ECONOMIC FACTORS INFLUENCING CONCEPTION DECISION OF WOMEN IN BURDWAN: AN ANALYSIS

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INTRODUCTION

Transition to motherhood is an important event for the mother and the age at which this transition occurs has important implications on the well being of both mother and child. Decision making for timing of motherhood is a very important aspect of the reproductive health of a woman because conception at high risk ages (younger than 19 years or older than 35 years) has a lot of unfavourable complications and outcomes for women, family and society. Conception at an early age can have a negative impact on marital stability, asset accumulation, woman's health but have a positive impact on the birth interval of subsequent children and completed family size. In India, women's first conception is at a relatively young age. The median age at first birth was about 21.2 years in 2020-21, an increase of 0.4 years from the 2006-06 level. In today's scenario, taking Metropolitan cities into consideration, there are nuclear families, and women are working full-time, most of the women prefer to take their conception decision in their 30s. Whereas, in small cities or villages in India are still suffering with the problem of teenage marriage and teenage conception. Most of the child marriages result in teenage pregnancy due to pressure of the society. Analysis of National Family Health Survey (NFHS)-4 shows that among the married girls aged between 15 to 19 years in India, 31.5 percent of them have babies. It is very essential to note that approximately one-fourth of the married girls in the age group of 15-16 years had at least a baby, more than a one-fourth of the married girls of this age group had at least a child at the age of 17, and 31% of the girls had a child by the age of 18.

Most Indian women desire and have a first birth shortly after marriage. Marriage age appears to have a strong influence on the first birth interval in India. Contrary to expectation, it has been seen that women who marry very early tend to delay their first birth significantly.

Regarding the role of education and the conception decision of women, it appears that much of the influence of education on the conception decision of women is through a delay in entry into marriage rather than a delay in entry into motherhood after marriage. A first birth interval does not significantly vary by educational attainment, except for women with high education who tend to have a longer first birth interval, net of marriage age. Thus, for most women education provides an opportunity to delay marriage but not first birth after marriage in India. It seems that only highly educated women delay their first birth.

Place of residence has been considered as one of the important factors that affect the age of women at first birth of women. Women who grew up in the rural areas are more likely to enter motherhood earlier. It is observed that mean age at first birth is lower for women residing in rural areas compared with those residing in urban areas.

Women's age at the time of first conception is determined by another variable, which is the status of employment of married women. It is noted that age at first childbirth among working married women is higher than those who are not working. Unemployed women have a lower mean age at first birth than employed women. Due to the responsibilities in their working place, they tend to get married late and their conception decision is also delayed.

One of the most important variables for marriage and childbearing can be the influence of religious beliefs and practices. Studies carried out in India showed that Muslim women are 1.14 times more likely to give birth to their first child at an early age than Hindu women. On the other hand, Christians and women belonging to other religions are less likely to have their first child at an early age than the Hindu women.

Early Conception subsequently increases the fertility level and population of a country, but it has been proven to have negative implications on the health of the mother and the infant. It would also hinder a woman's attainment of the higher level of educational, professional qualifications, career development, career progression. Delaying the first childbearing would be risky too, as it can increase the possibility of pregnancy complications and high child mortality. At the same time, postponing childbearing will help achieve a higher level of education and a better career path. Hence, deciding on the age to give birth to the first child and identifying its determinants is important.

MOTIVATION

We claim to live in a modern society which says that all are equal and women are free to take any decision for themselves, but still do we actually abide by these rules of modern society. Conception decision of women plays a very vital role in their lives. So, this decision should be taken by her independently.

But in India, it has been seen that the conception decision of women is actually the decision imposed by the men and by the family. When we discuss about reproductive rights in India, there is again the choice of the husband or the elders of the family but the woman has no power to take a decision for herself. Due to this lack of decision-making power of women, India is still suffering from a serious issue of teenage conception even in 21st century. Estimates from 4th National Family Health Survey (NFHS-4) indicates that 11.8 million teenage pregnancies in India and among all the states and union territories, West Bengal reports the second highest percentage (16%) of teenage conception.

Now if we set our focus on the women who got married and conceived after 18 years of age then in that case we are trying to find out the factors which affect their conception decision. In this scenario, we are trying to find out the way of conception decision making by women with higher educational attainment or whose husband's income is high.

My main motive behind choosing this topic is to find out the key factors which directly or indirectly affect the conception decision of women and whether the actual decision is taken by women or not.

LITERATURE REVIEW

Age at the time of first conception is associated with woman's personal characteristics like age at marriage, education, occupation, and place of residence but with the influence of social norms. Age of women at first birth is important determinant and it effects the growth of population. Researchers were interested in finding out the causes of short first birth interval in developed countries.

Benzies et. al (2006), examined the factors that influence women's decisions about the timing of motherhood from a life span perspective in Canada using simple random sampling survey. The findings showed that financial independence, a stable relationship and declining fertility significantly influenced women's decisions about the timing of motherhood. But parental benefits (financial assistance to the people who are on maternity leave by providing 55% of their earning as benefit) have limited influence on the timing of motherhood. The study also highlighted that nowadays delayed childbearing has become more socially acceptable, with subsequent negative connotations associated with younger motherhood.

Tough et. al. (2007), determined the factors influencing the timing of childbearing for non-parenting men and women in Canada with the help of age-stratified random sampling survey. Findings showed that factors which affected the conception decision for both men and women consisted of financial security and partner suitability to become a parent. Almost 70% of men and women understood the direct relationship between older parental age and pregnancy difficulties.

Rabbi et. al. (2013), analysed the key factors affecting the age of women at first birth to enable the researchers to forecast the subsequent fertility behaviour and policy implications, in case of Bangladesh. The study used factor analysis. The major significant factors revealed from the study which directly influenced the age of women at fist birth were consciousness of parents and fertility.

Ruzicka (1976), investigated the prevailing patterns of the timing of first births by mothers' age at marriage and changes in this pattern since the marriages of the 1925/9 period in Australia. The study used the method of simple random sampling survey. The major findings showed that after a period of relative stability of family formation patterns in the 1950s and early 1960s, women married in the late 1960s started postponing the first birth beyond the

first two years of marriage due to the advancement of modern societies, availing of higher education and career development.

Regan et. al. (2013), examined the factors that influence women's decisions about birth in United States using survey and Consensual Qualitative Research method. The findings showed that the factors which were reported as influential in making decisions about birth included: how the women categorized, prioritized, and/or favored certain types of knowledge about modes of birth. These findings have its implications for parental and parental education and nursing practice.

