Education and Employment Choices:

Evidence from Pakistan

By

Waqar Saleem Khan

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Supervisor: Dr. Muhammad Nasir

Pakistan Institute of Development Economics (PIDE)

MPhil Business Economics, Department of Business Studies

Pakistan Institute of Development Economics

CERTIFICATE

This is to certify that this thesis entitled: **"Education and employment choices: Evidence from Pakistan"** submitted by Mr. Waqar Saleem Khan is accepted in its present form by the Department of Business Studies, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree of **Master of Philosophy in Business Economics**.

External Examiner:

Dr. Abdul Rashid
Associate Professor
IIUI, Islamabad

Supervisor:

Dr. Muhammad Nasir
Senior Research Economist
PIDE, Islamabad

Head, Department of Business Studies:

Dr. Nadeem Ahmed Khan
Head
Department of Business Studies
PIDE, Islamabad

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Waqar Saleem Khan

Contents

Abstract

The objective of this study is to investigate the influence of education on the probability of employment (self-employment and wage employment) in Pakistan. Household integrated income and consumption survey (HIICS, 2015-16) data is used for this analysis. Logistic regression technique is used to estimate the impact of education on the probability of employment selection. This study concludes that primary, middle and matric level of education are positively whereas, intermediate, graduation and post-graduation level of education are negatively associated with the selection of self-employment. In addition to this, other determinants of employment selection like age of worker, total monthly income of household, family size, dependency ratio are positively and significantly effecting the probability of choosing self-employment. This study suggests that government should formulate such policies that changes the preferences of individuals from wage-employment towards self-employment. The effect of education on employment choice suggest that educational system is not creating the skills among the highly educated individuals which are necessary for becoming an entrepreneur. Therefore, government and private institute should focus on provision of education which enhances the entrepreneurial skills among the educated workers.

Chapter 1

Introduction

One of the key and long-lasting concern across developing countries is the creation of employment opportunities for their youth. Although, it is a worldwide problem, but in the case of developing countries it is the most debatable issue. Youth of any country is an asset and the provision of employment opportunities to them is the responsibility of government. In addition, employment creation raises the family income, reduces income disparities and improves social well-being.

Pakistan is the sixth most populous country of the world with an estimated population of 191.71 million in year 2014-15. The estimates of total labour force in Pakistan stands at 63.03 million in the year 2014-15 out of which 59.1 million are employed and 3.93 million were unemployed; implying 6.2 percent unemployment rate over all. Total labour force is increasing over the passage of time. With the increase in participation rate, unemployment rate is also increasing. Pakistan like many developing countries[1] has high percentage of youth in total population; about 63 percent below the age of 30 years (LFS, 2014-15). The labor force participation rate among youth (ages 10-24) is 41.3 percent among males and 16.4 percent females. The unemployment rate is 9.8 percent among male youth and 12.3 percent among female youth. Now in 2017, the total population of Pakistan to be estimated is 207.7 million (GoP, 2017) and 57.9 percent of youth is dependent upon the others for their livelihood.

[1] The percentage of youth in Afghanistan, Bangladesh, India and Sri Lanka is 63.7 percent, 34.3 percent, 64.4 percent and 22 percent, respectively.

The creation of employment for all of its unemployed youth is not possible for any of the country. Besides wage employment in public sector, different employment options are available to individuals. Among these entrepreneurship/self-employments has achieved greater attention previously and currently as well. Self-employment is an important sector of the labor market of all countries and an alternative to paid employment. In recent years, the countries where unemployment is in high percentage, self-employment is going to be considered as one of the possible source of new jobs even in developed countries. It is also one of the way of employing entrepreneurial abilities which are intrinsically present in a person or achieved through acquiring education. Recently, economists have also begun to systematically analyze the role that self-employment is playing in the labor market. In fact, entrepreneurs not only create their own job but also other people's job through the wage-workers they hire. Hence, self-employment may be viewed as possible solution to unemployment and other problems.

Recognizing the important role that self-employment play in job creation, finding of the determinants of occupational choice between self-employed and employees have emerged as the important one. This in turn help in determining which type of workers (highly or low educated) enter in which category of employment. Therefore, there is ongoing debate among the researchers which factor affect the choice of employment the most. Theoretical and empirical studies[2] of this field pointed out many determinants that may have an influence on the employment choice (self-employment or wage employment). Among these factors level of education is one of the components of individuals' human capital, is considered to be important for business actions as pointed

[2] See Le (1999) and Blanchflower and Oswald (1998) for survey of earlier research

out by Le (1999), “one of the major theoretical determinants of self-employment choice is educational attainment.”

There are contrasting views regarding the impact of education on the self-employment. Certain studies recommend that, there is a positive effect of schooling on the self-employment probability, while others discover that the chance to choosing of entrepreneurship as an occupational option declines with increasing ranks of schooling. Against this back drop this study intends to finds out the affiliation among level of schooling and the likelihood of selection into self-employment or wage-employment.

The important gap after studying the literature is that a lot of studies analyze the impact of education on the probability of selection into self-employment, while some other analyze the impact of education on the probability of selection into wage employment. There is not even a single study available which has investigated the impact of education on the probability of selection into self or wage employment for Pakistan.

We are of the view that more educated people prefer self-employment over wage employment. Therefore, we want to know either higher educated people have greater intention for self-employment or wage employment in the case of Pakistan. In this respect this study will be a greater addition in the existing literature.

1.1 Objective of study

- To analyze the impact of education on the probability of selection into self-employment. These choices are between self-employment and wage employment.
- To explore the determinants of employment opportunities.

1.2 Significance of study

This study will help us in understanding the role played by education in determining the labor market outcomes in the form of self or wage employment. The role of self-employment in the situation of low unemployment opportunities is crucial in the economy of Pakistan, where unemployed educated youth is in abundant.

Governments are often encouraged to introduce the policies to reduce unemployment. But if the unemployment rate is high then to facilitate all the unemployed people through creating the employment opportunities in public sector become difficult for the governments. Therefore, this study will help the policy makers to find out alternative employment opportunities instead just focusing on the public sector.

