# IMPACT OF WOMEN'S RETIREMENT ON THEIR DAUGHTER IN LAW'S EMPLOYMENT

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## ABSTRACT

Using a fuzzy regression discontinuity design and a cross-pooled MICS data set for the years; 2011 and 2014, this research measures the impact of mother-in-law's retirement on their respective daughter in law's employment decision using retirement age as a cutoff. Female labor force participation has remained low in developing countries mainly due to the presence of young children in the house. This study argues that presence of grandmothers, to a large extent can play a vital role in eliminating this pressure but also can add to the constraints faced by the women and hence affecting the labor force participation negatively. Numerous researches done on developed countries highlight that the decision regarding formal or informal childcare depends on the availability and costs of the formal institutions. However, all these researches report a positive impact of childcare on female's labor force participation. This study extends this analysis to a case of developing country Pakistan, where the household dynamics and constraints faced by the households are quite different from that of developed world to see whether the impact remains the same or not. The results reveal that a retired mother-in-law has a significant negative affect on their daughter in law's employment especially for the women living in rural areas, lesser educated and belonging to a lower wealth quantile. These insights are useful for policy makers as the results indicate the need for an affordable formal child-care institution for working mothers as well as provide health care services to senior citizens to some extent as these two groups are the main reason why females have to opt out of labor force in order to take care of them.

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# 1. Introduction

Increased female labor force participation have become both a contributing factor and an outcome of high economic growth. It is one of the highlighting factors that differentiates a developed economy from a developing one as can be seen from the past trend where in developed economies, female labor force participation increased from 4 percent to 70 percent in 2000. The main channels that led to such development are the introduction of newer technology (Greenwood et.al, 2005), industrialization and lower "gender inequality gap" (Fernandez et.al, 2002; Galor & Weil, 1996).

Like most developing countries, Pakistan also achieved high growth at different points in time and headed towards "structural transformation" but remained among the lowest in female labor force participation, ranked at 166$^{th}$ around the world according to Pakistan Planning Commission, 2020. There has been a persistent gender gap in labor force participation in Pakistan with female employment rate at only 22.2 percent as compared to 77.8 percent for males. A study conducted by world bank in 2018 on Pakistan female labor force participation stresses on high gender gap and provides evidence that cultural and social barriers exist owing to which there is low female labor force participation. According to the study, being married causes 7 percent less chances for women to enter labor force as compared to unmarried females and 83 percent of married women quoted household chores and childcare as an explanation for unemployment.

Researchers like Jaumotte (2003) have focused on two key factors that affects women employment: "institutions" and "social context". Institutions caters females to balance her work and family obligations by providing formal childcare services, "subsidies" and "maternity leave". A country with strong institutions can increase its female labor force by providing ease in her

responsibilities. Whereas society can play two opposing effects on female labor force participation. On one hand, social norms depress female employment by insinuating “male breadwinner” model which implies that the male member of the household will earn whereas females will fulfil household obligations and will take care of children and senior members. Such norms discourage women to take advantage of potential job opportunities that emerges with time. On the other hand, extended family might act as a pillar that strengthens female employment in society through their services. Three generations in one household have its pros and cons for the potential females that might choose to work in the labor market. Senior members of a family can be of help for the females in terms of taking care of young children as well as financial gains either through pensions or through assets.

New technological advancements have resulted in an increase in life expectancy owing to which the concept of extended family living in the same household has been on rise especially in developing countries. This notion has been reinforced by the United nation population fund report of 2012 which estimated that senior members i.e those above 60 years of age will increase to 1.2 billion in 2025 and in year 2050, this number will rise up to 2.5 billion. The report also claims that majority (two- third) of senior population resides in the developing countries hence prompting multi-generations to live in the same household.

Out of the two key factors of female employment, social context plays a significant role for Pakistan. Its family-oriented culture has embodied “strong family values” owing to which a greater part of Pakistanis lives with extended family. Pakistan, like most Southern European countries have “familialistic model” where it is the duty of extended family to help in time of need whether it be emotional or financial support (Esping-Andersen, 1999). Extended family may become a solution for Pakistan’s major problem i.e., increasing female labor force participation.

The presence of extended family especially mother-in-law can have an impact on female's (daughter in law) employment, but the direction of impact is obscure. Help from mother-in-law, in doing household chores decreases the "household productivity" (Becker,1965) of potential females who then have more time available to enter labor market. This in result will increase female labor force participation. On the other hand, grandparents might need care due to their health issues which will hinder females to enter labor force. A study by Ettner (1995) developed a new term known as "sandwich generation" for women who have to take care of both older members and young children. The toll of taking care of both generations have a negative impact on female's employment. There might also be a situation where grandparents are present in the house but are employed which means they are of not much help in household chores and taking care of children.

This research empirically investigates whether the presence of an extended family members especially mother-in-law has a positive, negative, or no effect on female labor supply. This paper specifically tests whether mother-in-law's retirement has a significant impact on daughter-in-law's employment in the context of Pakistan using Fuzzy RDD, which Fenoll (2019) also used in his study. Legal retirement age is being used as the cutoff to capitalize on the sharp changes in the likelihood of retirement. To quantify the causal effect, Instrumental variable technique is being employed with the likelihood of being retired instrumented by a dummy for being over the legal retirement age.

To test the hypothesis, the study utilizes MICS, a cross-sectional household dataset from Punjab. To maximize the sample size, data from two rounds of MICS in 2011 and 2014 are appended. MICS encompasses a wide variety of indicators, from a female's employment to her health and socioeconomic status.

According to the analysis, women's retirement reduces daughters' employment by 4.36 percentage points. Furthermore, the findings show that self-employed females (5.5 percentage points) are more likely to leave the labor force than full-time employees (2.5 percentage points). These findings are consistent with the results of Ettner (1995) and Fenoll (2019), who contend that female jobs suffer because of increased household obligations, cultural obstacles, and insufficient family policies.

The study contributes to the literature on female labor supply in Pakistan by providing a new viewpoint that previous researchers in Pakistan have not considered much. Numerous researches have been conducted in developed countries showing the impact of mother's retirement on daughter's employment but it is the first time that such research is being administered in Pakistan.

The rest of the paper is structured as follows. The second section addresses the existing literature. Section 3 discusses the methodology employed to examine the impact. In section 4 information regarding dataset and variables be given. Section 5 is where results are being interpreted along with their regression tables. And section 6 concludes the whole paper.

## 2. Literature Review

Female labor supply has remained the focus of attention in the past as well as present due to their significant advantages to the economy. Numerous researchers like Mincer (1962), Becker (1965) and Bradbury & Katz (2005) have accentuated on the barriers that hinder female employment. Mincer (1962) incorporated various day to day variables in labor supply model for females and concludes that having more children pushes down the probability of females entering labor force. Becker in 1965 introduced time as the fundamental component in labor supply model

and termed it as “household production theory” which implies that for females, the decision to enter labor force depends on her time division between household obligations, employment and leisure. Using data from US Bureau of Labor Statistics for years 1994 to 2004 of highly qualified females, Bradbury & Katz identified variables such as number of children and high costs of childcare services as the major cause of low female labor supply. Other reasons include social imperatives such as “male breadwinner model” and “career break” where women in their prime age are busy in taking care of children rather than availing a potential job opportunity. Other researches done in Kuwait and Morocco are in line with the findings of Bradbury & Katz and stresses upon “marital status” and “fertility” as the main barrier that hinders female employment opportunities (Aly and Quisi, 1996; Assaad and Zouri, 2003).

After identifying the barriers to female employment, the focus of research shifted to solutions. One such solution is child-care services whether it be formal or informal depends on the socioeconomic status of families. Females have to pay a price for being employed which is often translated into high childcare costs if the children are look after in a day care centre or by a professional nanny. However, multiple researches reveal that day care services on “subsidized rate” have a positive impact on female’s labor supply as it minimizes the price, she has to pay for being employed and it also allows parents to increase the duration of their employment (Blau and Currie 2006a, b; Connelly and Kimmel 2003; Tekin 2007). Lower expenditure on childcare services attracts more parents to send their children to the day care centre while they are working which have a direct effect on the country’s economy through tax revenue earned from employed parents (Morrissey and Warner 2007).

Barros et al. (2011) employed IV technique to evaluate the impact of winning a lottery for a free place in public day care in Rio de Janeiro for low-income families. His estimates show that

the employment rate for females rose from 36 percent to 46 percent. Also, there were twice the number of mothers who entered labor force who were previously unemployed. Another research by Hojman and Lopez Boo (2019) claims that free day care service has resulted in mother's employment to increase by one-third. Halim et al. (2019) investigates whether building up new public preschools have any effect on mother's employment in Indonesia by applying difference-in-difference estimation. The results imply that female's labor supply increases but its mostly in non-paid jobs i.e farm-work or self-employment since preschools timing is limited.

Talamas (2020) did research in Mexico where mostly grandmothers are busy in child rearing activities. By using labor statistics data of mothers who lives with their in-laws, he finds that the death of a grandmother has a significant negative effect on mother's employment but if the day care fees are low then the impact of grandmother's death on mother's employment will also be small.

There are many countries where informal child-care is preferred over formal child-care services. Such countries have strong family ties and relies on each other in time of need. To see whether formal child-care is parents' first choice in UK, Wheelock and Jones (2002) did interviews and focus groups. The outcome of these research techniques helped the authors to learn the rationale behind the decision taken by parents to either sent their children to formal day care or use the help of extended family. It came out to be that parents' first choice are grandparents because they believe that grandparents will take care of children with love and would instill all the values that they abide with. There is an element of trust which further strengthens the concept of informal child-care service. Grandparents are seen as the best alternative if the mother is occupied with her job obligations. Corroborating with the notion, Thomas et al (2015) did research on the importance of informal childcare in California. He finds that family with low socio-economic status prefers

informal care because it is free and accommodates them according to their work hours. It also allows parents to take up two jobs to meet ends.

Maurer-Fazio et al. (2011) uses IV technique to examine whether residing with the extended family have any effect on daughter's employment in China. To instrument for grandparents (parents/in-laws) living with the daughter, the researcher uses the county data to estimate the percentage of senior members and parents residing in the households. His estimates show that residing with the grandparents have a significant effect and it increases female labor force participation by 12 percent. Ogawa and Ermisch (1996) did a similar research and show that the main reason female labor supply increases is due to the transfer of child rearing responsibilities from mother to grandparents as they are the next best option for childcare. Contrary to these studies, utilizing data from European Social Survey (ESS) Abendroth et al. (2012) notices no effect of having a grandparent residing with the female on her labor supply or work hours.

To determine the influence of grandparental benefits i.e., financially, and socially on daughter's job decision and labor supply, Dimova and Wolff (2011) proposes a hypothetical situation and then test it on ten European countries. Relying on SHARE as main data source, fixed effect Probit and ordered Probit models were employed. In light of the equations estimated, the results reveal that mothers who are financially strong and have more skills prefer to help their daughters financially whereas mother who are on the lower bound of socioeconomic status and skills are more towards taking care of children in order for their daughters to carry her work commitments. In the end, it came out to be that time transfer plays the main role and have significant effect on daughter's decision to enter labor force and in actual increases her participation by taking up potential jobs. Similarly, Cardia and Ng (2003) introduces financial and time elements in the multi-generation model and concludes that time element not only helps in

increasing female labor force participation, but it also helps to improve daughter's financial and social status.

Posadas and Vidal-Fernandez (2013) did research in USA by obtaining children data from National Longitudinal Survey of Youth 1979 to investigate the benefits associated with grandmother taking care of children. To test this, the researchers make use of IV technique along with fixed effects model. Instrumenting "grandparent's care" with "maternal mother's death" manifest ambiguous results since the instrument violates both conditions of endogeneity and exclusion. Death is considered as a setback for daughter mental health as well as financial status. On the other hand, fixed effect model reveals that the help received from grandmother in terms of child-care results in 9 percent increase in female's labor supply.

Since the relationship between presence of a grandmother and daughter's employment and fertility is ambiguous, Aparicio-Fenoll and M. Vidal-Fernandez (2014) uses an entirely unique instrument to deal with the problem of endogeneity. Mother's presence might only be helpful for the daughter if mother stays home and take care of children rather than being employed. To instrument mother's presence, the researchers employ "minimum retirement age in Italy". Their empirical outcome proves that a mother's employment is inversely related to child-care but on the other end, it has a positive relationship with daughter's fertility. It exhibits that mother's employment is beneficial in terms of money transfer rather than time transfer. Such transfers discourage females to enter labor force and hence there is an increase in dependent population due to increase in fertility. A study by Lei (2006) depicts a different picture on the labor supply and time transfer of grandmothers. By employing data from Health and Retirement Study, the results show that mothers do help their daughters with time and money transfers, but they do not alter their work routine.

This study contributes to the Pakistani literature by concentrating on the influence of multigenerational homes on female employment, and it differs from other studies in that it is conducted in a developing nation with limited family benefits. It's one of the first studies in Punjab using a large data set extracted from multiple rounds of MICS (year 2011 and 2014) to show the influence of woman on another i.e., impact of retirement of mother-in-law on daughter-in-law abandoning the workforce or never entering it at all. The research is backing the idea of societal duties, which might lead to daughters-in-law or even daughters to remain unemployed. The study also adds to the literature from a policy standpoint, since the findings will suggest if there is a need for subsidized childcare, facilities for the elderly, or both.

## 3. Methodology

Exploring the correlation between mother-in-law's retirement and daughter's employment can be demanding. There are many unobserved variables that might correlate with the error term and thus result in specification issues. Retirement is a personal decision that can be influenced by various factors which might range from personal to financial. Moreover, endogeneity might also be present because of selection bias. Mothers-in-law may choose to retire early to provide for their working daughters-in-law, or they may choose to dedicate more of their time to unemployed daughters-in-law. Due to these reasons simple OLS regressions would not be applicable as these will provide biased estimates.

Since the decision to retire depends on the individual so there might be some mothers-in-law who still work after they crosses the retirement age and on the other hand, there might also be some women who leave labor force even before reaching the retirement age. There is a non-zero probability of mothers-in-law retiring before or after reaching the retirement age. Hence, this

research is employing Fuzzy Regression Discontinuity Design as was done by Coe and Zamaro (2011) in their paper. It would have been a sharp RDD if there was 100 percent compliance rate i.e women only retire at the specific retirement age, not before or after it. But since there is the issue of non-compliance, Fuzzy RDD is being employed. This study is examining the change in probability of retirement by looking at the effect of mother-in-law's age on daughter-in-law's labor supply by using "country specific retirement age" as cutoff. So, to capture the true picture, this research employs IV technique to bring exogenous variation. To instrument for mother-in-law's retirement status, legal retirement age is used as they are correlated with the endogenous term but uncorrelated with the error term. Similar methodology has been initially used by Fenoll (2019) to test the effect of grandmother's retirement on daughter's employment in terms of time and money transfer to compare between high and low "family benefits" OECD countries.

Because of the Fuzzy nature of retirement status, there will always be a noticeable change in slope along with the "jumps" at the cutoff as can be seen in the appendix. A significant positive variation means that mothers-in-law's retirement has a positive effect on daughters-in-law's employment. But if the result shows negative variation, then it means mothers-in-law acts as a constraint on female's labor supply.

The paper tests the following hypothesis:

**$H_1$:** Having a retired mother-in-law has a significant effect on daughter-in-law's employment.

To have a detailed analysis, further sub sample regressions are run which includes no education vs educated, urban vs rural, lowest vs high wealth quintiles and male vs female household head. Apart from theses, the impact of mother-in-law's retirement is administered on different employment status of daughter-in law which comprises of full-time worker, self-employed, unemployed and homemaker.

## 3.1 Econometric Model

Based on the research methodology, the first and second stage for determining the effect of mother-in-law's retirement on daughter-in-law's employment is as follows:

First stage:

$$R_{mt} = \beta_0 + \beta_1 RE_{mt} + \beta_2 X_{mt} + \beta_3 D_{It} + \beta_4 Controls + \varepsilon_{imt}$$

Where:

R: dummy=1 if mother-in-law is potentially eligible for retirement i.e., retired (Retirement status)

RE: is the instrumental variable for retired mother-in-law; age based full retirement eligibility criteria (mother-in-law's age minus country specific retirement age)

X: mother-in-law's characteristics (age & education)

D: daughter-in-law's characteristics. (age, education no. of children, youngest child age.)

Controls includes all 36 district dummies, urban dummy, household head gender, household head education, wealth dummies.)

In the first stage, mother-in-law's retirement status depends on retirement eligibility criteria along with mother-in-law and daughter-in-law's characteristics. RE provides exogenous variation in the retirement decision.

Second stage:

$$WE_{imt} = \boldsymbol{\alpha}_0 + \boldsymbol{\alpha}_1 \hat{R}_{mt} + \boldsymbol{\alpha}_2 X_{mt} + \boldsymbol{\alpha}_3 D_{It} + \boldsymbol{\alpha}_4 Controls + \omega_{imt}$$

Where:

WE: outcome variable (daughter-in-law employed). It is a dummy variable equal to one if daughter is employed.

$\hat{R}$: predicted value of potentially eligible retired mother-in-law.

X: mother-in-law's characteristics (age & education)

D: daughter-in-law's characteristics. (age, education no. of children, youngest child age)

Controls includes all 36 district dummies, urban dummy, household head gender, household head education, wealth dummies.)

In second stage, conditional on mother-in-law being potentially eligible to retire, the impact of retirement of mother-in-law on daughter-in-law's employment is evaluated. $\boldsymbol{\alpha}_1$ is of great importance in our specification.

$$\boldsymbol{\alpha}_1 = WE_{imt}(\hat{R}_{mt} \mid x \geq c) - WE_{imt}(\hat{R}_{mt} \mid x \leq c)$$

Where:

c: threshold value/ cutoff

x: controls

$\boldsymbol{\alpha}_1$ is the local average treatment effect of the potentially eligible retired mother-in-law on the employment status of daughter-in-law around the threshold. This coefficient provides us with a fair approximation of the effect. The first term depicts the effect of retirement on the daughter-in-law's job prior to the cutoff, and the second term depicts the impact after the cutoff. This coefficient's significance and direction determines if the effect is positive or negative.

## 4. Data

To test whether mother-in-law's retirement influences daughter-in-law's employment, this paper uses MICS which is a cross-sectional pooled household dataset of Punjab. To increase sample size, the data from two rounds of MICS for years 2011 and 2014 have been appended. MICS covers various indicators which ranges from female's employment to her health and

socioeconomic status. The data allows to analyze the household characteristics as well as have information on every household member ranging from their education level to employment status.

The sample includes mother-in-law and daughter-in-law duo with respective age brackets. Mothers-in-law of age 40 above and daughters of age 15-39 have been used as a sample. These age brackets have been selected because in Pakistan early marriages are quite common which results in children born to females in their late teens. This implies that a mother-in-law, whose daughter-in-law gave birth in her late teen, becomes a grandmother at an early age as compared to those in the European countries. The information on retirement age for women have been taken from Employees' old age benefits institution. Pakistan has different retirement ages for men and women; for men it is 60 years and for females, it is 55 years.

The descriptive statistics of the variables used in the research are shown in the following table. It consists of mother-in-law's characteristics, daughter-in-law characteristics and household characteristics.

