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DEMOGRAPHIC, SOCIAL AND ECONOMIC DETERMINANTS OF HAPPINESS IN PUNJAB: A HOUSEHOLD BASED ANALYSIS

Tanveer Ahmed Naveed[¯]
Assistant Professor, Department of Economics, FSS, University of Gujrat, Pakistan
tanveer.ahmed@uog.edu.pk, tn18790@bristol.ac.uk

Asma Naz
Department of Economics, University of Gujrat, Pakistan

ABSTRACT
Gross National Happiness (GNH) Index first developed by Bhutan that is an inspiring initiative by Bhutan's government, and much praised by the global development communities. SDGs are highly integrated with the development philosophy of gross national happiness. Happiness is actually a sense of well-being, and generally, it is being supposed that happiness is a major source of motivation. It is the earliest assumption that income can make anyone happy, but there is a number of factors that are responsible for the happiness or subjective well-being other than income. This study examined the household level of happiness of women by considering demographic, social and economic determinants in province Punjab. The happiness of women is measured through developing happiness index based upon MICS5 data. Results showed that demographic, social and economic determinants can increase the happiness of female in case of Punjab. Some dependent variables having some negative relationships with happiness while all the other independent variables are effecting the happiness of women in a positive manner. The implications based on the findings suggest that policymakers should draft focused policies to accelerate the household level wellbeing of women instead of relying only on unanimous programs for all regions.

Key words: Happiness Index, Social Variables, Economics, Demography, Pakistan
JEL classification codes: O15, P36, D31, D63

1. INTRODUCTION
"Happiness" for common people happiness is a cocktail of emotions, one experience it when he does something good or positive. According to the neurologists, happiness is the experience of a flood of hormones released in the brain as a reward for behavior that extends survival. According to the tenets of several major religions, happiness indicates the presence of God. Philosophers have investigated happiness more thoroughly than anyone. They've boiled the debate over happiness down to a battle, and brought this psychological phenomenon towards the measurability in the form of well-being and satisfaction.

There are many theories that describes the association of an individual's life circumstances and happiness. Headey and Wearing (1989) explores the "set point theory" in psychology, this theory defines every individual must have to fix a set point for happiness. Misfortunes of life like losing the job, persistent illness and marriage surely distract individuals from that fixed "set point" temporarily, with the passage of time individual adapt the new situation then return to original set point level what they have fixed earlier. In contradiction many economists put their work to critic this theory. Easterlin (2003) discusses that happiness and satisfaction is not a function of any person's absolute level of income, "it depends on a gap of income and people's aspirations level and can be influenced by social evaluation or hedonic adaptation".

The journey of happiness explains the different stages and era of happiness, it is not a new phenomenon, it is the feeling of human being. In 1789 Jeremy Bentham given the name of this feeling as it is "the sum of pleasures and pains", almost after eight decades Mill and Smith conclude their

[¯] Corresponding Author

work as "happiness and utility are the two sides of a single coin", then just after a decade Estelline paradox reveals new dimensions of happiness. by this pioneer work economics of happiness, has got the limelight. In 1989, Heady and Wearing have introduced the set point theory, this theory says every person needs to set a point for his happiness and makes pathways to achieve this point of happiness, but in 1995, Easterlin again shifts the dimension of happiness now according to him satisfaction and happiness depends on gape of income and aspiration level that can be influenced by "social evaluation or hedonic adaptation". This journey has not ended yet, many researchers are in the search of different relations and connections of happiness with different sort of variables thus, results explores a variation by persons and countries as well.

According to the *World Happiness Report* Finland is the happiest country of the world, where Pakistan secures 75th rank among 150 countries with a score of 4.990 on a measuring scale 0 - 10, while Pakistan has scored 80th rank in the preceding year, and 92nd comparing with last report (2016) which makes Pakistan the happiest country among South Asian countries, Pakistan is considered as the happiest country than China, Hong Kong, Zimbabwe.

Although Pakistan is a rapidly growing and developing country, it has been facing various demographic, economic and social problems. By measuring poverty, an extensive number of population of Pakistan are still lying below the poverty line nationally and internationally (Government of Pakistan, 2015). In human development indicators, Pakistan standing at lowest in performers in South Asia Region, especially in education, although the rate of Net Enrollment is increasing, but still lagging with other South Asia countries, on the other hand in the child mortality rate the situation is almost same as education.

Gender disparities are persistent in all sectors i.e. educational sectors, health sectors, and all economic sectors. Rate of female labor force participation is also lowest in this region (UNDP Report, 2017). On the other side, the overall scenario of Pakistan carrying, economic participation and opportunity is at 143rd in ranking, Educational attainment laying in 136th rank, Health and survival is at 140th rank, Political empowerment is at 95th rank and it is being considered as the second-worst country on Global Gender Gap Index ("Pakistan second-worst on Global Gender Gap Index," 2017).

Happy Planet Index (HPI) is another related measure of happiness, latest HPI of 2016 has given ranks almost 140 countries of the globe, where Pakistan occupies 36th rank followed by Finland, in this index Pakistan's ranking defeating its neighboring countries too like India, China and Afghanistan. Total HPI of Pakistan was calculated at 31.5 on a scale from 0 to 100 (Happy Planet Index, 2016) While in Human Development Index (HDI) Pakistan stands at 147th out of 188th countries which makes Pakistan medium human developed country (Human Development Index, 2017). According to the Global Gender Gap Index, Pakistan is the 2nd worse country of the globe in gender discrimination, standing at 143rd out of 144th countries, although the scorers of index are little bit increasing but with the same ranking, like in 2015, the score is 0.559, while in 2016 it is 0.556 and in 2017 it is standing at 0.546.

The Global Peace Index summaries Pakistan's situation as, it is at 152nd out of 163rd countries in south Asian region almost every country is occupying the better situation, instead of Afghanistan that is laying at 162nd (second worse country), in this index Pakistan is also doing better such as in 2015 it is laying at 154th (least 10 peaceful countries), in 2016 it shows better off situation by adding one rank and secures 153rd rank, and now in 2017 it is at 152nd, but laying in red zone still

According to the most reliable report "world happiness report" Pakistan secures 75th rank, that showing an ascending ordered ranking from the previous years, it is a very optimistic change in happiness being a developing nation here is a question arising, what are the main forces behind this changes in Pakistan? as women are the essential part of any economy and considered to have the equal rights. In Pakistani society either women are having the same level of happiness compared to men or not, if yes than what makes her happier? Ali and ul Haq (2006) elaborate that the "women's autonomy" always brings satisfaction to their live which causes happiness, but Pakistani society is somehow different from the other societies, so the autonomy of women doesn't fixe exactly we need to focus on those variables which effect the autonomy of a women, Pakistani society portray a picture of patriarchy where every individual is bound to follow the old traditions and women is subordinate, while girls are being feed to obey the instruction of men, they are being taught to follow the decisions of any male from family, related to their marriages, number of child, education, career etc.