1.3 Organization of study

The rest of the study is organized as follows: Chapter two provides the detail literature review regarding the impact of education on both 'wage employment' and 'self-employment. Chapter three discusses the theoretical channel by which the education may possibly have an impact on the probability of choice of employment. Chapter four briefly presents the data, variables, and econometric methodology which is being used for empirical analysis. Chapter five details the results, while chapter six concludes the study.

Chapter 2

Literature review

The influence of educational attainment on the choice of employment have been considered by many researchers with the help of individual data. There is no constant research results in the literature regarding the impact of education on the self-employment.

Blau (1985), proposed a model of employment choice between wage and self-employment in the context of less developed countries under the assumption of competitive labour market. He concludes that managerial ability of an individual and self-employment are positively associated with each other. Relatively a higher level of managerial ability and expected higher earnings are observed for self-employed as compared to wage employees in this model.

Le (1999) discussed several channels through which educational achievement can enhances the likelihood of selection into self-employment. According to him, in one hand managerial abilities of a person are enhanced through educational attainment which in turn raises the likelihood of choosing self-employment but on the other hand higher level of education proves to be favorable in finding the salaried jobs, therefore the propensity of becoming self-employed decreases. The first argument is supported by Rees and Shah (1986) who examine this issue for United Kingdom and fined more education increases the probability of selection into self-employment. Similarly, Gill (1998) using the same model for US data confirmed this results and reports that probability of choosing self-employment is higher for

highly educated workers. Evans and Leighton (1989), Borjas and Bronars (1989) also supports this view that the probability of being self-employed is higher for highly educated person.

Calvo and Wellisz (1980) through employing the general equilibrium model, explain the impact of educational attainment on the probability of selection into an entrepreneurial position through managerial ability. According to them managerial ability is enhanced through education, which in turn increases the probability of entrepreneurship. Levie and Autio, (2008) are also of the view that education provides individuals necessary skills and qualities for creation of new business. Honig (2004) establishes the fact that individuals' skills for starting a new business is enhanced through education, whereas, Detienne and Chandler (2004) are of the view that individuals' cognitive ability to identify and assess business opportunities are affected by education. Moore and Mueller (2002), are of the view individuals with higher level of education have higher probability of entering self-employment. Studying the movement from wage employment to self-employment they explore the low probability of movement for the individuals with elementary school education, whereas people with university education are more probable. An analysis by Sayed et al., (2014) on the determinants of entrepreneurship also confirms the positive impact of education on entrepreneurial activities.

Stefanovic and Stosic (2012) establish that self-employment is preferred over wage employment in Republic of Serbia when the level of education increases. The share of individual with college and university degree is two times higher in wage employment as compared to their share in self-employment. Popescu et al., (2016) while analyzing the influence of different types of education (master, bachelor, entrepreneurial and non-entrepreneurial) find that entrepreneurial education has positive association with setting up new

business, while other types of education have no significant influence on the establishment of new business.

On the contrary, the negative association between level of education and likelihood to become self-employed is also found by many studies. Mixed results of the impact of education on self-employment exists. It appears from many studies that investment in formal education is not rewarded in self-employment. As House et al. (1993) and Taylor (1996) explore, formal education has no role to play in determination of self-employment and the success of entrepreneurship is unrelated with formal education. In the opinion of Blau (1985) and de Wit (1993), formal education is not as much necessary for the initial success of a new firm as the good business idea. Management skills are more important than formal education for establishing and running an enterprise. As discussed by Lentz and Laband (1990) it may be due to difference in qualifications. Qualifications which result from formal education acquisition are not necessarily those required for business/entrepreneurship. The human capital of self-employed by having formal education is not enhanced in the way as it is enhanced among the wage-employees. Thus, high levels of education discourage the selection of self-employment and facilitate the selection into wage employment.

Blanchflower *et al.,* (2001), find that the level of education has a negative effect on the probability of an individual selecting self-employment. They state that highly educated people may not be willing to take the risk associated with entrepreneurship. Praag (2009) also states that individual's decision to become entrepreneur has negative correlation with education. It may be due to low motivation of highly educated people for entrepreneurship or consideration of education less valuable for establishing a business. Baffour and Turkson (2015) suggest that

all levels of education increase the probability to be employed in public and private sector while the probability of selection into self-employment decreases with education.

Shavit and Ychtman-Yaar, (2001) find that impact of education on the probability to become self-employed is curvilinear. Individuals having the low or higher level of education are less likely to be self-employed, whereas workers with the medium level of education i.e. possessing matriculation diploma are more probable to start work as self-employed person. Jorge-Moreno et al., (2011) measures the student's intention efficiency who are enrolled in economic and business studies degree, for entrepreneurship and finds that business studies student's intention to become entrepreneur decreases as they progress in their studies[3]. For economics degree students, the entrepreneurial intention efficiency is highest for the student who are in third course whereas it is lowest for the fifth course students.

Sluis *et al*., (2005, b), while conducting a Meta-Analysis for developing countries find no evidence of the relationship between individual's schooling level and the probability of selection into entrepreneurship. According to him highly educated workers are more likely to become salaried workers. On the other hand, increased education also pulls them to avail non-farm entrepreneurship opportunities relative to farming. Whereas, Sluis et al., (2008) conducted a Meta-analysis for industrial countries and concludes that impact of education on

[3] The students who are studying second and third course have higher intention to become entrepreneur than the student who are studying fourth and fifth course. This may be due to risk factor involved in setting a company and the financial constraints faced by the family.

entrepreneurial selection is neither positive nor negative i.e. insignificant in seventy five percent of the cases.

Assaad et al., (2000) examines the determinants of employment status while employing multinomial logit model. The separate analysis is done for urban/rural areas and for male/females. The findings reveal that women with secondary level of education or above are salaried worker, whereas the women who are self-employed have no basic education. This is only true for urban areas as there is no wage employment for women in rural areas. For males, the probability of selection into salaried employment with basic education is more than the probability of selection into other employment status and it is true for both rural and urban areas.

