Working Paper

Strategic Life Choices in Women's Economic Empowerment:
Does society scared from educated and economically empowered women?

Humaira Kamal Pasha

Ph.D. Candidate

CERDI

Universite Clermont Auvergne

Abstract

The study focuses on the impact of education on empowerment by the women aged 15-49 years who are struggling to influence in the society and contribute in economic growth of Pakistan. This study has used PSLM (Pakistan Standards Living Measurement) survey dataset from 2005-2014 that covers 80,000 households approximately by applying econometric models; probit and multinomial probit models. The main objective and contribution of the study is to analyze the effects of education on women empowerment with socio-economic characteristics particularly in areas of marriages, education attainment, health, employment, intra-household expenditures and son preference. It is interesting to examine results into two scenarios, first one, examine the effect of education on women empowerment and second one determines the significance of education by empowerment indicators. Findings demonstrate the male dominance in the society that control major sectors of the employment. Gender of the head of the household participates actively only when joint decisions are considered. High fertility rate and lower level of education have centered dynamic and potential role of women in the labor market. Study attempts to deal with the potential endogeneity between education and empowerment by instrumental variable technique and results change slightly. Estimates are equally supportive for education and physical assets possession by the women and significantly effect on empowerment.

Key words: Gender, education, empowerment, probit and multinomial models, endogeneity.

JEL Codes: I24, J24, C36, B54

1. Introduction

This study focuses on the impact of education on women empowerment for the economic growth and development in Pakistan who are less privileged in decision-making for their dynamic role in a society. According to the United Nations Charter (2015) gender equality is considered prerequisite for achieving MDGs (2010) for well-being and economic empowerment. Public policy interventions for the poverty reduction cannot be implemented without gender equality, mainly in education and health (UNESCO 2015). High mortality rate and discrimination, after and before birth, have increased number of missing women in millions that describes the lack of education, working gap in labor market, poor technology and lower women empowerment (Sen 2003; Klasen et al., 2003; Gillard et al., 2008). Researchers and policy developers from recent decades have been observing the individual empowerment to achieve economic welfare with the education attainment, poverty reduction and income stability (Haddad et al., 2003). But still definition of empowerment remains unspecified and unclear with spatial and social differences. Some have defined empowerment by the ability to make individual decisions and inside the households (Holvoet 2005) and others have different opinions with the desired attributes for human beings such as school completion, income generation, freedom in society, marriage age and choice, good health and social security (Scanlan 2010).

Women empowerment influences on development goals while in male dominance societies like in Pakistan, cultural barriers prevent women to achieve their rights for education[1], employment and health care decisions (Hakim et al., 1998). Basic compulsory education and microcredit schemes are treated interventions in women empowerment that reflect female awareness against discrimination and domestic oppression that challenge traditional norms and social set-ups (Strauss et al., 2017). Kabeer (1994,1999) focuses on the three inter-related dimensions in the process to achieve women empowerment in which agency sets one's goals independently and act accordingly by utilizing human or social resources for the well-beings of the society. Capability approach also gives challenging definition of empowerment and it seems quite difficult to choose appropriate one in the context of Pakistan. Empowerment has become familiar term, but it is treated as latent phenomenon[2] which can only be observed indirectly such as level of freedom, autonomy and mobility. It is more likely that marginalized women after gaining empowerment face frequent exposure to violence and unequal distribution of responsibilities among household members (Basu 2006).

Educated women participate in the society well-informed and know how to channelize different mediums when comes to their basic rights exploitations on education, employment and health. But one cannot ignore this fact that by reducing fertility rate or acquiring basic education do not mean that the women are empowered enough to achieve their strategic goals[3]. That is why focusing only on basic

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[1] Recent report of Pakistan Bureau of Statistics (2018) claims that female to male disparity has been declined or narrow down in the 2018 whereas the literacy rate has been slightly improved by 49 to 51 percent all over the country. See LFS Pakistan Report 2017-2018.

[2] See (Mahmud 2011)

[3] See N Kabeer; Resources, Agency, Achievement (1999) as empowerment describes as the process to take control on lives by expanding choices for the alternatives.

education and ignoring other social and economic aspects of the community, do not provide substantial empowerment.

In Pakistan, gender inequality has strong roots and men tends to hold firm positions as compared to women in high salaried jobs, public and private sectors as well as in the intra-household decisions-making (Mehdi 2004). There are two broader aspects of women empowerment which include education and financial independence that can decrease gender gap and achieve economic welfare. But relevant information and provided opportunities are quite disappointing. In agriculture sector, more than 50 percent of total population is employed that hold two third part of the country's GDP has most of the lands owned by the men. Female labor force in this sector is higher than any other sectors of the country constituting 67 percent of the total female population making their lives vulnerable because of low wage rates (Labor Force Survey Pakistan 2015). Pakistan Vision 2025[4] (World Bank 2019) urges to raise the current level of female labor force rate from 25 percent rate to 45 in coming six years which is quite challenging as only 13 percent of females are able to reach secondary level of education. Household heads and mothers are unable to decide to feed or to educate their daughters when vicious cycle of poverty is higher than last decades around39 percent. When more than 32 percent girls are out-of-schools and 22 million children are at school going age, empowering women is highly needed than ever before.

This current study has interest to clarify the concept of empowerment in context of Pakistani households, what it is and how it is measured. It formulates socio-economic determinants of women empowerment by dealing causality. Each aspect of empowerment is categorized with the socio-economic characteristics that is highly interrelated among households within provinces. This study observed each empowerment aspect individually at first place and then their differences are analyzed at household level. These aspects cover women strategic choices for education, health, employment, intra-household resources allocation, choice of marriage and son preferences. Main focus of this study is educational impact on power achievement, but comparative analyses also observe between human and physical resources.

1.1 Education and women empowerment in Pakistan

Pakistani Education system comprises with many Westerns magnitudes and features. It is divided into three main categories; Primary, secondary and higher levels. The first important thing is that compulsory education is not totally free all around the country (Saeed 2007). Each province has liberty to formulize its curriculum and at higher levels systems are also independent. The drop-outs rates are higher in Pakistan as compared to the South Asia. Although reforms initiatives are launched in 2005 for each kind of education medium providers or institutes regarding contents and subjects, more than twenty million children are suffering from the basic education (Government of Pakistan 2009)[5]. Public programs for the

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[4] This 12-year plan has been started in 2014 for the 90 percent literacy rate, female labor force participation rate by 21 percentage point, reducing generation costs in electricity, hydropower and mediums of energy that are economical elements of sustainable growth. It urges to increase the export 150 billion US dollar on annual basis by opening small business ventures and promoting gender equality in labor market to maximize the female human resource.

[5] See Pakistan Economic Survey 2009-2010

adults and financially poor families are launched in which prominent one is NFBE (Non-Formal Basic Education) to cover the gender gap. It somehow proves better for girls with the ratio of 4 to 1. Proper infrastructure and facilities for a learning environment are lacking in the country particularly in rural areas (Khalid et al., 2006; Shami et al., 2005).

The marriage system is nonetheless is becoming economic burden for the middle and poor class families. Its patterns are characterized with arranged marriages and large dowries. Women powerlessness is highlighted in the child marriages with the men three or four times older in age and estimates show 21 percent girls get married before reaching the age 18 (UNICEF Pakistan 2017). The contact and communication gaps for the young females within society and families depict lower power for marriage choice (Jejeebhoy 2000). Kin marriages and natal family's relationships provide support for the female protection and security against household discrimination and violence. The other benefit associated with these marriages to reduce the marriage cost but unfortunately the flow of this cost remains unidirectional. According to Pakistan Demographic and Health Survey (PDHS), more than half of the women aged 15-49 married with their cousins and this percentage becomes up to 70 percent in rural areas[6].

Recent government has suggested to amend Child Marriage Restrain Act 1929. By this act the child marriage would be ban and young girls will not get married until the age of 18. In rural or tribal systems, men autonomy over women exhibits harsh and insensitive in which women are sold or given for settling regional or tribal issues (Amnesty International 2002). Larger families along with class, caste and ethnicity show regional disparity for women in shape of freedom in mobility and socio-economic stability (Critelli 2012; Mansuri 2008).

Women with their reproductive rights are considered equally to perform their socio-economic activities with courage and self-wroth. They have right to determine their choices in health, education and marriage within and outside of their households. Gender gap in health is directly associated with the woman's age and socio-economic background (Country Program 2018-2022 UNFPA)[7]. Lack of education, control and status have negatively associated with the woman's health status. The estimates of maternal mortality rate are 500 per 10 thousand live births which is high and on the other side 5 children per woman increases total fertility rate in the country. women are extremely dependent on family structure in seeking help for reproductive and health maintenance programs. No proper treatment, insufficient health facilities and poor quality of care services make situation grim in Pakistan (WHO 2016).

Low empowerment in health describes low support from the family of husband. Low mobility and poor access to medical treatment restrict independent decision-making for mother and child health (Islam et al., 2002). Low community support, cultural barriers, superstitious misconceptions and misinterpreting certain beliefs are those barriers which can only be improved by education and knowledge (Kabeer 1996; World Bank 2002; Stephenson et al., 2004).

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[6] This survey has standard sample size of 50 thousand households to monitor health indicators and mortality rates after five years. The main areas covered by women violence, domestic abuse, child care and education.
[7] United Nation Sustainable Development Framework for Pakistan.

Women physical health is also connected with their mental health. Depression and relevant symptoms of anxiety are likely to increase mental disorder with ratio of 1.5 to 2.0 from women to men. Culturally discrimination impose psychological pressure and risky behavior towards life (Zaidi et al., 2016; Sen 1992). Son preference is highly embedded in the country which has many advantages in developing countries like Pakistan. Son carries family name, support of parents in old age and financial stability. On the other hand, daughters are considered for benefiting their in-laws and high cost of living is associated with them. Pakistan has ranked second in son preference out of 61 countries[8] which is further validated by the PDHS (Pakistan Demographic and Health Surveys). Childcare and protection also depends on the gender of the child. Parents attention and proper diet are maintained when son is born in the family (Sathar et al., 2015; Zubair et al., 2006). This accelerates sex-relative abortions and ratios with decrease in fertility rate on the selection sex of a child (Muhammad 2009).

Pakistan Labor Force Survey[9] (2013) states that only 22 percent females are working in the labor market which demonstrate the lack of mobility and limited working opportunities. But typically, those females if economically productive for their households do not mean that they are empowered also. Female labor outcomes can be affected directly for the household living standards (Heath 2013) and most of the women are not free to use their own earnings. Regional disparities are also one of the biggest hurdles in the female labor force participation when Baradari system and Paradah traditions that widens the gender gap.