Table 1: Descriptive Statistics

| Variable | Observations | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| ***Mother-in-law's Characteristics:*** | | | | | |
| **Potentially eligible to retire** | 12,626 | 0.697054 | 0.4595504 | 0 | 1 |
| **RE** | 12,626 | 4.932283 | 10.51057 | -15 | 44 |
| **Age** | 12,626 | 59.93228 | 10.51057 | 40 | 95 |
| **Age sq** | 12,626 | 3702.342 | 1322.769 | 1600 | 9025 |
| **Education (yrs)** | 12,622 | 1.133497 | 2.877501 | 0 | 12 |
| ***Daughter-in-law's Characteristics:*** | | | | | |
| **WE** | 12,441 | 0.137529 | 0.3444189 | 0 | 1 |
| **Age** | 12,626 | 27.93046 | 5.623184 | 15 | 39 |
| **Age sq** | 12,626 | 811.7283 | 318.1952 | 225 | 1521 |
| **Marital status** | 12,626 | 1.174244 | 0.8158171 | 1 | 4 |
| **Education (yrs)** | 12,625 | 5.081505 | 4.685982 | 0 | 12 |
| **Number of children** | 10,610 | 2.236664 | 1.921416 | 0 | 12 |
| **Youngest child age** | 12,626 | 1.798999 | 2.625685 | 0 | 25 |
| ***Household characteristics:*** | | | | | |
| **Urban** | 12,626 | 0.340884 | 0.4740252 | 0 | 1 |
| **wealth1** | 12,626 | 0.172739 | 0.3780363 | 0 | 1 |
| **wealth2** | 12,626 | 0.191747 | 0.3936908 | 0 | 1 |
| **wealth3** | 12,626 | 0.214953 | 0.4108062 | 0 | 1 |
| **wealth4** | 12,626 | 0.215904 | 0.4114641 | 0 | 1 |
| **wealth5** | 12,626 | 0.204657 | 0.4034668 | 0 | 1 |

Note: Potentially eligible to retire is a dummy variable which includes all those mothers-in-law who are above the age of retirement i.e 55 years but have worked in any category that may result in income earned. Thus, it is not restricted to only those women who are under the category of "retired with pension". Moreover, it has been constructed by pooling two datasets of MICS 2011 and 2014 hence resulting in 60% of mothers potentially eligible for retirement. *Mothers-in-law who are housewives or have never looked for any employment have been excluded from the sample since the article did not intend to capture the influence of women who had never worked. The purpose of this study is to investigate the influence of retired mother-in-law on their daughter-in-law's employment. By adding housewives, the figures would be skewed because these are the females who have never had to choose between remaining at home and working outside.

According to the data, 69 percent of the mothers-in-law in our sample are potentially eligible to retire with an average age of 59 years. Whereas, the percentage of working daughter-in-law is only 13 percent, which comprises daughter-in-law who work full-time as well as self-employed. The average age of a daughter-in-law is 27 years, with the youngest child being almost 2 years old, indicating that there are young children in the family who needs to be taken care of. The level of schooling of females in each category differs, with most mothers-in-law having only

attended elementary school and daughters-in-law having completed middle school. 34% of the sample resides in urban area.

## 5. Results

The analysis of the regression results begins with the first stage where the IV, RE (retirement eligibility criteria) is being instrumented for potentially eligible to retire dummy (which is retirement status) to cater for specification issues. For it to be a valid instrument, it should be correlated with retirement status but uncorrelated with the unobserved variables.

Table 2: First Stage results

| VARIABLES<br>Dependent variable: Retired = 1 | (Model 1)<br>IV | (Model 2)<br>IV |
|---|---|---|
| RE | 0.0317*** | 0.0307*** |
| | (0.000268) | (0.000311) |
| Constant | 0.541*** | 0.515*** |
| | (0.00312) | (0.0217) |
| Mother in law's characteristics | No | Yes |
| Daughter in law's characteristics | No | Yes |
| Controls | No | Yes |
| Observations | 12,626 | 10,606 |
| R-squared | 0.524 | 0.534 |
| F- stat | 1391.25 | 257.39 |

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

Note: Mothers-in-law of age 40 above and daughters of age 15-39 have been used as a sample. Retired (i.e., potentially eligible to retire) is instrumented by RE i.e., mother-in-law's age minus retirement age (55 years). Mother-in-law's characteristics include mother's age, age squared and education in years. Daughter-in-law's characteristics comprises of her age, age squared, education in years, marital status, number of children and the age of youngest child. All 36 districts and wealth quintiles have been controlled for along with area dummy. Standard errors are clustered at the mother-in-law's age.

Table 2 displays that RE is a highly significant IV when controlled for the unobservable as well as mother-in-law and daughter-in-law's characteristics. Thus, it implies that rather than relying solely on retirement status, RE is a more accurate way to assess the impact of women's

retirement on their daughter-in-law's employment. This is further reinforced by the F-statistic value, which, according to Stock and Yogo (2005), is considered a weak instrument if the critical value is less than ten. However, the first stage F statistic in this article is 257.39, which is greater than 10, implying that RE is a strong instrument. The significance and the sign of the probability of retiring when elders reach retirement age in this study is similar to the prior studies. The chance of retiring increases by 3 percentage points when mother-in-law reaches full retirement age. In studies by Aparicio-Fenoll and Vidal-Fernandez (2015) and Fenoll (2019), the "probability" of retiring is also positive when elders reach retirement age however, it is higher in their researches. The reduced form estimates obtained by regressing daughters' work on "age-based retirement eligibility" can be found in appendix (see page # 37). The magnitude of the predicted coefficients is small when compared to Bratti, Frattini, and Scervini (2018)'s estimate of 11 percentage points for Italy but none the less significant for the case of Pakistan.

Table 3: OLS and IV results

| VARIABLES<br>Dependent variable:<br>Daughter-in-law employed = 1 | (Model 1)<br>OLS | (Model 2)<br>OLS | (Model 1)<br>IV | (Model 2)<br>IV |
|---|---|---|---|---|
| Retired | -0.0390*** | 0.00591 | -0.0537*** | -0.0436*** |
| | (0.00926) | (0.0159) | (0.0120) | (0.0126) |
| Constant | 0.165*** | 0.588*** | 0.175*** | 0.264*** |
| | (0.00885) | (0.132) | (0.0105) | (0.0266) |
| Mother in law's characteristics | No | Yes | No | Yes |
| Daughter in law's characteristics | No | Yes | No | Yes |
| Controls | No | Yes | No | Yes |
| Observations | 12,441 | 10,469 | 12,441 | 10,469 |
| R-squared | 0.003 | 0.044 | 0.002 | 0.039 |
| F-stat | 17.75 | 640.54 | 68.26 | 257.39 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: Mothers-in-law of age 40 above and daughters of age 15-39 have been used as a sample. IV used is RE which is mother-in-law's age minus country's specific retirement age (55 years). Mother-in-law's characteristics include mother's age, age squared and education in years. Daughter-in-law's characteristics comprises of her age, age squared, education in years, marital status, number of children and the age of youngest child. All 36 districts and wealth quintiles have been controlled for along with area dummy. Standard errors are clustered at the mother-in-law's age. * There is sample variation between first and second stage of Instrumental variable methodology due to the missing values in the main dependent variable, WE i.e., daughter-in-law employed.**The critical value of the F statistic shows that RE is a strong instrument even in the absence of the controls.

The comparison between OLS and IV results is shown in the above table. The first and second columns present OLS results where retirement status (potentially eligible to retire dummy) is being employed as an independent variable to examine the impact with and without controls. The table indicates that without controls, OLS implies that there is a significantly negative impact of mother-in-law's retirement on daughter-in-law's employment. However, the sign and significance level of the OLS coefficient changes when controls are introduced, and it reveals that there are higher odds of a daughter becoming employed due to a retired mother being in the house. The bias was expected to be positive in developing nations with low family benefits since , elder members of the household are expected to care for the youngsters while daughter-in-laws carries

out household chores or be on a job. The same findings were found in prior research by Fenoll (2019), where OLS estimations indicated a favorable influence on daughter-in-law's employment.

But, since the decision to retire is a personal one, there are several endogenous factors that may have resulted in biased estimates. So, based on the results of the first stage, the third and fourth columns considers the specification issues and uses the predicted value (retired hat) as an independent variable to determine the effect. The findings are particularly important, indicating that women's retirement has a significantly negative effect on their daughter-in-law's employment with and without controls. The magnitude of the coefficient demonstrates that women around the cutoff i.e., retirement age, decreases the probability of daughter-in-law being employed by 4.4 percent.

The size of the coefficient using IV is small as compared to other studies but is still significant for the case of Pakistan since it is done on micro level. However, the estimates contrast with Fenoll's findings where in countries with limited family benefits, a mother's retirement has a beneficial influence on a daughter's employment but at macro level. According to Fenoll (2019) this might be due to daughters receiving support from their mothers with domestic duties and childcare. However, this research depicts a different picture about a nation with poor family benefits. It appears that in Punjab, the retirement of a mother-in-law has a negative influence on daughter-in-law's employment, which might be due to a variety of factors, including the elders' old age or health-related concerns.

**Figure 1:** Regression Discontinuity design showing a negative effect (IV)

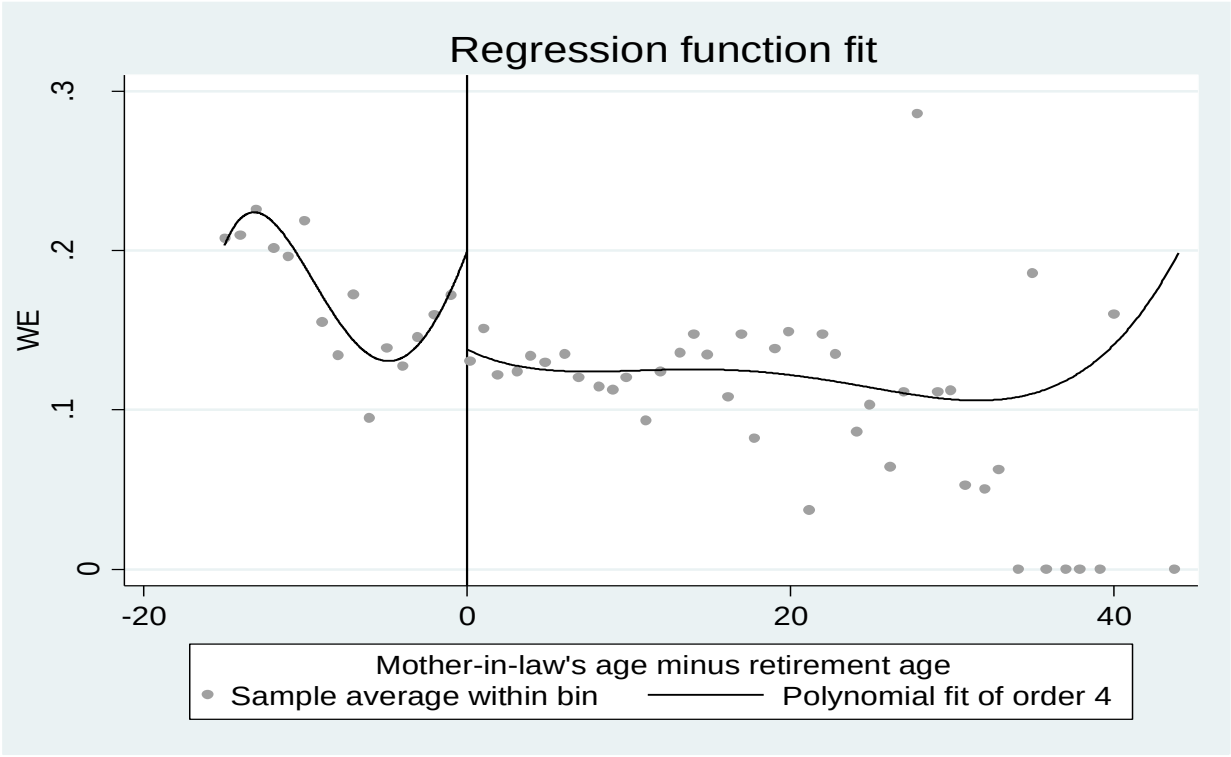


Figure 1 shows the graphical representation of the results obtained through IV in Table 3. The graph depicts the detrimental influence of the mother-in-law's retirement on the employment of her daughter-in-law. It shows a jump downwards on the cutoff level, implying that the retirement of the mother-in-law will limit the career opportunities for the daughter-in-law.

Following the findings of the main regression, further subsample regressions are performed to check for differential effects, as seen in table 4 on next page.

Table 4 IV results: Sub sample results

| VARIABLES<br>Dependent variable: Daughter-in-law employed = 1 | (1)<br>No Education | (2)<br>Educated | (3)<br>Urban | (4)<br>Rural | (5)<br>Lowest wealth | (6)<br>Highest wealth | (7)<br>Male hh head | (8)<br>Female hh head |
|---|---|---|---|---|---|---|---|---|
| Retired | -0.0566*** | -0.0370** | -0.0313* | -0.0483*** | -0.0506*** | -0.0328* | -0.0496*** | -0.00265 |
| | (0.0165) | (0.0173) | (0.0187) | (0.0142) | (0.0154) | (0.0178) | (0.0140) | (0.0251) |
| Constant | 0.245*** | 0.253*** | 0.240*** | 0.286*** | 0.254*** | 0.154*** | 0.238*** | 0.280** |
| | (0.0318) | (0.0573) | (0.0362) | (0.0191) | (0.0332) | (0.0423) | (0.0250) | (0.133) |
| Equality test | $p$ = 0.0002 | | $p$ = 0.0000 | | $p$ = 0.0005 | | $p$ = 0.0000 | |
| Mother in law's characteristics | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Daughter in law's characteristics | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 6,343 | 4,129 | 3,536 | 6,933 | 6,132 | 4,337 | 9,131 | 1,338 |
| R-squared | 0.059 | 0.023 | 0.040 | 0.045 | 0.046 | 0.024 | 0.037 | 0.085 |
| F-stat | 176.85 | 91.27 | 87.81 | 176.66 | 183.29 | 99.11 | 226.84 | 39.32 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: IV used is RE which is mother-in-law's age minus country's specific retirement age (55 years). Mother-in-law's characteristics include mother's age, age squared and education in years. Daughter-in-law's characteristics comprises of her age, age squared, education in years, marital status, number of children and the age of youngest child. All 36 districts and wealth quintiles have been controlled for along with area dummy. In subsamples, education vs no education omitted variable (education in years), Urban vs rural omitted variable (urban dummy), lowest vs highest wealth quintile omitted variable (wealth quintiles) and male vs female household head omitted variable (Household head's gender). Standard errors are clustered at the mother-in-law's age. *RE is a strong instrument in all subsample categories, as evidenced by the fact that F-stat is more than 10.

Although the impact is significant in all subcategories, it is most pronounced among those who reside in rural areas (4.8 % vs 3.3%), have no education (5.7% as compared to 3.7%), fall into the lowest income quintile (5.1% as compared to 3.3%), and have a male household head (5% as compared to 0.2%). These results suggests that females who are more limited in terms of schooling and wealth are likely to have lower job prospects and having a male household head relives them from the obligation to earn for house and concentrate more on their household chores. It can be inferred from the p-values of 0.0002, 0.0000, 0.0005 and 0.0000 that all four subsamples are

"statistically significantly different" from each other.

Table 5 IV results: Daughter-in-law's labor market status (Total Effect)

| VARIABLES<br>Dependent variable:<br>Daughter-in-law employed =1 | (1)<br>Full-time | (2)<br>Self-Employment | (3)<br>Unemployed | (4)<br>Homemaker |
|---|---|---|---|---|
| Retired | -0.0245** | -0.0549*** | -0.00303 | 0.298*** |
| | (0.0119) | (0.00930) | (0.00204) | (0.0336) |
| Constant | 0.201*** | 0.0569*** | 0.00243 | 0.395*** |
| | (0.0236) | (0.0138) | (0.00449) | (0.0575) |
| Mother in law's characteristics | Yes | Yes | Yes | Yes |
| Daughter in law's characteristics | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes |
| Observations | 10,469 | 10,471 | 10,469 | 10,469 |
| R-squared | 0.032 | 0.022 | 0.012 | 0.115 |
| F-stat | 257.39 | 257.39 | 257.39 | 257.39 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: IV used is RE which is mother-in-law's age minus country's specific retirement age (55 years). Mothers-in-law of age 40 above and daughters-in-law of age 15-39 have been used as a sample. Mother-in-law's characteristics include mother's age, age squared and education in years. Daughter-in-law's characteristics comprises of her age, age squared, education in years, marital status, number of children and the age of youngest child. All 36 districts and wealth quintiles have been controlled for along with area dummy. Standard errors are clustered at the mother-in-law's age. *RE is a strong instrument in all employment status categories, as evidenced by the fact that F-stat is more than 10.

Further, this study explores all the labor market dimensions. It classifies daughter-in-law's job status as full-time employees, self-employed, unemployed, or homemakers as it can be seen in table 5. A significant shift from full-time work and self-employment to homemaker can be seen, if they have a retired mother-in-law residing in the house. This emphasizes the fact that family pressures are essentially resulting in lower female labor force involvement in all labor market dimensions. However, the transition from self-employment is unclear because it is not known if these women are leaving self-employment to work full-time or leaving jobs to become housewives. Hence, the research examines each of these labor market statuses based on the subsampling to get

a better understanding of the effect of women's retirement on daughter-in-law's work and employment status.

Table 6 IV results: Full-Time employment (Disaggregated Effect)

| VARIABLES Dependent variable: Full-time employment =1 | (1) No Education | (2) Educated | (3) Urban | (4) Rural | (5) Lowest wealth | (6) Highest wealth | (7) Male hh head | (8) Female hh head |
|---|---|---|---|---|---|---|---|---|
| Retired | -0.0378*** | -0.0187 | -0.0279 | -0.0229* | -0.0285* | -0.0194 | -0.0225* | -0.0290 |
| | (0.0143) | (0.0168) | (0.0180) | (0.0133) | (0.0151) | (0.0187) | (0.0122) | (0.0248) |
| Constant | 0.193*** | 0.177*** | 0.198*** | 0.209*** | 0.203*** | 0.0876** | 0.191*** | 0.176 |
| | (0.0275) | (0.0532) | (0.0366) | (0.0188) | (0.0288) | (0.0433) | (0.0208) | (0.111) |
| Equality test | $p$ = 0.0082 | | $p$ = 0.0010 | | $p$ = 0.0232 | | $p$ = 0.0001 | |
| Mother in law's characteristics | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Daughter in law's characteristics | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 6,343 | 4,129 | 3,536 | 6,933 | 6,132 | 4,337 | 9,131 | 1,338 |
| R-squared | 0.054 | 0.021 | 0.039 | 0.040 | 0.041 | 0.024 | 0.032 | 0.075 |
| F-stat | 176.85 | 91.27 | 87.81 | 176.66 | 183.29 | 99.11 | 226.84 | 39.32 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: IV used is RE which is mother-in-law's age minus country's specific retirement age (55 years). Mothers-in-law of age 40 above and daughters-in-law of age 15-39 have been used as a sample. Full-time employment is a dummy variable. Mother-in-law's characteristics include mother's age, age squared and education in years. Daughter-in-law's characteristics comprises of her age, age squared, education in years, marital status, number of children and the age of youngest child. All 36 districts and wealth quintiles have been controlled for along with area dummy. In subsamples, education vs no education omitted variable (education in years), Urban vs rural omitted variable (urban dummy), lowest vs highest wealth quintile omitted variable (wealth quintiles) and male vs female household head omitted variable (Household head's gender). Standard errors are clustered at the mother-in-law's age. *RE is a strong instrument in all subsample categories, as evidenced by the fact that F-stat is more than 10.