Diamond and Schaede (2016) explores that during the period from 1963 to 2004 low educated people have high preferences for self-employment. The results are similar both for men and women having the school degree but for the women possessing high level of education the result is opposite to this i.e. preference for self-employment among highly educated women is higher. Praag and Ophem (1995), discuss the determinants of opportunities and willingness to become an entrepreneur. Among these determinants education is found not to have any impact on the probability to become self-employed, either through willingness or opportunities.

Gérard Duchêne et al., (2007) show that self-employment sector has low percentage of undergraduate and graduate individuals either male or female. Whereas, the high percentage of individuals with undergraduate level is associated with wage/salaried employment. Furthermore, individuals having ten to twelve years of education have greater share in wage employment than self-employment sector. Thus, this suggests that the persons with higher level

of education have low propensities to choose self-employment. According to report by UNESCO (2013)[4] on eleven developing countries further confirms the findings that non-wage employment is more common among those who have low levels of education.

Comola and Mello (2010) also establish the positive association between education and salaried employment and are of the view that workers with higher level of education end up as salaried employee. Trang Do (2008) studying the determinants of self-employment for Vietnam reports the people with low education are more inclined to choose self-employment than wage employment. Destré and Henrard (2004) also finds negative association between self-employment and education. For university graduates this relationship is observed to be stronger. According to them, it may due to the fact the qualification which is essential and required for setting up new business may not be attained by the formal education. Formal education only facilitate entry into wage employment. Kidd (1993), in doing the anlaysis for Australian born, finds individuals with diploma are 3.87 percentage points are less probable than the individuals who have not completed ten years of education to select self-employment.

Faridi et al., (2010) while exploring the determinants of self-employment find with the increase in the level of education, the likelihood of choosing the self-employment as the career choices decreases among the individuals. Farooq (2011) explores almost 10.6 percent of the graduate males consider that their job is irrelevant to their qualification, while for females this percentage is 13.8. This reveals the fact that females are facing the problem of job-qualification mismatch more than the male graduates.

[4] Educational attainment and employment outcomes

From the analysis of literature review, we came across that education is one of the determinants[5] of entrepreneurship selection and wage employment. Some studies investigated the impact of education into selection of self-employment while some other found its impact on wage employment. The results of the studies are mixed. Some found negative impact of education on the probability of selection into self-employment, while some other found no link between them. Same is the case when studying the impact of education on wage employment. Some studies establish the positive relationship between education and employment while some other portrays that the impact of education on the likelihood of wage employment is insignificant.

[5] The other determinants are risk attitude, access to capital, labor market experience, business acumen, family background, psychological traits

Chapter 3

Theoretical Framework

Educational attainment is found to be one of the theoretical determinant of choosing the self-employment. The channels through which education have an impact on this choice of employment is discussed by the researchers. Lucas (1978) presented the model "*On the size distribution of business firms*" in which discussing the managerial abilities he argues firm size increases with managerial abilities. Further, based on this, Le (1999) proposed two channels i.e. managerial ability and outside options impacting the choice of self-employment. In one hand, according to him, attainment of higher level of education has positive influence on the managerial ability and in turn raises the propensity to become self-employed. But on the other hand, there is possibility that higher level of education may have negative impact on the choice of self-employment. As an outside option, lucrative wage employment and better working conditions may available to highly educated persons and thus this causes the decline in likelihood to become self-employed/entrepreneur. Calvo and Wellisz (1980) while focusing on the Lucas models also discussed the above proposed channels by which the education have an impact on the probability of selection into self-employment.

What the net impact of the level of education will be is yet unclear. It may be due to theoretically predicted offsetting net impact of influence of education is undefined. Therefore, no proposition is provided by the theory about the empirical association between the level of education, self-employment and wage employment. As a result of this contrasting empirical evidence exist about the relationship between the education and the

decision to become either self-employed of wage employee. Therefore, this relationship cannot be determined as priori.

In addition, Johansson (2000) is of the view, earning potential of an individual increases with the increase in level of education in paid employment sector. This means if an individual is paid higher wage then opportunity cost of becoming self-employed will go up. In this situation, the more educated individual will not prefer to become self-employed.

Chapter 4

Data and Methodology

4.1 Data

Data from House Hold Integrated Income and Consumption Survey (2015-16) have been used for this study. This survey is obtained by merging the household Integrated Economic Survey (HIES) and Family Budget Survey (FBS). It consists of rich information on employment and individuals' socio-economic characteristics which proves to be helpful in doing the analysis of education and employment choice.

The data on wage and self-employment is extracted from employment and income section whereas the other information regarding the socio-economic characteristics of is extracted from roster and education section of this survey. The data is merged on the basis of common identification codes. Its employment and income section consist of 115910 individuals but among them only 44147 are employed[6]. We have focused on only last month employment as we have large number of observations i.e. 43480 employed individuals. Among these individuals 26952 are paid employee, whereas 5814 are self-employed persons.

[6] Either employed last month, doing other work last year, or doing any other work last year

4.2 The Model

The choice to become self or wage employed is modelled in the logit framework. The decision to enter into self-employment can be defined by then an unobserved latent variable SE*.

$$SE_i^* = x_i'\beta_i + \varepsilon_i \qquad (1)$$

Here *i* is the *i*th individual, Ɛ is the error term which is distributed normally with mean zero and constant standard errors. X is the set of explanatory variables and β is vector of unknown parameters to be estimated. The choice of entering into self-employment is related to actual decision of becoming self-employed or wage employed by assuming;

$$SE_{ij} = \begin{cases} 1 & \text{self} - \text{employment} \quad \text{if } SE^* > 0 \\ 0 & \text{wage} - \text{employment} \quad \text{if } SE^* \leq 0 \end{cases} \qquad (2)$$