According to the current census 2017 population of Pakistan is almost 21 million which makes Pakistan the 6th most populist country of the world, where only Punjab's population is 110,012,442, in which 55,958,974 are male while 54,046,759 are female remaining are transgender (PBS), as province of Punjab is having almost the half of population, being the major part of population this province is getting the limelight for this research work in which we are paying a special attention towards the vital part of economy "women", and their happiness.

The contribution of this study will be primarily measurement of happiness index for women at the household level for 36 districts of Punjab, and to investigate the demographic, social and economic determinants of women happiness index for Punjab. This micro-level analysis will help the policymakers to draft focused policies to accelerate the household level wellbeing instead of relying on unanimous programs for all regions.

2. LITERATURE REVIEW

Recent literature is investigating suggestively the happiness of people is not only the psychological phenomenon but it has measurability in economic terms, there are several theories that have developed to explain the concepts of happiness, as well there are many factors or determinants that are related to the happiness of a person, As evidence shows that happiness differs from person to person, so the two women cannot be the same and their utility/satisfaction/ happiness level cannot be the same as well, then the question arises how one can measure the level of happiness? The review of literature provides the different ways to measure the happiness.

The journey of happiness in economic terms has started in late seventeenth century when Bentham (1789) summaries the feeling of happiness as the summary of pleasures and pains, Harberger (1971) studies explores individual's welfare and happiness that can be measured by consumer surplus and social welfare through the ratio of an aggregate of an individual's welfare and its total population. While, Isen and Levin (1972) evaluates the minor changes in the level of happiness may influence the thoughts of individuals on a daily basis and positive affect of these changes accelerate individuals' and they are motived to help others. Even, Easterlin (1974) examines the relationship between income and happiness.

Just after few years a new dimension is given to happiness by another economist. Ng (1978) concludes, different individuals have their happiness at different levels in different ways. Some individuals feel happy in religious activities some feel happy by having a good family life while some individuals feel happy being adventurous, etc. But almost every individual like to have its own level of happiness for oneself, for his family and possibly also for others. These researches are enlightening many directions to work further for happiness at individual's level, without having any criticisms. So, it is easier to sum up the happiness journey as, Happier people are found to be more creative. The degree of creativity is being influenced by the individual personal level of happiness (Isen, Daubman, &Nowicki, 1987).

There is a number of studies about the global perspective of happiness and the consequences of emigration. According to this study the families suffering from emigration are having stress and depression which is an unhealthy environment for any individual. Overall, subjective well-being can be positive even after the emigration because of an income boost up and the employment satisfaction (Ivlevs, Nikolova, & Graham, 2019).

Women happiness is essential for any economy because women can play an active role in any economy, she takes care of children and house as well. Children are the future of any nation, so it can be said the women actually plays the role of cultivator to grow our future. Many studies explore that a happier person is a healthier one, and a healthier person is more active in his performance. So, women happiness is vital for all. There are many factors that can affect the happiness of women, such as domestic violence and inequality etc. (Veenhoven, 1993) explains in his work that there is a huge number of studies that are analyzing changes in the circumstances and their consequences on family and individual's life. Baranowska-Rataj et al. (2014) search for the different factors of a woman happiness in this paper they provide an evidence of lone motherhood that explores single female parent is also having a positive relationship of her happiness with raising her child, it is although difficult for her and increases the burden but having child can never make a women unhappy. Qian (2017) works for the gender inequality and the women happiness for the absolute results researcher has tried many different variables included in the five different indices that measures the inequality of

gender than they have found, the happiness of women can never be increased in an inequitable environment. Jabeen and Khan (2016) also reveals that if a woman is more religious, unmarried, and job-holders must be found as happier, typically those individuals who are satisfied with their financial situations are also happier while saving and trust also influence happiness positively. As inequality in gender meters a lot similarly racism also ruin the happiness of any individual.

The purpose of this section was to elaborate on the shreds of evidence that are already exist on the subject and to discover the gap on the literature in Pakistan. Previous studies show the lack of work on Happiness in Pakistan, few studies are there that provide the literature on it but there is a huge gap in this field to work. This study is very first effort to investigate the relationship of Happiness of women with three different dimensions.

3. RESEARCH METHODOLOGY

To analyze the demographic, social and economic determinants of happiness, the Multiple Cluster Survey for the Punjab region is under consideration, this survey was designed by the "Pakistan Bureau of Statistics (PBS)" with the collaboration of United Nations International Children's Emergency Fund (UNICEF). It helps to collect comparable international data at household level in the widest range to take into account the women and children's situation. The collected data at the household level used to construct an index for every woman and at the household level for the happiness of every single woman, this household happiness index helped to measure all the variables from three specified dimensions.

3.1 Data and Sampling

The data is collected by applying cluster sampling, the sample size is 38,405 households with the response rate is 98 percent. The interview clears that 61,286 eligible women are there, from which almost 53,668 are interviewed successfully, the remaining 2 percent of the household are not present at home at the time of interview.

3.2 Concept of Happiness Index

Happiness Index is a tool to enhance an individual's happiness that can be used by researchers, community organizers and policymakers those can withdraw it for community well-being, social justice, economic equality, and environmental sustainability. The index is formed to promote social changes and to make sure the availability of data freely to the community, students and organizations, etc. The Happiness Index can be easily used to measure satisfaction towards life, psychological well-being, health, time balance, community, social support, education, arts and culture, environment, governance, material well-being etc.

3.3 Measuring Index

The Gross National Happiness (GNH) Index is first developed in 1972, this first index of happiness is created by government of Bhutan. It is based on four indicators with different dimensions (economic development, environment, culture & governance) with nine sub-dimensions, Bhutan government has been using these indices to create public policies. Musikanski et al. (2017) has measured another index for happiness, naming "The Happiness Alliance" which is inspired by Gross National Happiness index. The Happiness Alliance's survey instrument calles the Happiness Index as the GNHI from 2011 to 2016. World happiness index has been calculated with the help of the Gallup world poll data set, it explores the rankings of different nations. The rankings are based on responses of individual about the main life evaluation question asked in the poll survey. The ranking is lying between 0 – 10, where 10 the best possible life, and 0 means the worst life.

3.4 Theoretical Links of Explanatory Variables

Gender equality means equal treatment to the human being without considering the gender, it implies that men and women should receive equal treatment unless there is a sound biological reason for different treatment it doesn't mean women and men will take the same circumstances.

According to the United Nations Children's Fund (2006), gender equality means both sexes of the human being can enjoy the same opportunities and protections. Qian (2017) work on gender equality and happiness, according to this article there is no influence of gender equality on happiness while gender inequality has a high influence on happiness in many regions. Kageyama (2012) evaluating, decreasing national average happiness, cause an increase in sex difference in life expectancy and has explored a significant impact of survival rate at an aggregate level and happiness.