Teachman et. al. (1985), analysed the first-birth timing in Norfolk, USA with the help of simple random sampling survey. Results showed that there is impact of three major determinants of birth timing: marital age , level of education and socioeconomic background characteristics. Significant findings included a strong impact of level of education in all cases, a significant impact of marital age of women and a greater impact of wives' background characteristics compared with those of husbands'.

Rindfuss et. al.(1983), explored the social determinants of the timing of the first birth in North Carolina, USA. The study used the method of simple random sampling survey. The study concluded that education level at the time of marriage is the most important predictor of age of mother at first birth, and the relationship between the two is positive. Although a few social factors which have a direct effect on age of women at first birth are race, religion, and smoking at young ages, while most important economic determinant affecting age of women at first birth is education.

Mamboreo et. al. (2022), established the factors that influence the age of women at first birth in coast province using the method of simple random sampling survey and multivariate regression analysis. The study's findings showed that the level of education, women's age, the type of place of residence and contraceptive use significantly influenced the age at first birth. But religion and marital status didn't show any significant influence on the age at first birth.

Gurmu et. al. (2014), examined determinants of first birth interval after marriage in Ethiopia with the method of simple random sampling survey and Cox proportional hazard model (this model is a commonly used method that allows the researcher to study relationships between

the time to event outcome, Y and a set of explanatory variables, X_1, X_2 , …, Xp). The results showed that first marriage at early age, lower level of education significantly influenced first birth interval. The findings revealed that the timing of marriage and first birth are partiallty governed by marriage practices of the society but the modernization factors also play a role in determining age at first birth.

Talukder et. al. (2021), investigated the determinants that can influence the age of women at first birth in Albania. The study used quantile regression model. The study revealed that woman's age, educational attainment and husband's higher educational attainment had a positive effect on age of the women at first birth. Rural area, husband's age and smoking status had a negative effect on age of the women at first birth. The study suggested that women's level of education should be prioritized because it can have an effect on the age of marriage.

Kariman et. al. (2014), analysed the socio-economic and emotional factors influencing decision making for timing of motherhood among Iranian women by using a cross-sectional data. The results revealed that marital age was the most effective predictor of timing motherhood.

Salmani et. al. (2016), identified the factors which influenced the first childbearing decision of women living in Shahroud, Iran in 2014 with descriptive cross-sectional study. The results showed that marital age of the woman had the highest degree of correlation with the first conception decision-making in women followed by other determinants which included economic status of the family, hopefulness and quality of life.

Alam (2015), examined the marriage to first birth interval and identified the socio-economic, demographic and cultural factors influencing the first birth interval among married women in Bangladesh with the help of Cox proportional hazard model. The findings revealed that age at first marriage, division, religion, respondents' education, partners' education, respondents' currently working, Partners' occupation, socio-economic status, respondents' age at first birth are the most important significant factors of 'Marriage to first birth interval' in Bangladesh.

Mugarura et. al (2016), found out the socio-economic and demographic factors affecting the age of women at first birth in Uganda using the method of Cox proportional hazard model.

Results established that age of respondent, education, religion, region, residence were the significant factors which influenced the age at first birth in Uganda.

Chandrasekhar (2010), identified the determinants of age at marriage and age at first birth in India using Cox proportional hazard model. Findings showed that women who grew up in the countryside or in towns are more likely to marry early and have children earlier. Women those who have their completed primary schooling or higher delayed their marriage compared to those who have no education. A negative relationship was established between educational attainment and prevalence of underage marriage using Census 2001 data.

Thayaparan et. al. (2022), identified the factors associated with the age of the mother at the first childbirth in Polanaruwa district in Sri Lanka. This study used the method of simple random sampling survey and linear regression analysis. The results revealed that age at marriage, educational level, place of residence (urban or rural), religion, and employment status were the major factors which positively influenced the childbearing in Polanaruwa district.

Islam et. al. (2021), investigated the time to first birth after marriage and identified the significant factors affecting the time to first birth after marriage using simple random sampling survey and cox proportional hazard model. The significant determinants of time to the first birth included age at marriage, education, wealth index, and employment status.

Rahman et. al. (2013), examined the marriage to first birth interval and also to identify the socio-economic, demographic and cultural factors influencing the first birth interval among married women in Bangladesh with the help of simple random sampling survey, lifetable and cox proportional hazard model. The study concluded respondent's education, access to mass media, age at first marriage had highly significant positive impact on first interval excluding Rajshahi and Khulna division. Husband's education was partially significant over first birth interval and place of residence (urban or rural), had a little impact on first birth interval.

Nath et. al. (1993), found out the effects of various sociodemographic factors on the first birth interval for Assam and Uttar Pradesh in India. The study used simple random sampling survey and lifetable. The significant factors directly affecting the first birth interval in India were employment status of the mother, level of education and affordability to health services.

Chernet et. al (2019), aimed to find out the determinants of time-to-first birth interval after marriage among Ethiopian women with the help of stratified sampling survey. The study concluded that age, residence area (urban or rural), employment status, contraceptive use and education of women were associated directly to time-to-first birth. Women having younger age at first marriage and urban women had prolonged time to first birth interval.

Obite et. al (2021), determined the influence of various socio-demographic and cultural factors on the marriage-to-first birth interval in Nigeria. This study used the method od simple random sampling survey. The results revealed that women who married early had longer first birth interval than those that married late. Muslims had longer first birth interval than Christians. Place of residence(urban or rural) had no significant influence on the marriage to first birth interval. Women with primary and secondary education had shorter first birth interval than women with no education but the husband's education had no such significant effect on the first birth interval.

Dommaraju (2009), examined the timing of first birth in India with the help of simple random sampling survey. The findings showed that age at marriage had a significant influence on timing of first birth. Despite wide variations in fertility levels among the states, the relationship between marriage age and age at first birth was remarkably similar. Education had a limited influence on the first birth interval because educated women delay marriage.

Bitew et. al. (2021), assessed the time to first birth and its determinants among married female youths in Ethiopia using simple random sampling survey and cox proportional hazard model. The results revealed that the significant determinants which directly affected the time to first birth were place of residence (urban or rural), age at first marriage, marriage between 15 and 17, un-met need for family planning.