If the individual chooses the self-employment then it's probability can be defined as:

$$pr(SE_i = 1|x_i) = (SE^* > 0|x_i)$$

$$pr(SE_i = 1|x_i) = [(x_i'\beta + \varepsilon_i) > 0|x_i]$$

$$pr(SE_i = 1|x_i) = pr(\varepsilon_i > -x_i'\beta|x_i)$$

$$pr(SE_i = 1|x_i) = pr(\varepsilon_i/\sigma > -(x_i'\beta)/\sigma|x_i)$$

$$pr(SE_i = 1|x_i) = \phi(-x_i'\beta/\sigma)$$

Similarly, the probability of choosing wage employment is;

$$pr(\mathrm{SE_i} = 2|\mathrm{x_i}) = 1 - (-\mathrm{x_i'}\beta/\sigma)\ ,\ \sigma=1$$

This is cumulative standard normal probability distribution function. The relationship between explanatory variables and the probability of selection into self-employment can be further interpreted through estimating the marginal effect. This accounts for the partial change in the probability carried out by changes in explanatory variables. Marginal effect can be derived as follow;

$$\frac{\partial \mathrm{pr(SE_i=1|x)}}{\partial \mathrm{x_i}} = \phi\left(\mathrm{x_i'}\beta\right)\beta$$

The operational model of self-employment for estimation is outlined in the following equations.

$$SE* = \beta_0 + \beta_1 age + \beta_2\, age^2 + \beta_3 Edu_{cont} + \beta_4 Edu\ cont^2 + \beta_5 gender + \\ + \beta_6 MARTS + \beta_7 DP.R + \beta_8 FS + \beta_9 PMFI + \beta_{10} region + \\ \beta_{11} province + \mu \qquad (3)$$

4.3 Variables

4.3.1 Dependent variable

"SE" is a dependent binary variable, consisting of two choices i.e., self-employment or wage employment. If workers choose self-employment then it takes the value one otherwise zero. In the studies of the state and the entrepreneurship dynamics, as well as in the models of the employment options choice, entrepreneurship is often quantitatively determined by the number of self-employed (Suzana, 2012).

4.3.2: Explanatory Variables

The list of explanatory variables involves demographic, and socioeconomic characteristics. These variables are discrete, continuous or a combination of both.

Age: is the age of individual. This will be included in the model in two ways i.e. as total years and dummy variables for different age groups (in order to see the self-employment response for various age groups).

There are not the same sentiments on the influence of age on individual selection to the self-employment as a labor market status. It can be positive or negative. Dissimilarities in the explanation of the effect of age on self-employment can be described by separating the two phases of this association. If age is taken as a determining factor of the size of the monetary, human and societal capital that an individual has (Arum and Muller, 2004; Parker, 2009), it can be presumed that the probability to be a businessperson will increase with time of life (Praag and Ophem, 1995). But on the other hand it is also argued that probability of taking the risk is lower in old individuals than young individuals as their willingness to take the risk decreases with the increase in age. In addition, the old people avoid to do the work which are more demanding as is the case with self-employment. Consequently, the likelihood of choosing the self-employment declines (Rees and Shah, 1986).

Age^2 : Adding the square of age variable into the model allows to capture the non-linear relationship between the employment and age. For instance, the effect of age could be positive up to some level of age e.g. at the age of 50, and then negative thereafter.

Edu (Education): This represents the level of education of individuals. It will be included in the model as completed years of education or in the form of dummies representing different levels of education. As discussed in the literature reviews its impact on the probability of selection into self-employment cannot be determined as priori.

MARTS (Marital Status): This variable is related to the marital status of a person. It is possible that a married man will be more prepared to take risks (Rees and Shah, 1986) as marriage is assumed in the economics literature to represent stability and thus to provide a suitable background for risky self-employment (Le, 1999). On the other hand, family support may make self-employment less demanding than it would be otherwise. Marital status raises the sense of familial responsibilities in the individuals, therefore, making self-employment less attractive due to factor of risk.

Gender: This represents gender of a person. Generally, it is expected that men are more involved in business than women, especially in the case of developing countries (Kelley et al, 2012).

FS (family size) : It is the family size of individual. It is expected that with the increase in the households' size the likelihood of selection into self-employment decreases.

DP.R (Dependency ratio): This shows the number of family members who are dependent on the employed individual. It is expected as the number of dependency ratio increases, it raises the probability of selection into self-employment.

PMFI (Per month family income): This variable shows the total monthly income of the household. It is expected that this variable has positive association with the selection into self-employment.

REG: This variable shows either an individual is residing in urban area or rural area. It is included in the analysis to control for regional disparities.

Province: This variable is included in the model to show the provincial disparities. KPK is being used as the reference category. Punjab and Sindh are considered more developed provinces of Pakistan than KPK and Balochistan , therefore it is expected that self-employment opportunities available in these regions are higher as compare to KPK and Baluchistan.

The description of these variables as the determinants of the self-employment is provided in Appendix (Table A).

Chapter 5

Empirical Result and Discussions

5.1 Introduction

In this section, we set out to explain in detail the characteristics of the variables and proceed to compute and analyze relationships in pursuit of our objectives. Summary statistics in the next section provide statistical information on the characteristics of the variables i.e., mean, maximum, minimum and standard deviation. We also discuss continuous and categorical variables separately. After that we proceed to the regression analysis. Regression analysis is supplemented with a comprehensive debate on the results and their significance.

5.2 Summary Statistics

In this section we'll look at some of the basic statistical characteristics of the variables at hand. For the purpose of convenience and understanding we have separated variables in to 'continuous' and 'categorical' and have explained them separately.

5.2.1 Continuous Variables

In table (5.1), variables that are critical to our analysis i.e., education, age, per-month family income and household size are discussed from the perspective of employed individuals. Education is measured in terms of number of years of education. Its mean value comes out to be significantly low at 6.73 depicting that on average employed individuals in our sample have 7 years of education but at the same time this value comes coupled with a higher standard deviation indicating towards a high dispersion in the data. This shows that despite the fact,

average education of employed individual is low there are employed individuals with significantly higher education than the presumed average.

Age is also measured in number of years. Average age of the sample is approximately 35 years. The peculiarity of the answer comes from the fact that our sample specifically takes only those individual who are employed thereby excluding some age groups. Though there are age restrictions on wage-employment for individuals but there is no age-restriction for self-employment which indicates towards the inflated value for standard deviation.