This study particularly examines following areas of interest;

   a. Women decision making power (education); does she participates in education attainment decisions and if she has right to take individual decision on the continuation of their education.
   b. Women decision making power (employment); dodoes woman has right to participate in labor market and she individually takes decisions to go out for the job search and continuation of profession.
   c. Women decision making power (marriage); does she has right to choose her spouse freely and confidently or others influence on her future life.
   d. Women decision making power (son preference); are women feel empowered and protected that control household and its resources by having first child, a son.
   e. Their decision-making power (family size and health); does she has control or right about having more children according to their health and physical conditions or does she is in favor of more children.
   f. Power to make decisions (Freedom of mobility and household expenditure); does she has control on the household expenditure and spend freely on cloths, travel, food and other household items. If she moves around freely to purchase and spend household income on the said articles.

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[8] See Bongaarts (2013) for details.
[9] Pakistan Labor Force Survey works under Pakistan Bureau of Statistics and International Labor Organization since 1963. The recent annual report states that 51 percent of the females in Pakistan are allocated in family work and unemployment rate is observed 9 percent during comparative period which remain same in rural areas.

The study contributes in following aspects: First, the study examines Pakistan, one of the developing countries in the South Asia with enormous human capital resource but its cultural and social norms do not permit women to make initiatives for their own lives. It will be interesting to get the stylized facts and highlight the impact of education on empowering themselves with the help of rich micro dataset from 2005 to 2014. Secondly, it compares how much effective physical and human resources are for achieving empowerment in household simultaneously and which resource contributes more effectively for power gain. It also draws comparisons among indicators of women empowerment and try to analyze precise definition of empowerment for Pakistani society. Thirdly, this study attempts to deal with the endogeneity issue that was remained ignore in previous literature between empowerment and education[10]. Lastly it also investigates the effect of women empowerment on the education completion side by side which has been not considered in existing literature.

2. Literature Review

Past literature show that cash flow towards women is likely to increase their empowerment by decision making (Holmes et al., 2010; Gitter et al., 2008). Kabeer (1999) defines empowerment a procedure with three elements consists of resources, agency and outcome. These resources are the main characteristics in women's lives in which they might be assets or objects in terms of better schooling, secure environment, healthy lifestyles and freedom of mobility (Kishore 2000; Mishra et al., 2011). They examine that age, education, household wealth and income are positively correlated with the empowerment generally. The existing empirical literature observe insufficient information about endogeneity such as potential reverse causality in measuring women empowerment. Gupta et al., (2006) studies the married women empowerment in India by logit model regression. It covers mobility and household decision making as indicators of empowerment with explanatory variables such as age, education and media exposure but do not provide the causal effect of education and empowerment.

Recent studies (Maslak et al., 2011; Strauss et al., 2017 ; Agha 2000; Jejeebhoy 2000) show that the highly educated women are more open to outside as compared to the less educated ones which can bring out changes in cognitive skills and capacity to seek awareness. Literacy programs and micro-credits are good predictors in the decision making of the households and control over the resources. Exposure to the literacy programs empowers the women by reducing gender gap as education is a catalyst in the economic development. Empowerment is multidimensional term that cannot be only constructed on theoretical basis and need empirical investigation. Other studies find positive effect of education on empowerment in Pakistan and India (Jejeebhoy et al., 2001) and in Zimbabwe (Hindin 2000).

Most of the literature investigate women empowerment in specific areas and with limited framework. Majority of the studies are concerned for specific economic characteristics related to land ownership or microcredit that ignore the socio-economic and demographic determinants which are the main causes of empowering women (Samman et al., 2009). Women empowerment is specifically determined with economic term like influence of assets, control on the household resources and decision-making for

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[10] See Gupta et al., (2006), Allendrof (2007), Allendrof (2012) and Lokshin et al., (2005)

herself and others (Haddad et al., 1997). Women holding assets can be defined empowered because it is their way of development and give opportunity to make further choices.

The study of Jejeebhoy (2000) examines the autonomy of women in which holding assets or ownership including valuable goods in terms of gold and jewelry are likely to reflect more control by the females. Similarly, Mason (1998) studies the land rights that influence positively on women empowerment. Land rights could provide security in case of domestic violence and torture (Agarwal 2005). In past research, empowerment has been linked with the microcredit finance or loans attainment. Sen (1996) describes that use of loans are not fully controlled by the women and they remained unaware of the spending of loans by their husbands. Similar patterns have been observed by Ganle et al., (2015) that show negative relationship of women empowerment with the micro-financing that is opposite to the other studies (Gurman et al., 2016; Cheston 2002). While financial stability increases relative bargaining power within the household and between households for the females also likely to increase (Swain 2012; Mohamed 2011).

Maslak et al., (2008) explains girls are brought up with the self-denial and subservient in the South Asian countries specially in Pakistan. The role of mother and the elder members of the households influence on the upbringing of the female child. Women empowerment in Pakistan has been discussed particularly for social awareness. But women strategic life choices with decision making are remained ignored empirically in recent studies. Most of the studies have focused only on social set ups for women or theoretical aspects of the empowerment with limited determinants. The study of Beaman et al., (2009) present cultural barriers as political restrictions for females to perform at macro levels. Its study examine power of control with different methods in which people response for the male and female leaders differently. It found that men are more preferable leaders as compared to women.

By examining the data of Taiwan Chou et al., (2010) found positive effect of parents' education on the child health and decrease rate of child mortality. While the same strategy used by Duflo (2004) do not find reduce mortality rate but suggest highly educated women on the basis of their birth and region has impact on small family size and household education. Similarly, trade-offs are observed differently for the female child investment. Dhaliwal et al., (2011) show larger proportion of the per child expenditure as compared to the returns to education for the parents that is higher for girls. Studies explains the reduce women empowerment is linked with the higher gender inequality in education. For example, in India the ratio of sending boys for the graduate school as compared to the girls are 32 to 18 percent (Beaman et al., 2011). Women participation is investigated by Malik (2011) that explains exposure to the higher education offers economic independence. Its potential increase family per capita income and impact against the female discrimination within the households. Family background and support system can boost income level marginally with the continuation of tertiary education (Noreen 2012).

In South Asia, particularly in Pakistan[11], the income and wage rate define status and the power of the family member within the households and society. As more men are employed on higher salaried job

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[11] In context of Pakistan, see Zubair et al., (2006) for gender preferences; Chaudhary et al., 2012 different perception of empowerment ; Sohail (2014) for women and economic development; Khan (2012), Rehman (2015) and Weber (2014) in microfinancing for women empowerment; Naqvi (2002) female labor force participation and

have more control on decision making as compared to women. While domestically child survival rate and his nutrition level, health care facilities and calorie intake also describe women's income in the households (Allendorf 2007). Female labor force participation increases their options in many aspects. The working environment polishes the inner abilities of a woman and open new doors for success and knowledge. It provides freedom of mobility and access to the available opportunities. Women are considered risk aversive member of the household at micro levels and financial institutions at macro levels. They are capable to manage information with planning and investment as compared to the men making them better choice for decision making in household and working places (Browning et al., 2014). Social norms effect directly on women empowerment through work. Society and culture stigmatize labor market for married women. The caste or social group that influence extremely in India discourage women time allocation in labor market (Naqvi et al., 2016; Eswaran et al., 2013).

The past studies (Vlassof 1994; Malhotra et al., 1997) suggest that women income contribution at micro level studies has centered their role in the reducing gender gap. Income generated by the wives are likely to support husbands in the household's budget constraints. But this has been not equivalent to their empowerment. The substantial access to the economic resources are controlled by the men even the woman herself is the only earner in the households. In China (Qian 2008), missing women are proportionally lower in the tea producing regions as compared to the other part of the country. Female income if increases household income by US $7 is likely to increase 1 percent point in the survival of the missing young girls. In the classical study of the power within the household decisions the argue that the final decision is based on the husband and wife who have higher level of education and wages.

Women degree of access to the material things such as food, income, land and other forms of wealth and social resources in the society define their autonomy and power within families (Dyson et al., 1983). Other studies explain that the bargaining power of the women improves with the additional year of the schooling. On the other side this effect is difficult to estimate as education and empowerment along with household and community characteristics might be unobserved. examine the economic development with the effect of women empowerment. Empowering women improves the decision-making process and eventually benefits all women by facing stereotypes of the society. Women empowerment not only improves their control over the resources, but it also provide better access to the child's welfare and nutrition of the household. Healthcare services also increase the household expenditures which may lead to reduce the other mediums of human resources such as education (Duflo 2012; Lundberg et al., 1993).

Krik (1965) argue that reducing fertility rate is directly associated with the female participation in labor market. Women with the nuclear households are better in accessibility and children brought up and control on different decisions relating with child schooling, health, marriages and mobility. Past studies have mixed opinion about the education and fertility. Osili et al., (2008) suggest that the reduced number of children increase the women empowerment in case of Nigeria whereas Mocan et al., (2012) explains the use of contraceptives and likelihood of being tested HIV might be increased among women

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autonomy; Niaz (2004), Durrani (2000) and Mumtaz (2009) for child care an women health empowerment; Bushra (2015), Faridi (2009) socio-economic characteristics influencing on gender role and empowerment; Weiss (2003) for religious rights and women empowerment; and for education Jayaweera (1997) and Heward (1999)

with the power gain. Studies on late marriages like Goldin et al., (2002) examine that control on fertility give improved outcomes in the labor market for the unmarried women and availability of the contraceptives increase age at marriage and years of schooling. The low fertility rate has positive incentives for the women empowerment which contribute the use of contraceptives and modern methods of family planning. In developing countries, people are afraid of these methods and cultural beliefs are enough strong to prevent them. However, others (Heath et al., 2016; Mumtaz et al., 2009) also favor this concept that education among young women effect their health care services and improve labor force participation which further accelerates household welfare.

Aaronson et al., (2017) suggest that the labor market opportunities are well acquired by the women if they control on the choice of having more children and potentially increase their wages. The optimal fertility targets are achieved when family planning is managed by the joint decision of the wife and husband if they are both in working environment. Women alone are able to reduce fertility rate if they have resources available for the modern technology and contraceptives. Receiving free vouchers in Zambia for the contraceptives are more utilized by the women who took them alone as compared to those who received in the presence of their husband. This huge difference of 23 percent are more tends towards improved family planning and reduced unwanted childbirths (Ashraf et al., 2014; 2010). Some studies (Jayachandran et al., 2009) also reveals family planning and maternal healthcare services are strongly correlated with the women decision-making and fertility control[12].

Discrete Choice Model: Using probit and multinomial logit model (Naqvi et al., 2002) figured out that in Pakistan the female labor participation are quite low with higher level of education with other household factors. Researchers have calculated likelihood models on the decisions made for the primary education level using cross sectional data by controlling family and individual factors. These decisions are constructed on the time of survey or at the time of school entrance (Alderman et al. 1995; Sawada et. al 2001), the distance to the nearest schools (Sathar et al. 1994; and Hazarika 2001). Studies of Sathar et al., (1994) are strongly found access to be significant in school enrollment and more important when results are disaggregated on gender.