Hossain et. al (2019), explored the determinants that determine the mother's age at first birth in Bangladesh using simple random sampling survey and quantile regression model. The results showed that variables such as the type of place of residence, religious status, husband's age and his occupation, and wealth index of the respondent were positively related to the age of mother at first birth. However, variables such as current age, highest educational level, and occupation of the respondent, husband/partner's education level were negatively related to the age of mother at first birth.

Kamal et. al. (2013), identified significant factors contributing towards marriage to first birth interval in Pakistan. The study used Cox Proportional Hazard model. The study revealed that women's age at the birth of first child, women's age at marriage, level of education and financial condition positively influenced marriage to first birth interval in Pakistan.

Suchindran et. al (1992), examined the relation between age of marriage and the first birth interval in Uttar Pradesh and Kerala ,India by using the method of simple random sampling survey and lifetable. The result showed that the first-birth interval is significantly influenced by age at marriage, education and employment status of the women.

Saadati et. al. (2018), evaluated socio-economic factors influencing the first birth interval in married women in Tehran province, Iran using Cox Proportional Hazard model. The findings showed that women's educational level and employment status had significant effects on the first birth interval. Women with higher educational attainment had the shortest first birth intervals, respectively.

OBJECTIVE

The conception decision of women is driven by several factors like education level, wealth index, age of marriage, place of residence (urban or rural) etc. In this study we take up few factors and check their effect on the age of women at the time of first conception.

This study aims at fulfilling the following objectives.

a. To check if the early age conception is actually driven by early age marriage.

b. To examine whether the conception decision of women is influenced by their income and their husband's income.

c. To investigate whether education level of women and their husband have any influence on the conception decision of women.

d. To find out the relation between age of marriage and marriage-to-first birth interval.

METHODOLOGY

For this study we have randomly surveyed 30 women (those who have at least one child) from areas of Perbirhata and Mirchoba of Burdwan city of Purba Bardhaman district,West Bengal. We have collected the age of women at the time of first birth, education level of women and their husbands, and income of women and their husbands. Since our explained variable is age of women at the time of first conception, so if we subtract 9 months from the age at first birth then we get the age of the women at the time of first conception. We know that change in origin has no effect on the regression coefficient, therefore, we consider that age of women at the time of first birth and age of the women at the time of first conception as synonyms.

The survey data was collected by the method simple random sampling survey. Therefore, the study is based on primary data. We have surveyed women of different backgrounds, like farmers, unemployed, educated, uneducated, home-makers, senior citizen etc.

The collected data is graphically represented through pie-chart and bar diagram. We have calculated and interpreted the descriptive statistics of the survey data and then analysed the survey data by using three variable simple linear regression model. The significance of the variables and overall regression are tested using t-test and f-test respectively.

RESULTS

This survey was conducted in the areas of Perbirhata and Mirchoba of Burdwan city of Purba Bardhaman district, West Bengal.

For this study we have randomly drawn a sample of 30 women from Burdwan city. Then we have calculated Descriptive Statistics and drawn charts for both the Dependent variable and Independent variables.

Here are some pictorial representations related to age of marriage and age of first conception.

Figure 1: Age of women at the time of marriage

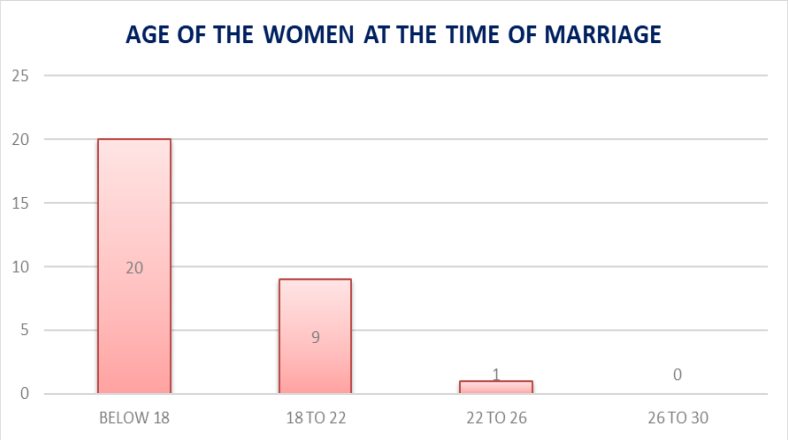

Figure 1 represents the age of the women at the time marriage. The maximum observed marital age of women is 26 years and the minimum observed marital age of women is 9 years. It is noticed, in our figure, that most of the women got married below 18 years of age which means 66.67% (20 out of 30) women got married below 18 years of age.

Figure 2: Age of women at the time of first conception

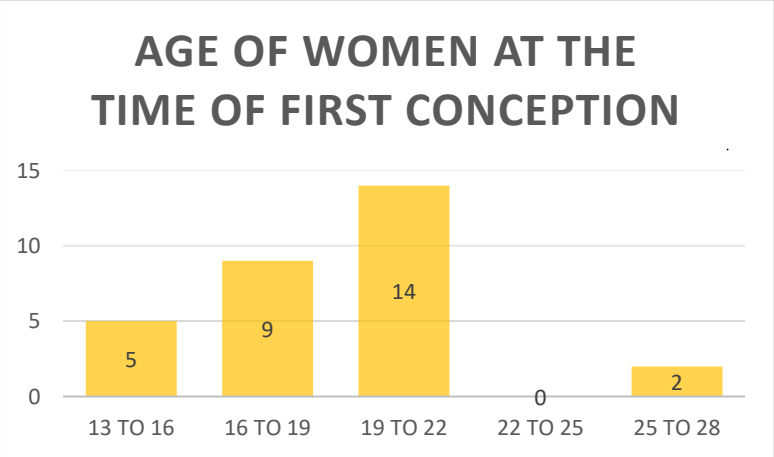

Figure 2 represents the age of women at the time of first conception. The maximum observed age of first conception is 28 years and the minimum observed age of first conception is 13 years.It is evident from the above figure that maximum number of women were in the age group of 19 to 22 years at the time their of their first conception which implies that 46.67%(14 out of 30) women conceived their first child in the age group of 19 to 22 years.

The descriptive statistics of age of marriage of women and age of first conception of women is shown in the table 1 given below.

TABLE 1:

	Age of women at the time of marriage (in Years)	**Age of the women at time of first conception (in years)**
MEAN	16.56	19
MEDIAN	16	19.21
MODE	15	19.64
STANDARD DEVIATION	3.2	2.97
RANGE	17	15

In the above table, we see that the mean marital age of women is 16.56 years and the mean age of women at time of first conception is 19 years. The mean marital age of women is below 18 years because maximum number (20 out 30) of women in our sample got married below 18 years.