The data for per-month family income (PMFI) reveals an average income of approximately Rs.5350 with the magnitude of standard deviation bigger than the average. A low value for the average income may indicate towards higher wage employment as well as self-employment of less educated individuals but since the age and education categories are diverse, employed individuals with higher education and experience would earn more leading to data showing a lot of dispersion.

Table 5.1 Summary Statistics of Employed Individuals (15-64 years of age)

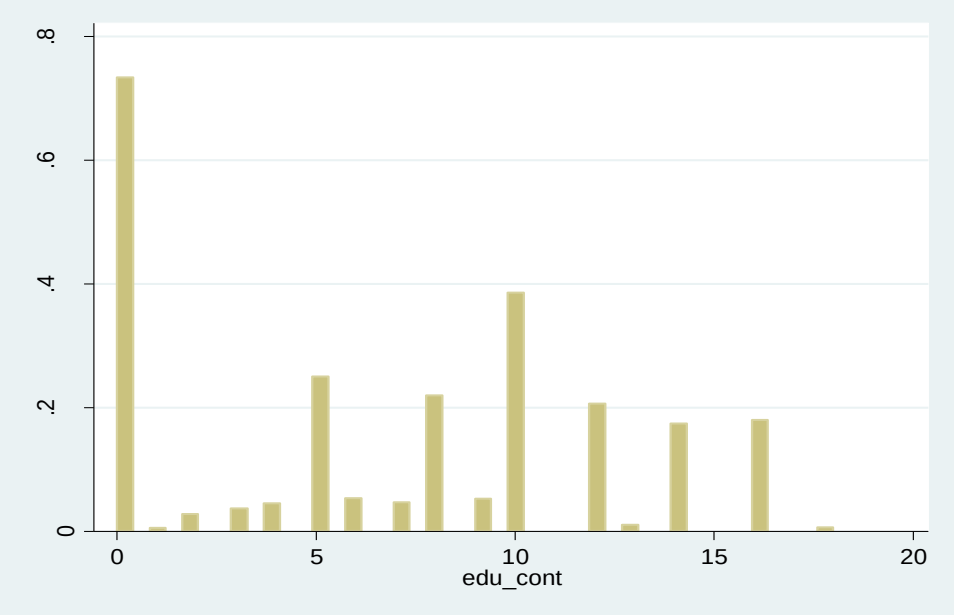
Variable	Mean	Std.Dev.	Min	Max
Edu	6.737	5.440	0	18
Age	35.257	12.217	16	65
PMFI	5353.201	6783.444	15.625	290969.8
FS	7.356	3.665	1	63

Last but not least our sample shows the average family size (FS) to be around 7 individuals with rather smaller dispersion indicating that apart from few family where the number of individuals is high, the sample shows most of the data in close proximity of the mean.

5.2.2 Categorical Variables

The only categorical independent variable that we have is education. Table (5.2) shows the nine categories that we have defined from the education information of individuals. These categories are defined on the basis of existing literature and distribution of data. Looking at the histogram of education (as continuous variable) in figure (5.2.2.1), it can be seen that the largest number of employed individuals are illiterate. After this there are significant spikes at the following stages; primary, middle, matric, intermediate and graduation.

Fig 5.1: Trend of Education



For the individuals who have completed 5 years of education have been categorized as primary educated individuals and the individuals who have education more than graduation have been categorized as post-graduates[7].

[7] Categories for education have been drawn up according to Afridi et al., (2010).

Table 5.2: Summary Statistics of Education (%)

Education groups/Employment	Wage Employment	Self-employment	% (N)
Illiterate	84.35	15.65	100 (9431)
Primary	79.35	20.65	100 (4,732)
Middle	76.74	23.26	100 (4,132)
Matric	78.38	21.62	100 (5,651)
Intermediate	82.57	17.43	100 (2,657)
Graduation	87.08	12.92	100 (2,391)
Post-Graduation	92.79	7.21	100 (2,413)
% (N)	82.23(25,825)	17.77(5,582)	100 (31,407)

In table (5.2), we compare the percentage distribution of wage and self-employed individuals with respect to different education categories. Our initial inspection reveals that across all categories from completely illiterate through post-graduation the percentage of wage earning individuals remains significantly higher compared to self-employed individuals in the same education category. However, in table (5.3) we see in wage and self-employment the percentage distribution of different educational categories. It can be seen that for both wage and self-employment, as the individual progresses through the education categories the percentages of people employed in both groups rise up to the level of matric. After matric the increase in education is met with falling percentages of people employed in both categories.

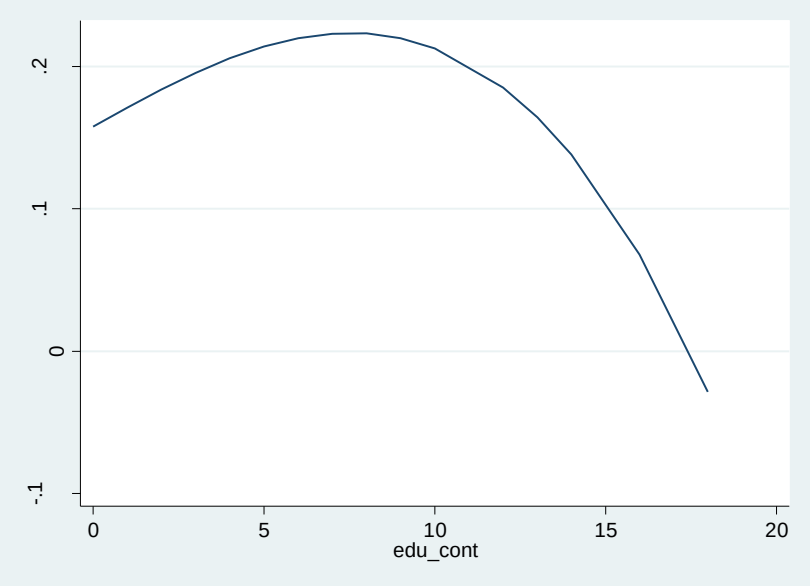
It can also be observed that in wage employment the percentage of individuals with intermediate, graduation and post-graduation level is higher whereas the percentage of individuals with low level of education is higher in self-employment. This indicates as the education level increases the individuals prefer to go in wage employment rather than choosing the self-employment as their mean of livelihood. To explore more in this regard we also draw a graph which gives legitimacy to our claim.