Further study by Sathar et al., (2000) suggested that parents' preference was strong for separate schools for the girls. The nested multinomial logit model was used for estimation of mutually exclusive choices not to enroll, to enroll in public or private school. Other variables used are father's education, mother schooling, public and private schools' availability and teachers residing in the same village. Parents enrollment varies significantly for the girls and boys in which girls is less likely to enroll if her mother is not educated and father job is in agriculture sector. Other interesting studies have offered estimations based on multinomial models based on human capital approach (Becker 1964,1965; Mincer 1974; Breen et al. 2000; Francesconi 2001; Lauer 2003).

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[12] Also see for maternal health Sathar et al., (1997) and Fikree et al., (2001)

3. Data and Methodology

3.1 Data

Micro data is used in this study is taken from the Pakistan Social and Living Standards Measurements (PSLM) survey conducted by the Pakistan Bureau of Statistics (PBS), Government of Pakistan, from 2005 to 2016. The objective of PSLM is to establish the distributional impact of the development programs for the welfare of people. The data calculated from these surveys is used for the monitoring and assessing the Millennium Development Goals (MDGs) indicators and assisting the government to formulate and design policies[13]. The sample size of PSLM surveys at district level has approximately 80000 and for provincial level 26000 households[14].

Dependent Variable: Current study has estimated women empowerment in six models based on probit and multinomial probit model regressions. The dependent variables are designed for each model according to the given choices by the household members. Women empowerment determined by health, marriage, son preference and resources are estimated with probit model. The binary dependent variable consists of value = 1 if the women alone takes the decision and =0 if husband, guardians and other family members are making decision. In comparison of the binary choice model, discrete choice models with more than two categories allow more variations. The models for education and employment are estimated by the multinomial probit model in which the categories are described as; takes value=1 if the woman alone makes decision, =2 if the husband of the woman takes decision, =3 if they both jointly make decision and =0 if other guardians or family members are making decision.

Individual characteristics: Explanatory variables are divided into individuals and household characteristics along with four provinces of the country. Individual characteristics are further divided into women aged 15-49, parents, household head and educated members of the households.

Household characteristics: Whereas household characteristics are analyzed on family size, physical facilities available in the household and joint family structure. On the other hand, dummy variables of urban area and provinces of the country are also calculated.

3.2 Methodology: Current study is using two econometrics strategies side by side depending on the outcome variables. When the dependent variable is binary, it has adopted probit model regression and for more than two categories, it is estimated by multinomial probit regression. Probit model is a statistical probability model with two possibilities in the outcome variable. It has been remained popular in human resource management, labor economics and agricultural economics. It is based on the cumulative normal distribution that gives it an edge to use in applied economics. The binary variable y

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[13] The reasons to use PSLM data conducted by PBS are following; Firstly, PBS takes special measures for the quality and reliability of the data by monitored team with supervisors for the field wok. Entire data is taken from all the regions of Pakistan to the Islamabad Headquarters for further processing. Secondly, the survey covers wide range of topics such as; education, health, occupation, services etc. Thirdly the survey is the main mechanism for monitoring Millennium Development Goals (MDGs) indicators in Pakistan.

[14] Data description and explanation of the variables are presented in Appendices (Table A.1 and A.2)

takes the value 1n if the decision is made by women alone and 0 for husbands and household members. The probability P_i of choosing any alternative can be represented by,

$$P_i = prob\ [Y_i = 1\ |X] = F\ (x'\beta) = \int_{-\infty}^{x'_i\beta} \left(2\pi^{-\frac{1}{2}}\right)\ \exp\left(-\frac{t^2}{2}\right) dt \tag{1}$$

In multinomial probit model regression, different relevant effects of explanatory variables are explained with different outcomes variables in this process. Errors can be correlated across the chosen categories in multinomial probit model that is a significant advantage over other non-linear models although estimations of parameters are computationally complexed (Wooldridge 2002). It eliminates the assumptions of independence of irrelevant alternatives. This assumption is key feature in multinomial logit model (Imbens et al., 2009; Greene 2012). The choices are mainly made by wife, husband, joint decision of husband and wife and lastly decision made by other household members and guardians.

The multinomial probit model is presented as;

$$W_j = x'_j\ \beta_j + \ \varepsilon_j\ and\ j = 1,2,3\ldots J, [\varepsilon_1, \varepsilon_2\ , \ldots, \varepsilon_j] \sim [0, \Sigma] \tag{2}$$

The loglikelihood relating to the d choice can be expressed as,

$$\Pr[Choiced] = Prob\ [U_d > \ U_j, j = 1,..,J, j \neq d] \tag{3}$$

Above equations represent x as explanatory variables, β as vector of coefficients and ε is error term assumed to have normal distribution.

Computing estimates under non-linear models, better interpretation is selected by calculating marginal effect. This study examine the measures of empowerment with the use Average Marginal Effects (AMEs) that are estimated as the average of the individual marginal effects. It reflects the change in the probability of response variable by given unit change in the explanatory variable x_i.

It is presented as;

$$\frac{\partial_p}{\partial_{x_j}} = \frac{\Sigma F'(x'\beta)}{n}\ \beta_j \tag{4}$$

Empirical Strategy: Firstly, the study examines the effect of education and other individuals and household characteristics on women empowerment which are performed in six models in which four models are estimated by probit regression and the last two by multinomial probit regression. The estimates are also calculated by multinomial logit regression for education and employment indicators of empowerment but not presented here as the low values of Hausman test for IIA (Independence of Irrelevant Alternatives) explain violation for two categories.

Secondly, this study uses the strategy to address the potential endogeneity[15] problem by Instrumental Variable (IV) technique (Sargan 1958). The results of estimation might be inconsistent when correlation

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[15] Family background and household related question are found to be good instrument to deal potential endogeneity of education. In this study the education of mother, type of institution by the women aged (15-49) and question based on the enrolment in the schools are estimated. See Chevalier (2008), Uuisitalo (1999)

between regressor and error term is not zero. The key point works with two stage regression equations in which reduced form equation is obtained when endogenous variable is regressed on the instruments (say z_i) and other explanatory variables. Its predicted values are used in second stage that is also called structural equation (Murray 2006a). In binomial response model, researchers sometimes use linear 2SLS model that is equivalent to linear probability model with the IV technique ignoring binary outcome. In the Instrumental Variable framework, this study switch the estimation method from multinomial probit model to probit model where dependent variable is treated cardinally (Trommlerova et al., 2015). It is feasible to interpret the results, but the results are also conducted by 2SLS estimators to find the strength of the instruments and over-identification[16].

4. Analysis and Discussion

4.1 Empowerment in Marriage Decision

Table 4.1 Women Decision Making in Marriage: Probit Estimations Results

Variables	(1) Coefficients	(2) Average Marginal Effects
Female	0.1450***	0.0211***
	(0.0316)	(0.0047)
Wo man Age (15-24)	-0.5308***	-0.0606***
	(0.0395)	(0.0036)
Woman Age (25-34)	0.0718	0.0106
	(0.0489)	(0.0075)
Woman Age (35-44)	0.1481***	0.0228***
	(0.0439)	(0.0073)
W Education	0.0097***	0.0014***
	(0.0032)	(0.0005)
W Property	0.1193***	0.0181**
	(0.0455)	(0.0074)
M Working	0.2892***	0.0490***
	(0.0871)	(0.0172)
W Professonal	0.5057***	0.0970***
	(0.1509)	(0.0368)
W Technician	0.3395	0.0594
	(0.2640)	(0.0552)
W Clerk	1.2462***	0.3275***
	(0.2574)	(0.0931)
W Labor	-0.1053	-0.0140
	(0.1528)	(0.0189)
Head	-0.1664**	-0.0214**
	(0.0782)	(0.0091)
H Education H	0.0831	0.0124
	(0.0950)	(0.0149)
Mem Education H	0.5043***	0.0960***
	(0.0666)	(0.0160)
HH size	-0.0226***	-0.0032***
	(0.0014)	(0.0002)
Total Births	0.0074***	0.0010***
	(0.0003)	(0.0000)
HH Telephone	0.1404***	0.0198***

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[16] The estimates for empowerment in education and employment are presented in Table A.3 and A.4 respectively. The estimated tests and the instruments are precisely described in variable description table as well.

	(0.0230)	(0.0032)
HH Gas	0.2088***	0.0302***
	(0.0228)	(0.0034)
HH Livestock	-0.0389	-0.0057
	(0.0804)	(0.0120)
Joint Family	0.0082	0.0012
	(0.0324)	(0.0046)
Urban	0.0873***	0.0124***
	(0.0215)	(0.0031)
Wealth Q1 (Ref. category)	-	-
Wealth Q 2	-0.2512***	-0.0451***
	(0.0283)	(0.0051)
Wealth Q 3	-0.4603***	-0.0734***
	(0.0308)	(0.0049)
Wealth Q 4	-0.5104***	-0.0790***
	(0.0319)	(0.0049)
Wealth Q 5 (Highest)	-0.4227***	-0.0689***
	(0.0329)	(0.0053)
Punjab (Ref. Category)	-	-
Sindh	0.0502**	0.0078*
	(0.0254)	(0.0040)
KPK	-0.1370***	-0.0188***
	(0.0268)	(0.0036)
Balochistan	-0.2058***	-0.0270***
	(0.0349)	(0.0042)
Constant	-1.0609***	-
	(0.0887)	
Observations	37,890	37,890
Other Information Criteria		
AIC	20088.93	
BIC	20336.66	
Log-Likelihood	-10015.467	
LR(df=28)	1707.895	
Chi-square P-Value	0.000	
Deviance(df=37861)	20030.933	
Link Test z score	11.84, 2.55	

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The estimated parameters of the women empowerment for marriage is presented in Table 4.1. The female is statistically significant variable and highly to increase empowerment with the progression of age. Another factor in determining the power and control is the possession of the physical asset that support previous literature. The very next column is provided with the average marginal effects that is significantly likely to increase the women empowerment by 2.1 percent change. Education is highly significant and increase the probability to make decision about the marriage positively. Although the possession of the asset is marginal higher and more likely to increase the women empowerment as compared to other household members. Being in labor market, woman is more likely to choose her husband and take decisions on marriages as compared to those who don't work. Similarly, high salaried jobs in education health and legal institutions gives more access to get control on the decision making by 9.7 percent probability as compared to less salaried manual jobs. Male head of the household does not like for the woman

in terms of marriage decision and likely to decrease the empowerment by 2.1 percent. His education is positive but insignificant.