The median of marital age of women is 16 years and median of age of first conception is 19.21 years. This implies that maximum number of women got married before 18 years and as a result their age of first conception is also less.

The mode of age of marriage of women is 15 years and mode of age of first conception is 19.64 years. This indicates that maximum number of women (5 out of 30) got married at 15 years and maximum number of women's first conception (14 out of 30) was in the age group of 19 to 22 years.

The standard deviation of age of marriage of women is 3.2 years and standard deviation of age of first conception is 2.97 years.

The range of age of marriage of women is 17 years where the maximum and minimum age of marriage of women are 26 years and 9 years respectively. The range of age of first conception

is 15 years where the maximum and minimum age of first conception are 28 years and 13 years respectively.

Now we want to find out whether the women who got married before 18 years conceived early or late on an average.

For this, we have arranged the marital age of women in ascending order. Then, we have divided our sample data into two halves, one is women who got married below 18 years of age(illegal age of marriage) and other is women who got married above 18 years of age(legal age of marriage)

Number of women who got married before 18 years of age = 20

Number of women who got married after 18 years of age = 10

A cursory glance at the raw data shows that the women who got married before 18 years of age had a greater marriage-to-first birth gap than the women who got married after 18 years of age.

Now let us find out the relation of age of marriage of women with age of first conception and age of marriage of women with marriage-to-first birth interval

Correlation coefficient between age of marriage of women and marriage-to-first birth interval is -0.49.

Therefore, age of marriage of women and marriage-to-first birth interval are negatively correlated.

This implies that with the increase of age of marriage of women, marriage-to-first birth interval decreases.

In out sample we a data of a woman who got married at 9 years of age and her age of first conception is 14 years. Therefore, her marriage-to-first birth interval is 5 years. Since her age of marriage is very early ,therefore her first birth gap is greater than any other women in our sample.

Since it is a very extreme case of underage marriage. So we eliminate that data , then find out the results.

The correlation coefficient between age of marriage of women and marriage-to-first birth interval then becomes -0.37.

Thus, we can say that age of marriage is inversely related to marriage-to-first birth interval which means underage marriage doesn't drive early conception. The women who got married late had a pressure to conceive early.

Now, let us test whether the average marriage-to-first birth interval for illegal age of marriage is greater than that of legal age of marriage.

To test the null hypothesis (H_0) which states that mean marriage-to-first birth interval for illegal age of marriage (μ_I) is equal to mean marriage-to-first birth interval for legal age of marriage (μ_L) against the alternative hypothesis (H_1) which states that mean marriage-to-first birth interval for illegal age of marriage (μ_I) is greater than mean marriage-to-first birth interval for legal age of marriage (μ_L)

To test H_0: $\mu_I = \mu_L$ against H_1: $\mu_I > \mu_L$

Where I implies marriage-to-first birth interval for illegal age of marriage and L implies marriage-to-first birth interval for legal age of marriage.

Computed t is denoted by t*.

$$t^* = \frac{\bar{I} - \bar{L}}{s' \sqrt{\frac{1}{n_I} + \frac{1}{n_L}}}$$

Here n_I (number of samples under marriage-to-first birth interval for illegal age of marriage) = 20, n_L (number of samples under marriage-to-first birth interval for legal age of marriage) =10 , $\bar{I}$ =ΣI/n = 2.45 , $\bar{L}$ =ΣL/n = 1.5 and s' (pooled standard deviation) = $\sqrt{\frac{\sum(I-\bar{I})^2 + \sum(L-\bar{L})^2}{n_I + n_L - 2}}$ =1.27

t* = 1.93

For one-tailed test, the tabulated value of t under 1% level of significance and 28 degrees of freedom is ($t_{0.01,28}$) = 2.47

For one-tailed test, the tabulated value of t under 5% level of significance and 28 degrees of freedom is ($t_{0.05,28}$) = 1.70

For one-tailed test, the tabulated value of t under 10% level of significance and 28 degrees of freedom is ($t_{0.10,28}$) = 1.31

t* < ($t_{0.01,29}$), t* > ($t_{0.05,29}$), t* > ($t_{0.10,29}$)

Therefore, the null hypothesis (H_0) is accepted at 1% level of significance but rejected at 5% level of significance and 10% level of significance.

If we eliminate our first sample, then the new t* denoted as (t*)' becomes 1.74.

(t*)' < ($t_{0.01,29}$), (t*)' > ($t_{0.05,29}$), (t*)' > ($t_{0.10,29}$)

In this case, the null hypothesis (H_0) is accepted at 1% level of significance but rejected at 5% level of significance and 10% level of significance.

On an average, the women who got married before the age of 18 years had a greater marriage-to-first birth gap than that of the women who got married after the age of 18 years.

Hence, we can say that underage age marriage doesn't mean early conception.

Now, let us test whether the average age of marriage of women is less than that of men, as we have observed in our sample.

To test the null hypothesis (H_0) which states that mean age of marriage of women (μ_A) is equal to mean age of marriage of men (μ_B) against the alternative hypothesis (H_1) which states that mean age of marriage of women (μ_A) is less than mean age of marriage of men (μ_B)

To test H_0: $\mu_A = \mu_B$ against H_1: $\mu_A < \mu_B$

Where A implies age of marriage of women and B implies age of marriage of men.

Computed t is denoted by t*.

$t^* = \frac{\sqrt{n}\bar{Q}}{s_Q'}$

Here n (total number of samples) =30 , $\bar{Q}$ =Σ(A-B)/n = -6.33 and s_Q' (standard deviation of Q) = 7.78

t* = -4.46

For one-tailed test, the tabulated value of t under 1% level of significance and 29 degrees of freedom is $(-t_{0.01,29})$ = -2.46

For one-tailed test, the tabulated value of t under 5% level of significance and 29 degrees of freedom is $(-t_{0.05,29})$ = -1.70

For one-tailed test, the tabulated value of t under 10% level of significance and 29 degrees of freedom is $(-t_{0.10,29})$ = -1.31

$t^* < (-t_{0.01,29})$, $t^* < (-t_{0.05,29})$, $t^* < (-t_{0.10,29})$

Therefore, the null hypothesis (H_0) is rejected and alternative hypothesis (H_1) is accepted at 1% level of significance, 5% level of significance and 10% level of significance.