Table 5.3: Summary Statistics of Education (%)

Education groups/Employment	Wage employment	Self-employed	% (N)
Illiterate	30.8	26.44	30.03(9,431)
Primary	14.54	17.50	15.07(4,732)
Middle	12.28	17.22	13.16(4,132)
Matric	17.15	21.89	17.99(5,651)
Intermediate	8.50	8.29	8.46(2,657)
Graduation	8.06	5.54	7.61(2,391)
Post-Graduation	8.67	3.12	7.68(2,413)
% (N)	100 (25,825)	100 (5,582)	100 (31,407)

To explore more in this regard we also draw a graph which gives legitimacy to our claim.

Fig 5.2: Trend of Education



Same as we have done for education, the categories for 'age' have also been drawn up based upon existing literature and have been arranged in a sequential manner[8]. In table (5.4),

[8] Categories for age have been drawn up according to Moore and Mueller (2002).

we see that across all age categories the percentage of wage-employment dominates the percentage of self-employed individuals highest being 91 percent at age 16-25 and lowest being 72 percent at age 56-65.

Table 5.4: Summary statistics of Wage and Self-Employed with respect to Age (%)

Age groups/employment	Wage employed	Self-employed	% (N)
16-25	91.23	8.77	100 (8,356)
26-35	83.63	16.37	100 (9,088)
36-45	77.59	22.41	100 (7,055)
46-55	74.87	25.13	100 (4,914)
56-65	72.67	27.33	100 (1,994)
% (N)	82.23(25,825)	17.77 (5,582)	100 (31,407)

Looking for a trend in wage as well as self-employment in individuals through different age groups reveals that as we move up the age categories, from younger towards the older individuals, the percentage of wage earning individuals gradually decreases. For self-employed individuals a mix trend is found; there is a gradual increase in self-employment as age increase from 16 to 45 but after this age uptil 65 the percentage of self-employed individuals falls sharply.

Table 5.5: Summary statistics of Wage and Self-Employed with respect to Age(%)

Age groups /Employment	Wage-earner	Self-employed	% (N)
16 – 25	29.52	13.13	26.61(8,356)
26 – 35	29.43	26.66	28.94 (9,088)
36 – 45	21.2	28.32	22.46 (7,055)
46 – 55	14.25	22.12	15.65 (4,914)
56 – 65	5.61	9.76	6.35 (1,994)
% (N)	100 (25,825)	100 (5,582)	100 (3,147)

The provincial data on wage and self-employment also reveals as wage-employment being a dominant phenomenon with percentages of wage earners being significantly higher than self-employed individuals.

Table 5.6: Summary Statistics of Wage and Self-Employed; Province wise (%)

Province/Employment	Wage-employ	Self-employ	%(N)
KPK	79.15	20.85	100(5,958)
Punjab	75.77	24.23	100(13,089)
Sindh	91.56	8.44	100(9,005)
Balochistan	87.81	12.19	100(3,355)
% (N)	82.23(25,825)	17.77(5,582)	100(31,407)

Table (5.7) reveals that Punjab has the highest percentage of both wage and self-employed individuals out of the four provinces where Sindh follows behind in percentage of wage-employed individuals and KPK follows behind in percentage of self-employed individuals.

Table 5.7: Summary Statistics of Wage and Self-Employed; Province wise (%)

Province/Employmnet	Wage employed	Self-employed	% (N)
KPK	18.26	22.25	18.97(5,958)
Punjab	38.4	56.81	41.68(13,089)
Sindh	31.93	13.62	28.679 (9,005)
Balochistan	11.41	7.33	10.68(3,355)
% (N)	100(25,825)	100(5,582)	100(31,407)

5.3 Regressions results

For estimating the impact of education on the choice of employment we have excluded all the individuals with no education. Four models are estimated for capturing the effect of education on employment choice. Firstly, a bivariate analysis between employment choice and education is done without controlling for the other variables. Then in second regression, it is checked when different control variables are added into the regression then what will be effect of education on wage or self-employment. In third regression, for different levels of education the choice between wage or self-employment is checked. The fourth model is also estimated with different levels of education but with controlling the individual and household characteristics. The results of these regressions are reported in table (5.3.1). First, third, fifth and seventh column of the table presents the results of logit of model whereas second, fourth, sixth and eighth column displays the marginal impacts.

5.3.1 Model One (M-1)

In the first model (M-1), a bivariate analysis between completed years of education and employment choice is carried out. The coefficient of the education variable is negative and statistically significant indicating that as the level of education increases the likelihood of choosing self-employment declines. This results is consistent with Gillani et al., (2014), but opposite to that of Faridi et al., (2010). Since the coefficient of logistic model cannot be interpreted directly, hence in second column, marginal impact of education is also incorporated. It shows, increase in schooling by one year is associated with decline in probability of being in self-employment by 1.04 percent.