Many studies are exploring the relationship of demographic indicators with happiness such that having children exert happiness on an individual's lives. on the other side, Phipps et al. (2014) nevertheless, in the different region having children causes to diminish happiness, the consequence of this influence can be constraints of time and income. education attainment does also have positive impact on the level of individual's happiness, both are positively related with each other (Gerdtham & Johannesson, 2001; Oswald, 1997; Subramanian et al., 2005).

Another demographic factor marital status, showing a positive trend with happiness, married individuals are happier than singles (Gerdtham & Johannesson, 2001). The only indicator having a negative effect on happiness is separation or divorce (Clark, Oswald, & Warr, 1996; B. S. Frey & Stutzer, 2002; Peiro, 2006). Jabeen and Khan (2016) also revealed that religious, unmarried, and job-holders are found happier, typically those individuals who are satisfied with their financial situations are also happier while saving and trust also influence happiness positively.

3.5 Model Specification

The literature on the determinants of happiness has explored the different relationship between happiness and other variables that helped to generate a basic model of happiness function as:

$$WHIi = f(SF, EF, DF) \quad \text{General equation.}$$

$$Yi = \alpha 0 + \beta 1i + \beta 2i + \beta 3i + \mu_i \quad \text{General equation.}$$

$$WHI_i = \alpha_0 + \beta_1 SF_i + \beta_2 EF_i + \beta_3 DF_i + \mu_i \tag{1}$$

Where:

α = intercept term indicates the average level of the dependent variable when independent variables are supposed to be zero.

β = the coefficient of determinants which describe specific slope.

μ = stochastic error term or stochastic disturbance term which is an unobservable random variable which can be either negative or positive in value. i = no of respondent.

WHI = Women Happiness Index at the Household level,

SF = Social Factors that affect happiness at the household level,

DF = Demographic Factors that affect individuals' happiness,

EF = Economic Factors that affect the happiness of every individual.

Women happiness at household level is the dependent variable which is measured through an index, this index has been calculated with the help of various number of questions, asked from every individual about their satisfaction from their family, friends, educational institutions, current job status, health status, standard of living, behavior of people around, looks, current earning/income, Taking all the things together, responses were on a five-point numerical scale, Very happy, Somewhat happy, Neither happy nor happy, Somewhat unhappy, Very unhappy and the independent variables are economic factors, social factors, and demographic factors.

According to these variables the detailed defined model of this study is;

$$(WHI)_i = \alpha_0 + \beta_1 EI_i + \beta_2 HEL_i + \beta_3 CTH\text{-}Rate_i + \beta_4 Acc\text{-}Wat_i + \beta_5 + Ownsp_i + \beta_6 RMT_i + \beta_7 HH\text{-}CON_i + \beta_8 LOC_i + \beta_9 HHS_i + \beta_{10} MF\text{-}Ratio_i + \mu_i \tag{2}$$

Here;

Social variables: EI = education index, HEL = household head education level, CTHRate = no cough, tuberculosis and hepatitis rate, Wat-Acc = access to clean water.

Economic variables; Ownrsp = ownership, RMT = remittances & HH-Con = household condition,

Demographic variables: LOC = locality (U/R), POP = population (household size) & GEN= gender (male to female ratio).

Table-3.1 Theoretical Links of Explanatory Variables

Variable name	Variable code	Variables definition	Theoretical link
Dependent Variable			
Women happiness index	WHI	It is a composite index that is measured through different questions of satisfaction at the micro-level. The level of satisfaction on average explained the level of happiness of an individual at a house hold level.	Musikanski et al. (2017) Ura et al. (2012)
Independent Variable			
Economic Factors	EF	It contains all those factors that relate to the income and wealth (for example,)	A. E. Clark, Frijters, and Shields (2008) Richard A (1995)
Remittances	RMT	It is an amount of money sent by a household living abroad for employment and transfers money to his homeland.	Ivlevs et al. (2019) Joarder, Harris, and Dockery (2017); Tao, Yupeng, and Binkai (2011)
Household conditions	HH-CON	To measure the household condition study used some proxy variable that can	Cattaneo, Galiani, Gertler, Martinez, and
		explain the condition of the house where the household members are living	Titiunik (2009) Kozma and Stones (1983)
Ownership	Ownsp	This is again measured through the different assets ownerships, for example, the ownership of household and ownership of agricultural land.	Ruprah (2010) Tao et al. (2011)
Social Factors	SF	Social factors contain all the factors that can affect happiness through social links such as educational status, health, water supply, leisure, etc.	Gerdtham and Johannesson (1997) Peiro (2006)

Education Index	EI	Education indrex is the social factor that has been measured through the different measures that affect the education level.	O'Rourke and Cooper (2010)
Head of Household Education level	HEL	This variable actually explains the education level of household head so the internal environment can be measured through it.	O'Rourke and Cooper (2010) Ruiu and Ruiu (2018) Akhter and Akbar
Health (no cough, tuberculosis, and hepatitis)	CTH-Rate	Health is been measured by the help of other health factors such as if any person has never gone through cough, tuberculosis or hepatitis, that means he is assumed to be the healthiest person.	Angner, Ray, Saag, and Allison (2009) Veenhoven (2008)
Access to clean water	Acc-Wat	Accesses to clean water means how can one access the clean water to drink or for personal use, as the water is a basic necessity.	Devoto, Duflo, Dupas, Parienté, and Pons (2012) González-Gómez, Guardiola, and García-Muñoz (2009)
Demographic Factors	DF	Demographic factors are those factors that include all the population related information(i.e.) birth rate, death rate, locality, male or female, population, etc.	Efklides, Kalaitzidou, and Chankin (2003)
Population (household size)	HHS	To measure Population I have again used the proxy variable that is the size of a household to get the information about the number of members living in a house.	Schwarze and Winkelmann (2011)
Male to female ratio mfratio Ratio	MF_	This variable containing information about the ratio of gender available in one house to replace the other gender, e.g. how	Stevenson and Wolfers (2008, 2009)
		many males are there in comparison to female in a household.	O'Campo et al. (1995)
Locality	LOC	This study is measuring locality as the division of rural and urban.	Knight and Gunatilaka (2010) Berry and OkuliczKozaryn (2011)

3.6 Variables Description

A) Dependent Variables

Women happiness at the household level is the dependent variable in this study, some of the people believe that there is no specific definition of happiness while others think that it is the feeling of contentment and satisfaction that comes after fulfilling all needs of life and after achieving the highest level of satisfaction. But in economic terms, it gets quite change as "Bentham" on measuring

happiness says, the utility is the best resource to check the level of happiness, as it is "the sum of pleasures and pains".