The test indicates that the average age of marriage of women is less than that of men**.**

Here are some pictorial representations related to level of education of women and level of education of men.

Figure 3: Level of education of women

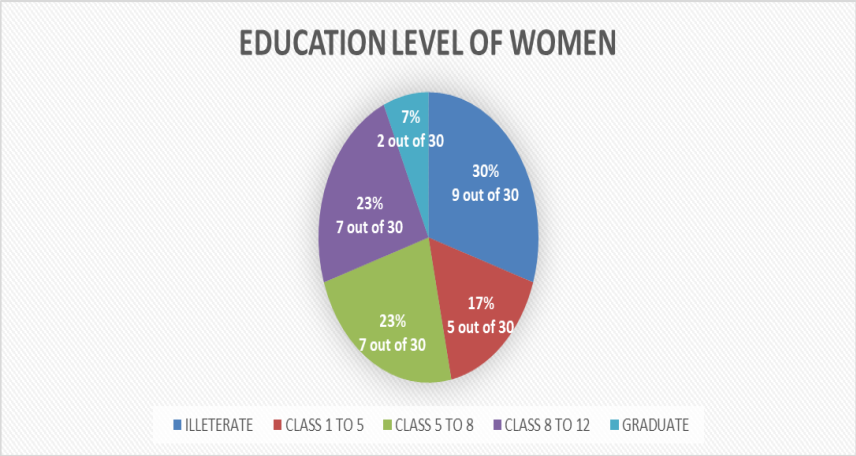

Figure 3 represents the level of education of women. It is evident from the above figure that maximum number of women (9 out of 30 i.e. 30%) are illiterate and only 2 out of 30 women (7%) were able to complete their graduation. 17% women (5 out 30) have completed their primary education.

Figure 4: Level of education of men

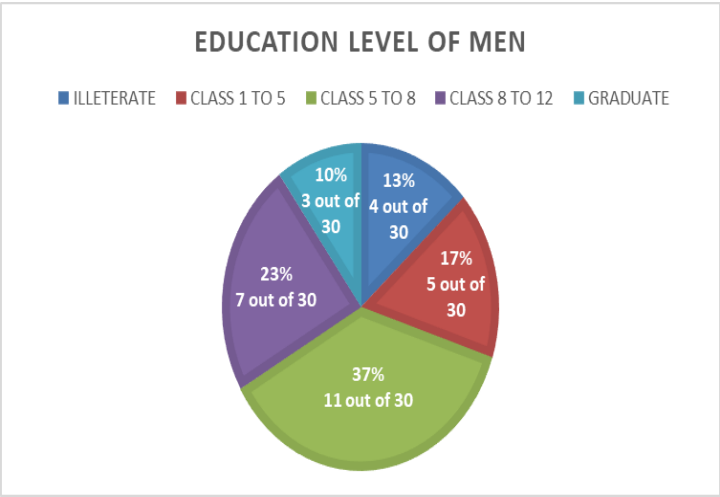

Figure 4 represents the level of education of men. It is evident from the above figure that maximum number of men (11 out of 30 i.e. 37%) were educated between class 5 to 8 and only 3 out of 30 men (10%) were able to complete their graduation. 13% men (5 out 30) have are illiterate.

In our study, the education level is measured in years. Here, we consider class 1 = 1 year and accordingly, for every additional class, the years of education increases by 1 year. A person whose level of education is below class 1, his/her years of education is taken as 0.

The descriptive statistics of education level of women and education level of men is shown in the table 2 given below.

TABLE 2:

	Education level of women (in years)	**Education level of men(in years)**
MEAN	5.4	6.63
MEDIAN	5.43	6.64
MODE	5.48	6.64
STANDARD DEVIATION	4.21	3.82
RANGE	15	15

In the above table, we see that the mean education level of women is 5.4 years and the mean education level of men is 6.63 years. The mean education level of women(in years) is less than that of men because the maximum number of women in our sample are illiterate i.e., their years of education is zero.

The median of education level of women is 5.43 years and the median of education level of men is 6.64 years. The median of education level of women(in years) is less than that of men because the maximum number of women(9 out of 30) in our sample are illiterate i.e., their years of education is zero.

The mode of education level of women is 5.48 years and the mode of education level of men is 6.64 years. The mode of education level of women(in years) is less than that of men.

The standard deviation of education level of women is 4.21 years and standard deviation of education level of men is 3.82 years.

The range of education level of women is 15 years (minimum years of education of women is 0 years and maximum years of education of women is 15 years) and range of education level of men is 15 years (minimum years of education of men is 0 years and maximum years of education of men is 15 years).

Now, let us test whether the average level of education of women is less than that of men, as we have observed in our sample.

To test the null hypothesis (H_0) which states that mean level of education of women (μ_C) is equal to mean level of education of men (μ_D) against the alternative hypothesis (H_1) which states that mean level of education of women (μ_C) is less than mean level of education of men (μ_D) and against the alternative hypothesis (H_2) which states that mean level of education of women (μ_C) is not equal to mean level of education of men (μ_D)

To test H_0: $\mu_C = \mu_D$ against H_1: $\mu_C < \mu_D$

Where C implies education level of women and D implies education level of men.

Computed t is denoted by t*.

$$t^* = \frac{\sqrt{n}\bar{Q}}{s'_Q}$$

Here n (total number of samples) =30, $\bar{Q}$ =Σ(C-D)/n = -1.43 and s_Q' (standard deviation of Q) = 3.28

t* = -2.40

For one-tailed test, the tabulated value of t under 1% level of significance and 29 degrees of freedom is $(-t_{0.01,29})$ = -2.46

For one-tailed test, the tabulated value of t under 5% level of significance and 29 degrees of freedom is $(-t_{0.05,29})$ = -1.70

For one-tailed test, the tabulated value of t under 10% level of significance and 29 degrees of freedom is $(-t_{0.10,29})$ = -1.31

$t^* < (-t_{0.01,29})$, $t^* < (-t_{0.05,29})$, $t^* < (-t_{0.10,29})$

Therefore, the null hypothesis (H_0) is rejected and alternative hypothesis (H_1) is accepted at 1% level of significance, 5% level of significance and 10% level of significance

The test indicates that the mean level of education of women is less than that of men**.**

Here are some pictorial representations related to income of women and income of men.