In Table 6, full-time employment is used as the dependent variable rather than overall employment and the effect of women's retirement on their full-time working daughters-in-law is assessed. According to the findings, the impact on full-time jobs is solely determined by schooling and wealth. Individuals of little qualifications and in the lowest income quintile are the most

impacted. The effect is slightly more for people who are residing in rural areas. While the coefficient for male household heads is lower than that for female household heads, it is still significant at 10%. These results suggest that more constrained females leave their employment. And having a male household head has a certain advantage to it such that females do not have the responsibility to earn and so when their mothers-in-law retire, they also leave their full-time work to care for household members as well as household chores.

Table 7 IV results: Self-Employed

| VARIABLES<br>Dependent variable: Self-employment =1 | (1)<br>No Education | (2)<br>Educated | (3)<br>Urban | (4)<br>Rural | (5)<br>Lowest wealth | (6)<br>Highest wealth | (7)<br>Male hh-head | (8)<br>Female hh-head |
|---|---|---|---|---|---|---|---|---|
| Retired | -0.0417*** | -0.0912*** | -0.0828*** | -0.0433*** | -0.0294*** | -0.103*** | -0.0507*** | -0.0907*** |
| | (0.00759) | (0.0168) | (0.0183) | (0.00890) | (0.00819) | (0.0198) | (0.00923) | (0.0263) |
| Constant | 0.0543*** | 0.0586** | 0.113*** | 0.0689*** | 0.0597*** | 0.0881*** | 0.0374*** | 0.0392 |
| | (0.0163) | (0.0241) | (0.0288) | (0.0124) | (0.0161) | (0.0224) | (0.0125) | (0.0310) |
| Equality test | $p$ = 0.0000 | | $p$ = 0.0000 | | $p$ = 0.0000 | | $p$ = 0.0000 | |
| Mother in law's characteristic | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Daughter in law's characteristic | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 6,343 | 4,131 | 3,538 | 6,933 | 6,132 | 4,339 | 9,132 | 1,339 |
| R-squared | 0.018 | 0.038 | 0.040 | 0.020 | 0.019 | 0.039 | 0.021 | 0.052 |
| F-stat | 176.85 | 91.27 | 87.81 | 176.66 | 183.29 | 99.11 | 226.84 | 39.32 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: IV used is RE which is mother-in-law's age minus country's specific retirement age (55 years). Mothers-in-law of age 40 above and daughters-in-law of age 15-39 have been used as a sample. Self-employment is a dummy variable. Mother-in-law's characteristics include mother's age, age squared and education in years. Daughter-in-law's characteristics comprises of her age, age squared, education in years, marital status, number of children and the age of youngest child. All 36 districts and wealth quintiles have been controlled for along with area dummy. In subsamples, education vs no education omitted variable (education in years), Urban vs rural omitted variable (urban dummy), lowest vs highest wealth quintile omitted variable (wealth quintiles) and male vs female household head omitted variable (Household head's gender). Standard errors are clustered at the mother-in-law's age. *RE is a strong instrument in all subsample categories, as evidenced by the fact that F-stat is more than 10.

Table 7 displays the results of the impact when self-employment is used as the dependent variable. It comes out to be highly significant in general, as it causes daughters-in-law to leave the labor market when their mother-in-law is retired. However, the figures are striking and distinct from those of full-time employees. It implies that females who are better off in terms of schooling, wealth, and location are more affected in terms of their employment, regardless of whether their mother-in-law is retired or approaching retirement age. These findings contradict the popular belief that self-employment is the most versatile form of work in terms of time and freedom as more females are opting out of labor force owing to mother-in-law's retirement. Another interesting finding in this table is that daughters-in-law whose household head is a female are less likely to work than those whose household head is a male.

This can be explained as a cultural norm and generational barrier in which, as the mother-in-law retires, the daughter-in-law's responsibilities towards the home increase as well as women in developing countries such as Pakistan generally expect their daughters-in-law to be present in the household.

Table 8 IV results: Unemployed

| VARIABLES<br>Dependent variable: Unemployed = 1 | (1)<br>No Education | (2)<br>Educated | (3)<br>Urban | (4)<br>Rural | (5)<br>Lowest wealth | (6)<br>Highest wealth | (7)<br>Male hh head | (8)<br>Female hh head |
|---|---|---|---|---|---|---|---|---|
| Retired | 0.000838 | -0.00660 | -0.00644 | -0.00206 | -0.000263 | -0.00815* | -0.00219 | -0.0109* |
| | (0.00160) | (0.00507) | (0.00446) | (0.00203) | (0.00178) | (0.00493) | (0.00224) | (0.00660) |
| Constant | 0.00196 | 0.0114 | 0.00275 | 0.00387 | 0.00289 | -0.00233 | 0.00496 | 0.000709 |
| | (0.00536) | (0.0112) | (0.00254) | (0.00331) | (0.00464) | (0.00588) | (0.00416) | (0.00778) |
| Equality test | $p$ = 0.3554 | | $p$ = 0.8042 | | $p$ = 0.2510 | | $p$ = 0.5182 | |
| Mother in law's characteristics | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Daughter in law's characteristics | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 6,343 | 4,129 | 3,536 | 6,933 | 6,132 | 4,337 | 9,131 | 1,338 |
| R-squared | 0.011 | 0.017 | 0.022 | 0.015 | 0.010 | 0.018 | 0.014 | 0.028 |
| F-stat | 176.85 | 91.27 | 87.81 | 176.66 | 183.29 | 99.11 | 226.84 | 39.32 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: IV used is RE which is mother-in-law's age minus country's specific retirement age (55 years). Mothers-in-law of age 40 above and daughters-in-law of age 15-39 have been used as a sample. Unemployed is a dummy variable. Mother-in-law's characteristics include mother's age, age squared and education in years. Daughter-in-law's characteristics comprises of her age, age squared, education in years, marital status, number of children and the age of youngest child. All 36 districts and wealth quintiles have been controlled for along with area dummy. In subsamples, education vs no education omitted variable (education in years), Urban vs rural omitted variable (urban dummy), lowest vs highest wealth quintile omitted variable (wealth quintiles) and male vs female household head omitted variable (Household head's gender). Standard errors are clustered at the mother-in-law's age. *RE is a strong instrument in all subsample categories, as evidenced by the fact that F-stat is more than 10.

Females who lie in the category of unemployed are those who are actively searching for work. With unemployment as the main dependent variable in Table 8, only females in the highest income quintile and residing in a home where the household head is female are affected by the mother-in-law's retirement. The variable's significance at 10 percent suggests that females' high wealth allows them to avoid looking for work, and they can then fall into the category of homemakers. Along these lines, with a female household head, daughters avoid searching for work, which could draw attention on the burdens experienced by females in the household, causing

them to forego any career opportunities. However, the p values of 0.2510 and 0.5182 suggest that the subsamples for unemployed females are not "statistically significantly different" from one another since the samples' p-values are more than 0.05. Hence, the findings of this table cannot be considered representative of unemployed Pakistani women.

Table 9 IV results: Homemakers

| VARIABLES<br>Dependent variable:<br>Homemaker = 1 | (1)<br>No Education | (2)<br>Educated | (3)<br>Urban | (4)<br>Rural | (5)<br>Lowest wealth | (6)<br>Highest wealth | (7)<br>Male hh head | (8)<br>Female hh head |
|---|---|---|---|---|---|---|---|---|
| Retired | 0.320*** | 0.322*** | 0.229*** | 0.324*** | 0.327*** | 0.243*** | 0.304*** | 0.252*** |
| | (0.0310) | (0.0460) | (0.0409) | (0.0326) | (0.0317) | (0.0391) | (0.0354) | (0.0434) |
| Constant | 0.413*** | 0.341*** | 0.272*** | 0.213*** | 0.357*** | 0.453*** | 0.538*** | 0.272** |
| | (0.0598) | (0.0950) | (0.0685) | (0.0484) | (0.0599) | (0.0774) | (0.0556) | (0.137) |
| Equality test | $p$ = 0.0000 | | $p$ = 0.0000 | | $p$ = 0.0000 | | $p$ = 0.0000 | |
| Mother in law's characteristics | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Daughter in law's characteristics | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 6,343 | 4,129 | 3,536 | 6,933 | 6,132 | 4,337 | 9,131 | 1,338 |
| R-squared | 0.126 | 0.106 | 0.131 | 0.133 | 0.138 | 0.110 | 0.115 | 0.111 |
| F-stat | 176.85 | 91.27 | 87.81 | 176.66 | 183.29 | 99.11 | 226.84 | 39.32 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: IV used is RE which is mother-in-law's age minus country's specific retirement age (55 years). Mothers-in-law of age 40 above and daughters-in-law of age 15-39 have been used as a sample. Homemaker is a dummy variable. Mother-in-law's characteristics include mother's age, age squared and education in years. Daughter-in-law's characteristics comprises of her age, age squared, education in years, marital status, number of children and the age of youngest child. All 36 districts and wealth quintiles have been controlled for along with area dummy. In subsamples, education vs no education omitted variable (education in years), Urban vs rural omitted variable (urban dummy), lowest vs highest wealth quintile omitted variable (wealth quintiles) and male vs female household head omitted variable (Household head's gender). Standard errors are clustered at the mother-in-law's age. *RE is a strong instrument in all subsample categories, as evidenced by the fact that F-stat is more than 10.

Lastly, Table 9 exhibits the findings when homemaker is used as the main independent variable. The probability of being a homemaker is positive and highly significant if a retired

mother-in-law resides in the house. The findings are symmetric to the previous results, indicating that the household constraints that females encounter are the factor that raises the magnitude of becoming a housewife and thus resulting in lower female labor force participation.

# 6. Conclusion

Considering Pakistan's multigenerational household composition and the obstacles that females face in entering labor supply, this paper investigates the hypothesis that mother-in-law's retirement has a significant impact on daughter-in-law's employment. Extensive anecdotal research done on developed countries has shown that mothers assist their working daughters by transferring time or resources, thereby easing their daughter's transition into the labor force. (Cardia and Ng, 2003; Dimova and Wolff, 2011). However, the same cannot be said about developing countries as the household dynamics and household constraints vary from those of the developed world.

The study employs Fuzzy RDD to assess the effects of women's retirement, which has received little attention in Pakistan over the years. RE is used as the exogenous shifter in the regressions to remove any specification issues. The results indicates that a mother-in-law's retirement has a significantly negative effect on her daughter-in-law's employment, culminating in a decline in female labor force participation. These results vary from previous research, which found that in countries with insufficient family policy, the family serves as a replacement for fulfilling domestic obligations, giving daughters more time and space to concentrate on their careers. As a result, the mother's retirement has a significantly positive effect on the employment of their daughter (Fenoll, 2019).

Furthermore, the findings of the study indicate that, across subsamples, daughters-in-law with less opportunities in terms of education and income are most impacted if their mother-in-law is retired. Though having a male household head relieves them of the duty to earn, it instead drives them away from future job prospects resulting in lower female labor force participation.

When the disaggregated effect of daughter-in-law's “labor market status” was examined, several startling findings emerged. For starters, self-employed females were more likely than full-time workers to abandon the labor force. Second, those females who were initially searching for work stopped looking after their mother-in-law became retirement eligible. Such outcomes can be explained by the fact as a mother-in-law retires, a daughter-in-law's obligations towards home increases, forcing her to choose between working outside or staying at home to carry-out her responsibilities. These figures are also consistent with Ettner's (1995) study, who used the term "sandwich generation" to emphasize the burden that daughters-in-law must carry out by caring for older members as well as children in the family, resulting in a negative impact on their employment. Another reason for leaving the labor force is addressed in Fenoll (2018)'s paper, which argues that a mother's retirement has a positive effect on her daughter's fertility, forcing her to take maternity leaves or, in some cases, leave the work force entirely if they do not get maternity leave. The same is true for Pakistan, where there are inadequate maternity policies, forcing women to abandon their full-time jobs.

Because of cultural disparities, the conclusions of this research vary from those of the developed nations. Daughters-in-law are supposed to play a traditional part which consists of them fulfilling household obligations. According to Salway (2007), cultural norms in Pakistan limit married women's employment opportunities, and the participation of extended family members strengthens this code of conduct. Thus, based on the preceding discussion, it can be

inferred that extended family members, especially the mother-in-law, can be regarded as a barrier to a daughter-in-law's employment in the case of Pakistan.

These insights are helpful for policymakers because the findings stress upon the need for an affordable formal child-care institution for working women, as well as other health care programs for senior citizens, as these two categories are the primary reasons that females would leave the labor force to care for them. However, these two will not be enough to achieve the target of raising female labor force participation. Overall, our results implies that pension plans and policies promoting female labor market should be planned in tandem.

This research is limited in scope since it only looks at the impact of women's retirement on their daughters-in-laws' employment. More research is needed to explain the mechanisms/channels by which women's retirement impacts the employment opportunities of their daughters-in-law. This will make it easier to identify the problem and create the appropriate policy to address it. Finally, when looking at the research’s analysis, bear in mind that the results are only focused on one province of Pakistan, namely Punjab. The results for other provinces of Pakistan may vary.

# 7. Robustness Checks

Table 10 IV results: Robustness

| VARIABLES<br>Daughter employed = 1 | (1)<br>IV 50 years | (2)<br>IV 55 years | (3)<br>IV 60 years |
|---|---|---|---|
| Retired | -0.0412*** | -0.0436*** | -0.0458*** |
| | (0.0113) | (0.0126) | (0.0134) |
| Constant | 0.264*** | 0.264*** | 0.264*** |
| | (0.0266) | (0.0266) | (0.0266) |
| Mother in law's characteristics | Yes | Yes | Yes |
| Daughter in law's characteristics | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes |
| Observations | 10,469 | 10,469 | 10,469 |
| R-squared | 0.039 | 0.039 | 0.039 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: IV used is RE which is mother-in-law's age minus country's specific retirement age with 3 different cutoff levels (50 years, 55 years, and 60 years). Mother-in-law's characteristics include mother's age, age squared and education in years. Daughter-in-law's characteristics comprises of her age, age squared, education in years, marital status, number of children and the age of youngest child. All 36 districts and wealth quintiles have been controlled for along with area dummy. In subsamples, education vs no education omitted variable (education in years), Urban vs rural omitted variable (urban dummy), lowest vs highest wealth quintile omitted variable (wealth quintiles) and male vs female household head omitted variable (Household head's gender). Standard errors are clustered at the mother-in-law's age.

As a robustness analysis, the study uses a different cutoff to see if the effects were significant and in the same direction. Instead of using only 55-year retirement age as our cutoff, it uses 50-year-old and 60-year-old as well as new cutoffs to examine the effects. The findings were consistent with the previous findings, suggesting that even though mothers-in-law retire earlier than their actual retirement age or later than the retirement age, they still have a negative effect on their daughters-in-law' careers. These results reinforce the notion of mother-in-law being elderly and in need of care for daughters-in-law to abandon the labor pool as well as the idea that cultural barriers play a significant role in lowering female labor force participation.

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# Appendix

Regressions with Controls

**Table 2: First Stage results**

| VARIABLES<br>Dependent variable:<br>Retired = 1 | (Model 1)<br>IV | (Model 2)<br>IV |
|---|---|---|
| RE | 0.0317*** | 0.0307*** |
| | (0.000268) | (0.000311) |
| medu_yr | | -0.00296** |
| | | (0.00129) |
| dedu_yr | | 0.00248*** |
| | | (0.000860) |
| dCEB | | 0.00600*** |
| | | (0.00174) |
| youngest_child | | 0.00243** |
| | | (0.00119) |
| Bahawalpur | | -0.0647*** |
| | | (0.0229) |
| B_Nagar | | 0.0223 |
| | | (0.0269) |
| RY_Khan | | -0.00186 |
| | | (0.0240) |
| DG_Khan | | 0.0407 |
| | | (0.0285) |
| Layyah | | 0.0235 |
| | | (0.0308) |
| M_Garh | | -0.0296 |
| | | (0.0263) |
| Rajanpur | | 0.0384 |
| | | (0.0292) |
| Faisalabad | | -0.00813 |
| | | (0.0222) |
| Chiniot | | -0.0168 |
| | | (0.0267) |
| Jhang | | -0.0351 |
| | | (0.0247) |
| TT_Singh | | 0.00547 |
| | | (0.0272) |
| Gujranwala | | -0.0441* |
| | | (0.0242) |

| | |
|---|---|
| Gujrat | 0.0120 |
| | (0.0237) |
| Hafizabad | -0.0118 |
| | (0.0335) |
| M_Bahaudin | -0.0103 |
| | (0.0278) |
| Narowal | 0.00236 |
| | (0.0278) |
| Sialkot | -0.0272 |
| | (0.0261) |
| Lahore | -0.0314 |
| | (0.0243) |
| Kasur | 0.0207 |
| | (0.0255) |
| N_Sahib | 0.0346 |
| | (0.0298) |
| Sheikhupura | -0.0686*** |
| | (0.0262) |
| Multan | -0.0105 |
| | (0.0243) |
| Khanewal | -0.0350 |
| | (0.0266) |
| Lodhran | -0.0491* |
| | (0.0296) |
| Vehari | -0.0164 |
| | (0.0254) |
| Sahiwal | -0.0272 |
| | (0.0251) |
| Pakpattan | 0.0231 |
| | (0.0280) |
| Okara | 0.0148 |
| | (0.0278) |
| Rawalpindi | 0.0465* |
| | (0.0263) |
| Attock | 0.00716 |
| | (0.0257) |
| Chakwal | -0.0149 |
| | (0.0264) |
| Jhelum | -0.0469* |
| | (0.0269) |
| Sargodha | -0.0567** |
| | (0.0240) |
| Bhakkar | 0.0190 |
| | (0.0272) |
| Khushab | -0.0322 |
| | (0.0271) |

| | | |
|---|---|---|
| wealth2 | | 0.00327 |
| | | (0.0104) |
| wealth3 | | 0.0123 |
| | | (0.0110) |
| wealth4 | | 0.0121 |
| | | (0.0123) |
| wealth5 | | 0.0453*** |
| | | (0.0149) |
| Urban | | 0.00401 |
| | | (0.00774) |
| hhgender | | -0.00851 |
| | | (0.00974) |
| hhedu_yr | | 0.000528 |
| | | (0.00102) |
| Constant | 0.541*** | 0.515*** |
| | (0.00312) | (0.0217) |
| Observations | 12,626 | 10,606 |
| R-squared | 0.524 | 0.534 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