In this study happiness has measured through an index and this happiness index is consisting of women responses on their happiness level towards family, friend, environment, health, appearance and living standard, household happiness index has been estimated through the mean of total happiness index of a household and the total number of girls, as this study has used the MICS micro data for Punjab, so measurement of happiness index is limited to available information in the survey. this study has used following nine questions from MICS Punjab (2014) survey data, the questions included are as follows (LS2); is about the overall happiness and asked as "first, taking all things together, would you say you are very happy, somewhat happy, neither happy nor unhappy, somewhat unhappy or very unhappy?" (LS3); "how satisfied are you with your family life?". (LS4); "How satisfied are you with your friendships?". (LS6); "How satisfied (are/were) you with your school/educational institute?". (LS8); "How satisfied are you with your health?". (LS9); "How satisfied are you with where you live?". (LS10); "How satisfied are you with how people around you generally treat you?". (LS11); "How satisfied are you with the way you look?". (LS12); "how satisfied are you with your life, overall?"

By using all of these questions we found an aggregated response of every woman (∑LS), through given information a new variable has generated as the total number of girls(tgirls) who respond the life satisfaction questions. Where 0 means the number of girls which are out of this age group that is approximately 42% of this data set while 1 means there is at least one female of this age who is participating in this survey and there are almost 19,915 households which are responding to this survey by single female, and 7 means there are 7 members in a single household to respond to these questions, now 1 to 7 means this is our actual sample size, and almost 21,198 households are under consideration.

Typically, questions about the Happiness of every individual of every household (selected) is posed related to their happiness from all aspects (family life, employment, relationships, education, and educational institutions, appearance of individuals, etc.)? more or less nine question are under consideration in this study where the response of every respondent where on Likert-type scale where 1 means very unhappy while 5 means very happy and 3 means neither happy nor unhappy, Besides all the other assumption it is difficult to understand how the respondent has answered to these questions, as we can say normally it has observed in Pakistani society that everyone is implementing the other once response to hide their own actual conditions they are going through, in other words, they are used to follow others blindly, somehow to make this study unbiased we just focused on how do they answer the questions, by considering themselves in respect of their own situation, or they tried to give a comprehensive judgment.

To calculate the household happiness index, it was necessary to calculate an overall happiness index. This overall happiness index found that all observations have a limit from1 to 5, where minimum value is 1 and it is showing there is "even no single person who is highly unhappy" and the maximum value is 5 that is showing there are some females who are highly satisfied and happy with their life, while the mean value is more than 4 and it is showing, on average maximum people are closer to the maximum value, in other words, we can say most people are living in happy state of life as whole.

To calculate the happiness index at a household level, total happiness index is divided by the total number of girls who responded to the questions asked about life satisfaction. Almost 35,640 females are under observation in this study and mean value gives an impression of the overall situation of happiness which is laying between 4-5, which means on average people are living in a satisfied situation as an index is laying between 1 (highly unhappy) to 5 (highly happy).

B) Independent Variables

To determine the current and expected future value of any determinant such as investment depends on economic factors that include income, unearned income, social securities, income per capita, expenditure, assets/investment, the standard of living, employment and unemployment rate, etc.

United Nations statistics division defines social indicators as "the Social indicators covering a wide range of subject-matter fields" it is a numerical measure which helps to describe the wellbeing of

individuals or communities. Social factors include educational status, health, water supply, leisure, public safety, transport, and communication, etc.

Demographic indicators; The statistical study of human beings, in general science, it analyzes any kind of dynamic living population, it contains especially life expectancy, fertility and infant mortality rate, and rural-urban distribution, population & gender, etc.

a) Economic Determinants:

The Economic Determinants of this study are as follows:

i) Household characteristics : This variable has been calculated from the same questionnaire where HC3, HC4, and HC5 were most relevant questions about the household characteristics, HC3 is about the flooring of the particular household either it has the natural flooring (earth/sand or dung) or finished flooring (parquet or polished wood/ vinyl or asphalt strips/ ceramic tiles, marbles or chips/ cement/ carpet/ bricks floor/ other). To calculate a new variable(floor) 0-1 scale was used where 0 is equal to natural flooring while 1 is equal to finished flooring and it has observed that only approximately 36% households are having natural flooring on the other side almost 64% households are having the finished flooring in all over the province. HC4 is about the roofing of a particular household, either the household is having the natural roofing (no roof/ thatch or palm leaf/ sod) or having rudimentary roofing (rustic mat/ palm or bamboo/ wood planks) or the particular household having the finished roofing (metal or tin or t-iron or girders/ bricks/ calamine or cement fiber/ ceramic tiles/ cement/ others).

Similar to the floor, roof is being on a same scale 0-1, where 0 equals to natural and rudimentary roofing both are assuming in a single category as 0, because somehow the rudimentary roofing is an extended version of natural roofing, and 1 equals to the finished roofing. Observation says almost 82% of households are enjoying the finished flooring while only 18% are having natural roofing in Punjab. The external condition of household which is measured as the material condition of the exterior walls, it is also a detailed question about the exterior to the household either they are having natural walls (no walls/ cane or palm/ dirt) or they are having the rudimentary walls (bamboo with mud/ stone with mud/ uncovered adobe/ plywood/ cardboard/ reused wood) or they are having finished walls at their exterior (cement/ stone with lime/ brocks/ cement blocks covered adobe/others). This external condition of household is again containing only two options 0 or 1 where 0 is equal to natural exterior and the rudimentary exterior while 1 is equal to the finished exterior around the household and observation depicts that almost 87% of households are having the finished exterior to their house while only 13% of people are having the natural exterior walls.

By combining these three variables a new variable has been generated as the household condition, which explains the overall situation of household, almost 95% of households, which are approximately 36,408 households out of 38,395 are enjoying the better household condition in all aspects of housing while only 5% are not considered better as compared to the others, it shows the province of Punjab is better in household condition. **ii) Remittances** This is another economic variable calculated from the same questionnaire RM4 is under consideration due to the relevance to this variable, the responses are between 0 & 1 (yes/no). summary of this variable shows almost 88.5% of people are not getting remittances while 11.5% of households are getting remittances.

iii) Ownership of Assets

The ownership of assets is the other economic variable in my study, this has been calculated from the different sort of assets such as ownership of house where they livein or houses they have to be lived and having the agricultural land. From the same questionnaire, HC10 & HC11 are under consideration. While the responses collected as 1 for yes and 0 for no. results show almost in rural areas 93% people are having their own houses and own agricultural land while almost 82% people in urban areas are having their own house to live in and owning agricultural land too.

b) Social Determinants

The social determinants of this study are as follows: **i)**

Education

Education plays a vital role in economic progress, higher rank on education attainment means higher social achievements, in this study education is the key indicator in social determinants, I have calculated this variable in two different dimension one as a lump sum for young as an education index and the other one is the education level of the head of household.