Figure 5: Income of women

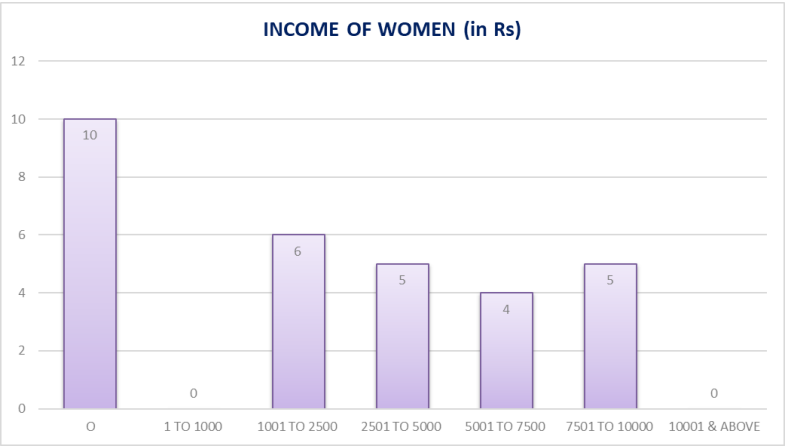

Figure 5 represents the income of women. Maximum number of women's income is 0 which means that 10 out of 30 women (33.33%) are housewives. Only 4 out of 30 women's income lies between Rs 5001 to Rs 7500. There is no women earning in the categories of Rs 1-Rs 1000 and Rs 10001 and above.

Figure 6: Income of men

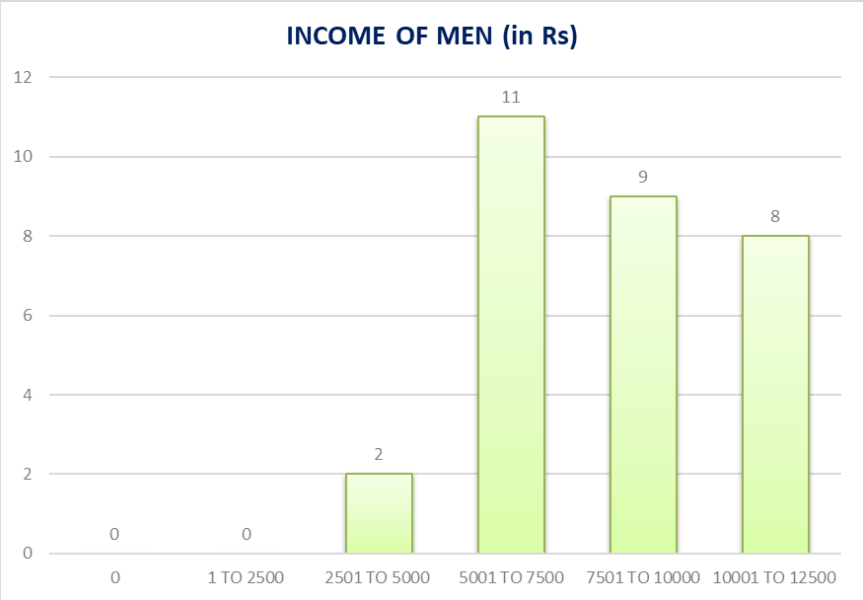

Figure 6 represents the income of women. Maximum number of men's income (11 out of 30 i.e., 36.67%) lies between Rs 5001 to Rs 7500. Only 2 out of 30 men's income lies between Rs 2501 to Rs 5000. There is no men earning in the categories of Rs 1-Rs 2500 and Rs 0.

The descriptive statistics of income of women and income of men is shown in the table 3 given below.

TABLE 3:

	Income of women (in Rs)	**Income of men (in Rs)**
MEAN	3081.07	8274.4
MEDIAN	1750	8000
MODE	0	6000
STANDARD DEVIATION	3233.71	3345.23
RANGE	9000	15000

In the above table, we see that the mean income of women is Rs 3081.07 and the mean income of men is Rs 8274.4. The mean income of women is less than that of men because the maximum number of women in our sample are housewives i.e., their income is zero.
The median of income of women is Rs 1750 and the median of income of men is Rs 8000. The median of income of women is less than that of men because the maximum number of women in our sample are housewives.
The mode of income of women is Rs 0 and the mode of income of men is Rs 6000. The mode of income of women is less than that of men because the maximum number of women(10 out of 30) in our sample are housewives and maximum number of men's income (11 out of 30) lies between Rs 5000 to Rs 7500.
The standard deviation of income of women is Rs 3233.71 and standard deviation of income of men is Rs 3345.23.
The range of income of women is Rs 9000 and range of income of men is Rs 15000.

Now, let us test whether the average income of women is less than that of men, as we have observed in our sample.

To test the null hypothesis (H_0) which states that mean income of women (μ_E) is equal to mean income of men (μ_F) against the alternative hypothesis (H_1) which states that mean income of women (μ_E) is less than income of men (μ_F).

To test H_0: $\mu_E = \mu_F$ against H_1: $\mu_E < \mu_F$

Where E implies income of women and F implies income of men.

Computed t is denoted by t*.

$$t^* = \frac{\sqrt{n}\bar{Q}}{s'_Q}$$

Here n (total number of samples) =30, $\bar{Q}$ =Σ(E-F)/n = -5193.33 and s_Q' (standard deviation of Q) = 4280.342665

t* = -6.645509572

For one-tailed test, the tabulated value of t under 1% level of significance and 29 degrees of freedom is $(-t_{0.01,29})$ = -2.46

For one-tailed test, the tabulated value of t under 5% level of significance and 29 degrees of freedom is $(-t_{0.05,29})$ = -1.70

For one-tailed test, the tabulated value of t under 10% level of significance and 29 degrees of freedom is $(-t_{0.10,29})$ = -1.31

$t^* < (-t_{0.01,29})$, $t^* < (-t_{0.05,29})$, $t^* < (-t_{0.10,29})$

Therefore, the null hypothesis (H_0) is rejected and alternative hypothesis (H_1) is accepted at 1% level of significance, 5% level of significance and 10% level of significance

The test indicates that the mean income of women is less than that of men**.**

Here is a pictorial representation related to any kind of family pressure to beget a boy reported by the respondents.