**Table 2b: Reduced Form Results**

| VARIABLES<br>Daughter employed = 1 | (1)<br>Reduced form | (2)<br>Reduced form |
|---|---|---|
| RE | -0.00170*** | -0.00133*** |
| | (0.000293) | (0.000337) |
| medu_yr | | 0.00467*** |
| | | (0.00139) |
| dedu_yr | | 0.000153 |
| | | (0.000931) |
| dCEB | | -0.000657 |
| | | (0.00189) |
| youngest_child | | 0.00963*** |
| | | (0.00129) |
| Bahawalpur | | 0.0395 |
| | | (0.0248) |
| B_Nagar | | -0.0390 |
| | | (0.0292) |
| RY_Khan | | -0.0418 |
| | | (0.0260) |

| | |
|---|---|
| DG_Khan | -0.0445 |
| | (0.0307) |
| Layyah | -0.0251 |
| | (0.0332) |
| M_Garh | 0.0295 |
| | (0.0284) |
| Rajanpur | 0.0269 |
| | (0.0315) |
| Faisalabad | 0.0318 |
| | (0.0240) |
| Chiniot | 0.0124 |
| | (0.0290) |
| Jhang | -0.00946 |
| | (0.0267) |
| TT_Singh | 0.0175 |
| | (0.0293) |
| Gujranwala | -0.0191 |
| | (0.0263) |
| Gujrat | 0.0187 |
| | (0.0256) |
| Hafizabad | -0.0403 |
| | (0.0361) |
| M_Bahaudin | -0.00939 |
| | (0.0300) |
| Narowal | -0.0521* |
| | (0.0302) |
| Sialkot | -0.0295 |
| | (0.0283) |
| Lahore | -0.0275 |
| | (0.0263) |
| Kasur | -0.0343 |
| | (0.0275) |
| N_Sahib | -0.0521 |
| | (0.0322) |
| Sheikhupura | 0.0200 |
| | (0.0283) |
| Multan | 0.0797*** |
| | (0.0264) |
| Khanewal | 0.0851*** |
| | (0.0291) |
| Lodhran | 0.142*** |
| | (0.0321) |
| Vehari | 0.0757*** |
| | (0.0276) |
| Sahiwal | -0.0464* |
| | (0.0272) |

| | | |
|---|---|---|
| Pakpattan | | -0.0668** |
| | | (0.0304) |
| Okara | | -0.0269 |
| | | (0.0302) |
| Rawalpindi | | -0.000666 |
| | | (0.0285) |
| Attock | | -0.0117 |
| | | (0.0278) |
| Chakwal | | -0.0205 |
| | | (0.0286) |
| Jhelum | | -0.0550* |
| | | (0.0291) |
| Sargodha | | -0.00151 |
| | | (0.0260) |
| Bhakkar | | -0.0363 |
| | | (0.0293) |
| Khushab | | 0.00438 |
| | | (0.0293) |
| wealth2 | | -0.0730*** |
| | | (0.0112) |
| wealth3 | | -0.0916*** |
| | | (0.0119) |
| wealth4 | | -0.107*** |
| | | (0.0133) |
| wealth5 | | -0.108*** |
| | | (0.0161) |
| Urban | | -0.00927 |
| | | (0.00840) |
| hhgender | | -0.0338*** |
| | | (0.0106) |
| hhedu_yr | | -0.00202* |
| | | (0.00110) |
| Constant | 0.146*** | 0.241*** |
| | (0.00341) | (0.0235) |
| Observations | 12,441 | 10,469 |
| R-squared | 0.003 | 0.040 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

**Table 3: OLS and IV results**

| VARIABLES | (Model 1) OLS | (Model 2) OLS | (Model 1) IV | (Model 2) IV |
|---|---|---|---|---|
| Retired | -0.0390*** | 0.00591 | -0.0537*** | -0.0436*** |
| | (0.00926) | (0.0159) | (0.0120) | (0.0126) |
| HL6 | | -0.0124*** | | |
| | | (0.00384) | | |
| agesq | | 8.39e-05*** | | |
| | | (2.82e-05) | | |
| medu_yr | | 0.00406*** | | 0.00453*** |
| | | (0.00121) | | (0.00122) |
| dHL6 | | 0.00185 | | |
| | | (0.00456) | | |
| dagesq | | 5.39e-05 | | |
| | | (8.03e-05) | | |
| dedu_yr | | 0.000147 | | 0.000268 |
| | | (0.00110) | | (0.00109) |
| dCEB | | -0.00660*** | | -0.000397 |
| | | (0.00233) | | (0.00209) |
| youngest_child | | 0.00620*** | | 0.00973*** |
| | | (0.00142) | | (0.00146) |
| Bahawalpur | | 0.0389 | | 0.0368 |
| | | (0.0279) | | (0.0278) |
| B_Nagar | | -0.0368 | | -0.0380 |
| | | (0.0289) | | (0.0285) |
| RY_Khan | | -0.0416 | | -0.0416 |
| | | (0.0286) | | (0.0279) |
| DG_Khan | | -0.0368 | | -0.0426 |
| | | (0.0402) | | (0.0404) |
| Layyah | | -0.0243 | | -0.0240 |
| | | (0.0370) | | (0.0358) |
| M_Garh | | 0.0306 | | 0.0284 |
| | | (0.0334) | | (0.0334) |
| Rajanpur | | 0.0306 | | 0.0287 |
| | | (0.0437) | | (0.0433) |
| Faisalabad | | 0.0322 | | 0.0315 |
| | | (0.0279) | | (0.0278) |
| Chiniot | | 0.0137 | | 0.0117 |
| | | (0.0306) | | (0.0304) |
| Jhang | | -0.00770 | | -0.0109 |
| | | (0.0301) | | (0.0298) |
| TT_Singh | | 0.0187 | | 0.0178 |
| | | (0.0396) | | (0.0395) |
| Gujranwala | | -0.0161 | | -0.0207 |

| | | |
|---|---|---|
| | (0.0255) | (0.0249) |
| Gujrat | 0.0211 | 0.0193 |
| | (0.0238) | (0.0234) |
| Hafizabad | -0.0347 | -0.0406 |
| | (0.0271) | (0.0268) |
| M_Bahaudin | -0.00836 | -0.00971 |
| | (0.0352) | (0.0351) |
| Narowal | -0.0500 | -0.0516 |
| | (0.0329) | (0.0330) |
| Sialkot | -0.0274 | -0.0307 |
| | (0.0250) | (0.0245) |
| Lahore | -0.0213 | -0.0287 |
| | (0.0261) | (0.0256) |
| Kasur | -0.0307 | -0.0333 |
| | (0.0290) | (0.0288) |
| N_Sahib | -0.0492 | -0.0503 |
| | (0.0332) | (0.0321) |
| Sheikhupura | 0.0213 | 0.0172 |
| | (0.0376) | (0.0364) |
| Multan | 0.0833** | 0.0795** |
| | (0.0374) | (0.0366) |
| Khanewal | 0.0884** | 0.0837** |
| | (0.0377) | (0.0380) |
| Lodhran | 0.141*** | 0.140*** |
| | (0.0451) | (0.0439) |
| Vehari | 0.0768** | 0.0751** |
| | (0.0331) | (0.0332) |
| Sahiwal | -0.0450* | -0.0474* |
| | (0.0251) | (0.0250) |
| Pakpattan | -0.0654** | -0.0655*** |
| | (0.0254) | (0.0252) |
| Okara | -0.0279 | -0.0262 |
| | (0.0323) | (0.0321) |
| Rawalpindi | 0.00141 | 0.00158 |
| | (0.0362) | (0.0366) |
| Attock | -0.0120 | -0.0112 |
| | (0.0283) | (0.0281) |
| Chakwal | -0.0201 | -0.0212 |
| | (0.0288) | (0.0282) |
| Jhelum | -0.0541* | -0.0568* |
| | (0.0300) | (0.0297) |
| Sargodha | -4.58e-05 | -0.00372 |
| | (0.0278) | (0.0274) |
| Bhakkar | -0.0352 | -0.0354 |
| | (0.0275) | (0.0267) |
| Khushab | 0.00583 | 0.00308 |

| | | | | |
|---|---|---|---|---|
| | | (0.0306) | | (0.0301) |
| wealth2 | | -0.0719*** | | -0.0728*** |
| | | (0.0127) | | (0.0126) |
| wealth3 | | -0.0919*** | | -0.0911*** |
| | | (0.0113) | | (0.0112) |
| wealth4 | | -0.109*** | | -0.106*** |
| | | (0.0131) | | (0.0130) |
| wealth5 | | -0.112*** | | -0.106*** |
| | | (0.0139) | | (0.0140) |
| Urban | | -0.00753 | | -0.00904 |
| | | (0.00705) | | (0.00697) |
| hhgender | | -0.0324*** | | -0.0343*** |
| | | (0.0111) | | (0.0109) |
| hhedu_yr | | -0.00238* | | -0.00200* |
| | | (0.00119) | | (0.00115) |
| Constant | 0.165*** | 0.588*** | 0.175*** | 0.264*** |
| | (0.00885) | (0.132) | (0.0105) | (0.0266) |
| Observations | 12,441 | 10,469 | 12,441 | 10,469 |
| R-squared | 0.003 | 0.044 | 0.002 | 0.039 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

**Table 4: Sub sample results**

| VARIABLES | (1) No Education | (2) Educated | (1) Urban | (2) Rural | (5) Lowest wealth | (6) Highest wealth | (7) Male hh head | (8) Female hh head |
|---|---|---|---|---|---|---|---|---|
| Retired | -0.0566*** | -0.0370** | -0.0313* | -0.0483*** | -0.0506*** | -0.0328* | -0.0496*** | -0.00265 |
| | (0.0165) | (0.0173) | (0.0187) | (0.0142) | (0.0154) | (0.0178) | (0.0140) | (0.0251) |
| dCEB | 0.00257 | -0.00770*** | 0.00549*** | 0.00139 | 0.00133 | -0.00324 | -0.000638 | 0.00466 |
| | (0.00251) | (0.00291) | (0.00173) | (0.00223) | (0.00274) | (0.00296) | (0.00227) | (0.00539) |
| youngest_child | 0.0105*** | 0.00851*** | 0.00315** | -0.00142 | 0.0108*** | 0.00911*** | 0.00798*** | 0.0163*** |
| | (0.00202) | (0.00161) | (0.00135) | (0.00130) | (0.00206) | (0.00177) | (0.00161) | (0.00311) |
| Bahawalpur | 0.0926*** | -0.0674 | -0.00575** | 0.00149 | 0.0645** | -0.0701 | 0.0419 | -0.0710 |
| | (0.0320) | (0.0513) | (0.00264) | (0.00288) | (0.0322) | (0.0514) | (0.0288) | (0.138) |
| B_Nagar | -0.0521 | 0.000906 | 0.00896*** | 0.0102*** | -0.0410 | -0.0405 | -0.0405 | -0.0950 |
| | (0.0321) | (0.0503) | (0.00229) | (0.00171) | (0.0316) | (0.0524) | (0.0271) | (0.147) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| RY_Khan | -0.00577 | -0.117*** | 0.0278 | 0.0493 | -0.0288 | -0.0937* | -0.0394 | -0.142 |
| | (0.0346) | (0.0446) | (0.0421) | (0.0325) | (0.0346) | (0.0487) | (0.0292) | (0.138) |
| DG_Khan | -0.0256 | -0.0678 | 0.00713 | -0.0593* | -0.0395 | -0.0200 | -0.0295 | -0.215 |
| | (0.0435) | (0.0588) | (0.0397) | (0.0346) | (0.0416) | (0.0758) | (0.0415) | (0.153) |
| Layyah | -0.00503 | -0.0446 | -0.00538 | -0.0510 | 0.0172 | -0.153*** | -0.0391 | 0.118 |
| | (0.0404) | (0.0554) | (0.0415) | (0.0355) | (0.0459) | (0.0412) | (0.0351) | (0.168) |
| M_Garh | 0.0298 | 0.0529 | 0.000954 | -0.0575 | 0.0400 | 0.00658 | 0.0311 | -0.0660 |
| | (0.0375) | (0.0711) | (0.0637) | (0.0447) | (0.0385) | (0.0909) | (0.0361) | (0.148) |
| Rajanpur | 0.0501 | -0.0130 | -0.00560 | -0.0308 | 0.0537 | -0.0335 | 0.0258 | 0.000257 |
| | (0.0499) | (0.0646) | (0.0406) | (0.0467) | (0.0491) | (0.0693) | (0.0457) | (0.177) |
| Faisalabad | 0.0861*** | -0.0691* | 0.101* | 0.00484 | 0.0509 | -0.0472 | 0.0273 | -0.0252 |
| | (0.0330) | (0.0417) | (0.0537) | (0.0395) | (0.0363) | (0.0471) | (0.0292) | (0.155) |
| Chiniot | 0.0293 | -0.00410 | -0.0620 | 0.0543 | 0.0274 | -0.0578 | 0.00118 | 0.0629 |
| | (0.0323) | (0.0685) | (0.0432) | (0.0534) | (0.0340) | (0.0618) | (0.0300) | (0.176) |
| Jhang | 0.0188 | -0.0783* | 0.0499 | 0.0297 | 0.0176 | -0.109** | -0.0136 | -0.0439 |
| | (0.0319) | (0.0445) | (0.0327) | (0.0364) | (0.0318) | (0.0485) | (0.0306) | (0.152) |
| TT_Singh | 0.0748 | -0.0801* | 0.0130 | 0.0141 | 0.0541 | -0.104** | 0.0138 | -0.00946 |
| | (0.0506) | (0.0456) | (0.0477) | (0.0352) | (0.0531) | (0.0457) | (0.0395) | (0.209) |
| Gujranwala | -0.00559 | -0.0690 | -0.0266 | -0.00313 | -0.0646* | -0.0556 | -0.0179 | -0.109 |
| | (0.0316) | (0.0453) | (0.0467) | (0.0363) | (0.0360) | (0.0423) | (0.0271) | (0.144) |
| Gujrat | 0.0603** | -0.0516 | 0.0331 | 0.0176 | -0.0163 | -0.0239 | 0.0214 | -0.0621 |
| | (0.0296) | (0.0355) | (0.0541) | (0.0478) | (0.0328) | (0.0471) | (0.0265) | (0.151) |
| Hafizabad | -0.0517 | -0.0613 | 0.00651 | -0.0355 | -0.0796* | -0.0544 | -0.0464* | -0.0875 |
| | (0.0354) | (0.0472) | (0.0372) | (0.0368) | (0.0406) | (0.0543) | (0.0276) | (0.163) |
| M_Bahaudin | 0.0125 | -0.0613 | 0.00142 | 0.0254 | -0.0537 | -0.0277 | -0.00293 | -0.117 |
| | (0.0388) | (0.0535) | (0.0394) | (0.0290) | (0.0336) | (0.0559) | (0.0392) | (0.150) |
| Narowal | -0.0491 | -0.0731 | -0.0132 | -0.0523 | -0.0688* | -0.0890* | -0.0349 | -0.195 |
| | (0.0353) | (0.0494) | (0.0433) | (0.0340) | (0.0404) | (0.0524) | (0.0341) | (0.145) |
| Sialkot | 0.0173 | -0.105*** | 0.0214 | -0.0203 | -0.0472 | -0.0812* | -0.0331 | -0.102 |
| | (0.0371) | (0.0364) | (0.0451) | (0.0436) | (0.0430) | (0.0460) | (0.0266) | (0.149) |
| Lahore | 0.0411 | -0.113*** | -0.0633 | -0.0446 | -0.0667 | -0.0755* | -0.0159 | -0.146 |
| | (0.0347) | (0.0359) | (0.0430) | (0.0437) | (0.0533) | (0.0414) | (0.0234) | (0.147) |
| Kasur | 0.00858 | -0.118*** | -0.0617** | -0.0120 | -0.0513 | -0.0670 | -0.0199 | -0.242* |
| | (0.0343) | (0.0372) | (0.0297) | (0.0351) | (0.0332) | (0.0444) | (0.0309) | (0.141) |
| N_Sahib | -0.0306 | -0.0965** | 0.00325 | -0.0577 | -0.0887*** | -0.0763 | -0.0602** | -0.0693 |
| | (0.0362) | (0.0492) | (0.0342) | (0.0406) | (0.0311) | (0.0551) | (0.0300) | (0.172) |
| Sheikhupura | 0.0673 | -0.0670* | 0.0132 | -0.0595* | 0.000127 | -0.0321 | 0.0172 | -0.0655 |
| | (0.0522) | (0.0353) | (0.0394) | (0.0332) | (0.0460) | (0.0438) | (0.0367) | (0.148) |
| Multan | 0.133*** | -0.0393 | -0.0232 | -0.0556 | 0.113** | -0.0194 | 0.0782** | 0.00108 |
| | (0.0473) | (0.0451) | (0.0473) | (0.0374) | (0.0480) | (0.0494) | (0.0378) | (0.156) |
| Khanewal | 0.143*** | -0.0522 | 0.0910* | -0.0272 | 0.107** | -0.00802 | 0.0746** | 0.106 |
| | (0.0425) | (0.0578) | (0.0508) | (0.0364) | (0.0460) | (0.0512) | (0.0375) | (0.132) |
| Lodhran | 0.208*** | -0.00993 | 0.0856** | 0.0838* | 0.148*** | 0.0461 | 0.147*** | -0.0564 |
| | (0.0560) | (0.0663) | (0.0414) | (0.0483) | (0.0526) | (0.0650) | (0.0459) | (0.203) |
| Vehari | 0.146*** | -0.0833* | 0.0611 | 0.0912* | 0.0990** | -0.0480 | 0.0689** | 0.0882 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (0.0431) | (0.0439) | (0.0457) | (0.0479) | (0.0407) | (0.0596) | (0.0336) | (0.185) |
| Sahiwal | -0.00546 | -0.112*** | 0.169*** | 0.131** | -0.0442 | -0.0981** | -0.0472** | -0.116 |
| | (0.0293) | (0.0356) | (0.0645) | (0.0520) | (0.0358) | (0.0427) | (0.0239) | (0.149) |
| Pakpattan | -0.0377 | -0.122*** | 0.0236 | 0.0938** | -0.0837** | -0.0953** | -0.0576** | -0.221* |
| | (0.0281) | (0.0369) | (0.0521) | (0.0418) | (0.0341) | (0.0449) | (0.0243) | (0.127) |
| Okara | 0.0382 | -0.122*** | -0.00402 | -0.0595** | -0.0152 | -0.0931* | -0.0166 | -0.171 |
| | (0.0421) | (0.0368) | (0.0431) | (0.0265) | (0.0405) | (0.0524) | (0.0334) | (0.145) |
| Rawalpindi | 0.00213 | -0.0392 | -0.0519 | -0.0661** | -0.0309 | -0.0267 | -0.00943 | -0.0338 |
| | (0.0366) | (0.0539) | (0.0413) | (0.0312) | (0.0482) | (0.0534) | (0.0311) | (0.157) |
| Attock | 0.0226 | -0.0750* | -0.0191 | -0.0193 | -0.0175 | -0.0584 | -0.0166 | -0.0617 |
| | (0.0331) | (0.0443) | (0.0526) | (0.0415) | (0.0363) | (0.0508) | (0.0303) | (0.147) |
| Chakwal | -0.00393 | -0.0680 | 0.00153 | 0.0126 | -0.0556 | -0.0233 | -0.0197 | -0.111 |
| | (0.0378) | (0.0464) | (0.0416) | (0.0444) | (0.0343) | (0.0528) | (0.0304) | (0.143) |
| Jhelum | -0.0154 | -0.130*** | -0.0313 | -0.00208 | -0.0507 | -0.121*** | -0.0580** | -0.119 |
| | (0.0352) | (0.0377) | (0.0435) | (0.0331) | (0.0359) | (0.0444) | (0.0274) | (0.147) |
| Sargodha | 0.0148 | -0.0483 | 0.0442 | -0.0374 | -0.00476 | -0.0435 | -0.0204 | 0.0313 |
| | (0.0330) | (0.0435) | (0.0508) | (0.0353) | (0.0348) | (0.0516) | (0.0264) | (0.152) |
| Bhakkar | -0.0383 | 0.00991 | -0.0380 | -0.0583 | -0.0208 | -0.0536 | -0.0327 | -0.147 |
| | (0.0296) | (0.0621) | (0.0413) | (0.0357) | (0.0306) | (0.0636) | (0.0244) | (0.194) |
| Khushab | 0.0246 | -0.0340 | 0.0342 | -0.0162 | 1.08e-05 | -0.00922 | 0.0157 | -0.148 |
| | (0.0349) | (0.0471) | (0.0448) | (0.0386) | (0.0327) | (0.0523) | (0.0307) | (0.159) |
| wealth2 | -0.0755*** | -0.0296 | -0.0538 | -0.0244 | | | -0.0734*** | -0.0610 |
| | (0.0143) | (0.0385) | (0.0341) | (0.0355) | | | (0.0126) | (0.0438) |
| wealth3 | -0.0882*** | -0.0360 | -0.00359 | 0.0116 | | | -0.0901*** | -0.0956*** |
| | (0.0121) | (0.0325) | (0.0440) | (0.0364) | | | (0.0115) | (0.0363) |
| wealth4 | -0.124*** | -0.0186 | -0.0993** | -0.0627*** | | | -0.0947*** | -0.173*** |
| | (0.0146) | (0.0346) | (0.0410) | (0.0136) | | | (0.0130) | (0.0361) |
| wealth5 | -0.156*** | -0.00606 | -0.0716* | -0.0880*** | | | -0.0949*** | -0.161*** |
| | (0.0169) | (0.0344) | (0.0380) | (0.0125) | | | (0.0136) | (0.0397) |
| Urban | -0.00857 | -0.00903 | | | -0.0188** | -0.0106 | -0.00984 | -0.00385 |
| | (0.00897) | (0.0116) | | | (0.00959) | (0.00929) | (0.00671) | (0.0255) |
| hhgender | -0.0290** | -0.0501*** | -0.123*** | -0.0891*** | -0.0571*** | -0.0158 | | |
| | (0.0136) | (0.0181) | (0.0360) | (0.0137) | (0.0137) | (0.0148) | | |
| hhedu_yr | -0.00422** | 0.00240* | -0.152*** | -0.0643*** | -0.00540*** | -9.97e-05 | -0.00227* | 0.00382 |
| | (0.00178) | (0.00129) | (0.0365) | (0.0178) | (0.00175) | (0.00131) | (0.00117) | (0.00645) |
| medu_yr | | | -0.0 | -0.0 | 0.00122 | 0.00385*** | 0.00433*** | 0.00211 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 0.0326** | 0.0365*** | | | | |
| | | | (0.0152) | (0.0142) | (0.00314) | (0.00115) | (0.00130) | (0.00545) |
| dedu_yr | | | 0.00107 | -0.00341** | -0.00492*** | 0.00383*** | -0.000394 | 0.00353 |
| | | | (0.00150) | (0.00161) | (0.00130) | (0.00122) | (0.00104) | (0.00299) |
| Constant | 0.245*** | 0.253*** | 0.225*** | 0.272*** | 0.254*** | 0.154*** | 0.238*** | 0.280** |
| | (0.0318) | (0.0573) | (0.0435) | (0.0334) | (0.0332) | (0.0423) | (0.0250) | (0.133) |
| Observations | 6,343 | 4,129 | 3,536 | 6,933 | 6,132 | 4,337 | 9,131 | 1,338 |
| R-squared | 0.059 | 0.023 | 0.040 | 0.045 | 0.046 | 0.024 | 0.037 | 0.085 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