Education Index

Education index is being calculated with the help of literacy rate of household, number of current enrolments, number of child present in a household and enrolment rate at household level, from the same data set that helped to calculate literacy rate containing the reading and writing ability of any individual where "HH1, HH2, & HL1" helped to summarize the literacy rate at the household level, on the other hand, ED3 and ED5 facilitated to calculate the number of overall enrollment. Then the data converted at household level, by taking the raw mean of literacy rate and enrollment rate at household level I have calculated the education index. The summary shows the literacy rate in Punjab is more than 57%, the MICS report also supported the results, 57% means more than 50% people in this region are literate and another observation is there are several households which are having 100% literacy rate. While on the other side the enrollment rate is showing a huge change in the society where the net current enrollment is more than 77.86% and there is a number of households which have enrolled their each and every child present in the house.

Head of Household Education Level

This variable is calculated only by the responses of the respondent no proxy is been used and no alteration was done in this variable to check the fluctuations of responses if the head is having primary education or the head is under matric than what happens with the happiness of women as the head gets higher achievements.

Health

To measure the health as an intervening , I have calculated CTH-Index, which is a simple index containing the cough, tuber clauses(TB) and hepatitis data set at household level for this HL16(A), HL16(B) & HL16(C) where under consideration, by calculated this index I have found there are only 4% of people who suffered from one of these diseases which shows minute variation in data so the data set was converted to a new variable that is nocth which means people who are having nor cough not TB and no hepatitis, to calculate this variable I have given two dimensions 0 & 1 where 0 means people suffered from these while 1 means people never faced these health issues, and observed more than 95% people never suffered from this problems, and then I have calculated the no-cth-rate by dividing hh-no-cth with the household size and multiplied by 100 to calculate the percentage, the nocth-rate is used to measure the health facilities at the household level in the province of Punjab.

iii) Access to Protected Water

It is the other social indicator in this study data has been collected from the same questionnaire, our main concern is drinking water accessibility here WS1 is most relevant to this, this question is about the main sources of drinking water for the member of household it is a very detailed question to be answered, for this purpose a new variable has been generated by splitting responses into two 0 and 1 where 1 means protected drinking water while 0 means unprotected water to drink. All the piped water options and the borehole options are considered as the safe and protected water while the other sources i.e. rainwater collection(pond)/ tanker-truck/ cart or drum or can and surface water is assumed as the unprotected or unsafe to drink as stagnant water is unhealthy and unhygienic to drink This variable helped to observe the overall situation of Punjab in the accessibility of drinking water, where 0 is showing only 5.6% household are unable to get the safe and protected water to drink while 94.4% which are 36,202 households out of 38,384 are having the easy access to safe and protected water to drink which is showing a good overall condition in water accessibility.

c) Demographic Determinants:

The demographic determinants of this study are as follows:

i) Locality

Locality is another demographic variable which is actually highlighting the rural urban distribution, here it is very easy to observe that the rural areas are having the majority of population with 165,174 household's members while all the urban areas are having 81,222 household members where Lahore city is having more than half of this population almost 43,847 households goes to this city.

ii) Population

The demographic variable population has measured through the size of the household which has been calculated with the help of HH1 cluster number& HH2 household number, this variable helped to resize the sample size of under observation population, the total number of households is 246,396 from which the female population size is 21,198 that have been interviewed successfully.

iii) Gender

The variables gender I have calculated by taking male to female ratio, male proportion under age 5 is almost 51% in contradiction of female that is 49%, while the mean value 3.8 of this ratio shows almost 3 to 4 males are there to oppose one female, and the minimum value zero shows there are few households that had no female or male in comparison. This variable helped to observe the number of female under confederation in this study.

3.9 Estimation and Methodology

The data set has been collected from the MICS survey, that is a micro-level data set, we have used cross-sectional data modeling methodology to estimate the relationship of dependent and independent variables. Ordinary least squares (OLS) regression analysis is under the consideration in this study. OLS estimates the relationship between one or more independent variables and a dependent variable. This method estimates the relationship by minimizing the sum of the squares in the difference between the observed or predicted values of the dependent variable. This OLS analysis can be used in bivariate model as well as the multivariate models. A model containing independent variable X and dependent variable Y, known as the bivariate model in which Greek letters like α and β are used to denote the parameters. Where α is the intercept while β is the coefficient, this model also contains the stochastic error term, the error term is also known as the residual, disturbance, or remainder term and is variously represented in models by the letters *e,* ε, or u. There are many studies that are using OLS regression analysis to regress the cross sectional data set, Dawson-Townsend (2019) measures the level of well-being/ satisfaction of older adults with the social participation by using the cross sectional data, this study contains a bivariate modeling methodology.

The model is using in this study is the bivariate model which contains all of the above specifications and the Regression tools are used in the present cross-sectional data set. The data handling methodology is same as time-series data handling procedure. Stepwise Regression analysis of all the independent variable with the dependent variable, to elaborate their existing relationships.