Figure 7: Pressure to beget a boy child

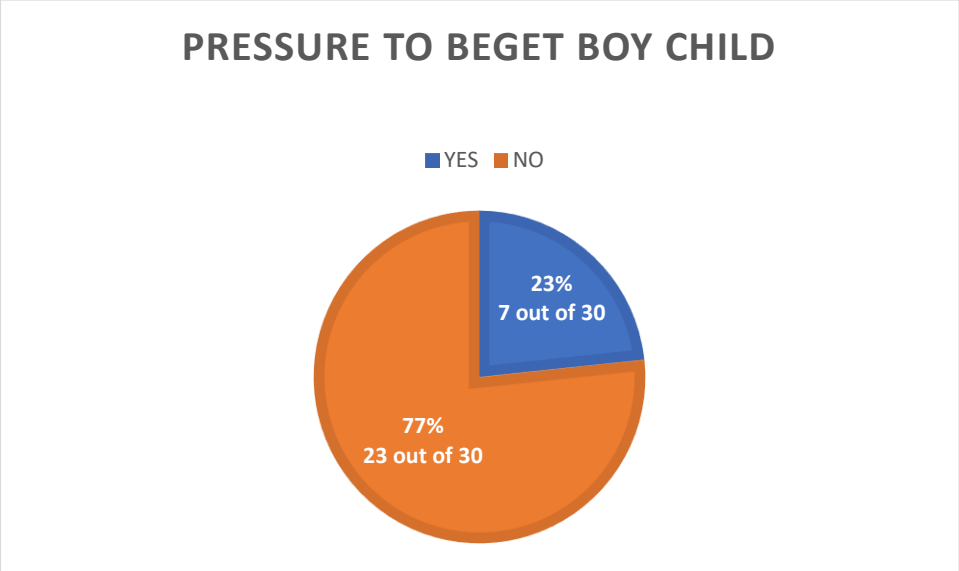

Figure 7 represents pressure to beget a boy child as reported by women. Out of 30 women, only 7 women reported that they faced a family pressure to beget a boy child. Maximum number of women (23 out of 30 women) had experienced no pressure to beget a boy child.

Now we will check whether Woman's level of education and Husband's income have any influence on the age of woman at the time of first conception.

For this we take a three variable regression model where age of woman at the time first conception is taken as dependent variable while woman's years of education and husband's income are taken as independent/explanatory variable. The model is given as follows:

$Y_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \varepsilon_i$ ……..... (i)

Where Y_i implies Age of woman at the time first conception,

X_{1i} implies Woman's years of education,

X_{2i} implies Husband's income,

α is the intercept term

β_1 and β_2 are slope coefficients

ε_i is the disturbance term

for all i = 1,2,3,...,30

Results of Regression :-

Regression Statistics	
Multiple R	**0.45**
R Square	**0.20**
Adjusted R Square	**0.14**
Standard Error	**2.60**
Observations	**30.00**

ANOVA

	df	***SS***	***MS***	***F***	***Significance F***
Regression	**2.00**	**45.41**	**22.70**	**3.35**	**0.05**
Residual	**27.00**	**182.89**	**6.77**		
Total	**29.00**	**228.30**			

	Coefficients	***Standard Error***	***t Stat***	***P-value***	***Lower 95%***	***Upper 95%***	***Lower 95.0%***	***Upper 95.0%***
Intercept	**16.18**	**1.42**	**11.37**	**0.00**	**13.26**	**19.10**	**13.26**	**19.10**
Woman's Years of education (X_1)	**0.25**	**0.10**	**2.44**	**0.02**	**0.04**	**0.46**	**0.04**	**0.46**
Husband's Income (X_2)	**0.00**	**0.00**	**0.97**	**0.34**	**0.00**	**0.00**	**0.00**	**0.00**

In the above table, Goodness of Fit (R^2) is 0.20, which implies that out of 100% variation in the age of woman at the time of first conception, 20% variation can be explained by the explanatory variables X_1 and X_2 jointly. The value of adjusted R^2 is 0.14, which implies that out of 100% variation in the age of woman at the time of first conception, 14% variation can be explained by the explanatory variables X_1 and X_2 jointly. R^2 increases with the introduction of every additional independent variable. So, to determine how reliable the correlation is and

how much it is determined by the addition of independent variable we use adjusted R^2. Adjusted R^2 compensates for the addition of each new independent variable.

From the above table, $\hat{\alpha}$ = 16.18 which means that if the woman is illiterate and her husband has no income then the age of woman at the time of first conception is approximately 16 years. $\widehat{\beta_1}$ = 0.25, this implies that ceteris paribus, for every additional year woman's education , her age of first conception will increase by 3 months. Since the P-value of $\widehat{\beta_1}$ is 0.02 which is greater than 0.01 but less than 0.05 and 0.1. Therefore, $\widehat{\beta_1}$ is insignificant at 1% level of significance but is significant at 5% and 10% level of significance. $\widehat{\beta_2} = 0$, this implies that husband's income does not have any influence the age of woman at time of first conception, ceteris paribus. Since the P-value of $\widehat{\beta_2}$ is 0.34 which is greater than 0.1. Therefore, $\widehat{\beta_2}$ is insignificant at 1% , 5% and 10% level of significance.

In the above table, observed F (F*) = 3.35.

$F_{0.01,2,27} = 5.49$ $F_{0.05,2,27} = 3.35$ $F_{0.1,2,27} = 2.51$

$F^* < F_{0.01,2,27}$, $F^* = F_{0.05,2,27}$, $F^* > F_{0.1,2,27}$.

Therefore, the overall regression is insignificant at 1% and 5% level of significance but significant at 10% level of significance.

Hence, we can say that age of woman at the time of first conception is driven by the woman's level of education and husband's income has no significant effect on woman's age at the time of first conception.

Now along with husband's income we will check along with husband's income whether Husband's level of education drives age of woman at the time of first conception.