**Table 5: Daughter-in-law's labor market status (Total Effect)**

| VARIABLES<br>Dependent variable:<br>Daughter employed =1 | (1)<br>Full-time | (2)<br>Self-Employment | (3)<br>Unemployed | (4)<br>Homemaker |
|---|---|---|---|---|
| Retired | -0.0245** | -0.0549*** | -0.00303 | 0.298*** |
| | (0.0119) | (0.00930) | (0.00204) | (0.0336) |
| medu_yr | 0.00481*** | 0.00244** | -0.000657** | -0.0137*** |
| | (0.00109) | (0.00114) | (0.000319) | (0.00258) |
| dedu_yr | 0.000491 | -0.000991* | 0.000867*** | 0.00260** |
| | (0.000979) | (0.000540) | (0.000232) | (0.00111) |
| dCEB | -0.00378** | -0.000547 | -0.000676*** | 0.00414 |
| | (0.00174) | (0.000930) | (0.000240) | (0.00345) |
| youngest_child | 0.00613*** | -0.000127 | -0.000123 | -0.000904 |
| | (0.00139) | (0.000609) | (0.000193) | (0.00176) |
| Bahawalpur | 0.0534** | 0.0301** | -0.00138 | -0.298*** |
| | (0.0239) | (0.0136) | (0.00395) | (0.0417) |
| B_Nagar | -0.0194 | 0.0251* | 0.00504 | -0.0773* |
| | (0.0264) | (0.0152) | (0.00662) | (0.0447) |
| RY_Khan | -0.0360 | 0.0200 | -0.000765 | -0.193*** |
| | (0.0260) | (0.0125) | (0.00444) | (0.0467) |
| DG_Khan | -0.0326 | 0.0178* | 0.00338 | 0.0138 |
| | (0.0331) | (0.0106) | (0.00598) | (0.0477) |
| Layyah | -0.0276 | 0.0367** | 0.00334 | -0.00900 |
| | (0.0328) | (0.0177) | (0.00706) | (0.0579) |
| M_Garh | -0.0114 | 0.00777 | -0.00173 | -0.121*** |
| | (0.0270) | (0.00974) | (0.00362) | (0.0459) |

| | | | | |
|---|---|---|---|---|
| Rajanpur | 0.0242 | -0.00227 | -0.00119 | -0.0745 |
| | (0.0357) | (0.00818) | (0.00375) | (0.0530) |
| Faisalabad | -0.00383 | 0.00961 | -0.000448 | -0.281*** |
| | (0.0239) | (0.0122) | (0.00431) | (0.0457) |
| Chiniot | 0.00530 | 0.0310* | 0.0136 | -0.0821* |
| | (0.0240) | (0.0169) | (0.00853) | (0.0469) |
| Jhang | -0.0244 | 0.0189* | -0.000133 | -0.216*** |
| | (0.0255) | (0.0106) | (0.00464) | (0.0474) |
| TT_Singh | -0.00268 | -0.00163 | -0.00480 | -0.225*** |
| | (0.0306) | (0.0127) | (0.00346) | (0.0559) |
| Gujranwala | -0.00189 | 0.0166 | -0.00668* | -0.0640 |
| | (0.0225) | (0.0186) | (0.00348) | (0.0469) |
| Gujrat | 0.0320 | 0.00544 | -0.00499 | -0.115** |
| | (0.0222) | (0.00968) | (0.00424) | (0.0463) |
| Hafizabad | -0.0354 | 0.0348 | -0.00502 | 0.0392 |
| | (0.0242) | (0.0249) | (0.00343) | (0.0406) |
| M_Bahaudin | 0.00436 | 0.0240 | -0.00108 | -0.0589 |
| | (0.0310) | (0.0161) | (0.00530) | (0.0481) |
| Narowal | -0.0444 | -0.00195 | 0.000380 | -0.0559 |
| | (0.0272) | (0.0104) | (0.00546) | (0.0504) |
| Sialkot | -0.0406* | 0.0407** | 0.000201 | -0.173*** |
| | (0.0211) | (0.0194) | (0.00601) | (0.0497) |
| Lahore | -0.0201 | 0.0125 | -0.00585 | -0.0808* |
| | (0.0217) | (0.0124) | (0.00427) | (0.0423) |
| Kasur | -0.0244 | 0.0378*** | 0.00577 | -0.0742 |
| | (0.0231) | (0.0113) | (0.00785) | (0.0497) |
| N_Sahib | -0.0323 | 0.0333 | 0.00125 | -0.0581 |
| | (0.0279) | (0.0237) | (0.00616) | (0.0544) |
| Sheikhupura | 0.0271 | 0.00678 | 0.00521 | -0.123*** |
| | (0.0318) | (0.0151) | (0.00630) | (0.0451) |
| Multan | 0.0839** | 0.0237 | 0.00655 | -0.326*** |
| | (0.0334) | (0.0177) | (0.00627) | (0.0493) |
| Khanewal | 0.0509 | 0.0185 | 0.000735 | -0.206*** |
| | (0.0318) | (0.0149) | (0.00524) | (0.0433) |
| Lodhran | 0.127*** | -0.0162 | -0.00353 | -0.215*** |
| | (0.0430) | (0.0113) | (0.00348) | (0.0545) |
| Vehari | 0.0767** | 0.00285 | -0.00380 | -0.224*** |
| | (0.0303) | (0.0117) | (0.00337) | (0.0444) |
| Sahiwal | -0.0344 | 0.00333 | 0.00291 | 0.0243 |
| | (0.0211) | (0.0139) | (0.00622) | (0.0377) |
| Pakpattan | -0.0648*** | 0.00884 | 0.0277** | -0.0412 |
| | (0.0215) | (0.00984) | (0.0136) | (0.0367) |
| Okara | -0.0311 | 0.0233 | -0.000581 | -0.107** |
| | (0.0276) | (0.0169) | (0.00543) | (0.0522) |
| Rawalpindi | -0.00364 | 0.0281* | -0.00207 | -0.273*** |
| | (0.0298) | (0.0149) | (0.00499) | (0.0448) |

| | | | | |
|---|---|---|---|---|
| Attock | -0.000401 | 0.0204 | -0.00425 | -0.141*** |
| | (0.0238) | (0.0137) | (0.00340) | (0.0451) |
| Chakwal | -0.0156 | 0.00326 | -0.000316 | -0.123*** |
| | (0.0244) | (0.0104) | (0.00526) | (0.0458) |
| Jhelum | -0.0418 | 0.0343** | 0.000569 | -0.134*** |
| | (0.0257) | (0.0150) | (0.00519) | (0.0452) |
| Sargodha | -0.0125 | 0.0317** | -0.00423 | -0.166*** |
| | (0.0257) | (0.0145) | (0.00345) | (0.0457) |
| Bhakkar | -0.0204 | -0.000278 | 0.00217 | -0.0587 |
| | (0.0260) | (0.00911) | (0.00539) | (0.0395) |
| Khushab | -0.00186 | 0.00349 | 0.00103 | -0.0519 |
| | (0.0277) | (0.0128) | (0.00529) | (0.0442) |
| wealth2 | -0.0648*** | 0.0149** | 0.000261 | 0.00638 |
| | (0.0108) | (0.00650) | (0.00145) | (0.0181) |
| wealth3 | -0.0766*** | 0.0182*** | 0.00192 | 0.0350** |
| | (0.0120) | (0.00664) | (0.00180) | (0.0172) |
| wealth4 | -0.0885*** | 0.0249** | 0.000703 | 0.0617*** |
| | (0.0143) | (0.0106) | (0.00128) | (0.0201) |
| wealth5 | -0.0905*** | 0.0147 | 0.00763*** | 0.0943*** |
| | (0.0162) | (0.0118) | (0.00268) | (0.0212) |
| Urban | -0.00137 | 0.0169*** | 0.000425 | -0.0137 |
| | (0.00635) | (0.00558) | (0.00172) | (0.0113) |
| hhgender | -0.0154 | -0.0180** | 0.00210 | 0.149*** |
| | (0.00943) | (0.00813) | (0.00194) | (0.0135) |
| hhedu_yr | -0.00188** | -0.000566 | -0.000330 | -0.000957 |
| | (0.000884) | (0.000557) | (0.000207) | (0.00127) |
| Constant | 0.201*** | 0.0569*** | 0.00243 | 0.395*** |
| | (0.0236) | (0.0138) | (0.00449) | (0.0575) |
| Observations | 10,469 | 10,471 | 10,469 | 10,469 |
| R-squared | 0.032 | 0.022 | 0.012 | 0.115 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

**Table 6: Full-Time employment (Disaggregated Effect)**

| VARIABLES | (1) No Education | (2) Educated | (3) Urban | (4) Rural | (5) Lowest wealth | (6) Highest wealth | (7) Male hh head | (8) Female hh head |
|---|---|---|---|---|---|---|---|---|
| Retired | -0.0378*** | -0.0187 | -0.0279 | -0.0229* | -0.0285* | -0.0194 | -0.0225* | -0.0290 |
| | (0.0143) | (0.0168) | (0.0180) | (0.0133) | (0.0151) | (0.0187) | (0.0122) | (0.0248) |
| dCEB | -0.00124 | -0.0104*** | 0.00480*** | 0.00249 | -0.00250 | -0.00585** | -0.00464** | 0.00439 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (0.00207) | (0.00279) | (0.00156) | (0.00191) | (0.00249) | (0.00242) | (0.00186) | (0.00517) |
| youngest_child | 0.00705*** | 0.00468** | 0.00294*** | -0.000920 | 0.00711*** | 0.00545*** | 0.00510*** | 0.00927** |
| | (0.00186) | (0.00195) | (0.00108) | (0.00122) | (0.00202) | (0.00164) | (0.00146) | (0.00379) |
| Bahawalpur | 0.101*** | -0.0360 | -0.00690*** | -0.00274 | 0.0771*** | -0.0382 | 0.0588** | 0.0181 |
| | (0.0264) | (0.0479) | (0.00258) | (0.00234) | (0.0285) | (0.0488) | (0.0263) | (0.0973) |
| B_Nagar | -0.0304 | 0.0177 | 0.00513*** | 0.00652*** | -0.0285 | -0.00245 | -0.0285 | 0.0405 |
| | (0.0293) | (0.0513) | (0.00185) | (0.00165) | (0.0313) | (0.0500) | (0.0243) | (0.136) |
| RY_Khan | -0.0152 | -0.0779* | 0.0572* | 0.0594* | -0.0353 | -0.0496 | -0.0365 | -0.0353 |
| | (0.0294) | (0.0439) | (0.0339) | (0.0314) | (0.0332) | (0.0492) | (0.0265) | (0.125) |
| DG_Khan | -0.0296 | -0.0217 | 0.0499 | -0.0533 | -0.0367 | 0.0112 | -0.0278 | -0.0732 |
| | (0.0339) | (0.0583) | (0.0335) | (0.0327) | (0.0345) | (0.0595) | (0.0337) | (0.121) |
| Layyah | -0.0190 | -0.0273 | 0.00579 | -0.0491 | -0.000912 | -0.105*** | -0.0345 | 0.0623 |
| | (0.0385) | (0.0509) | (0.0308) | (0.0352) | (0.0419) | (0.0398) | (0.0314) | (0.154) |
| M_Garh | -0.0135 | 0.0117 | 0.0389 | -0.0606 | -0.00597 | -0.0227 | -0.0227 | 0.0757 |
| | (0.0297) | (0.0571) | (0.0461) | (0.0389) | (0.0335) | (0.0741) | (0.0272) | (0.142) |
| Rajanpur | 0.0377 | -0.00421 | 0.0247 | -0.0502 | 0.0340 | 0.0180 | 0.0163 | 0.158 |
| | (0.0409) | (0.0629) | (0.0333) | (0.0448) | (0.0409) | (0.0706) | (0.0374) | (0.159) |
| Faisalabad | 0.00769 | -0.0355 | 0.120** | -0.0573* | -0.0260 | -0.0187 | -0.0103 | 0.0300 |
| | (0.0259) | (0.0408) | (0.0486) | (0.0332) | (0.0297) | (0.0461) | (0.0246) | (0.118) |
| Chiniot | 0.00604 | 0.0385 | -0.0106 | 0.0278 | 0.0102 | -0.0269 | -0.0109 | 0.202 |
| | (0.0220) | (0.0651) | (0.0399) | (0.0454) | (0.0244) | (0.0585) | (0.0230) | (0.152) |
| Jhang | -0.00923 | -0.0516 | 0.0939*** | -0.0500 | -0.0119 | -0.0605 | -0.0245 | -0.0208 |
| | (0.0262) | (0.0416) | (0.0290) | (0.0306) | (0.0283) | (0.0472) | (0.0243) | (0.121) |
| TT_Singh | 0.0349 | -0.0658 | 0.0493 | -0.0123 | 0.0151 | -0.0729* | -0.0133 | 0.120 |
| | (0.0394) | (0.0428) | (0.0424) | (0.0303) | (0.0431) | (0.0406) | (0.0279) | (0.165) |
| Gujranwala | 0.00776 | -0.0318 | 0.000757 | -0.0335 | -0.0368 | -0.0134 | -0.000666 | -0.0144 |
| | (0.0307) | (0.0444) | (0.0394) | (0.0329) | (0.0324) | (0.0390) | (0.0239) | (0.116) |
| Gujrat | 0.0622** | -0.0157 | 0.0548 | -0.0214 | -0.00797 | 0.0188 | 0.0395* | 0.0206 |
| | (0.0290) | (0.0336) | (0.0415) | (0.0408) | (0.0324) | (0.0445) | (0.0237) | (0.116) |
| Hafizabad | -0.0401 | -0.0517 | 0.0503 | -0.0277 | -0.0644* | -0.0371 | -0.0502** | 0.0644 |
| | (0.0284) | (0.0452) | (0.0311) | (0.0351) | (0.0348) | (0.0420) | (0.0224) | (0.140) |
| M_Bahaudin | 0.0170 | -0.0252 | 0.0368 | 0.0260 | -0.0356 | 0.00868 | 0.00891 | -0.0263 |
| | (0.0378) | (0.0525) | (0.0314) | (0.0297) | (0.0347) | (0.0563) | (0.0339) | (0.119) |
| Narowal | -0.0393 | -0.0585 | 0.0156 | -0.0587* | -0.0702** | -0.0466 | -0.0402 | -0.0548 |
| | (0.0272) | (0.0440) | (0.0422) | (0.0309) | (0.0333) | (0.0449) | (0.0272) | (0.114) |
| Sialkot | 0.00964 | -0.0987** | 0.0541 | -0.0166 | -0.0494 | -0.0657 | -0.0397* | -0.0347 |
| | (0.0301) | (0.0386) | (0.0354) | (0.0399) | (0.0345) | (0.0416) | (0.0211) | (0.115) |
| Lahore | 0.0343 | -0.0774** | -0.0118 | -0.0566 | -0.0544 | -0.0372 | -0.00944 | -0.0545 |
| | (0.0290) | (0.0352) | (0.0378) | (0.0375) | (0.0488) | (0.0391) | (0.0217) | (0.112) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Kasur | 0.00205 | -0.0777** | -0.00707 | -0.0543* | -0.0489* | -0.0255 | -0.0166 | -0.110 |
| | (0.0277) | (0.0367) | (0.0249) | (0.0304) | (0.0264) | (0.0427) | (0.0235) | (0.106) |
| N_Sahib | -0.0163 | -0.0653 | 0.0343 | -0.0442 | -0.0691** | -0.0357 | -0.0484* | 0.0751 |
| | (0.0293) | (0.0493) | (0.0266) | (0.0360) | (0.0297) | (0.0536) | (0.0251) | (0.129) |
| Sheikhupura | 0.0760 | -0.0426 | 0.0462 | -0.0612** | 0.0283 | -0.00653 | 0.0271 | 0.00613 |
| | (0.0467) | (0.0362) | (0.0294) | (0.0312) | (0.0423) | (0.0431) | (0.0324) | (0.120) |
| Multan | 0.143*** | -0.0486 | 0.00892 | -0.0445 | 0.123*** | -0.00285 | 0.0795** | 0.108 |
| | (0.0442) | (0.0430) | (0.0378) | (0.0352) | (0.0438) | (0.0470) | (0.0360) | (0.126) |
| Khanewal | 0.0949*** | -0.0497 | 0.117** | -0.0234 | 0.0611* | 0.00302 | 0.0409 | 0.154 |
| | (0.0357) | (0.0550) | (0.0498) | (0.0320) | (0.0366) | (0.0571) | (0.0311) | (0.136) |
| Lodhran | 0.177*** | 0.0159 | 0.0978*** | 0.0912** | 0.128** | 0.0680 | 0.135*** | 0.00329 |
| | (0.0565) | (0.0645) | (0.0371) | (0.0450) | (0.0542) | (0.0672) | (0.0450) | (0.176) |
| Vehari | 0.130*** | -0.0421 | 0.0616 | 0.0434 | 0.0959** | -0.0193 | 0.0720** | 0.127 |
| | (0.0397) | (0.0418) | (0.0487) | (0.0388) | (0.0408) | (0.0566) | (0.0324) | (0.156) |
| Sahiwal | 0.00233 | -0.0813** | 0.202*** | 0.0957* | -0.0309 | -0.0593 | -0.0426** | 0.0112 |
| | (0.0249) | (0.0335) | (0.0623) | (0.0536) | (0.0347) | (0.0387) | (0.0199) | (0.117) |
| Pakpattan | -0.0380* | -0.113*** | 0.0598 | 0.0800** | -0.0734** | -0.0835** | -0.0633*** | -0.0920 |
| | (0.0226) | (0.0372) | (0.0483) | (0.0396) | (0.0288) | (0.0407) | (0.0214) | (0.113) |
| Okara | 0.0254 | -0.108*** | 0.0258 | -0.0552** | -0.0278 | -0.0648 | -0.0205 | -0.103 |
| | (0.0411) | (0.0308) | (0.0328) | (0.0276) | (0.0384) | (0.0466) | (0.0298) | (0.110) |
| Rawalpindi | -0.0167 | -0.0204 | -0.0342 | -0.0751** | -0.0543 | 0.00717 | -0.0117 | 0.0352 |
| | (0.0313) | (0.0498) | (0.0231) | (0.0296) | (0.0364) | (0.0506) | (0.0270) | (0.120) |
| Attock | 0.0211 | -0.0385 | 0.0165 | -0.0432 | -0.00342 | -0.0311 | 0.000803 | -0.00721 |
| | (0.0276) | (0.0431) | (0.0455) | (0.0379) | (0.0329) | (0.0461) | (0.0260) | (0.0969) |
| Chakwal | -0.00128 | -0.0509 | 0.0306 | -0.00919 | -0.0427 | -0.0100 | -0.0107 | -0.0342 |
| | (0.0294) | (0.0467) | (0.0349) | (0.0373) | (0.0296) | (0.0447) | (0.0248) | (0.115) |
| Jhelum | -0.00889 | -0.0946** | 0.00342 | -0.00321 | -0.0426 | -0.0730* | -0.0489** | -0.00890 |
| | (0.0271) | (0.0393) | (0.0384) | (0.0313) | (0.0293) | (0.0436) | (0.0236) | (0.117) |
| Sargodha | -0.0114 | -0.0228 | 0.0502 | -0.0357 | -0.0264 | -0.0122 | -0.0271 | 0.0870 |
| | (0.0284) | (0.0426) | (0.0467) | (0.0353) | (0.0305) | (0.0490) | (0.0244) | (0.119) |
| Bhakkar | -0.0289 | 0.0303 | -0.0137 | -0.0508 | -0.0156 | -0.00772 | -0.0209 | -0.0141 |
| | (0.0281) | (0.0618) | (0.0367) | (0.0312) | (0.0289) | (0.0603) | (0.0253) | (0.147) |
| Khushab | 0.0119 | -0.0229 | 0.0521 | -0.0383 | -0.0138 | 0.0205 | 0.0146 | -0.108 |
| | (0.0305) | (0.0503) | (0.0371) | (0.0361) | (0.0301) | (0.0561) | (0.0290) | (0.117) |
| wealth2 | -0.0673*** | -0.0172 | -0.0184 | -0.0204 | | | -0.0649*** | -0.0516 |
| | (0.0121) | (0.0379) | (0.0273) | (0.0355) | | | (0.0106) | (0.0430) |
| wealth3 | -0.0776*** | -0.0171 | 0.0102 | -0.00170 | | | -0.0737*** | -0.0924*** |
| | (0.0127) | (0.0314) | (0.0354) | (0.0371) | | | (0.0117) | (0.0344) |
| wealth4 | -0.104*** | -0.00638 | -0.0727** | -0.0575*** | | | -0.0764*** | -0.152*** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (0.0150) | (0.0338) | (0.0368) | (0.0120) | | | (0.0128) | (0.0377) |
| wealth5 | -0.132*** | 0.00265 | -0.0539 | -0.0753*** | | | -0.0793*** | -0.146*** |
| | (0.0176) | (0.0347) | (0.0379) | (0.0139) | | | (0.0146) | (0.0369) |
| Urban | 0.00444 | -0.00651 | | | -0.00451 | -0.00801 | -0.00533 | 0.0187 |
| | (0.00865) | (0.0112) | | | (0.00825) | (0.00806) | (0.00607) | (0.0192) |
| hhgender | -0.00805 | -0.0349** | -0.102*** | -0.0727*** | -0.0366** | -0.000882 | | |
| | (0.0125) | (0.0149) | (0.0353) | (0.0161) | (0.0143) | (0.0100) | | |
| hhedu_yr | -0.00445*** | 0.00300** | -0.133*** | -0.0471** | -0.00564*** | 0.000880 | -0.00193** | -0.00533 |
| | (0.00110) | (0.00129) | (0.0355) | (0.0196) | (0.00126) | (0.00105) | (0.000890) | (0.00420) |
| medu_yr | | | -0.0277** | 0.000874 | 0.00401*** | 0.00472*** | 0.00643 | |
| | | | (0.0120) | (0.0132) | (0.00296) | (0.00115) | (0.00121) | (0.00425) |
| dedu_yr | | | 0.00179 | -0.00325** | -0.00382*** | 0.00327*** | -0.000313 | 0.00547** |
| | | | (0.00166) | (0.00114) | (0.00117) | (0.00107) | (0.000952) | (0.00248) |
| Constant | 0.193*** | 0.177*** | 0.156*** | 0.214*** | 0.203*** | 0.0876** | 0.191*** | 0.176 |
| | (0.0275) | (0.0532) | (0.0354) | (0.0333) | (0.0288) | (0.0433) | (0.0208) | (0.111) |
| Observations | 6,343 | 4,129 | 3,536 | 6,933 | 6,132 | 4,337 | 9,131 | 1,338 |
| R-squared | 0.054 | 0.021 | 0.039 | 0.040 | 0.041 | 0.024 | 0.032 | 0.075 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