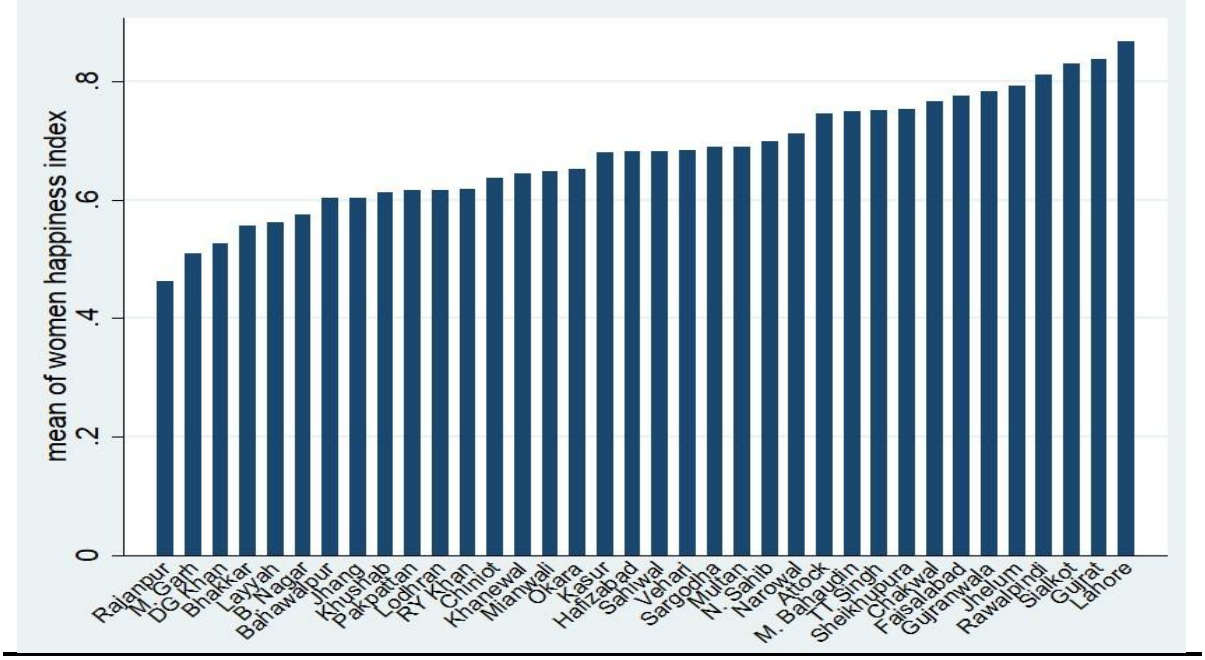
4. RESULTS AND DISCUSSION

The primary objective of this study is to measure the level of happiness of female at household level for the region of Punjab, the most populist province of Pakistan. A composite index of happiness for women is being calculated. This section will provide the results for the discussion on the findings of questions and the hypothesis given in chapter 3. This chapter is comprised of descriptive statistics for demographic, economic and social indicators, on the other hand, it will provide an exclusive summary of data, tables, and graphs, which will help to conclude the results and policymaking. Results will be exerted by the OLS Regression analysis afterward some diagnostic test of autocorrelation, heteroscedasticity, and multicollinearity will be checked to enhance the reliability of data and model.

4.1 Happiness Index at the Household Level

The happiness index at household level comprises the women responses on their happiness level towards their family, friend, environment, health, appearance, and living standard. This happiness index has been estimated through the mean of total happiness index of a household and the total number of girls. This index is a composition of nine questions from MICS Punjab (2014) survey. Figure 4.1 portrays an overall situation of household happiness index at the district level in Punjab.

Figure-4.1: Women Happiness Index at Household Level for Punjab



Authors' Calculation

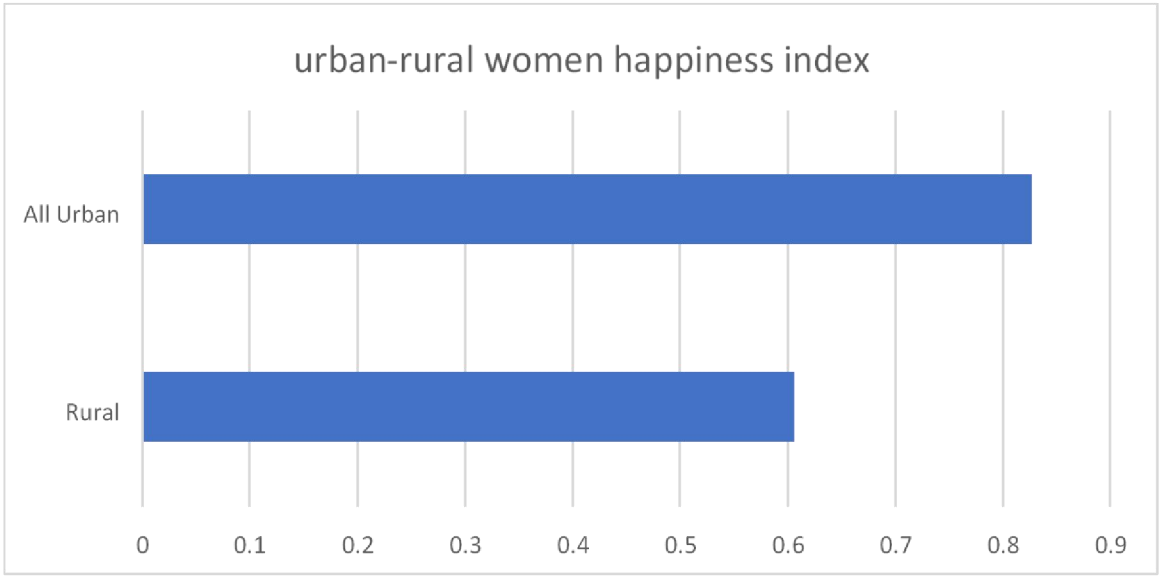
Figure-4.1 illustrates the mean value of the happiness index of women in Punjab, it is easy to observe that almost on average every woman is happy but the happiness index says there are some regional differences in general, the districts (like Rajanpur, Bhakkar, D.G. Khan, R.Y. Khan) are showing lower happiness of women. On the contrary other districts (Lahore, Gujrat, Sialkot, Rawalpindi, etc.) are showing the high tendency which elaborates the females belongs to these areas are happier than females are living in the areas mentioned before. These observations drive us to different variables which are influencing on the happiness of women at household level in the region of Punjab.

Akhter and Akbar explains in their study that the Lahore is the largest and the modest city of Punjab, and the government of Punjab is implementing the good governance and the equality system for both genders. This practice is making women empowered. The equality in working opportunity and education attainment making women more satisfied.

Awan (2016) conclude his research as, educated and empowered women can play a vital role in the economy, education gives them exposure to women that drives women to empower herself. In urban areas, education attainment is easier than in rural areas.

The situation of women in Punjab who surrendered their rights of inheritance for male. This study recommended an effective awareness for females about their inheritance rights, in both ways legally and by promoting female education that enables females to make their informed choices (Usman).

Figure-4.2: Urban-Rural Women Happiness Index of Punjab



Authors' Calculation

Figure- 4.2 is depicting the huge difference between the rural area happiness and the urban area happiness, the rural areas' happiness of women is not more than 0.6 on average while the happiness of female living in the urban areas are more than 0.8 just closer to 1, one can easily say that women belong to urban areas are happier than the women of rural areas. (Knight & Gunatilaka, 2010) proved that the rural-urban happiness may differ from each other in China because they have observed a huge income Espirit at a household in the rural and urban area. Remarkably, there is higher subjective well-being in rural areas. This decomposition analysis concluded that there are many are determinants of happiness other than absolute income.

Table-4.1: Summary and Descriptive Analysis

Variable	Observations	Mean	Standard Deviation	Min.	Max.
Women happiness index	38405	.688	.252	0.02	1
Household condition	38395	.948	.222	0.01	1
Ownership	38389	.886	.318	0.02	1
Remittances	38349	.115	.319	0.021	1
Education index	38404	.644	.321	0.001	1
Head education level	38394	.302	.459	0.02	1
Male to female ratio	33453	3.785	2.118	0.03	19
Access to clean water	38384	.943	.232	0.05	1
Locality	38405	1.369	.482	1	2
No_CTH_Rate	38405	.946	.129	0.010	1

Household size	38405	6.418	2.994	1	50

Table 4.1 presents the summary and descriptive statistics for all the variables the Women Happiness Index shows a mean value (0.688) which clearly shows that the overall happiness scenario, 68.8% women are happy in Punjab at household level. In third chapter it is mentioned that data set is only available for approximately 21,000 women because of the limitation of age. while the other data is available for more household, I have treated the household without female with the help of multiple imputation method in which the missing values can be treated as a better way, the multiple imputation method fills the missing value with a best substitute value.it is the best worldwide known methodology used to handle the missing values, for this purpose I used the software Stata which filled the gap and provided the whole data set to work further.