Table 5.3.1: Regression |Results (logit model estimations)

	M-1		M-2		M-3		M-4	
	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx
edu_cont	-0.0692***	-0.0104***	0.233***	0.0318***				
	(0.00464)	(0.000693)	(0.0243)	(0.00331)				
Edu^2			-0.0176***	-0.00241***				
			(0.00130)	(0.000177)				
Middle					0.153***	0.0261***	0.0199	0.00318
					(0.0514)	(0.00882)	(0.0544)	(0.00869)
Matric					0.0587	0.00978	-0.0825	-0.0129
					(0.0483)	(0.00804)	(0.0518)	(0.00810)
Intermediate					-0.209***	-0.0322***	-0.286***	-0.0426***
					(0.0625)	(0.00942)	(0.0679)	(0.00991)
Graduation					-0.561***	-0.0772***	-0.799***	-0.104***
					(0.0708)	(0.00904)	(0.0789)	(0.00948)
Post-Graduation					-1.208***	-0.134***	-1.639***	-0.168***
					(0.0865)	(0.00790)	(0.0978)	(0.00820)
Age			0.108***	0.0148***			0.107***	0.0147***
			(0.0116)	(0.00157)			(0.0116)	(0.00157)
Age^2			-0.000992***	-0.000136***			-0.000980***	-0.000134***
			(0.000143)	(1.95e-05)			(0.000143)	(1.95e-05)
Male			-0.750***	-0.102***			-0.751***	-0.103***
			(0.0798)	(0.0109)			(0.0799)	(0.0109)
MRTS			0.245***	0.0335***			0.248***	0.0338***
			(0.0474)	(0.00646)			(0.0473)	(0.00646)
FS			0.0392***	0.00535***			0.0393***	0.00537***
			(0.00534)	(0.000727)			(0.00534)	(0.000727)
DP.R			0.352***	0.0481***			0.352***	0.0481***
			(0.0505)	(0.00688)			(0.0505)	(0.00688)
PMFI			-0.337***	-0.0460***			-0.337***	-0.0461***
			(0.0371)	(0.00504)			(0.0370)	(0.00504)
Urban			0.135***	0.0184***			0.135***	0.0184***
			(0.0475)	(0.00649)			(0.0475)	(0.00649)
Punjab			0.306***	0.0490***			0.309***	0.0494***
			(0.0478)	(0.00742)			(0.0478)	(0.00743)

Sindh			-0.821***	-0.0963***			-0.826***	-0.0968***
			(0.0607)	(0.00719)			(0.0608)	(0.00721)
Baluchsitan			-0.715***	-0.0867***			-0.723***	-0.0874***
			(0.0794)	(0.00879)			(0.0795)	(0.00878)
Constant	-0.826***		-7.500***		-1.346***		-6.824***	
	(0.0453)		(0.392)		(0.0359)		(0.376)	
Observations	21,976	21,976	21,976	21,976	21,976	21,976	21,976	21,976

dy/dx represent the marginal effects and *,** and *** shows the Significant at 1 Percent 5 percent and 10 percent level of Significance.

5.3.2 Model Two (M-2)

The second model is also estimated with completed years of education but controlling for individual and household characteristics. In contrast to bivariate analysis, the estimated coefficient of education displays positive and statistically significant association with self-employment. This represents probability of becoming self-employed increase with the rise in level of education. The square term of education is also incorporated in order to model the non-linear relationship between the education and employment choice. According to Calvo and Wellisz (1980), Lucas (1978) and le (1999) education enhances managerial ability, which increases the probability of entrepreneurship, So, our results are supported by these studies. The square of education captures the diminishing effect of education for employment choice. This shows and follows the inverted u-shape theory between self-employment and education.

Looking at the control variables, positive and significant association found to be between age and self-employment. As it is discussed earlier, older people possess more experience and accumulate capital over their entire life, therefore their likelihood of choosing the self-employment is higher than wage-employment. It is also evident from table (5.5) that among the self-employed individuals, the percentage of older people is higher as compare to wage-earner. In terms of marginal impact, with each additional year of age the probability of being in self-employment increases by1.48 percent. Similar results have been provided by (Arum and Muller, 2004; Parker, 2009), and opposite results according to (Praag and Ophem, 1995).

Similarly, the coefficient of male is negative and significant pointing out that males are more likely to be wage-employed as compared to self-employed or in terms of marginal impact, being a male decreases the probability of being in self-employment by 10.2 percent. Similar results for gender are provided in the study of Kelley et al., (2012). It is also observed that the coefficient of marital status is positive and significant. This suggests that married individuals tends to prefer self-employment over wage employment and being married increases the probability of choosing self-employment over wage-employment by 3.4 percent because married people are more risk taker as compare to un married and they financially well as compare to unmarried. These results are consistent with Rees and Shah (1986) and Anwar, et al., (2010).

The coefficient for the family size found to be positive and significant suggesting that increase in family size is associated with higher probability of being in self-employment rather than in wage-employment. To put this is terms of quantifiable effect, we can say that for every unit increase in family member the probability for choosing self-employment compared to wage-employment increases by 0.335 percent. The small magnitude of the effect suggest that due to growing number of individuals in families employment choice is not effected by too much.

In case of Pakistan the number of dependent in a family matters a lot for employment choice. In most of the cases, there is only one earning member in the family and the rest of the family depend on him. The results suggest that as the number of dependents in a family rises, the likelihood of choose self-employment over wage-employment also increases. Looking at marginal impact, a one unit increase in dependent member raises the probability

of being in self-employment by 4.8 percent. These results are in line with the study of Mumtaz et al., (2010).

Per-month family income is taken in the log form to control for the effect of education on self-employment. The results suggest that total family income is negatively and significantly associated with probability of self-employment. It shows, a one percent increase in total family income decreases the probability of being in self-employment by 4.6 percent.

Regional and provincial disparities in the choice of employment is also captured by incorporating the dummies of rural/urban areas and provinces. For regional analysis, rural area is taken as base category. The positive and significant sign of urban region indicates the likelihood of being self-employed is higher for urban areas than for rural areas. This may be due the fact urban areas are more advance then rural areas, therefore better opportunities are available of urban residents then rural residents. For seeing the disparities in provinces, KPK is taken as the reference category. Compared to KPK, individuals from Punjab are more likely to prefer self-employment, whereas individuals from Sindh and Baluchistan are less probable to choose self-employment. Marginal effects state that if the individual is from Punjab then probability of choosing self-employment over wage-employment increases by 4.9 percent as compare to individuals belonging to KPK, whereas if the individual is from Sindh or Baluchistan then his probability of choosing wage-employment decrease by 9.6 percent and 8.6 percent, respectively.

