0.36**
AM	0.00	-0.10	0.27**	0.09	-0.16	0.11	0.16	0.02	0.12	-0.05	
BS	-0.05	0.17	0.06	0.13	0.18*	-0.10	-0.18*	0.04	-0.09		
WH	0.20*	-0.09	0.08	0.11	-0.10	0.03	0.10	0.12			
DS	0.12	0.02	-0.10	0.01	-0.24**	0.09	0.24**				
Ncont	-0.06	0.02	-0.03	-0.09	-1.00**	0.63**					
Ncont* Young	-0.42**	-0.08	0.04	-0.14	-0.63**						

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Conclusion and recommendations

A total of 150 people were surveyed in which 68% comprised of female and the rest 32% male. The mean age of the respondents is found to be 34 years while the mean age at marriage is 25 years. Majority of the respondents have undergraduate qualification with 46%. In general, 72% of the sample agreed to the statement that they cannot go for more than two children because they cannot find baby sitter while 14% disagreed to the statement and another 14% neither agreed nor disagreed. The highest percentage to the strongly agree was from those who had Masters or PhD category. By the category of sex, female had higher percentage with 72.5% in strongly agree category while the rest male with a percentage of only 27.5%. Majority of the respondent reported that their ideal number of children is two and 37% of the respondents said that it is their ideal number because beyond that they cannot find baby sitter. The use of the condom was the most popular method of contraception in the sample with a percentage of 63%.

The linear multiple regression used to develop the model showed that only Age of the Respondent, Age at Marriage and factor of availability of Baby Sitter were found to have statistically significance in determining the fertility. The test of collinearity indicated that there is no existence of multicollinearity in all the explanatory variables. Among those significant variables, only Age of the Respondent had positive associations with fertility while Age at Marriage and factor of availability of Baby Sitter had negative associations with fertility. The Bivariate Correlations also showed strong correlations between fertility and the significant variables while there were also other variables that showed significant strong correlation but not statistically significant in determining the fertility.

Although the finding shows that the factor of availability of Baby Sitter has effect on fertility, for policy decisions, in-depth study by developing the frame and the carrying out probability sampling is required. When probability sampling is used, one can compute inferential statistics which can be applied to draw conclusions about the population. Since this study is carried

for the first time, there is immense scope for future researchers to carry out comprehensive study with alternative research methods. Just by looking at the sample, if the number of children has to be increased, early marriage and policies where baby sitter is available has to be developed. While if fertility is to be reduced, postponement of marriage and stringent policies on easy availability of baby sitter is encouraged.

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