**Table 7: Self-Employed**

| VARIABLES | (1) No Education | (2) Educated | (3) Urban | (4) Rural | (5) Lowest wealth | (6) Highest wealth | (7) Male hh head | (8) Female hh head |
|---|---|---|---|---|---|---|---|---|
| Retired | -0.0417*** | -0.0912*** | -0.0828*** | -0.0433*** | -0.0294*** | -0.103*** | -0.0507*** | -0.0907*** |
| | (0.00759) | (0.0168) | (0.0183) | (0.00890) | (0.00819) | (0.0198) | (0.00923) | (0.0263) |
| dCEB | -0.000702 | -0.000200 | 0.00325** | 0.000521 | -0.000933 | -0.000743 | -0.000169 | -0.00622* |
| | (0.000873) | (0.00204) | (0.00144) | (0.00139) | (0.00101) | (0.00148) | (0.000998) | (0.00334) |
| youngest_child | -0.000817 | 0.00168 | -0.000206 | -0.00107** | 2.78e-05 | 0.000282 | -0.000295 | 0.00119 |
| | (0.000607) | (0.00150) | (0.00110) | (0.000508) | (0.000753) | (0.000949) | (0.000679) | (0.00188) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Bahawalpur | 0.0238 | 0.0437*** | -0.00109 | -0.000776 | 0.0290 | 0.0504*** | 0.0228* | 0.120** |
| | (0.0171) | (0.0167) | (0.00181) | (0.00101) | (0.0177) | (0.0194) | (0.0126) | (0.0589) |
| B_Nagar | 0.0201 | 0.0381 | 0.00121 | -0.000625 | 0.00724 | 0.0790* | 0.0234 | 0.0782* |
| | (0.0214) | (0.0246) | (0.00110) | (0.000619) | (0.0165) | (0.0443) | (0.0164) | (0.0453) |
| RY_Khan | 0.0144 | 0.0326 | 0.0535** | 0.0218 | 0.00517 | 0.0647* | 0.0230* | 0.00759 |
| | (0.0101) | (0.0290) | (0.0219) | (0.0179) | (0.0105) | (0.0360) | (0.0129) | (0.0297) |
| DG_Khan | 0.00826 | 0.0412 | 0.0597* | 0.00786 | 0.00153 | 0.0603 | 0.0165 | 0.0783* |
| | (0.0142) | (0.0416) | (0.0309) | (0.0150) | (0.0133) | (0.0493) | (0.0106) | (0.0405) |
| Layyah | 0.0483** | -0.00188 | 0.0539* | 0.00616 | 0.0345 | 0.0439 | 0.0393** | 0.0329 |
| | (0.0241) | (0.00784) | (0.0301) | (0.0112) | (0.0238) | (0.0338) | (0.0186) | (0.0289) |
| M_Garh | 0.00678 | 0.0134 | 0.0225 | 0.0144 | 0.00704 | -0.00610 | 0.00840 | 0.0381 |
| | (0.0119) | (0.0155) | (0.0266) | (0.0106) | (0.0114) | (0.0114) | (0.00810) | (0.0435) |
| Rajanpur | -0.00291 | -0.00529 | 0.0414* | 0.0371 | -0.00802 | 0.0111 | -0.00259 | 0.0288 |
| | (0.0116) | (0.00868) | (0.0248) | (0.0261) | (0.0110) | (0.0125) | (0.00862) | (0.0295) |
| Faisalabad | 0.00729 | 0.0161 | -0.00812 | 0.0115 | 0.0268 | 0.0120 | -0.00576 | 0.137*** |
| | (0.0165) | (0.0139) | (0.00903) | (0.0122) | (0.0163) | (0.0121) | (0.0119) | (0.0486) |
| Chiniot | 0.0347 | 0.0106 | 0.0158 | -0.00917 | 0.0376* | 0.0143 | 0.0350** | 0.00196 |
| | (0.0235) | (0.0224) | (0.0228) | (0.00920) | (0.0225) | (0.0203) | (0.0177) | (0.0228) |
| Jhang | 0.0177 | 0.0234 | 0.0137 | 0.0126 | 0.0100 | 0.0614* | 0.0172 | 0.0707 |
| | (0.0135) | (0.0200) | (0.0160) | (0.0160) | (0.0102) | (0.0369) | (0.0110) | (0.0469) |
| TT_Singh | -0.00695 | 0.0120 | 0.0900** | 0.00494 | -0.00558 | 0.0240 | -0.00439 | 0.0624 |
| | (0.0170) | (0.0145) | (0.0456) | (0.0188) | (0.0118) | (0.0201) | (0.0128) | (0.0602) |
| Gujranwala | -0.00529 | 0.0359 | 0.00328 | 0.0235* | 0.0180 | 0.0337 | 0.0119 | 0.0898* |
| | (0.0201) | (0.0222) | (0.0157) | (0.0133) | (0.0218) | (0.0220) | (0.0178) | (0.0513) |
| Gujrat | -0.00132 | 0.0126 | 0.0444 | -0.0191* | 0.00282 | 0.0257* | 0.00181 | 0.0653* |
| | (0.0113) | (0.0123) | (0.0336) | (0.0107) | (0.0148) | (0.0138) | (0.0132) | (0.0354) |
| Hafizabad | 0.0425 | 0.0267 | 0.0221 | 0.0217 | 0.0413 | 0.0445* | 0.0406 | 0.0179 |
| | (0.0298) | (0.0239) | (0.0216) | (0.0231) | (0.0293) | (0.0245) | (0.0283) | (0.0305) |
| M_Bahaudin | 0.0386 | 0.00804 | 0.0407* | -0.00907 | 0.0405 | 0.0292 | 0.0260 | 0.0437 |
| | (0.0244) | (0.0151) | (0.0226) | (0.0137) | (0.0249) | (0.0198) | (0.0177) | (0.0461) |
| Narowal | -0.0101 | 0.0120 | 0.108** | -0.00305 | -0.00274 | 0.0147 | 0.00227 | 0.0263 |
| | (0.0142) | (0.0101) | (0.0549) | (0.0163) | (0.0114) | (0.0124) | (0.0119) | (0.0280) |
| Sialkot | 0.0458* | 0.0400** | 0.0318 | 0.0192 | 0.0235 | 0.0670** | 0.0423* | 0.0853* |
| | (0.0260) | (0.0203) | (0.0279) | (0.0178) | (0.0171) | (0.0265) | (0.0244) | (0.0438) |
| Lahore | 0.0237 | 0.0107 | -0.00418 | -0.00388 | -0.00366 | 0.0358** | 0.0156 | 0.0529 |
| | (0.0221) | (0.0118) | (0.0135) | (0.0131) | (0.0247) | (0.0168) | (0.0135) | (0.0399) |
| Kasur | 0.0420** | 0.0312* | 0.00831 | 0.0601** | 0.0491*** | 0.0410* | 0.0360*** | 0.0866 |
| | (0.0180) | (0.0166) | (0.0171) | (0.0280) | (0.0173) | (0.0219) | (0.0126) | (0.0728) |
| N_Sahib | 0.0354 | 0.0333 | 0.0405** | -0.00553 | 0.0178 | 0.0741* | 0.0351 | 0.0599 |
| | (0.0268) | (0.0423) | (0.0166) | (0.0125) | (0.0208) | (0.0417) | (0.0258) | (0.0528) |
| Sheikhupura | 0.0105 | 0.00628 | 0.0479** | 0.0393** | 0.0158 | 0.0172 | 0.00837 | 0.0171 |
| | (0.0203) | (0.0139) | (0.0227) | (0.0176) | (0.0177) | (0.0178) | (0.0164) | (0.0304) |
| Multan | 0.00972 | 0.0605* | 0.0707 | 0.0191 | 0.00167 | 0.0766** | 0.0161 | 0.119* |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (0.0184) | (0.0328) | (0.0559) | (0.0212) | (0.0144) | (0.0333) | (0.0163) | (0.0636) |
| Khanewal | 0.0261 | -0.000165 | 0.0134 | 0.00693 | 0.0145 | 0.0397 | 0.00971 | 0.156** |
| | (0.0201) | (0.0161) | (0.0211) | (0.0162) | (0.0179) | (0.0270) | (0.0135) | (0.0767) |
| Lodhran | -0.0164 | -0.0133 | 0.0792** | -0.00895 | -0.0112 | -0.00875 | -0.0160 | 0.0147 |
| | (0.0153) | (0.0111) | (0.0326) | (0.0125) | (0.0121) | (0.0153) | (0.0119) | (0.0320) |
| Vehari | -0.00169 | 0.0150 | 0.0605 | 0.00300 | -0.0103 | 0.0536** | 0.00434 | 0.0176 |
| | (0.0146) | (0.0167) | (0.0415) | (0.0153) | (0.01000) | (0.0246) | (0.0130) | (0.0302) |
| Sahiwal | -0.00903 | 0.0184 | -0.0182 | -0.0128 | 0.00254 | 0.0250 | -0.00696 | 0.101 |
| | (0.0174) | (0.0187) | (0.0170) | (0.0145) | (0.0152) | (0.0197) | (0.0115) | (0.0682) |
| Pakpattan | -0.00538 | 0.0292 | 0.0218 | -0.00496 | 0.000764 | 0.0370* | 0.00982 | 0.0390 |
| | (0.0141) | (0.0209) | (0.0257) | (0.0126) | (0.0122) | (0.0221) | (0.0102) | (0.0289) |
| Okara | -6.89e-05 | 0.0537** | 0.0293 | -0.00782 | 0.0196 | 0.0546** | 0.0183 | 0.0992* |
| | (0.0173) | (0.0216) | (0.0270) | (0.0126) | (0.0189) | (0.0265) | (0.0177) | (0.0551) |
| Rawalpindi | 0.0240 | 0.0384* | 0.0144 | 0.00597 | 0.0222 | 0.0552** | 0.0275 | 0.0712** |
| | (0.0217) | (0.0210) | (0.0215) | (0.00995) | (0.0183) | (0.0215) | (0.0176) | (0.0324) |
| Attock | 0.0212 | 0.0181 | 0.0880** | -0.00362 | 0.0330* | 0.0210 | 0.0164 | 0.0870* |
| | (0.0192) | (0.0180) | (0.0406) | (0.0136) | (0.0188) | (0.0164) | (0.0146) | (0.0455) |
| Chakwal | -0.00415 | 0.0143 | 0.0938*** | -0.00240 | -0.00594 | 0.0351* | 0.00667 | 0.0227 |
| | (0.0130) | (0.0137) | (0.0328) | (0.0131) | (0.00990) | (0.0195) | (0.0117) | (0.0283) |
| Jhelum | 0.0379** | 0.0300 | 0.0266 | 0.0162 | 0.0541** | 0.0278 | 0.0412** | 0.0496 |
| | (0.0189) | (0.0211) | (0.0250) | (0.0162) | (0.0247) | (0.0203) | (0.0176) | (0.0399) |
| Sargodha | 0.0356** | 0.0245 | 0.0417 | -0.0119 | 0.0209* | 0.0642* | 0.0310** | 0.0795 |
| | (0.0168) | (0.0196) | (0.0266) | (0.0117) | (0.0119) | (0.0331) | (0.0158) | (0.0608) |
| Bhakkar | -0.0114 | 0.0284 | 0.104** | 0.00823 | -0.0142* | 0.0456 | -0.000422 | 0.00196 |
| | (0.00978) | (0.0225) | (0.0470) | (0.00984) | (0.00860) | (0.0360) | (0.00938) | (0.0303) |
| Khushab | -0.00417 | 0.0216 | 0.0300 | 0.0342* | -0.00242 | 0.0285 | 0.0100 | -0.000875 |
| | (0.0154) | (0.0207) | (0.0197) | (0.0196) | (0.0136) | (0.0238) | (0.0142) | (0.0255) |
| wealth2 | 0.0150** | 0.0104 | 0.00685 | -0.00325 | | | 0.0156** | 0.00541 |
| | (0.00663) | (0.0137) | (0.0144) | (0.0114) | | | (0.00608) | (0.0311) |
| wealth3 | 0.0179*** | 0.0184 | 0.0435* | -0.0138 | | | 0.0171** | 0.0286 |
| | (0.00615) | (0.0137) | (0.0249) | (0.0125) | | | (0.00703) | (0.0254) |
| wealth4 | 0.0167 | 0.0359** | 0.00261 | 0.0159** | | | 0.0276*** | 0.0131 |
| | (0.0126) | (0.0177) | (0.0257) | (0.00731) | | | (0.0106) | (0.0295) |
| wealth5 | 0.00698 | 0.0286* | 0.0105 | 0.0170** | | | 0.0150 | 0.0129 |
| | (0.0144) | (0.0170) | (0.0219) | (0.00690) | | | (0.0124) | (0.0356) |
| Urban | 0.0216*** | 0.0136 | | | 0.0279*** | 0.00673 | 0.0181*** | 0.00216 |
| | (0.00764) | (0.00896) | | | (0.00840) | (0.00706) | (0.00647) | (0.0183) |
| hhgender | -0.0222** | -0.0171 | 0.00839 | 0.0261** | -0.0267*** | -0.0105 | | |
| | (0.00965) | (0.0125) | (0.0262) | (0.0107) | (0.00976) | (0.0111) | | |
| hhedu_yr | -5.40e-05 | -0.000283 | -0.00409 | 0.0238* | -1.19e-05 | -0.000896 | -0.000978* | 0.00458 |
| | (0.000741) | (0.00103) | (0.0264) | (0.0124) | (0.000608) | (0.00115) | (0.000549) | (0.00353) |
| medu_yr | | | -0.00747 | -0.0246** | 0.00171 | 0.00124 | 0.00237** | -0.000322 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | (0.0129) | (0.0101) | (0.00204) | (0.00149) | (0.00104) | (0.00351) |
| dedu_yr | | | -0.00161 | 3.60e-05 | -0.00123* | 1.80e-05 | -0.000713 | -0.00208 |
| | | | (0.00130) | (0.00052 6) | (0.000700) | (0.000880) | (0.000522) | (0.00183) |
| Constant | 0.0543*** | 0.0586** | 0.0766** | 0.0621*** | 0.0597*** | 0.0881*** | 0.0374*** | 0.0392 |
| | (0.0163) | (0.0241) | (0.0299) | (0.0160) | (0.0161) | (0.0224) | (0.0125) | (0.0310) |
| Observations | 6,343 | 4,131 | 3,538 | 6,933 | 6,132 | 4,339 | 9,132 | 1,339 |
| R-squared | 0.018 | 0.038 | 0.040 | 0.020 | 0.019 | 0.039 | 0.021 | 0.052 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