Now the summary statistics explains the other variables as the mean value of household condition is .948 that is showing almost 95% of population is having the best condition of household where the women are living, in the region of Punjab. While the next variable Ownership shows 0.886 Mean value that means around 89% of the population is owning the land or house for them that helps to calculate the income level of households. The next variable Remittances showing the mean value 0.115 that indicates there are only 11.5% of families who are getting Remittances. The education index shows the mean value 0.644 means determinants of this index shows more than 64% of population are those who have met the education criteria at international level, which reflects positive tendency where more than half of people are at their best in this index, while the other variable of education, head of household education level shows a value .302 which elaborate almost 30% family heads are educated in this data set. the male to female ratio is showing the mean value 3.785 which means in every household there 3 to 4 females are available, the next social variable access to clean water shows a mean value .943 that is showing almost 95% of the population is having the easy access to clean water. The other variable household is having 6.418 mean value that reflects almost 6 to 7 person is living in every household in every district of Punjab where, the next variable is the proxy of health that shows a mean value .946 which depicts 94% of population never faced the cough, tuber clauses or hepatitis in this region. in this province of Pakistan.

Table-4.2: Regression Analysis

Variable	Economic variables Model (1)	Social variables Model (2)	Demographic variables Model (3)	Combined variable model (4)
Household Condition	0.465***			0.278***
	(0.00522)			(0.00425)
Remittances	0.104***			0.0783***
	(0.00364)			(0.00283)
Ownership	0.00944***			0.0329***
	(0.00364)			(0.00285)
Education Index		0.443***		0.328***
		(0.00340)		(0.00342)
Head education level		0.0833***		0.0783***
		(0.00237)		(0.00218)
Access to clean water		-0.0553***		-0.0365***
		(0.00419)		(0.00389)
No_CTH_Rate		0.0518***		0.0307***
		(0.00750)		(0.00749)
Male to Female Ratio			-0.0158***	-0.00895***

			(0.000609)	(0.000455)
Household Size			0.0134***	0.00988***
			(0.000437)	(0.000327)
Locality			0.213***	0.119***
			(0.00249)	(0.00199)
Constant	0.227***	0.381***	0.375***	-0.0361***
	(0.00598)	(0.00833)	(0.00478)	(0.00971)
Observations	38,345	38,372	33,453	33,414
R-squared	0.189	0.436	0.205	0.563

**** p<0.01, ** p<0.05, * p<0.1*

Table 4.2 is showing the model explains the results describes nearly 56 percent variation in the happiness of women can be explained by the three dimensions i.e. economic, social and the demographic variables. While the social variables are playing a significant role in the happiness of women, the value of R-squared shows the dependency level of each variable. The positive sign for Remittances, education index, no cough tuber clauses, and hepatitis household size, locality, education level of the head of household and ownership represents that a rise in the happiness of women at household, increase in these variables would cause an increase in the happiness of women in Punjab. While a negative sign for access to clean water and male to female ratio indicates an inverse relationship with the happiness of women.

4.2 The OLS Regression Analysis Results

The Regression Analysis is concerned with the study of the dependence of one variable on one or more Variable, to check the dependency of our dependent variable (the women happiness index at household level) on the many independent variables through different dimensions. The Regression analysis tells the t-values of all variable and the p–values of all variables. the mean of the dependent variable is 0.697 while the standard deviation of the dependent variable is 0.245, on the other side the co-efficient of determinants R-square is explaining the level of goodness of fit that means how much our independent variables can explain our dependent variables and the value is 0.506 that shows the goodness of fit of our model in which total observations are 33,423. (see appendix_03)

While every single independent variable is describing its own relationship and its significance on dependent variable, the three separate models for the three separate dimensions that are used in this research work being regressed separately to enhance the transparency of our model.

A) The Economic Variables

Remittances, that having coefficient value 0.078, shows a positive relationship with happiness and it can be interpreted as, if the remittance increases by 1 unit, the happiness of women must be increased by 0.078, that explores the responsiveness of women on their happiness with respect to remittances. Similar results have been found by Ivlevs et al. (2019), Joarder et al. (2017), Cattaneo (2009), Kozma and Stones (1983).

The next economic variable ownership is also having a positive relationship with the happiness the value of coefficient 0.038 that explains the responsiveness of this variable, it can be interpreted as, if the ownership increases by 1 unit, the happiness of women must be increased by 0.038. Ruprah (2010) this paper used the data set for seventeen Latin American countries to obtain the expected results. They present evidence of homeownership, the individual having own house are happier than no owning once and this cause the difference in happiness. Fagundes (2016) acquiring property is a central part of the modern American vision of the good life. The assumption that accruing more land or chattels will make us better off is so central to the contemporary preoccupation with an acquisition that it typically goes without saying.

B) The Social Variables

In results, the education index coefficient with the value 0.349 explores that if the education index goes up by 1 unit, the happiness of women would go up by 0.349, ultimately that shows more responsiveness towards happiness compared to remittances. Ruiu and Ruiu (2018) explored the

relationship between education income and the happiness of the people living in Italy. The results showed a positive effect of education on incomes. High educated people are having good jobs and earning a handsome amount to enjoy the basic needs of life, which makes them happier. Tabbodi and Rahgozar (2015) work on academic achievement and happiness, the results explored that, there is a significant positive relationship between happiness and achievement of students. There is also a significant positive correlation between happiness and the progress of students.

The next variable is health that shows the value of the slope of coefficient 0.022 and explores, if the values of health indicator goes up by 1 then the happiness of women will be increases by 0.022, that again shows very low responsiveness towards the dependent variable. Veenhoven (2008) enlighten the relationship between health and happiness, according to this article public health can be promoted by promoting the policies which make people happier. There is a two-way relationship between health and happiness if an individual is healthy he must be happy and vice versa. Angner et al. (2009) explains the relationship between health and happiness by using a crosssectional data of 383 people that are older adults. This study also explains that there is a positive relationship between health and happiness, as a patient diagnosed by any disease, making him happy can make him healthier.

Next variable access to clean water is showing a negative coefficient with the value -0.024, this variable is showing a negative relationship with the dependent variable. It explains if the access to clean water decreases by 1 unit than the happiness of women will be increased by 0.024, that express if the accessibility of water improves, will improve the happiness of women at household level. González-Gómez et al. (2009) explores the link between access to clean water and happiness and the results elaborates if the clean water for the family members is near to house and every member of household can easily the safe drinking water can make a women happier, while on the contrary if a female spent her lots of time to collect water for the family members it makes women less happy.