Surprisingly, other male members of the household likely to increase women empowerment by 10 percent. Women empowerment likely to develop infrastructure of the household estimated by the availability of telephone and gas by 2 and 3 percent respectively. While infant mortality rate likely to decrease when woman gets right to choose her husband according to her choice and consent. Although joint family structure support arranged marriages and estimates are providing same results in which the variable becomes insignificant to give control to women. Interesting results are drawn with the wealth quantiles in which middle income households are less likely to increase women participation in marriage decision as compared to the higher income levels households.

4.2 Empowerment by Son Preference

Table 4.2 Women Empowerment in Son Preference: Probit Estimations Results

Variables	(1) Coefficients	(2) Average Marginal Effects
Female	0.0257***	0.0049***
	(0.0076)	(0.0015)
Age	-0.0030***	-0.0006***
	(0.0005)	(0.0001)
Age in Square	0.0000*	0.0000*
	(0.0000)	(0.0000)
W Education	0.0062***	0.0012***
	(0.0009)	(0.0002)
W Property	0.0281*	0.0054*
	(0.0155)	(0.0030)
M Working	0.1030***	0.0206***
	(0.0324)	(0.0069)
H Self-Employ	0.0496	0.0096
	(0.0402)	(0.0080)
H Paid-Employ	0.0521*	0.0101
	(0.0312)	(0.0062)
H Agri-Employ	0.0796	0.0157
	(0.0623)	(0.0128)
Head	0.0883***	0.0174***
	(0.0238)	(0.0049)
H Education H	-0.0957***	-0.0170***
	(0.0256)	(0.0043)
Mem Education H	0.2426***	0.0522***
	(0.0196)	(0.0048)
HH size	-0.0007*	-0.0001*
	(0.0004)	(0.0001)
Total Births	-0.0006***	-0.0001***
	(0.0001)	(0.0000)
H Telephone	0.0431***	0.0081***
	(0.0070)	(0.0013)
HH Livestock	-0.1450***	-0.0296***
	(0.0217)	(0.0048)
HH Health Visit	0.1284***	0.0244***
	(0.0060)	(0.0012)
Joint Family	0.0024	0.0004

	(0.0090)	(0.0017)
Urban	-0.0132**	-0.0025**
	(0.0061)	(0.0011)
Wealth Q 1 (Ref. Category)	-	-
Wealth Q 2	0.0296***	0.0056***
	(0.0095)	(0.0018)
Wealth Q 3	-0.0003	-0.0000
	(0.0099)	(0.0018)
Wealth Q 4	0.00998	0.00186
	(0.00995)	(0.001852)
Wealth Q 5 (Highest)	0.0169*	0.0032*
	(0.0102)	(0.0019)
Punjab (Ref. Category)	-	-
Sindh	0.0056	0.0010
	(0.0077)	(0.0014)
KPK	0.0772***	0.0147***
	(0.0078)	(0.0015)
Balochistan	0.1120***	0.0217***
	(0.0100)	(0.0020)
Constant	-1.1644***	-
	(0.0251)	
Observations	330,091	330,091
Other Information Criteria		
AIC	228367.193	
BIC	228656.286	
Log-Likelihood	-114156.597	
LR(df=26)	1230.810	
Chi-square P-Value	0.000	
Deviance(df=330064)	228313.193	
Link Test z score	4.45, 2.21	

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The cultural barriers and society concepts are well described in Table 4.2. As the developing countries are mostly male dominant and according to the recent global reports by the Pakistan Demographic Surveys, there is strong urge by the parents, households and women to have their son as first child. This situation is presenting as closed mind. Women are highly significant and positively associated to get control on the households if they produce first child male. It is interesting that with the increase of the education level, women likely to get empowerment that represents the cultural support by having male child.

In general, male head likes to have first child as son for two main reasons; firstly, a son carries his name and baradari is highly dependent on the male leaders. Secondly, a male child provide strength and security to father or head in society and future. The estimates proves the concept at 99 percent confidence level. With the influence of education, awareness and knowledge can redirect this thinking on right track and the education level of the head of the household explains this very well. One of the important factors is given by the estimates of the household.

The size of the household is less likely to increase women important. The ideology is not only economical but social at the same time. In Pakistani society, most of the children are born for

only having son. If a woman produce a girl child, society, family members pressurize her for second child and this pressure continues until she is able to have a male child. So, having a son as first child represents disguise blessing that incorporate women to get control on the households and supportive for family planning. But this behavior is observed in rural areas more as compared to urban that is supported by the estimates. A lady health worker and proper medical examination also increases probability to have son. Most amazing results are presented in the wealth quantiles in which lower group are highly significant for women with first child as son, but middle groups are insignificant. With the reference of Punjab, Balochistan province is likely to increase women empowerment by 2.1 percent.

4.3 Empowerment in HH Resources

Table 4.3 Women Decision Making in HH Resources: Probit Estimations Results

Variables	(1) Coefficients	(2) Average Marginal Effects
Female	0.0380***	0.0036***
	(0.0129)	(0.0013)
Woman Age (15-24)	-0.2996***	-0.0240***
	(0.0175)	(0.0012)
Woman Age (25-34)	0.0494***	0.0048***
	(0.0179)	(0.0018)
Woman Age (35-44)	0.1765***	0.0189***
	(0.0257)	(0.0031)
W Education	0.0076***	0.0007***
	(0.0013)	(0.0001)
W Property	0.0687***	0.0068***
	(0.0211)	(0.0022)
Child Study	0.0944***	0.0093***
	(0.0101)	(0.0010)
Head	0.0270	0.0026
	(0.0352)	(0.0035)
H Education H	-0.0850**	-0.0076**
	(0.0397)	(0.0034)
Mem Education H	0.1310***	0.0136***
	(0.0281)	(0.0032)
H Employed	-0.3583	-0.0263
	(0.3434)	(0.0186)
H Self-Employ	-0.2832***	-0.0220***
	(0.0704)	(0.0043)
H Paid-Employ	-0.0514	-0.0047
	(0.0493)	(0.0044)
H Agri-Employ	-0.1209	-0.0105
	(0.1010)	(0.0080)
HH size	0.0223***	0.0021***
	(0.0005)	(0.0000)
Education Cost	0.0159***	0.0015***
	(0.0011)	(0.0001)
HH Livestock	-0.0701**	-0.0070**
	(0.0283)	(0.0030)
HH Health Visit	-0.0801***	-0.0075***
	(0.0086)	(0.0008)
HH Telephone	0.0683***	0.0064***
	(0.0101)	(0.0009)
HH Electricity	0.1346***	0.0124***

	(0.0101)	(0.0009)
Joint Family	-0.0144	-0.0014
	(0.0125)	(0.0012)
Urban	0.0657***	0.0062***
	(0.0085)	(0.0008)
School Pvt	0.1716***	0.0183***
	(0.0262)	(0.0031)
Wealth Q 1 (Ref. Category)	-	
Wealth Q 2	-0.1508***	-0.0171***
	(0.0118)	(0.0013)
Wealth Q 3	-0.1898***	-0.0209***
	(0.0125)	(0.0014)
Wealth Q 4	-0.2675***	-0.0280***
	(0.0130)	(0.0014)
Wealth Q 5 (Highest)	-0.4019***	-0.0385***
	(0.0136)	(0.0013)
Punjab (Ref. Category)	-	-
Sindh	-0.9347***	-0.0805***
	(0.0145)	(0.0009)
KPK	-0.7737***	-0.0741***
	(0.0122)	(0.0009)
Balochistan	-1.0472***	-0.0838***
	(0.0212)	(0.0009)
Constant	-1.8390***	-
	(0.0329)	
Observations	330,091	330,091
Other Information Criteria		
AIC	118611.637	
BIC	118943.558	
Log-Likelihood	-59274.819	
LR(df=30)	16988.947	
Chi-square P-Value	0.000	
Deviance(df=330060)	118549.637	
Link Test z score	15.95, -2.55	

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Women resource allocation and consumption expenditure also demonstrate their control inside the household. A woman who alone decides to spend household income on food articles, clothing or recreational trips are likely to get control on household decision making. The table 4.3 presents the women empowerment by food, clothes and travel expenditures. Females are positively significant to increase the probability to gain power and after the age of 34 years, it seems proportionally higher. Women education and asset holding positively and significantly likely to increase their power. When the resources are controlled by the women it supports education in the household that indirectly promote girls' education and reduce gender gap but on the other hand it increases the education cost.

The head variable loses its significant in both models and head's education is inversely proportional on empowerment. It shows similar results when the head is self-employed. In Pakistani society most of the resources are controlled by the men. As they are the main earners and control most of the household income. The spending behavior is quite real and expected.

Mostly men do not prefer to give income control to women. The spending behavior of females does not support saving patterns and females are likely to spend more when it point comes for clothes, food items and travelling. Household infrastructure like telephone and electricity increase empowerment by 0.6 to 1.2 percent. Medical expenses are likely to reduce when women gain control over household.

4.4 Empowerment in Health

Table 4.4 Women Decision Making in Health: Probit Estimations Results

Variables	(1) Coefficients	(2) Average Marginal Effects
Female	0.0609	0.0181
	(0.0397)	(0.0117)
Woman Age (15-24)	0.0283	0.0084
	(0.0528)	(0.0156)
Woman Age (25-34)	-0.0463	-0.0140
	(0.0597)	(0.0182)
Woman Age (35-44)	-0.1075	-0.0329
	(0.0665)	(0.0208)
W Education	-0.0123***	-0.0037***
	(0.0028)	(0.0008)
W Property	-0.1093**	-0.0334**
	(0.0538)	(0.0168)
W Married	-0.0037	-0.0011
	(0.0491)	(0.0147)
W Working	0.1212***	0.0354***
	(0.0274)	(0.0078)
Total Births	0.0008***	0.0002***
	(0.0003)	(0.0001)
Head	-0.0001	-0.0000
	(0.0452)	(0.0135)
H Employed	0.4581	0.1198
	(0.6548)	(0.1445)
H Self-Employ	0.4458***	0.1172***
	(0.1379)	(0.0309)
H Agri-Employ	0.1997	0.0566
	(0.2346)	(0.0627)
HH size	0.0034***	0.0010***
	(0.0012)	(0.0004)
Joint Living	0.2329***	0.0664***
	(0.0291)	(0.0078)
Urban	-0.1281***	-0.0385***
	(0.0193)	(0.0058)
Wealth Q 1 (Ref. Category)	-	-
Wealth Q 2	0.0411	0.0119
	(0.0288)	(0.0084)
Wealth Q 3	-0.0461	-0.0137
	(0.0294)	(0.0087)
Wealth Q 4	-0.0830***	-0.0248***
	(0.0306)	(0.0091)
Wealth Q 5 (Highest)	-0.2017***	-0.0618***
	(0.0318)	(0.0097)
Punjab (Ref. Category)	-	-
Sindh	-0.4055***	-0.1534***

	(0.0240)	(0.0090)
KPK	-0.2238***	-0.0828***
	(0.0278)	(0.0104)
Balochistan	0.8839***	0.2324***
	(0.0258)	(0.0065)
Constant	0.4839***	
	(0.0406)	
Observations	24,103	24,103
Other Information Criteria		
AIC	25534.757	
BIC	25728.919	
Log-Likelihood	-12743.379	
LR(df=23)	3267.639	
Chi-square P-Value	0.000	
Deviance(df=24079)	25486.757	
Link Test z score	18.18, -0.43	

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The table 4.4 provides estimation results on the women empowerment for health. In a society where sons are preferred and gender gap is increasing day by day, women have right to decide how much children they want. But this does not happen in developing societies. The estimates explains insignificant value of female variable for the decision to have more children. Educated women are less likely to have more children and support nuclear and smaller household sizes that is presented by the estimates. But land possessions although positive but insignificantly support women.