For this we take a three variable regression model where age of woman at the time first conception is taken as dependent variable while husband's income and husband's years of education are taken as independent/explanatory variable. The model is given as follows:

$Y_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \varepsilon_i$ ..... (ii)

Where Y_i implies Age of woman at the time first conception

X_{1i} implies Husband's income

X_{2i} implies Husband's years of education

α is the intercept term

β_1 and β_2 are slope coefficients

ε_i is the disturbance term

for all i = 1,2, 3, ..., 30

Results of Regression :-

Regression Statistics	
Multiple R	**0.51**
R Square	**0.26**
Adjusted R Square	**0.21**
Standard Error	**2.50**
Observations	**30**

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	**2**	**59.48**	**29.74**	**4.76**	**0.02**
Residual	**27**	**168.82**	**6.25**		
Total	**29**	**228.3**			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	**16.15**	**1.34**	**12.05**	**0.00**	**13.40**	**18.90**	**13.40**	**18.90**
Husband's Income (X_1)	**0.00**	**0.00**	**0.25**	**0.81**	**0.00**	**0.00**	**0.00**	**0.00**
Husband's Years of education (X_2)	**0.33**	**0.11**	**2.95**	**0.01**	**0.10**	**0.56**	**0.10**	**0.56**

In the above table, Goodness of Fit (R^2) is 0.26, which implies that out of 100% variation in the age of woman at the time of first conception, 26% variation can be explained by the explanatory variables X_1 and X_2 jointly. The value of adjusted R^2 is 0.21, which implies that

out of 100% variation in the age of woman at the time of first conception, 21% variation can be explained by the explanatory variables X_1 and X_2 jointly.

From the above table, $\hat{\alpha}$ = 16.15 which means that if the woman is illiterate and her husband has no income then the age of woman at the time of first conception is approximately 16 years. $\widehat{\beta_1}$ = 0.00, this implies that husband's income does not have any influence the age of woman at time of first conception, ceteris paribus. Since the P-value of $\widehat{\beta_1}$ is 0.81 which is greater than 0.1. Therefore, $\widehat{\beta_1}$ is insignificant at 1% ,5% and 10% level of significance. $\widehat{\beta_2}$ = 0.33, this implies that ceteris Paribus, for every additional year husband's education, woman's age of first conception will increase by approximately 4 months. Since the P-value of $\widehat{\beta_2}$ is 0.01 which is equal to 0.01 but less than 0.05 and 0.1. Therefore, $\widehat{\beta_2}$ is insignificant at 1% level of significance but is significant at 5% ,10% level of significance.

In the above table, observed F (F*) = 4.76.

$F_{0.01,2,27} = 5.49$ $F_{0.05,2,27} = 3.35$ $F_{0.1,2,27} = 2.51$

$F^* < F_{0.01,2,27}$, $F^* > F_{0.05,2,27}$, $F^* > F_{0.1,2,27}$.

Therefore, the overall regression is insignificant at 1% level of significance but significant at 5% and 10% level of significance.

Hence, we can say that age of woman at the time of first conception is driven by the husbands' level of education and husband's income has no significant effect on woman's age at the time of first conception.

POLICY SUGGESTIONS

Findings revealed that the age of women at the time of first conception is influenced mainly by her educational qualification. Education of both the woman and her husband have significant effect on the conception decision of women. We have also found that the income of both woman and her husband has no significant effect on the age of women at the time of first conception. The following suggestions can be useful:

(a) The government should organise education related campaigns in order to increase the percentage of educated women.

(b) Gram Panchayats should check the number of school dropouts.

(c) The government should strictly implement the education policy so that all men and women complete their primary education.

(d) Health related campaigns should be organised in order to aware women about the health problems arising from early age conception.

CONCLUSION

The present analysis shows factors affecting the age of women at the time of first conception in Burdwan city of Purba Bardhaman district. Age of marriage is a very important determinant of age of women at the time of first conception. In our survey data we found out that 20 out of 30 women got married before attaining 18 years of age but only 9 of them conceived before 18 years of age. After looking into the marriage-to-first birth interval, it has been found out that women who got married before 18 years of age had a higher marriage-to-first birth interval than the women who got married after 18 years of age. It is also observed that with the increase in the marital age of women the first birth interval gradually decreases. It is evident from the findings that early marriage does not imply early conception.

Education plays a vital role in conception decision of women. Level of education of women and their husbands has a significant positive effect on the age of women at the time of first conception. In our sample 10 out of 16 literate women got married after 18 years of age which means that women with higher educational attainment tend to delay their marriage and hence their age at the time of first conception is also higher. Thus, the age at the time of first conception is higher for educated women than that of uneducated women. From our survey data we have found out that 17 out of 24 illiterate fathers and 16 out of 25 illiterate mothers gave their daughter's marriage before 18 years of age. This implies that education level of parents of women is also an important factor affecting the age of marriage of women.

Findings showed that income of women and their husbands have no significant effect on the women's age at the time of first conception. This implies that conception decision of women is not taken on the basis of their and their husbands' income. Therefore, in our study, we conclude that the education is found out to be the key factor affecting the conception decision of women.

This project report has not considered all the significant factors affecting age of women at the time of first conception. In future, this project report can be expanded by taking the other factors (like, religion, place of residence, educational attainment of parents of the woman and employment status) into account and find out whether they have any significant effects on the women's age at the time of first conception. In this project we have considered the age at the time of first conception but the other side of this topic (considering birth intervals) is unexplored which can serve as a future study topic. The future scope of this study is to cover up all the limitations of this project report.

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APPENDIX – I : Questionnaire

1. Name of respondent:

2. Age of respondent and spouse:

3. Income of respondent:

4. Income of his/her spouse:

5. Educational qualification of the respondent:

6. Educational qualification of his/her spouse:

7. Age and Gender of her first child:

8. If the first child is a girl, then did the respondent report any kind of family pressure to beget a boy :

APPENDIX – II : Worksheet

SL. NO.	Age at time of first conception	WOMAN'S YEARS OF EDUCATION	HUSBAND'S YEARS OF EDUCATION	HUSBAND'S INCOME	WOMAN'S INCOME
1	20	0	0	9000	2700
2	14	0	6	8732	8732
3	18	0	5	15000	5000
4	18	0	5	12000	8000
5	19	3	4	6000	0
6	17	15	8	8000	0
7	19	8	7	5000	2000
8	21	10	9	6000	1000
9	15	0	5	13000	9000
10	15	8	6	3000	9000
11	19	10	12	11000	0
12	20	4	8	4000	7000
13	21	9	12	10000	0
14	26	10	15	8000	0
15	18	9	10	5000	0
16	21	15	9	7000	0
17	17	5	0	8000	4000
18	20	4	4	9000	0
19	18	0	0	6000	6000
20	20	4	5	6000	6000
21	15	0	0	8000	1000
22	18	5	8	5000	1500
23	17	6	9	8000	0
24	19	7	9	5000	1000
25	25	3	7	10000	1500
26	14	0	2	6000	3000
27	16	0	5	7000	4000
28	20	12	15	9500	0
29	20	5	7	12000	8000
30	21	12	15	18000	4000