**Table 8: Unemployed**

| VARIABLES | (1) No Education | (2) Educated | (3) Urban | (4) Rural | (5) Lowest wealth | (6) Highest wealth | (7) Male hh head | (8) Female hh head |
|---|---|---|---|---|---|---|---|---|
| Retired | 0.000838 | -0.00660 | -0.00644 | -0.00206 | -0.000263 | -0.00815* | -0.00219 | -0.0109* |
| | (0.00160) | (0.00507) | (0.00446) | (0.00203 ) | (0.00178) | (0.00493) | (0.00224) | (0.00660) |
| dCEB | -9.42e-05 | -0.00283*** | -0.00103*** | -0.000230 | -0.000194 | -0.00191*** | -0.000731*** | -0.000365 |
| | (0.000320) | (0.000673 ) | (0.000521 ) | (0.00038 6) | (0.000350) | (0.000511) | (0.000292) | (0.000522) |
| youngest_child | 7.71e-05 | -0.000452 | 0.00125*** | 0.000649** | 2.25e-05 | -9.21e-05 | -0.000235 | 0.000488 |
| | (0.000205) | (0.000407 ) | (0.000416 ) | (0.00028 2) | (0.000260) | (0.000266) | (0.000242) | (0.000354) |
| Bahawalpur | -0.00503 | 0.00405 | -0.00202*** | -0.000189 | -0.00470 | 0.0114 | -0.00154 | -0.000425 |
| | (0.00510) | (0.00718) | (0.000532 ) | (0.00031 4) | (0.00433) | (0.00859) | (0.00409) | (0.00315) |
| B_Nagar | -0.00538 | 0.0222 | 0.000137 | -0.000194 | 0.000500 | 0.0191 | 0.00604 | -0.000791 |
| | (0.00508) | (0.0142) | (0.000342 ) | (0.00015 6) | (0.00699) | (0.0162) | (0.00739) | (0.00322) |
| RY_Khan | -0.00498 | 0.00652 | 0.00901 | -0.00599 | -0.00450 | 0.0111 | -0.00109 | -0.00321 |
| | (0.00525) | (0.00898) | (0.00676) | (0.00514 ) | (0.00450) | (0.00950) | (0.00463) | (0.00384) |
| DG_Khan | 0.00214 | -0.00212 | 0.00384** | 0.00757 | 0.00275 | 0.00177 | 0.00369 | 0.00223 |
| | (0.00833) | (0.00216) | (0.00185) | (0.0104) | (0.00746) | (0.00209) | (0.00653) | (0.00290) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Layyah | 0.00359 | 0.000706 | 0.00971 | -0.00531 | 0.00350 | 0.000631 | 0.00349 | -0.000699 |
| | (0.00974) | (0.00175) | (0.00812) | (0.00529) | (0.00896) | (0.00177) | (0.00761) | (0.00355) |
| M_Garh | -0.00453 | -0.00137 | 0.00189 | 0.00282 | -0.00389 | 0.000468 | -0.00224 | -8.23e-05 |
| | (0.00526) | (0.00137) | (0.00170) | (0.00852) | (0.00439) | (0.00255) | (0.00374) | (0.00255) |
| Rajanpur | -0.00472 | -0.000260 | 0.0221 | -0.00519 | -0.00405 | 0.00312 | -0.00161 | 0.00152 |
| | (0.00540) | (0.00260) | (0.0192) | (0.00531) | (0.00454) | (0.00206) | (0.00387) | (0.00452) |
| Faisalabad | -0.00491 | 0.00622 | 0.00299 | -0.00462 | -0.00410 | 0.00943* | -0.00206 | 0.00816 |
| | (0.00500) | (0.00632) | (0.00196) | (0.00530) | (0.00436) | (0.00517) | (0.00433) | (0.00939) |
| Chiniot | 0.00496 | 0.0407 | 0.00303 | -0.00427 | 0.0113 | 0.0213 | 0.0144 | -0.00186 |
| | (0.00844) | (0.0286) | (0.00190) | (0.00552) | (0.00962) | (0.0174) | (0.00914) | (0.00324) |
| Jhang | -0.00468 | 0.00966 | 0.00844 | -0.00419 | -0.00403 | 0.0149 | 1.38e-05 | -0.00350 |
| | (0.00514) | (0.0141) | (0.00584) | (0.00537) | (0.00431) | (0.0154) | (0.00490) | (0.00382) |
| TT_Singh | -0.00548 | -0.00352** | 0.0412* | 0.000984 | -0.00430 | -0.000168 | -0.00509 | -0.00347 |
| | (0.00505) | (0.00170) | (0.0212) | (0.00745) | (0.00442) | (0.00190) | (0.00355) | (0.00347) |
| Gujranwala | -0.00516 | -0.00549*** | 0.0122 | -0.00536 | -0.00496 | -0.000124 | -0.00702* | -0.00468 |
| | (0.00502) | (0.00176) | (0.0120) | (0.00518) | (0.00434) | (0.00180) | (0.00363) | (0.00415) |
| Gujrat | -0.00420 | -0.00226 | -0.00115 | -0.00675 | -0.00410 | 0.00325 | -0.00498 | -0.00551 |
| | (0.00512) | (0.00432) | (0.00169) | (0.00507) | (0.00436) | (0.00455) | (0.00475) | (0.00418) |
| Hafizabad | -0.00539 | -0.00434*** | -0.000461 | -0.00826 | -0.00428 | -0.000114 | -0.00548 | -0.00612 |
| | (0.00506) | (0.00149) | (0.00167) | (0.00504) | (0.00426) | (0.00229) | (0.00354) | (0.00413) |
| M_Bahaudin | -0.00462 | 0.00622 | 0.00709 | -0.00965* | -0.00428 | 0.00803 | -0.00516 | 0.0249 |
| | (0.00506) | (0.00847) | (0.00836) | (0.00514) | (0.00428) | (0.00754) | (0.00346) | (0.0286) |
| Narowal | -0.00533 | 0.00861 | -0.00186 | -0.00678 | 0.00332 | 0.00119 | -0.00463 | 0.0194 |
| | (0.00512) | (0.00907) | (0.00174) | (0.00503) | (0.00853) | (0.00243) | (0.00356) | (0.0218) |
| Sialkot | 0.00460 | 0.00131 | -0.00266 | -0.00127 | 0.00812 | 0.00548 | -0.00238 | 0.00762 |
| | (0.0102) | (0.00525) | (0.00186) | (0.00743) | (0.0126) | (0.00493) | (0.00623) | (0.0126) |
| Lahore | -0.00357 | -0.00178 | 0.00382 | -0.00144 | -0.00480 | 0.00467 | -0.00642 | -0.00291 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (0.00518) | (0.00434) | (0.00245) | (0.00764) | (0.00433) | (0.00292) | (0.00471) | (0.00421) |
| Kasur | -0.000304 | 0.0163 | -0.000771 | 0.00166 | 0.000826 | 0.0193 | 0.00624 | -0.00144 |
| | (0.00717) | (0.0169) | (0.00202) | (0.00883) | (0.00685) | (0.0169) | (0.00839) | (0.00349) |
| N_Sahib | -0.00519 | 0.0122 | -0.000585 | -0.000397 | 0.00624 | 0.000463 | 0.00193 | -0.00653 |
| | (0.00501) | (0.0131) | (0.00205) | (0.00926) | (0.0101) | (0.00213) | (0.00681) | (0.00563) |
| Sheikhupura | -0.00524 | 0.0170 | 0.0178 | -0.000407 | 0.00467 | 0.0121* | 0.00567 | -0.00126 |
| | (0.00500) | (0.0106) | (0.0155) | (0.00763) | (0.00999) | (0.00732) | (0.00658) | (0.00298) |
| Multan | -0.00101 | 0.0224 | 0.00131 | 0.00144 | 0.000108 | 0.0219* | 0.00449 | 0.0217 |
| | (0.00657) | (0.0147) | (0.00211) | (0.00874) | (0.00640) | (0.0117) | (0.00605) | (0.0220) |
| Khanewal | -0.00474 | 0.0113 | 0.0172* | -0.000868 | -0.00412 | 0.0153 | 0.000868 | -0.00264 |
| | (0.00508) | (0.0136) | (0.0103) | (0.00782) | (0.00435) | (0.0140) | (0.00551) | (0.00418) |
| Lodhran | -0.00559 | -0.00221 | 0.0264** | -0.00570 | -0.00467 | 0.00159 | -0.00389 | -0.00253 |
| | (0.00513) | (0.00210) | (0.0118) | (0.00512) | (0.00440) | (0.00183) | (0.00355) | (0.00386) |
| Vehari | -0.00545 | -0.00243** | 0.0200 | -0.00587 | -0.00455 | 0.00129 | -0.00405 | -0.00546 |
| | (0.00496) | (0.00119) | (0.0161) | (0.00512) | (0.00428) | (0.00198) | (0.00344) | (0.00453) |
| Sahiwal | 0.00250 | 0.00679 | 0.00333* | -0.00607 | 0.00393 | 0.0110 | 0.00402 | -0.00301 |
| | (0.00840) | (0.00844) | (0.00201) | (0.00511) | (0.00932) | (0.00732) | (0.00695) | (0.00387) |
| Pakpattan | 0.0180 | 0.0437** | 0.00107 | -0.00605 | 0.0216 | 0.0423** | 0.0305** | -0.00312 |
| | (0.0137) | (0.0220) | (0.00123) | (0.00498) | (0.0149) | (0.0192) | (0.0147) | (0.00363) |
| Okara | -0.00498 | 0.00571 | 0.0161 | -0.00284 | -0.00442 | 0.0112 | -6.13e-05 | -0.00326 |
| | (0.00511) | (0.00858) | (0.0117) | (0.00708) | (0.00437) | (0.00985) | (0.00603) | (0.00345) |
| Rawalpindi | -0.00481 | 0.00313 | 0.0157 | 0.0326* | -0.00480 | 0.00734 | -0.00149 | -0.00596 |
| | (0.00502) | (0.00631) | (0.0159) | (0.0187) | (0.00430) | (0.00664) | (0.00573) | (0.00428) |
| Attock | -0.00481 | -0.00254 | 0.0156 | -0.00721 | -0.00395 | 0.000899 | -0.00440 | -0.00237 |
| | (0.00506) | (0.00179) | (0.0126) | (0.00494) | (0.00432) | (0.00183) | (0.00347) | (0.00327) |
| Chakwal | 0.00120 | -0.00211 | 0.00143 | -0.00306 | 0.00207 | 0.000358 | 0.000348 | -0.00695 |
| | (0.00816) | (0.00159) | (0.00176) | (0.00739) | (0.00758) | (0.00201) | (0.00583) | (0.00511) |
| Jhelum | -0.00501 | 0.00927 | 0.000196 | -0.00660 | -0.00375 | 0.0115 | 0.00161 | -0.00297 |
| | (0.00499) | (0.0105) | (0.00159) | (0.00495 | (0.00435) | (0.0102) | (0.00590) | (0.00368) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | ) | | | | |
| Sargodha | -0.00497 | -0.00346** | 0.00127 | -0.00159 | -0.00414 | -0.000441 | -0.00438 | -0.00347 |
| | (0.00503) | (0.00160) | (0.00180) | (0.00719) | (0.00427) | (0.00180) | (0.00353) | (0.00399) |
| Bhakkar | -0.00496 | 0.0176 | 0.0190 | -0.00619 | -0.00422 | 0.0245 | 0.00219 | -0.00460 |
| | (0.00517) | (0.0168) | (0.0148) | (0.00494) | (0.00433) | (0.0252) | (0.00556) | (0.00447) |
| Khushab | -0.00501 | 0.0154 | 0.000638 | -0.00625 | -0.00397 | 0.0178 | 0.00141 | -0.00249 |
| | (0.00491) | (0.0151) | (0.00158) | (0.00503) | (0.00415) | (0.0187) | (0.00580) | (0.00291) |
| wealth2 | 0.00136 | -0.00436 | 0.00233 | 0.00156 | | | 0.000392 | -0.000777 |
| | (0.00136) | (0.00801) | (0.00204) | (0.00822) | | | (0.00158) | (0.00142) |
| wealth3 | 0.00370** | -0.000354 | 0.0135 | -0.00525 | | | 0.00211 | 0.00135 |
| | (0.00179) | (0.00792) | (0.0112) | (0.00496) | | | (0.00190) | (0.00247) |
| wealth4 | -0.00135 | 0.00385 | 0.00600 | -0.000714 | | | -0.000222 | 0.00665 |
| | (0.00112) | (0.00706) | (0.00552) | (0.00136) | | | (0.00160) | (0.00528) |
| wealth5 | -0.00240 | 0.0131* | 0.00362 | 0.00127 | | | 0.00899*** | 0.00365 |
| | (0.00157) | (0.00772) | (0.00405) | (0.00188) | | | (0.00332) | (0.00345) |
| Urban | 0.00192 | -0.00238 | | | 0.00267 | 1.31e-07 | 0.00133 | -0.00575 |
| | (0.00150) | (0.00371) | | | (0.00222) | (0.00276) | (0.00186) | (0.00368) |
| hhgender | 0.00226*** | 0.00267 | -0.000493 | 0.000907 | 0.00252 | 0.000929 | | |
| | (0.000797) | (0.00393) | (0.00246) | (0.00209) | (0.00157) | (0.00396) | | |
| hhedu_yr | -0.000198 | -0.000566 | 0.00864** | 0.00524 | -0.000407* | -4.62e-05 | -0.000461** | 0.00206 |
| | (0.000189) | (0.000375) | (0.00377) | (0.00329) | (0.000247) | (0.000346) | (0.000205) | (0.00240) |
| medu_yr | | | 0.00685* | -0.000997 | -0.000485*** | -0.000855** | -0.000555 | -0.00259 |
| | | | (0.00369) | (0.00208) | (0.000171) | (0.000367) | (0.000385) | (0.00198) |
| dedu_yr | | | -0.000309 | -0.000296 | 0.000416* | 0.00167*** | 0.000838*** | 0.00105** |
| | | | (0.000479) | (0.000237) | (0.000236) | (0.000339) | (0.000236) | (0.000496) |
| Constant | 0.00196 | 0.0114 | - | 0.00791 | 0.00289 | -0.00233 | 0.00496 | 0.000709 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (0.00536) | (0.0112) | 0.00708** (0.00308) | (0.00613) | (0.00464) | (0.00588) | (0.00416) | (0.00778) |
| Observations | 6,343 | 4,129 | 3,536 | 6,933 | 6,132 | 4,337 | 9,131 | 1,338 |
| R-squared | 0.011 | 0.017 | 0.022 | 0.015 | 0.010 | 0.018 | 0.014 | 0.028 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