Household size increases the women empowerment by 0.1 percent and joint family structure increases the probability by 7 percent. Married females do not remain significant in both models, but the working women are likely to increase women empowerment by 4 percent points. Total births are likely to increase empowerment and head being self-employed has probability to improve women empowerment. Interestingly province of Balochistan is positively influence on empowerment as compared to Punjab. While other provinces remain negatively related to empowerment.

The estimates are precisely described that as compared to urban, rural areas are more likely to increase empowerment with larger family size. This explains limited utility of contraceptives and family planning. There comes the most important role of the education when it provide consciousness and thinking for future generation. Population control programs could be sufficiently implemented unless people specially women will come in front line for family planning. This traditional behavior is mostly seen in the middle-income groups and estimates explain it very well. The higher income group are more likely to discourage larger family as compared to lower income groups.

4.5 Empowerment in education

Table 4.5 Women Decision Making in Education: Multinomial Probit Estimations Results

Variables	(1) Outcome 0	(2) Outcome 1	(3) Outcome 2	(4) Outcome 3
Female	0.0315153***	0.0290744***	0.0202045***	0.0403853***
	(0.0022)	(0.00264)	(0.00358)	(0.00306)
Woman Age (15-24)	0.0113678***	-0.0315793 ***	0.017754 ***	0.0024575
	(0.00242)	(0.00267)	(0.00405)	(0.00359)
Woman Age (25-34)	-0.0054814**	0.0324293***	-0.0203836***	-0.0065643
	(0.00293)	(0.00396)	(0.00508)	(0.00438)
Woman Age (35-44)	0.0161316***	0.0287026***	0.0308892*** .	-0.0139449***
	(0.00377)	(0.00445)	(0.005686)	(0.00480)
W Education	0.0032946***	0.0094919***	-0.0139346***	0.0011481***
	(0.0002)	(0.00021)	(0.00028)	(0.00024)
W Property	0.0028856	0.0117262***	-0.0144403***	-0.0001715
	(0.0028)	(0.00353)	(0.004752)	(0.00414)
Head	0.040535	-0.0059285	0.0066658	0.0033161
	(0.00329)	(0.0040)	(0.005402)	(0.004652)
H Education S	0.0106113**	0.0205369***	-0.0300392***	-0.001109
	(0.006046)	(0.0074)	(0.009533)	(0.008123)
W Married	-0.0457134***	-0.0397114 ***	0.02556***	0.0598648***
	(0.001756)	(0.00250)	(0.00389)	(0.00365)
W Working	-0.0039299***	-0.0016479	-0.008429***	0.0140069***
	(0.001603)	(0.00195)	(0.00265)	(0.002334)
H Employed	-0.0502858***	0.0589593	0.0003417	-0.0090152
	(0.0248908)	(0.04613)	(0.05823)	(0.04869)
H Self-Employ	0.002464	-0.0324287***	0.0442964***	-0.0143317
	(0.008219)	(0.00905)	(0.01328)	(0.01113)
H Paid-Employ	0.0010452	0.014139**	-0.0407041***	0.0255199***
	(0.006227)	(0.00790)	(0.01011)	(0.00898)
H Agri-Employ	0.0059308	-0.0555805***	0.0743154***	-0.0246656***
	(0.013471)	(0.01360)	(0.02077)	(0.017218)
Dependency R	-0.1080416***	-0.0106379***	0.0610158***	0.0576637***
	(0.002502)	(0.00284)	(0.00398)	(0.00342)
HH Size	-0.0007177***	0.0005239***	0.000882***	-0.0006882 ***
	(0.000062)	(0.000076)	(0.000102)	(0.000088)
HH Telephone	0.02831***	0.0380928***	-0.0536318***	-0.012771***
	(0.001317)	(0.00158)	(0.00217)	(0.001894)
Joint Family	0.0092728***	-0.0080686***	-0.0064814***	0.0052773***
	(0.001855)	(0.00209)	(0.00282)	(0.00244)
Urban	0.0088341***	0.0324211***	-0.0593298***	0.0180746***
	(0.001179)	(0.00142)	(0.00191)	(0.00164)
Wealth Q 1(Ref. Category)	-	-	-	-
Wealth Q 2	-0.0049289***	-0.0511032***	0.0424796***	0.0135525***
	(0.001906)	(0.00238)	(0.00308)	(0.00262)
Wealth Q 3	-0.0065439***	-0.0525622***	0.0398513***	0.0192548**
	(0.0018449)	(0.00232)	(0.003028)	(0.002584)
Wealth Q 4	0.0058254***	-0.0499067***	0.0176946***	0.0263867***
	(0.0018944)	(0.00235)	(0.00309)	(0.00265)
Wealth Q 5	0.0233138***	-0.0222824***	-0.0294611***	0.0284297***
	(0.001958)	(0.00241)	(0.003129)	(0.00270)
Punjab (Ref. Category)	-	-	-	-
Sindh	-0.0220072***	-0.1672458***	0.1012502***	0.0880028***
	(0.0014842)	(0.00176)	(0.00250)	(0.00229)
KPK	-0.0184935***	-0.1672622***	0.2704638***	-0.0847082***

	(0.0014779)	(0.00171)	(0.002339)	(0.00184)
Balochistan	-0.0350723***	-0.2340377***	0.2630695***	0.0060405***
	(0.0018736)	(0.0016)	(0.00318)	(0.00281)
Observations				
Other Information Criteria				
AIC	610244.179			
BIC	611095.523			
Log-Likelihood	-305041.089			
Wald Chi-Square	40974.635			
Chi-square P-Value	0.000			
Deviance(df=271067)	610082.179			
Link Test z score	12.94, -0.39			

Z scores under Link Test are estimated by Probit Model. Marginal effects are measured with the base outcome (3). Model specification estimates are taken from Multinomial Probit Regression. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 4.5 presents results for the most important indicator of women empowerment that is education. Female is highly significant and positively influence on power and control for decision making in education. Marginal effects for empowerment in education present that education attainment is likely to increase women empowerment when she takes decision alone as compared to the males of the households by 3.2 percent, for joint decision by 4 percent that is higher in all four models. With the increase of age, woman is likely to get power on her education decision by 2.8 to 3.2 percent. Education of females increases empowerment when she decides alone or with the mutual understanding of head or the husband. But unfortunately, the decision based only on male less likely to increase her empowerment.

Possession of the physical asset only improves empowerment when women alone decide and the estimates are more supportive for the physical possession as compared to the education. Marriage is claimed to be a social contract and married women are likely to get empowered when supported by the husband for continuation of the education. On other hand mix results are found for the head profession. When head is associated with the nonagricultural services, job or business, he supports women decision that is contrary to those heads who are in agriculture sector.

Similarly, population estimates explains more than 50 percent women are linked with the agriculture sector in which wage rate is quite low. Women who are more likely to get in agriculture are less exposed to education and technology (Gillard et al., 2008). It might decrease her empowerment on getting education that is also explained by the results. When more than 11 million girls are out of schools and managed to get their livelihood in agricultural fields like cotton, wheat or rice production, they are less likely to enroll in schools.

4.6 Empowerment in Employment

Table 4.6 Women Decision Making in Employment: Multinomial Probit Estimations Results

Variables	(1) Outcome 0	(2) Outcome 1	(3) Outcome 2	(4) Outcome 3
Female	0.0919025***	0.0100824***	-0.047693***	-0.0542919***
	(0.002875)	(0.00189)	(0.00303)	(0.00242)
Woman Age (15-24)	-0.0682372***	-0.0145231***	0.0650204***	0.0177399***
	(0.00299)	(0.00205)	(0.00366)	(0.00311)
Woman Age (25-34)	-0.064637***	0.0322902***	0.0180625***	0.0142843***
	(0.00385)	(0.00318)	(0.00459)	(0.00386)
Woman Age (35-44)	-0.0537619***	0.0447539***	0.0019196	0.0070884**
	(0.00442)	(0.00375)	(0.00512)	(0.00423)
W Education	0.0012842***	0.0050109***	-0.008119***	0.0018239***
	0.00024)	(0.00016)	(0.00025)	(0.000208)
W Property	-0.0068493**	0.0074658***	-0.0004702	-0.0001463
	(0.00407)	(0.00270)	(0.00430)	(0.00350)
W Married	-0.0595122***	-0.0268242***	0.0260832***	0.0602531***
	(0.00304)	(0.00189)	(0.00351)	(0.00318)
W Working	-0.0297482***	0.0078735***	0.009864***	0.0120106***
	(0.00283)	(0.001998)	(0.00313)	(0.00256)
Total Births	-0.0010965***	0.0003867***	0.000122***	0.0005879***
	(0.000025)	(0.000016)	(0.00002)	(0.00002)
Head	-0.0123394***	-0.0160699***	0.0259754***	0.0024339***
	(0.00495)	(0.003285)	(0.00531)	(0.00424)
H Write	0.0169517***	0.0259635***	-0.0416962***	-0.001219
	(0.00686)	(0.00531)	(0.00685)	(0.00561)
P Self-Employ	0.0421638***	-0.0125276***	-0.0119757***	-0.0176605***
	(0.00300)	(0.00185)	(0.00305)	(0.00238)
P Paid-Employ	0.0197749***	0.0219771***	-0.0503757***	0.0086238***
	(0.00253)	(0.00178)	(0.00261)	(0.00215)
P Agri-Employ	0.0385766***	-0.0168344***	-0.0030527	-0.0186896***
	(0.00469)	(0.00277)	(0.00473)	(0.00366)
HH Size	0.0026143***	-0.0005987***	0.0002683***	-0.0022839***
	(0.000102)	(0.000067)	(0.00010)	(0.00008)
HH Rooms	0.0062189***	0.0064136***	0.0097347***	-0.0223672***
	(0.00170)	(0.00113)	(0.00179)	(0.00146)
HH Livestock	0.0253058***	0.0086781***	-0.017193***	-0.0167909***
	(0.005917)	(0.00395)	(0.00645)	(0.0053)
HH Telephone	0.0057383***	0.025878***	-0.0260776***	-0.0055388***
	(0.001809)	(0.00117)	(0.0019)	(0.00156)
Joint Family	0.0028796	-0.0036759***	0.000427)	0.0003692
	(0.002385)	(0.00158)	(0.002512)	(0.0020)
Urban	0.0023253	0.0153486***	-0.0309717***	0.0132978***
	(0.001603)	(0.00107)	(0.00169)	(0.00137)
Wealth Q 1(Ref. Category)	-	-	-	-
Wealth Q 2	-0.0227551***	-0.0410944***	0.0523248***	0.0115246***
	(0.002549)	(0.00179)	(0.00263)	(0.00211)
Wealth Q 3	-0.0352031***	-0.0454864***	0.0577709***	0.0229186***
	(0.002517)	(0.00176)	(0.00262)	(0.00212)
Wealth Q 4	-0.0367015***	-0.045176***	0.0616167***	0.0202607***
	(0.00259)	(0.001798)	(0.00271)	(0.00219)
Wealth Q 5	-0.0022702	-0.0389829***	0.0219585***	0.0192946***
	(0.00271)	(0.00184)	(0.00276)	(0.00226)
Punjab (Ref. Category)	-	-	-	-
Sindh	0.0698231***	-0.1246283***	0.0271859***	0.0276193***