5.3.3 Model Three (M-3)

In model three, completed years of education are replaced by different levels of education.. We have six levels of education in total i.e., primary, middle, matric, intermediate, graduation and post-graduation. Primary is treated as reference category. Estimating the regression with these levels of education provides the information regarding the selection of self-employment at different stages of educational levels. Model three is estimated only considering the different levels of education with adding other variables which may possibly have an effect on the choice of self-employment. It is obvious from the regression estimates, as an individual moves up in educational achievements, his preferences for choosing the self-employment over the wage-employment declines.

The signs of the coefficients of first two levels of education (Middle and Matric) are positive and statistically significant. This reveals that likelihood of choosing self-employment is higher for an individual with middle and matric level of education as compare to primary educated workers. In additions to this, individuals with intermediate, graduation and post-graduation degrees tend to prefer wage-employment than self-employment[9] as compare to individuals with primary level of education. These results are in line with the study of Gillani et al., (2014) but opposite to that of Faridi et al., (2010).

Marginal impacts for this regression also reflect the same signs to that of regression coefficients for all levels of education. For matric and intermediate levels of education, marginal effects states that if an individual is matriculate/intermediate then his probability to become self-employment over wage employment increases by 2.6 and 1 percent,

[9] consistent with summary statistics provided in table (5.1)

respectively as compare to individuals with primary level of education. As for bachelors, graduation and post-graduation, the respective decrease in the probability of becoming self-employed is 3.2, 7.7 and 1.4 percent respectively, as compared to primary.

5.3.4 Model Four (M-4)

In model 4, controls variables which are used in Model 2 are added to see the how the probability of education on the choice of employment changes. The introduction of controls variables into the regression changes the signs and significance of middle and matric levels of education. These level of education remain no more significant, whereas the sign of matric level of education turns from positive to negative. The significance and sign of the coefficients of intermediate, graduation and post-graduation do not change, while there is change in the probability and magnitude of the coefficients.

As far as the control variables are concerned, there has been absolutely no change in direction of effect from model two i.e., age, gender, marital status, family members, dependent ratio and per-month family income all have a positive relationship with choice of self-employment. In terms of demography the results are once again same with individuals from Punjab more probable to choose self-employment over wage-employment, while individuals from Sindh and Baluchistan are less probable to choose wage-employment over self-employment as compare to individuals of KPK.

Chapter 6

Conclusion and Policy Recommendation

6.1 Conclusion

Self-employment is an important sector of the labor market of all countries and an alternative to paid employment. To examine the self-employment in Pakistani labor market and the reasons which derives the people to choose this sector is crucial. Along with this, the role played by education in the determination of employment choice is very important from policy point of view. This study shows how the preferences of people regarding the employment choice changes with different levels of education.

In the present study, the impact of education on employment choice is determined by using the logistic regression. For this analysis, the data from HIICS (2015-16) is used. Apart from this, the relationship between education and different control variables consisting of individual and household characteristics is also analyzed. Individuals characteristics includes age, gender, marital status of a person whereas household characteristics consist of variables like family size, per month total income of household, and dependency ratio. In addition to this, regional and provincial dummies are also added for seeing the differences in likelihood of selection into self-employment among the rural/urban areas and in the four provinces of Pakistan.

The impact of education is estimated by firstly adding the completed years of schooling in the regression and then by dividing the education into different levels. When education is

measured in completed years of education then it is carried out with the increase in schooling years, the individuals tend to prefer wage-employment (as the sign of this variable is negative). This is only true for bivariate analysis. In order to see how different levels of education are associated with the choice of self-employment, this variable is categorized into primary, middle, matric, intermediate, graduation and post-graduation with being primary as the base category.

Therefore, it can be concluded that high educated people tend to opt for wage-employment compared to less educated people who normally go for self-employment. With respect to control variables, the results show age, gender, marital status, family size, number of dependents, per month total income of the households also have significant impact on the choice of employment. Family size and number of dependent increases the probability of preferring self-employment over wage employment, whereas, per month total income of the household is associated with the decline in likelihood of individual preference for self-employment. As far as the marital status and gender is concerned if an individual is married and male then his preferences for wage employment are higher as compare to unmarried and females.

6.2 Policy Recommendation

Following polices are proposed after findings of the study;

i. Government should formulate such policies which encourages the highly educated individuals to start their own business.

ii. The effect of education of the employment choice suggest that educational system is not creating the skills among the highly educated individuals which are necessary for becoming an entrepreneur. Therefore, government and private institute should focus on provision of education which enhances the entrepreneurial skills among the educated workers.

iii. Since most of population belongs to rural background so government should formulate the policy of education related to agriculture and agro base industry. Its raises self-employment in rural areas through this economy of our country grow up.

iv. Technical education is an area which has been neglected for many years in Pakistan. If government stresses on technical education, it could create the self-employment opportunities in country.

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Appendix

Table A1: Description of Variables

S. No.	Explanatory Variables	Description
1.	AGE	Age of the workers (in years)
2.	AGE^2	Square of the worker's age.
3.	Edu_{cont}	A continuous variable defined as the completed years of education
4.	Edu^2	Education square
5.	Illiterate	=1 for illiterate, otherwise 0
6.	Primary	=1 for primary, otherwise 0
7.	Middle	=1 for middle, otherwise 0
8.	Matric	=1 for matric, otherwise 0
9.	Intermediate	=1 for intermediate, otherwise 0
10.	Graduation	=1 for graduation, otherwise 0
11.	Post-graduation	=1 for Post-graduation, otherwise 0
12.	Gender	=1 if the worker is male, otherwise= 0
13.	MRTS	Marital Status of the person, =1 if the worker is married =0 otherwise
14.	FS	Total number of individuals in a household
15.	DP.R	Percentage of family member who's are dependent on the employed individual (number of children age<6+number of elders age>65/total number of member in a household)
16.	PMFI	Total per month income of household
18.	KPK	=1, otherwise 0
19.	Punjab	=1, otherwise 0
20.	Sindh	=1, otherwise 0
21.	Baluchistan	=1, otherwise 0
22.	Region	=1 if the workers is residing in the urban area, 0 otherwise