**Table 9: Homemakers**

| VARIABLES | (1) No Education | (2) Educated | (5) Urban | (6) Rural | (5) Lowest wealth | (6) Highest wealth | (7) Male hh head | (8) Female hh head |
|---|---|---|---|---|---|---|---|---|
| Retired | 0.320*** | 0.322*** | 0.229*** | 0.324*** | 0.327*** | 0.243*** | 0.304*** | 0.252*** |
| | (0.0310) | (0.0460) | (0.0409) | (0.0326) | (0.0317) | (0.0391) | (0.0354) | (0.0434) |
| dCEB | 0.000376 | 0.0127*** | -0.0162*** | -0.00898** | 0.00105 | 0.00921** | 0.00378 | 0.000531 |
| | (0.00388) | (0.00476) | (0.00334) | (0.00421) | (0.00438) | (0.00464) | (0.00347) | (0.00782) |
| youngest_child | -0.00290 | 0.00261 | 0.00689*** | 0.000622 | -0.00283 | 0.00218 | 0.000619 | -0.00615* |
| | (0.00233) | (0.00241) | (0.00213) | (0.00150) | (0.00254) | (0.00225) | (0.00210) | (0.00355) |
| Bahawalpur | -0.329*** | -0.248*** | 0.0130*** | 0.00107 | -0.319*** | -0.171** | -0.310*** | -0.0328 |
| | (0.0456) | (0.0789) | (0.00406) | (0.00446) | (0.0499) | (0.0759) | (0.0436) | (0.137) |
| B_Nagar | -0.0722 | -0.116 | 0.00331 | -0.00349* | -0.0891** | -0.0188 | -0.0695 | 0.0592 |
| | (0.0495) | (0.0855) | (0.00310) | (0.00207) | (0.0450) | (0.0924) | (0.0441) | (0.160) |
| RY_Khan | -0.242*** | -0.0862 | -0.284*** | -0.297*** | -0.203*** | -0.106 | -0.190*** | -0.0651 |
| | (0.0502) | (0.0767) | (0.0559) | (0.0491) | (0.0534) | (0.0745) | (0.0493) | (0.172) |
| DG_Khan | 0.00321 | 0.00157 | -0.198*** | 0.00120 | 0.0438 | -0.0703 | -0.000325 | 0.323** |
| | (0.0489) | (0.0852) | (0.0650) | (0.0474) | (0.0479) | (0.0991) | (0.0468) | (0.158) |
| Layyah | -0.000399 | -0.0755 | -0.207*** | -0.178*** | -0.0138 | 0.0365 | 0.00526 | -0.0294 |
| | (0.0554) | (0.102) | (0.0684) | (0.0468) | (0.0562) | (0.102) | (0.0599) | (0.193) |
| M_Garh | -0.0967* | -0.253*** | -0.135 | 0.0753 | -0.0869* | -0.296*** | -0.130*** | 0.130 |
| | (0.0529) | (0.0855) | (0.0861) | (0.0490) | (0.0500) | (0.0826) | (0.0481) | (0.166) |
| Rajanpur | -0.0827 | -0.113 | -0.121 | 0.0526 | -0.0768 | -0.0488 | -0.0732 | 0.0892 |
| | (0.0563) | (0.104) | (0.0937) | (0.0555) | (0.0561) | (0.0934) | (0.0538) | (0.220) |
| Faisalabad | -0.335*** | - | - | -0.0244 | -0.333*** | -0.164*** | -0.305*** | 0.0534 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 0.196*** | 0.391*** | | | | | |
| | (0.0470) | (0.0665) | (0.0732) | (0.0512) | (0.0550) | (0.0634) | (0.0479) | (0.162) |
| Chiniot | -0.0952* | -0.0834 | -0.00279 | -0.0877 | -0.114** | 0.0703 | -0.0752 | 0.00123 |
| | (0.0512) | (0.0944) | (0.0891) | (0.0559) | (0.0500) | (0.0748) | (0.0479) | (0.191) |
| Jhang | -0.245*** | -0.154 | - | - | -0.259*** | 0.00457 | -0.208*** | -0.130 |
| | | | 0.209*** | 0.325*** | | | | |
| | (0.0444) | (0.0941) | (0.0690) | (0.0499) | (0.0415) | (0.0916) | (0.0480) | (0.169) |
| TT_Singh | -0.279*** | -0.150** | -0.105 | -0.0693 | -0.299*** | -0.0416 | -0.224*** | -0.0568 |
| | (0.0661) | (0.0760) | (0.0666) | (0.0462) | (0.0696) | (0.0804) | (0.0554) | (0.181) |
| Gujranwala | -0.122** | 0.0101 | -0.183** | - | -0.0820 | 0.0136 | -0.0734 | 0.188 |
| | | | | 0.220*** | | | | |
| | (0.0586) | (0.0641) | (0.0797) | (0.0457) | (0.0601) | (0.0696) | (0.0494) | (0.137) |
| Gujrat | -0.213*** | -0.0270 | -0.0858 | - | -0.114* | -0.0429 | -0.131*** | 0.127 |
| | | | | 0.274*** | | | | |
| | (0.0613) | (0.0613) | (0.0759) | (0.0636) | (0.0607) | (0.0706) | (0.0488) | (0.151) |
| Hafizabad | 0.0695 | 0.0238 | -0.0572 | -0.0754 | 0.106** | 0.0311 | 0.0318 | 0.311* |
| | (0.0610) | (0.0694) | (0.0673) | (0.0523) | (0.0531) | (0.0740) | (0.0450) | (0.173) |
| M_Bahaudin | -0.0946** | -0.00451 | -0.118* | -0.114** | -0.0188 | -0.0291 | -0.0802 | 0.265 |
| | (0.0468) | (0.0733) | (0.0667) | (0.0513) | (0.0536) | (0.0762) | (0.0513) | (0.166) |
| Narowal | -0.0780 | -0.0323 | -0.0840 | 0.101** | -0.0749 | 0.0296 | -0.0840* | 0.257 |
| | (0.0610) | (0.0667) | (0.0786) | (0.0467) | (0.0632) | (0.0728) | (0.0507) | (0.196) |
| Sialkot | -0.250*** | -0.0981 | 0.00208 | -0.0751 | -0.231*** | -0.0809 | -0.150*** | -0.0280 |
| | (0.0659) | (0.0648) | (0.0772) | (0.0583) | (0.0709) | (0.0732) | (0.0486) | (0.185) |
| Lahore | -0.102** | -0.0495 | -0.00627 | -0.0678 | 0.00762 | -0.0175 | -0.0995** | 0.197 |
| | (0.0453) | (0.0599) | (0.0697) | (0.0598) | (0.0664) | (0.0643) | (0.0451) | (0.157) |
| Kasur | -0.112* | -0.00612 | -0.0593 | - | -0.0677 | -0.0186 | -0.0926* | 0.289* |
| | | | | 0.232*** | | | | |
| | (0.0595) | (0.0726) | (0.0728) | (0.0544) | (0.0532) | (0.0718) | (0.0516) | (0.170) |
| N_Sahib | -0.0429 | -0.0794 | -0.133** | 0.0265 | -0.00540 | -0.0485 | -0.0502 | 0.0885 |
| | (0.0602) | (0.0824) | (0.0648) | (0.0552) | (0.0520) | (0.0947) | (0.0545) | (0.160) |
| Sheikhupura | -0.202*** | -0.0286 | -0.154** | -0.0191 | -0.131** | -0.0549 | -0.114** | -0.0692 |
| | (0.0501) | (0.0579) | (0.0692) | (0.0516) | (0.0582) | (0.0698) | (0.0460) | (0.208) |
| Multan | -0.393*** | -0.187** | -0.147* | -0.0200 | -0.394*** | -0.153** | -0.344*** | 0.00902 |
| | (0.0554) | (0.0730) | (0.0863) | (0.0589) | (0.0514) | (0.0771) | (0.0483) | (0.156) |
| Khanewal | -0.242*** | -0.128* | - | -0.0688 | -0.234*** | -0.0848 | -0.198*** | -0.116 |
| | | | 0.205*** | | | | | |
| | (0.0553) | (0.0718) | (0.0666) | (0.0488) | (0.0541) | (0.0809) | (0.0453) | (0.207) |
| Lodhran | -0.241*** | -0.166* | - | - | -0.182*** | -0.252*** | -0.236*** | 0.253 |
| | | | 0.297*** | 0.342*** | | | | |
| | (0.0646) | (0.0897) | (0.0758) | (0.0521) | (0.0631) | (0.0963) | (0.0558) | (0.161) |
| Vehari | -0.293*** | -0.0801 | - | - | -0.269*** | -0.0569 | -0.233*** | 0.0508 |
| | | | 0.255*** | 0.183*** | | | | |
| | (0.0480) | (0.0660) | (0.0772) | (0.0522) | (0.0465) | (0.0817) | (0.0465) | (0.192) |
| Sahiwal | -0.0808* | 0.127** | - | -0.137** | -0.0806 | 0.157** | 0.0224 | 0.224 |
| | | | 0.362*** | | | | | |
| | (0.0480) | (0.0540) | (0.0829) | (0.0607) | (0.0555) | (0.0649) | (0.0405) | (0.160) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pakpattan | -0.0902* | 0.0444 | -0.228*** | -0.214*** | -0.0757 | 0.0672 | -0.0519 | 0.241 |
| | (0.0465) | (0.0662) | (0.0713) | (0.0485) | (0.0521) | (0.0711) | (0.0378) | (0.195) |
| Okara | -0.237*** | 0.0360 | 0.0196 | 0.0196 | -0.101* | -0.0433 | -0.133** | 0.259 |
| | (0.0741) | (0.0620) | (0.0692) | (0.0388) | (0.0559) | (0.0727) | (0.0551) | (0.164) |
| Rawalpindi | -0.253*** | -0.268*** | -0.00395 | -0.0530 | -0.250*** | -0.220*** | -0.241*** | -0.188 |
| | (0.0485) | (0.0642) | (0.0668) | (0.0454) | (0.0545) | (0.0619) | (0.0447) | (0.157) |
| Attock | -0.130** | -0.163** | -0.256*** | -0.0379 | -0.0881* | -0.160* | -0.121** | -0.0390 |
| | (0.0555) | (0.0738) | (0.0870) | (0.0550) | (0.0511) | (0.0836) | (0.0506) | (0.181) |
| Chakwal | -0.0786* | -0.179** | -0.201*** | -0.307*** | -0.0935* | -0.108 | -0.0953** | -0.0501 |
| | (0.0457) | (0.0774) | (0.0724) | (0.0503) | (0.0484) | (0.0853) | (0.0481) | (0.173) |
| Jhelum | -0.110** | -0.197** | -0.277*** | -0.0968** | -0.0374 | -0.226*** | -0.120** | -0.00857 |
| | (0.0487) | (0.0811) | (0.0963) | (0.0454) | (0.0498) | (0.0822) | (0.0475) | (0.154) |
| Sargodha | -0.157*** | -0.177** | -0.0496 | -0.145*** | -0.130*** | -0.176** | -0.160*** | -0.00386 |
| | (0.0500) | (0.0690) | (0.0792) | (0.0549) | (0.0479) | (0.0774) | (0.0507) | (0.172) |
| Bhakkar | -0.0539 | -0.123 | -0.247*** | -0.0927* | -0.0725* | -0.0328 | -0.0646 | 0.170 |
| | (0.0380) | (0.0903) | (0.0880) | (0.0510) | (0.0406) | (0.0899) | (0.0393) | (0.270) |
| Khushab | -0.0743 | -0.0284 | -0.214*** | -0.141*** | -0.0661 | 0.0202 | -0.0543 | 0.153 |
| | (0.0492) | (0.0678) | (0.0638) | (0.0543) | (0.0466) | (0.0784) | (0.0454) | (0.165) |
| wealth2 | 0.00728 | 0.0394 | -0.0301 | -0.0769* | | | 0.0114 | -0.0451 |
| | (0.0202) | (0.0443) | (0.0692) | (0.0431) | | | (0.0194) | (0.0558) |
| wealth3 | 0.0382* | 0.0557 | 0.0270 | -0.0968** | | | 0.0341* | 0.0447 |
| | (0.0222) | (0.0439) | (0.0699) | (0.0470) | | | (0.0181) | (0.0565) |
| wealth4 | 0.0677*** | 0.0676 | 0.0552 | -0.000825 | | | 0.0499** | 0.141*** |
| | (0.0249) | (0.0454) | (0.0479) | (0.0194) | | | (0.0222) | (0.0522) |
| wealth5 | 0.130*** | 0.0554 | -0.0252 | 0.0511** | | | 0.0807*** | 0.172*** |
| | (0.0238) | (0.0451) | (0.0498) | (0.0203) | | | (0.0196) | (0.0659) |
| Urban | -0.0278* | 0.00266 | | | -0.000666 | -0.00957 | -0.00824 | -0.0595 |
| | (0.0152) | (0.0184) | | | (0.0127) | (0.0170) | (0.0131) | (0.0373) |
| hhgender | 0.139*** | 0.185*** | 0.0368 | 0.0647*** | 0.173*** | 0.125*** | | |
| | (0.0168) | (0.0215) | (0.0454) | (0.0229) | (0.0223) | (0.0217) | | |
| hhedu_yr | 0.00276 | -0.0103*** | 0.0635 | 0.112*** | 0.00417* | -0.00453** | -0.00100 | -0.0115* |
| | (0.00188) | (0.00246) | (0.0476) | (0.0305) | (0.00223) | (0.00191) | (0.00139) | (0.00630) |
| medu_yr | | | 0.154*** | 0.142*** | -0.0101* | -0.0131*** | -0.0151*** | -0.000154 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | (0.0260) | (0.0183) | (0.00564) | (0.00290) | (0.00256) | (0.00710) |
| dedu_yr | | | -0.00429 | 0.00189 | 0.00400*** | 0.00416** | 0.00399*** | -0.00485 |
| | | | (0.00269) | (0.00187) | (0.00144) | (0.00201) | (0.00124) | (0.00310) |
| Constant | 0.413*** | 0.341*** | 0.438*** | 0.373*** | 0.357*** | 0.453*** | 0.538*** | 0.272** |
| | (0.0598) | (0.0950) | (0.0822) | (0.0613) | (0.0599) | (0.0774) | (0.0556) | (0.137) |
| Observations | 6,343 | 4,129 | 3,536 | 6,933 | 6,132 | 4,337 | 9,131 | 1,338 |
| R-squared | 0.126 | 0.106 | 0.131 | 0.133 | 0.138 | 0.110 | 0.115 | 0.111 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

**Table 10: Robustness check**

| VARIABLES<br>Daughter employed = 1 | (1)<br>IV 50 years | (2)<br>IV 55 years | (3)<br>IV 60 years |
|---|---|---|---|
| Retired | -0.0412*** | -0.0436*** | -0.0458*** |
| | (0.0113) | (0.0126) | (0.0134) |
| medu_yr | 0.00453*** | 0.00453*** | 0.00453*** |
| | (0.00122) | (0.00122) | (0.00122) |
| dedu_yr | 0.000268 | 0.000268 | 0.000268 |
| | (0.00109) | (0.00109) | (0.00109) |
| dCEB | -0.000397 | -0.000397 | -0.000397 |
| | (0.00209) | (0.00209) | (0.00209) |
| youngest_child | 0.00973*** | 0.00973*** | 0.00973*** |
| | (0.00146) | (0.00146) | (0.00146) |
| Bahawalpur | 0.0368 | 0.0368 | 0.0368 |
| | (0.0278) | (0.0278) | (0.0278) |
| B_Nagar | -0.0380 | -0.0380 | -0.0380 |
| | (0.0285) | (0.0285) | (0.0285) |
| RY_Khan | -0.0416 | -0.0416 | -0.0416 |
| | (0.0279) | (0.0279) | (0.0279) |
| DG_Khan | -0.0426 | -0.0426 | -0.0426 |
| | (0.0404) | (0.0404) | (0.0404) |
| Layyah | -0.0240 | -0.0240 | -0.0240 |
| | (0.0358) | (0.0358) | (0.0358) |
| M_Garh | 0.0284 | 0.0284 | 0.0284 |
| | (0.0334) | (0.0334) | (0.0334) |
| Rajanpur | 0.0287 | 0.0287 | 0.0287 |
| | (0.0433) | (0.0433) | (0.0433) |
| Faisalabad | 0.0315 | 0.0315 | 0.0315 |
| | (0.0278) | (0.0278) | (0.0278) |
| Chiniot | 0.0117 | 0.0117 | 0.0117 |
| | (0.0304) | (0.0304) | (0.0304) |
| Jhang | -0.0109 | -0.0109 | -0.0109 |

| | | | |
|---|---|---|---|
| | (0.0298) | (0.0298) | (0.0298) |
| TT_Singh | 0.0178 | 0.0178 | 0.0178 |
| | (0.0395) | (0.0395) | (0.0395) |
| Gujranwala | -0.0207 | -0.0207 | -0.0207 |
| | (0.0249) | (0.0249) | (0.0249) |
| Gujrat | 0.0193 | 0.0193 | 0.0193 |
| | (0.0234) | (0.0234) | (0.0234) |
| Hafizabad | -0.0406 | -0.0406 | -0.0406 |
| | (0.0268) | (0.0268) | (0.0268) |
| M_Bahaudin | -0.00971 | -0.00971 | -0.00971 |
| | (0.0351) | (0.0351) | (0.0351) |
| Narowal | -0.0516 | -0.0516 | -0.0516 |
| | (0.0330) | (0.0330) | (0.0330) |
| Sialkot | -0.0307 | -0.0307 | -0.0307 |
| | (0.0245) | (0.0245) | (0.0245) |
| Lahore | -0.0287 | -0.0287 | -0.0287 |
| | (0.0256) | (0.0256) | (0.0256) |
| Kasur | -0.0333 | -0.0333 | -0.0333 |
| | (0.0288) | (0.0288) | (0.0288) |
| N_Sahib | -0.0503 | -0.0503 | -0.0503 |
| | (0.0321) | (0.0321) | (0.0321) |
| Sheikhupura | 0.0172 | 0.0172 | 0.0172 |
| | (0.0364) | (0.0364) | (0.0364) |
| Multan | 0.0795** | 0.0795** | 0.0795** |
| | (0.0366) | (0.0366) | (0.0366) |
| Khanewal | 0.0837** | 0.0837** | 0.0837** |
| | (0.0380) | (0.0380) | (0.0380) |
| Lodhran | 0.140*** | 0.140*** | 0.140*** |
| | (0.0439) | (0.0439) | (0.0439) |
| Vehari | 0.0751** | 0.0751** | 0.0751** |
| | (0.0332) | (0.0332) | (0.0332) |
| Sahiwal | -0.0474* | -0.0474* | -0.0474* |
| | (0.0250) | (0.0250) | (0.0250) |
| Pakpattan | -0.0655*** | -0.0655*** | -0.0655*** |
| | (0.0252) | (0.0252) | (0.0252) |
| Okara | -0.0262 | -0.0262 | -0.0262 |
| | (0.0321) | (0.0321) | (0.0321) |
| Rawalpindi | 0.00158 | 0.00158 | 0.00158 |
| | (0.0366) | (0.0366) | (0.0366) |
| Attock | -0.0112 | -0.0112 | -0.0112 |
| | (0.0281) | (0.0281) | (0.0281) |
| Chakwal | -0.0212 | -0.0212 | -0.0212 |
| | (0.0282) | (0.0282) | (0.0282) |
| Jhelum | -0.0568* | -0.0568* | -0.0568* |
| | (0.0297) | (0.0297) | (0.0297) |
| Sargodha | -0.00372 | -0.00372 | -0.00372 |

| | | | |
|---|---|---|---|
| | (0.0274) | (0.0274) | (0.0274) |
| Bhakkar | -0.0354 | -0.0354 | -0.0354 |
| | (0.0267) | (0.0267) | (0.0267) |
| Khushab | 0.00308 | 0.00308 | 0.00308 |
| | (0.0301) | (0.0301) | (0.0301) |
| wealth2 | -0.0728*** | -0.0728*** | -0.0728*** |
| | (0.0126) | (0.0126) | (0.0126) |
| wealth3 | -0.0911*** | -0.0911*** | -0.0911*** |
| | (0.0112) | (0.0112) | (0.0112) |
| wealth4 | -0.106*** | -0.106*** | -0.106*** |
| | (0.0130) | (0.0130) | (0.0130) |
| wealth5 | -0.106*** | -0.106*** | -0.106*** |
| | (0.0140) | (0.0140) | (0.0140) |
| Urban | -0.00904 | -0.00904 | -0.00904 |
| | (0.00697) | (0.00697) | (0.00697) |
| hhgender | -0.0343*** | -0.0343*** | -0.0343*** |
| | (0.0109) | (0.0109) | (0.0109) |
| hhedu_yr | -0.00200* | -0.00200* | -0.00200* |
| | (0.00115) | (0.00115) | (0.00115) |
| Constant | 0.264*** | 0.264*** | 0.264*** |
| | (0.0266) | (0.0266) | (0.0266) |
| Observations | 10,469 | 10,469 | 10,469 |
| R-squared | 0.039 | 0.039 | 0.039 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

**RDD graphs:**

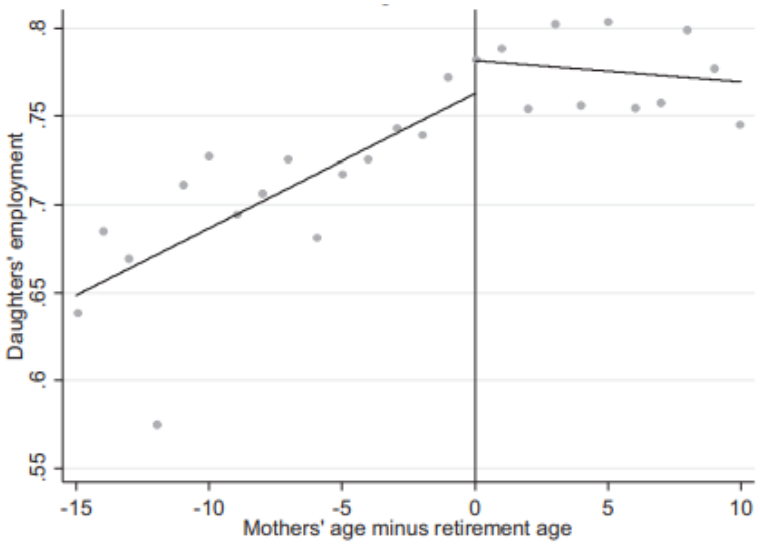


**Figure 2:** Regression Discontinuity design showing a positive effect

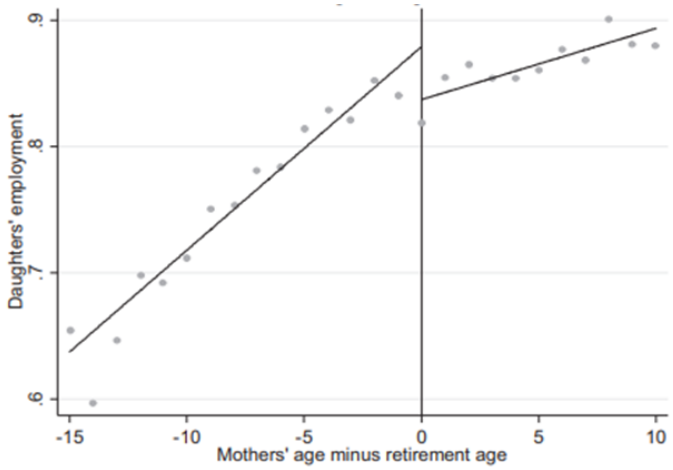


**Figure 3:** Regression Discontinuity design showing a negative effect