	(0.00209)	(0.00125)	(0.00212)	(0.00183)
KPK	-0.0573713***	-0.1256532***	0.2508263***	-0.0678017***
	(0.0019)	(0.00126)	(0.00220)	(0.00163)
Balochistan	0.0693774***	-0.1566159***	0.1494375***	-0.062199***
	(0.00287)	(0.00124)	(0.00299)	(0.00214)
Observations				
Other Information Criteria				
AIC	851631.9			
BIC	852535.7			
Log-Likelihood	-425731.973			
Wald Chi-Square	37126.70			
Chi-square P-Value	0.000			
Deviance(df=347758)	851463.946			
Link Test z score	21.37, 0.63			

Z scores under Link Test are estimated by Probit Model. Marginal effects are measured with the base outcome (3). Model specification estimates are taken from Multinomial Probit Regression. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 4.6 presents multinomial probit regression estimates for women empowerment in employment. Female remains significant in all outcomes but tends to become negative when male member of the household takes decisions on her behalf. Dummies for women's age for the first model and remain positive in other. The education of female is highly likely to increase women empowerment in employment. Although it less likely to increase empowerment when male members decide. Amazingly the physical possession by the women is also likely to increase empowerment but it is slightly less than the education outcome when only female decides for her job that also support our hypothesis. Human resource investment equally contributes in economy as investment in physical resources. Working women also likely to increase with 0.08 percent in empowerment and it is interesting that it remains positively and significantly in all models.

Total live births in the household support women empowerment in employment which is against the previous studies as higher empower reduces fertility. The plausible reason is that education simultaneously effect health and employment and by improving hygienic condition, it may reduce mortality rate and morbidity rate as well. The estimates are quite appealing as the gender of the head of the household does not support women when taking decision alone but is likely to increase empowerment when male or guardian or joint decision is taken into consideration. Working women are more likely to increase empowerment when they take decision alone which is opposite when other members of the household get involved in this decision. Most of the household members who are in paid employment are more likely to increase empowerment than in agricultural sector. Infrastructure and development activities in the household like better room and telephone are positively influence on empowerment whereas, joint family structure has negative impact on it. Unfortunately, all province as compared to Punjab are less likely to increase empowerment in which drastically reduced values are observed for Balochistan but this is opposite for joint decisions.

4.7 Education determination by Women Empowerment

Table 4.7 Impact of Women Empowerment on Education

Variables	Marriage (1)	Resources (2)	Resources (3)	Health (4)	Education (5)	Employment (6)
Female	0.259***	0.0654***	0.244***	0.323***	0.184***	0.230***
	(0.0527)	(0.0143)	(0.0174)	(0.0915)	(0.0245)	(0.0245)
Age	-	0.0108***	-	-	-	-
		(0.00103)				
Square Age	-	-7.08e-05***	-	-	-	-
		(1.40e-05)				
Woman Age (15-24)	-0.175***	-	-0.207***	-0.414***	-0.232***	-0.210***
	(0.0597)		(0.0224)	(0.122)	(0.0298)	(0.0302)
Woman Age (25-34)	0.118	-	0.259***	-0.156	0.466***	0.441***
	(0.0860)		(0.0257)	(0.138)	(0.0378)	(0.0383)
Woman Age (35-44)	-0.240***	-	-	-0.233	0.130***	0.147***
	(0.0789)			(0.155)	(0.0425)	(0.0428)
W Property	0.163**	0.105***	0.0423	0.0210	0.0489	0.113***
	(0.0728)	(0.0297)	(0.0294)	(0.129)	(0.0364)	(0.0369)
Head	-0.00785	-0.0262	0.151***	0.218**	-0.00417	-0.366***
	(0.0725)	(0.0319)	(0.0300)	(0.108)	(0.0413)	(0.0464)
H Education S	-	-	-		0.337***	0.711***
					(0.0708)	(0.0605)
Mem Edu H	1.457***	1.620***	1.595***	-	-	-
	(0.132)	(0.0407)	(0.0405)			
HH Size	0.0371***	0.0402***	0.0101***	0.0371***	0.0313***	0.0413***
	(0.00204)	(0.000709)	(0.000641)	(0.00282)	(0.000784)	(0.000920)
Total Births	-0.0048***	-0.00627***	-	-0.0025***	--	-0.00820***
	(0.000558)	(0.000172)		(0.000589)		(0.000222)
H Employer/ P	-		0.448	-1.405	0.954**	-
			(0.333)	(1.484)	(0.427)	
H Self-Employ/ P	-	-0.487***	-0.357***	-0.696**	-0.543***	-0.324***
		(0.0763)	(0.0756)	(0.319)	(0.0979)	(0.0231)
H Paid-Employ/ P	-	0.0482	0.125**		0.0405	0.218***
		(0.0592)	(0.0586)		(0.0739)	(0.0181)
H Agri-Employ/ P	-	-0.851***	-0.687***	-1.410***	-0.873***	-0.597***
		(0.120)	(0.119)	(0.547)	(0.158)	(0.0389)
HH Livestock	-	0.133***	0.139***	-	-	-
		(0.0430)	(0.0425)			
HH Telephone	0.297***	0.387***	0.929***	-	0.485***	0.439***
	(0.0360)	(0.0131)	(0.0145)		(0.0164)	(0.0166)
Joint Family	-0.382***	-0.243***	-0.214***	-0.291***	-0.243***	-0.120***
	(0.0519)	(0.0169)	(0.0167)	(0.0717)	(0.0209)	(0.0214)
Urban	0.715***	0.974***	0.863***	1.474***	0.920***	0.869***
	(0.0336)	(0.0113)	(0.0113)	(0.0444)	(0.0142)	(0.0145)
Wealth Q 2	-0.00808	0.0841***	0.0439**	-0.0173	-0.298***	-0.293***
	(0.0474)	(0.0177)	(0.0175)	(0.114)	(0.0294)	(0.0298)
Wealth Q 3	0.0997**	0.233***	0.198***	0.0624	0.124***	0.141***
	(0.0486)	(0.0184)	(0.0182)	(0.0680)	(0.0228)	(0.0229)
Wealth Q 4	0.198***	0.510***	0.530***	-0.0176	0.250***	0.272***
	(0.0506)	(0.0186)	(0.0185)	(0.0691)	(0.0226)	(0.0227)
Wealth Q 5 (Highest)	1.063***	1.587***	1.536***	0.341***	0.579***	0.526***
	(0.0543)	(0.0190)	(0.0189)	(0.0719)	(0.0230)	(0.0234)
Sindh	0.502***	0.466***	0.515***	0.935***	1.724***	1.652***
	(0.0425)	(0.0142)	(0.0142)	(0.0762)	(0.0226)	(0.0235)
KPK	0.647***	0.346***	0.387***	0.421***	0.638***	0.575***
	(0.0404)	(0.0148)	(0.0148)	(0.0716)	(0.0207)	(0.0210)
Balochistan	0.743***	0.505***	0.689***	1.060***	0.489***	0.407***

	(0.0496)	(0.0193)	(0.0193)	(0.0573)	(0.0275)	(0.0266)
Empower Marriage	0.175*** (0.0566)					
Empower Son		0.104*** (0.0175)				
Empower Resource			0.161*** (0.0249)			
Empower Health				-0.256*** (0.0505)		
Empower Education D					0.591*** (0.0172)	
Empower Job D						0.390*** (0.0185)
Constant	5.887*** (0.0606)	6.012*** (0.0480)	5.529*** (0.0468)	6.292*** (0.0931)	6.580*** (0.0305)	6.138*** (0.0291)
Observations	37,890	330,091	330,091	24,103	210,157	206,358
R Squared	0.132	0.106	0.124	0.094	0.120	0.128
F-Statistics	229.33	1697.83	1737.70	113.26	1146.03	1208.03
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Some estimates are not presented in the table to make it concise and understandable for the readers. Their brief description is given here: Model 1: Professions of the women are significant and positive. HH with the availability of gas supply is also positively significant. Model 2: HH rooms have positive and significant effect. Model 6: Person occupations are considered except head of HH

Table 4.7 shows women empowerment impact on education. The female is highly significant for the education achievement. These models are estimated with the socio-economic indicators that are appropriate according to each empowerment indicator. Women who own any physical property is likely to increase the probability to get educated in all models and highest value is observed in Model 5. Following estimates are likely to increase education level by 17 percent when empowered by marriage, 10 percent with the son preference, 16 percent with the HH consumption and resources and 39 percent with the employment.

Physical asset also increases the education level when women in empowered with the decision making on job by 11.3 percent. Probability to increase education level is observed in higher income groups while lower income also support education completion but slightly at lower values. Among different professions for head or any member of the household, paid employees are more active in the education achievement. It describes human capital resource formation in which people tends to increase their education level and expertise, so they get promotion and financial incentive based on their education levels. Other people who own their small business or work are less likely to increase their education level.

5. Discussion and Conclusion
5.1 Discussion

Current estimates mostly confirm study hypotheses and supports with the conceptual framework of Kabeer (1999) at individual and household level. When females are introduced to take decisions for their own lives, they are more productive and healthier in their strategic life choices. Most of the

characteristics are remained significant after dealing with endogeneity. Gender is the determinant of the empowerment and highly significant to corporate in household decision making that supports literature. In this study we also examine that physical asset possessed by females are equally important as education which is similar to the past literature. Moreover, in gaining power from education, it is slightly different. Microfinancing and land rights are also important determinant of women empowerment and our estimates supports literature significantly.