The next social variable, education level of the household head is also having a positive relationship with the happiness of women. The slope of coefficient 0.027 illuminates that if the education level of the household head increase by 1 unit than the happiness of women will be increased by 0.027. O'Rourke and Cooper (2010) this study is about the Australian primary students, this micro data-based analysis explores that if the parents are more educated, students show their positive behavior towards all activities and the education attainment which leads mothers happier.

C) The Demographic Variables

The next independent variable household size explains the number of individuals living in one house, the slope of coefficient 0.010 elucidates that the number of households and the happiness of women is positively related to each other, it can be said if the household size increase by 1 unit, the happiness of women would increase by 0.010, that means if numbers of people living in the household increases will make the women happier. Foye (2017) examining happiness into Two pathways. First, explains the movement of households from smallest one to bigger one just to accommodate the better lifestyle this may have the positive relationships in some cases while it has a negative impact on women because more members share the burden of work, etc. Secondly, wealth is a symbol of status, more breadwinners mean wore wealth and financial support, and high status means a high level of happiness. Although it is not as important as in this case. Schwarze and Winkelmann (2011) Using the number of observation to find out the linkages between the size of the household and the associated happiness. They explored that, if 1 standard deviation increases in a child's happiness will increase the happiness of parents at the same rate, as the income of a household may increase by 20–45%, depending on specification.

The demographic variable locality also having a positive relationship with the dependent variable with the coefficient value 0.132, it is very clear that if the locality increases by 1 element, the happiness of women must be increased by 0.010. It is having a high responsiveness than other variables accept education index. It portrays that the happiness of women was highly responsive to the area where they live. Knight and Gunatilaka (2010) explored the relationship of happiness with the urban-rural change in china they explored that there is a difference between both the people living in a different locality, the reason can be the available resources and the job opportunities. Berry and Okulicz-Kozaryn (2011) explores the different dimension of urban-rural change in happiness, they say

the people are living in the rural areas are happier than the people are living in the urban areas, because of many reasons one of the reason is justification, health environment, pollution, etc.

Another demographic variable male to female ratio is again having a negative relationship with the dependent variable, the slope of coefficient -0.010 forecasts the negative responsiveness, it elaborates if the male to female ratio decreases by 1 unit, it will increase the happiness of women by 0.010 unit, it discovers the number of male increased in the household will decrease the happiness of women. O'Campo et al. (1995) explored the women happiness in the presence of men, they used regression to obtain the best results possible. A woman can't get happier in the presence of the risk of partner-perpetrated violence, but the presence of humble men, women always require. But a violent male always plays a negative role towards women happiness.

The assumption of OLS, variance of error term should be fixed. This property is also called homoscedasticity. If Homoscedasticity is absent that means OLS will remain unbiased and consistent, but won't be longer efficient. There is a series of tests for the heteroscedasticity such as, White Test, the procedure of this test is to run the regression and get the residuals, running of auxiliary regression than Get the R-square from this auxiliary regression. It has observed in the data set that there is no heteroscedasticity present because the variance of the error term is fixed and no variations are noticed in the error term. Multi-collinearity refers to co-linearity between two or more explanatory variables. If the independent variables of the model are highly linearly related to the dependent variable, perfect multi-collinearity must exist in the model. It was observed that there is no multi-collinearity in our model. The independent variables do not correlate with each other.

5. CONCLUSION AND POLICY RECOMMANDATION

For the development Happiness is being considered as important as the GDP of any country, it is not a current phenomenon. The concept of Happiness as subjective well-being is the agenda of early 70's many economists are paying their full concentration to evaluate different relationships of happiness in the economy. After presenting Easterlin paradox in 1970's, happiness got the limelight of all the researchers. Before this work happiness was considered as the pure science subject and it was assumed that happiness is the only psychological conditions of any person, while the economists give it a quantitative measurement through utility, through satisfaction and now it is being measured through different dimensions.

This study is also measuring the different dimensions of happiness. And finding the relationships of all the three dimensions of any economy such as social factors, demographic factors, and the economic factors. The methodology and the modeling, helped to build the model for this study to answer all the questions related to this study.

Almost 69% of women are reported happier in the region of Punjab, Pakistan. Women belong to urban areas are happier than the women belong to the rural areas. Happiness can be more affected by the social variables compared to the economic and demographic variables. There are only to variables that having a negative relationship with happiness in this study. Male to female ratio is having a negative relationship with the happiness of women at the household level. There is the number of reason, for this negative influence (i.e) the burden of work, discomfort due to religious perspectives and the domestic violence from the male side is the basic hindrance of women happiness Access to clean water is the other variable that is having a negative influence on women happiness. In Pakistani society women are much concerned about the health of their kids and other family members, it is supposed that women are responsible to bring the clean water for rest household members. Getting access to bring the clean water is much time taking and tiring work especially for the pregnant women, under aged girl, and over-aged lady.

All the other variables used in this research having a positive effect on the happiness of women. Remittances are having a positive effect on the happiness of women, it can be concluded that an increase in remittances can make women happier. The reason can be an increase in income can uplift the lifestyle of any household, increase ownership of assets, education attainment can be increased and the health affordability can be improved, these all variables are having a positive relationship with happiness and if only remittance can uplift all of this or anyone than this only variable can make women happier in all aspects. Education index is also having a positive impact on happiness, as education enhances social awareness and the confidence of women. This social awareness may lead to better health, rights of inheritance, and increase job opportunities. Better

Health is also having a progressive effect on happiness, as the proxy of health no cough, tuberculosis hand hepatitis is leaving a positive impression on women happiness. Because healthy people living in a household make everyone happy instead of unhealthy family members.

The population is actually a household size that explains the member living in a household that is again having a positive effect on her happiness. The reasons can be differing from one to another person (i.e.) some women like to live around their family, some like many children. Head education level is also influencing the women happiness positively, as educated head of household can take better and realistic decisions and open the doors for women empowerment and make the bridges to educate them properly, make them aware from all the aspects, makes women happier compared to the uneducated head who make the environment more complex. Ownership of assets is also relating to women happiness positively, as the ownership of assets gives more sense of security on the other side owing more assets means more stability in the economic condition that improves living conditions of women.

.Happiness is a highly valued in present day society. Not only do people aim at happiness in their own life but there is also growing support for the idea that we care for the happiness of other people and that governments should aim at creating greater happiness for a greater number of citizens. On the basis of the findings the policy recommendations may differ from other studies as the literature explained that every society and related people are having a different way of living and different priorities, as the happiness is ultimate satisfaction from life and things around, happiness is the other name of subjective well-being. There is a need to enhance that policies that can make women more empowered and more aware, need to stable the institutions that provide education, health and other facilities of life to make our society healthier and happier. With special reference to Pakistan, there is a need for strong policies formulation in rural areas of Pakistan to achieve the right directions towards the basic necessities of life, such as clean water accessibility. There is a need to develop an environment where women can get other skills to strengthen their economic condition and enable them to be an active part of the economy.

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