Most of the models indicate that with the increase in the age, empowerment increasing that account for increasing marginal effect. The broader change has seen after the age of 30 years. Gender of the household remains insignificant when women alone take decision and tends to become positive surprisingly when joint decisions are taken. The estimates presents grassroot facts about the role of head particularly for marriage. Community structure in Pakistan are favorable for arranged marriages and social misperception is associated that young females are not wise enough to take such big decisions and this is explained by the estimates. One of the important facts by the gender of the household is observed where it is positive and highly significant.

Generally, mothers are considered for educating their daughters, but our findings suggest that educated head significantly increase the women empowerment. This explains the heterogeneity among different social and income classes. Higher educated male leadership with wealthy households supports female education. While poor families with the limited supply and resources are participating less in the human capital. Women empowerment in employment reveals the same facts. Societies with supply of education promote female labor force. Households in which both husband and wife are working can educate their children in better schools and environment.

Household infrastructure, particularly telephone, has remained positive and significant. It is well presented the need of modern era in Pakistan. Many rural areas in the country are still deprived from electricity and gas. Even due to mismanagement and improper implementation od the policies, main region of Balochistan that produces highest amount of Natural gas is itself deprived by its use. These major characteristics of the household are likely to support better health, higher education, food consumption and wages that are exhibited by current study.

Our findings are also helpful to discuss on the family patterns and size. Woman feels free to live with nuclear families as she avoids family pressure and certain traditions and our estimates present the true picture. Women are mostly active, independent and productive when small households and nuclear families are provided. Pakistan is already facing population growth rate at higher level and if proper family planning and modern techniques for childbearing would not be used, it will create challenging economic issues in coming years.

Regional differences are observed mostly in Province of Balochistan and KPK where literacy rate is lower than Punjab and Sindh. Moreover, discrimination between regions are also highlighted by the results. Findings provide significant impact of education and empowerment in urban areas. Rural areas deprived with infrastructure and basic household facilities are affected by unemployment and illiteracy rate.

5.2 Conclusion

This study is first attempt to evaluate individual and socio-economic characteristics in determining women empowerment in Pakistan. This empirical analysis focuses on the individual and community effects to determine women empowerment in couple of major aspects that were previously ignored or did not investigated single handedly. Its findings are based on the household dataset from 2005 to 2014 of Pakistan. It includes specific measures of empowerment for the women that are not categorized on their marital status rather on gender basis. Women's abilities for the outcome by inducing agency can change their lifestyles that are measured in the context of Pakistani dataset and it fully supports the conceptual framework of Kabeer (1999). Moreover, this study also provides possible correction of reverse causality with the help of Instrumental variable. Education is the fundamental part of the gender equality and if women acquire higher education, majority of men in main employment sectors can reduce drastically. This issue is sensitive in conservative societies and need to address on the basis of political and economic situation of the country.

Generally household chores and female activities produce low incentives and returns to the economic development. If cultural and traditional norms are set aside, women contribution with mobility, education, health and employment can overcome male lineage. The value of women empowerment is quite low and do not generate that potential in the households that can increase women chances to freely decide whether seeking job or starting any business. Women weak participation in employment sector and high involvement in agricultural activities or domestic work has negative correlation with empowerment. This study favors the joint and cooperative behavior of both man and women in education completion and employment. It seeks awareness and advocacy of man to encourage woman and appreciate for her contribution in the household well-being.

Men have been allocated with the non-agricultural activities, business and services in which high wage rate dominate them over women. Analysis of women empowerment on employment address two main concepts that education raised the awareness and opportunities to seek job in labor market independently and secondly education equality can improve household welfare and growth. There is immense need of policy-oriented research work for sustainable development. Major points from this study hold; promoting women education that can reduce gender gap in the employment sectors and give equal chances to women in non-agricultural activities, infrastructure and possible construction of distance learning in rural and abandoned areas to decrease the gender disparity and facilitate women for employment and higher studies.

This study suggest following policy implication;

a. Awareness programs for family planning and provision of public facilities like health visitors, remote clinic and hospitals for modern medical techniques and health services.
b. Women allocation in non-agricultural sectors that shift the burden from rural areas to industrial areas.
c. Government policies to be revised on construction of road, dams and energy production so regional disparities can be minimized.

d. Media exposure and campaigns for females' mental health and psychological impact on son preference and ensures equal participation of male members of the household.
e. University education should be free, if not, then scholarships or financial assistance should be given to those females whose household's annual income is less than PKR. 50,000.
f. E-learning, mobile commerce and distance learning should be given to women specially at rural areas.
g. Taxes should be revised, and government ensures strict monitoring on highest income groups to reduce income gap in the society.

Further studies can be analyzed on the women empowerment for the public programs at provincial levels. The causality problem may be investigated on other indicators of the women empowerment which are not covered by this study. Data structure with panel properties can be helpful to provide correct estimates in future studies.

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Appendices

A.1 Description of Variables

Table A.1 Description of Variables

Variable	Description	Sources
Empower Marriage	=1 if woman alone decide about her marriage =0 if other members of the HH decide	PSLM
Empower Son	=1 if woman has first child Son =0 otherwise	PSLM
Empower Resource	=1 if woman alone decide about purchase of food, clothes, travel =0 if other members of the HH decide	PSLM
Empower Health	=1 if woman alone decide for more chiidren =0 if other members of the HH decide	PSLM
		PSLM
		PSLM
Empower Education	=1 if woman alone decide to get and continue education =2 if father/husband decide to get and continue education =3 if father/ husband/ woman jointly decide to get and continue education =0 if other members of the HH decide	PSLM
Empower Education D	=1 if woman alone decide to get and continue education =0 if other members of the HH decide	PSLM
Empower Job	=1 if woman alone decide to seek and continue education =2 if father/husband decide to seek and continue education =3 if father/ husband/ woman jointly decide to seek and continue education =0 if other members of the HH decide	PSLM
Empower Job D	=1 if woman alone decide to seek and continue education =0 if other members of the HH decide	PSLM
Age	Age of the HH members (in Years)	PSLM
Square Age	Square of the age	PSLM
Female	Dummy variable for woman aged (15-49)	PSLM
Woman age 1	Woman age dummy if 15-24 years	PSLM
Woman age 2	Woman age dummy if 25-34 years	PSLM
Woman age 3	Woman age dummy if 35-44 years	PSLM
Woman age 4	Woman age dummy if 44-49 years	
W Education	Education of woman (Average)	PSLM
W Property	Dummy variable if woman holds any physical asset	PSLM
W Married	=1 if woman married =0 otherwise	PSLM
W Working	=1 if woman is working =0 otherwise	PSLM
W Professional	=1 if woman is professional in health, education, legal domains =0 otherwise	PSLM

W Technician	=1 if woman is technical or vocational work =0 otherwise	PSLM
W Clerk	=1 if woman is in clerical or administrative work =0 otherwise	PSLM
W Labor	=1 if woman is in labor work =0 otherwise	PSLM
W Schooling	=1 if woman ever enrolled in government school =0 otherwise	PSLM
M Working	=1 if mother is working =0 otherwise	PSLM
M Write	=1 if mother can write =0 otherwise	PSLM
Head	Dummy variable for the male head of the HH	PSLM
H Education s	Dummy variable for the HH head education if complete (Grade 6-12)	PSLM
H Read/Write	=1 if head of HH can write and read =0 otherwise	PSLM
H Education H	Dummy variable for the HH head education if complete (Grade > 14)	PSLM
H Employer	=1 if HH head is employer =0 otherwise	PSLM
H Self-Employer	=1 if HH head is self-employer =0 otherwise	PSLM
H Paid-Employer	=1 if HH head is paid employer =0 otherwise	PSLM
H Agri-Employer	=1 if HH head is agricultural employer =0 otherwise	PSLM
Mem Education H	=1 if male member of HH other than head complete graduation =0 otherwise	PSLM
P Self-Employer	=1 if HH member is self-employer =0 otherwise	PSLM
P Paid-Employer	=1 if HH member is paid employer =0 otherwise	PSLM
P Agri-Employer	=1 if HH member is agricultural employer =0 otherwise	PSLM
HH size	HH size	PSLM
Education Cost	Education expenditure (in log)	PSLM
Dependency Ratio	Dependency Ratio = people less than 15 and greater than 65 years/Total number of the people	PSLM
Live Births	Total live births in a HH	PSLM
HH Health Visit	=1 if HH is visited by Health worker or visitor =0 otherwise	PSLM
HH Rooms	Dummy variable if HH has more than 2 rooms	PSLM
HH Livestock	Dummy variable if HH has livestock/ Farm/ cattle breeding house	PSLM
HH Electricity	=1 if HH has electricity =0 otherwise	PSLM
HH Gas	=1 if HH has gas =0 otherwise	PSLM
HH Telephone	=1 if HH has telephone =0 otherwise	PSLM
Join Family	=1 if HH members live jointly =0 otherwise	PSLM
Urban	=1 for Urban =0 for rural	PSLM
Wealth Quantiles	= 1 if HH wealth is between PKR 0-45000	PSLM

= 2 if HH wealth is between PKR 45020-89000				
	= 3 if HH wealth is between PKR 89004-144000			
	= 4 if HH wealth is between PKR 144050-25200			
Provinces	=1 Province Punjab		PSLM	
	=2 Province Sindh			
	=3 Province KPK			
	=4 Province Balochistan			

A.2 Summary Statistics

Table A.2 Summary Statistics

	Observations	Mean	Std. Dev.	Min	Max
Empower Marriage	57,283	0.1017056	0.3022634	0	1
Empower Son	562,834	0.1059282	0.307746	0	1
Empower Resource	562,834	0.046488	0.2105395	0	1
Empower Health	44,107	0.7343959	0.4416594	0	1
Empower Education (Ref. 0)					
Empower Education 1	421,761	0.1442618	0.3513554	0	1
Empower Education 2	421,761	0.5430327	0.4981453	0	1
Empower Education 3	421,761	0.2252626	0.4177557	0	1
Empower Education D	333,804	0.1822746	0.3860713	0	1
Empower Job (Ref. 0)					
Empower Job 1	562,834	0.0969451	0.2958833	0	1
Empower Job 2	562,834	0.4114606	0.4920988	0	1
Empower Job 3	562,834	0.1859163	0.3890394	0	1
Empower Job D	331,250	0.1647215	0.3709296	0	1
Age	562,816	24.77546	19.35631	0	99
Square Age	562,816	988.4898	1351.031	0	9801
Female	562,834	0.3163775	0.4650625	0	1
Woman age 1	562,834	0.1018364	0.3024333	0	1
Woman age 2	562,834	0.0712288	0.2572069	0	1
Woman age 3	562,834	0.0514148	0.2208425	0	1
Woman age 4	562,834	0.0197465	0.139128	0	1
W Education	347,842	8.486541	3.315983	0	23
W Property	562,834	0.0373343	0.1895798	0	1
W Married	562,834	0.1576291	0.3643932	0	1
W Working	562,834	0.1656528	0.371769	0	1
W Professional	562,834	0.0021463	0.0462783	0	1
W Technician	562,834	0.0009612	0.0309885	0	1
W Clerk	562,834	0.0009132	0.030206	0	1
W Labor	562,834	0.0076808	0.0873029	0	1
W Schooling	562,834	0.1426939	0.3497608	0	1
M Working	562,834	0.0083044	0.0907494	0	1
M Write	562,834	0.0099035	0.0990222	0	1
Head	562,834	0.0629813	0.2429295	0	1

H Education s	562,834	0.0109197	0.1039255	0	1
H Read/Write	562,834	0.0276209	0.1638843	0	1
H Education H	562,834	0.0439028	0.2048791	0	1
H Employer	562,834	0.0002505	0.0158258	0	1
H Self-Employer	562,834	0.0073041	0.0851515	0	1
H Paid-Employer	562,834	0.0139562	0.117309	0	1
H Agri-Employer	562,834	0.0035996	0.059889	0	1
Mem Education H	562,834	0.0154824	0.1234613	0	1
P Self-Employer	562,834	0.1120153	0.3153855	0	1
P Paid-Employer	562,834	0.1824001	0.3861743	0	1
P Agri-Employer	562,834	0.0457488	0.2089401	0	1
HH size	562,834	20.28576	9.786055	1	80
Education Cost	562,834	2.048931	3.524901	0	13.66236
Dependency Ratio	562,816	0.4150131	0.2524646	0	1
Live Births	562,834	42.32483	38.78483	0	339
HH Health Visit	562,834	0.4079711	0.4914581	0	1
HH Rooms	562,834	0.432982	0.4954887	0	1
HH Livestock	562,834	0.9807812	0.1372934	0	1
HH Electricity	562,834	0.4833752	0.499724	0	1
HH Gas	562,834	0.3708571	0.4830347	0	1
HH Telephone	562,834	0.6061308	0.4886069	0	1
Join Family	562,834	0.1460093	0.3531159	0	1
Urban	562,834	0.4864934	0.499818	0	1
Wealth Quantiles (Ref. Q1)					
Wealth Q2	562,834	0.199295	0.3994706	0	1
Wealth Q3	562,834	0.2062882	0.4046402	0	1
Wealth Q4	562,834	0.1950451	0.3962358	0	1
Wealth Q5	562,834	0.1982876	0.3987103	0	1
Provinces (Ref. Punjab)					
Sindh	562,834	0.2457154	0.430511	0	1
KPK	562,834	0.2087436	0.4064111	0	1
Balochistan	562,834	0.1179122	0.3225044	0	1

A.3 Endogeneity: Education and Empowerment

Table A.3 Instrumental Variable Estimation Results for Women Empowerment in Education

	(1)	(2)	(3)
	2SLS	IV Probit	IV Probit
Variables	Parameters Coefficients	Parameters Coefficients	Average Marginal Effects
Female	0.00448	0.0225	0.00655*
	(0.00377)	(0.0138)	(0.00378)
Woman Age (15-24)	0.0161***	0.0467***	0.0123***
	(0.00443)	(0.0160)	(0.00436)
Woman Age (25-34)	0.0702***	0.246***	0.0686***
	(0.00708)	(0.0264)	(0.00737)

Woman Age (35-44)	0.0757***	0.260***	0.0716***
	(0.00568)	(0.0204)	(0.00566)
W Property	0.0177***	0.0602***	0.0166***
	(0.00466)	(0.0162)	(0.00445)
Head	-0.00213	-0.0122	-0.00339
	(0.00525)	(0.0193)	(0.00528)
H Education S	0.0238**	0.106***	0.0299***
	(0.00968)	(0.0349)	(0.00959)
W Married	-0.0428***	-0.155***	-0.0431***
	(0.00499)	(0.0185)	(0.00516)
W Working	-0.00763***	-0.0296***	-0.00822***
	(0.00257)	(0.00933)	(0.00256)
H Employed	0.0389	0.163	0.0469
	(0.0551)	(0.182)	(0.0498)
H Self-Employ	-0.0466***	-0.206***	-0.0576***
	(0.0137)	(0.0528)	(0.0145)
H Paid-Employ	-0.00565	-0.0157	-0.00424
	(0.00940)	(0.0344)	(0.00943)
H Agri-Employ	-0.0670***	-0.316***	-0.0887***
	(0.0221)	(0.0893)	(0.0245)
Dependency R	0.00767	-0.00688	-0.00418
	(0.0113)	(0.0420)	(0.0115)
HH Size	0.000357	0.00138	0.000449
	(0.000337)	(0.00126)	(0.000347)
HH Telephone	0.0365***	0.152***	0.0429***
	(0.00559)	(0.0213)	(0.00594)
Joint Family	-0.00124	-0.0365***	-0.0106***
	(0.00364)	(0.0137)	(0.00377)
Urban	0.0217**	0.113***	0.0331***
	(0.00972)	(0.0367)	(0.0101)
Wealth Q 2	-0.0371***	-0.139***	-0.0380***
	(0.00309)	(0.0112)	(0.00324)
Wealth Q 3	-0.0343***	-0.119***	-0.0323***
	(0.00372)	(0.0135)	(0.00392)
Wealth Q 4	-0.0308***	-0.0933***	-0.0248***
	(0.00646)	(0.0237)	(0.00674)
Wealth Q 5	-0.0257	-0.0482	-0.00973
	(0.0178)	(0.0662)	(0.0188)
Sindh	-0.166***	-0.633***	-0.165***
	(0.00500)	(0.0172)	(0.00412)
KPK	-0.0880***	-0.274***	-0.0817***
	(0.00654)	(0.0235)	(0.00646)
Balochistan	-0.231***	-1.061***	-0.228***
	(0.00500)	(0.0202)	(0.00407)
W Education	0.0196*	0.0434	0.00966
	(0.0101)	(0.0377)	(0.0103)
Constant	0.0878	-1.087***	-
	(0.0681)	(0.251)	
Observations	210,157	210,157	210,157

Other Information			
AIC	1285225	Durbin (score)	1.00687
BIC	1285810	Wu-Hausman	1.00674
Log-Likelihood	-642555.52	Sargan (score)	6.67901
Wald Chi-Square	11066.48	First Stage F statistics	78.2409
Chi-square P-Value	0.000		

Endogenous variable is women education and instruments are (i) If any grandchild is studying in the HH (ii) Reason to get admission in the school due to low fee. Instruments are tested by 2SLS estimator. Hausman

Test rejects Null Hypothesis explaining variable is endogenous, Test of overidentification states Instruments are strong at 5% level. F statistics gives minimum eigenvalue for first stage regression. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

A.4 Endogeneity: Employment and Empowerment

Table A.4 Instrumental Variable Estimation Results for Women Empowerment in Employment

Variables	(1) 2SLS Parameters Coefficients	(2) IV Probit Parameters Coefficients	(3) IV Probit Average Marginal Effects
Female	-0.00880**	-0.0252*	-0.00168
	(0.00394)	(0.0140)	(0.00365)
Woman Age (15-24)	0.00780*	0.0229	-0.000580
	(0.00429)	(0.0156)	(0.00401)
Woman Age (25-34)	0.0496***	0.163***	0.0575***
	(0.00670)	(0.0302)	(0.00632)
Woman Age (35-44)	0.0728***	0.245***	0.0704***
	(0.00557)	(0.0259)	(0.00533)
W Property	0.00956**	0.0310*	0.0117***
	(0.00470)	(0.0174)	(0.00434)
W Married	-0.0261***	-0.0949***	-0.0349***
	(0.00482)	(0.0208)	(0.00457)
W Working	0.0160***	0.0574***	0.0130***
	(0.00323)	(0.0123)	(0.00309)
Total Births	0.000932***	0.00350***	0.000676***
	(8.55e-05)	(0.000177)	(6.68e-05)
Head	-0.00679	-0.0390	-0.0217***
	(0.00688)	(0.0278)	(0.00680)
H Write	0.00292	0.0310	0.0311***
	(0.0105)	(0.0406)	(0.00984)
P Self-Employ	-0.0135***	-0.0463**	-0.0218***
	(0.00463)	(0.0189)	(0.00438)
P Paid-Employ	0.0109***	0.0449***	0.0197***
	(0.00362)	(0.0148)	(0.00340)
P Agri-Employ	-0.0127	-0.0418	-0.0290***
	(0.00793)	(0.0313)	(0.00738)
HH Size	-0.00227***	-0.00879***	-0.00102***
	(0.000434)	(0.00123)	(0.000358)
HH Rooms	-0.00202	-0.00803	0.0139***
	(0.00560)	(0.0204)	(0.00492)
HH Livestock	0.00548	0.0167	0.00658
	(0.00687)	(0.0267)	(0.00681)
HH Telephone	0.0193***	0.0763***	0.0342***
	(0.00505)	(0.0219)	(0.00466)
Joint Family	0.00208	-0.00612	-0.00540*
	(0.00290)	(0.0112)	(0.00280)
Urban	-0.0104	-0.0324	0.0188**
	(0.00912)	(0.0323)	(0.00788)
Wealth Q 2	-0.0550***	-0.199***	-0.0518***
	(0.00307)	(0.0113)	(0.00299)
Wealth Q 3	-0.0653***	-0.234***	-0.0570***
	(0.00377)	(0.0104)	(0.00348)
Wealth Q 4	-0.0739***	-0.258***	-0.0555***
	(0.00589)	(0.0130)	(0.00506)
Wealth Q 5	-0.111***	-0.389***	-0.0547***

	(0.0169)	(0.0453)	(0.0138)
Sindh	-0.197***	-0.772***	-0.182***
	(0.00572)	(0.0172)	(0.00411)
KPK	-0.158***	-0.558***	-0.141***
	(0.00590)	(0.0112)	(0.00378)
Balochistan	-0.232***	-1.077***	-0.224***
	(0.00460)	(0.0395)	(0.00570)
W Education	0.0375***	0.141***	0.00586
	(0.0102)	(0.0314)	(0.00850)
Constant	0.00958	-1.559***	
	(0.0633)	(0.165)	
Observations	206,358	206,358	206,358

Other Information			
AIC	2875221	Durbin (score)	10.552
BIC	2675810	Wu-Hausman	10.5511
Log-Likelihood	13382.03	Sargan (score)	0.102918
Wald Chi-Square	12086.40	First Stage F statistics	72.6543
Chi-square P-Value	0.000		

Endogenous variable is women education and instruments are (i) If any mother can write (ii) If women ever enrolled in a govt school. Instruments are tested by 2SLS estimator. Hausman Test rejects Null Hypothesis explaining variable is endogenous at 5 % level, Test of overidentification states Instruments are strong. F statistics gives minimum eigenvalue for first stage regression. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1