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## Article

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## **Determinants of Economic Literacy at University Level: A Case of Pakistan**

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### **Abstract**

The main intention of this study is to identify the determinants of economic literacy at university level. The data used in this study was collected by researchers through field survey by randomly selecting 200 students from different departments of the universities located in the Southern part of the Punjab province in Pakistan. Ordinary least square (OLS) technique and Logit model were used for empirical analysis. It is found that spending, age, gender, father's education and student's education were positive and significantly related to economic literacy. While the variables; mother's education and bank account were statistically significant but negatively related to the respondents' level of economic literacy. However, ATM used record, internet connection; resident's location and guardian's occupation were statistically insignificant with economic literacy. The study contributes towards the current understanding of the state of economic literacy among the young students. It also suggests the factors, which have significantly contributed towards the current economic literacy in Pakistani students.

**Keywords:** economic literacy, ordinary least square, logit model, Pakistan

### **1. Introduction**

Economic literacy is the understanding and knowledge of basic economic theories, concepts and their application. In today's global and market-based economy simple literacy is not enough. The current era of technological advancement requires economically literate persons who are capable of producing big revenues by taking the right decisions at the right point of time. It is not true that economic literacy is simply for

a business purpose. It has equal significance for democracy. People who have knowledge about economics can understand the government's policies better than those who don't possess this understanding (Lipset, 1959). Most importantly, we all are consumers thus we must be economically literate to save our limited resources. Therefore, economic literacy is supposed by many to be an essential part of the country's future development programmed. The need of economics literacy is vital, particularly when all citizens make choices as income earners, voters and consumers. This means that economics learning cannot be limited to a special group of students, such as labour or for those who will be future leaders in government; the college bound economics students and business (Hashim and Kayode, 2013). Economics literacy is very important in all nations to prepare students for the changing world financial system. Underdeveloped countries are facing many difficulties to improve economic performance and living standards. Students will need more economic understanding to participate actively in the changing global economy (Walstad and Allgood, 1999).

Economic literacy might sound a crumb of new thought for researchers living in the underdeveloped part of world while developed countries as well as newly industrialized countries like India and America have plenty of articles and research published on economic literacy. Harris (2009) in collaboration with the National Council on Economic Education (NCEE) conducted a study in America and concluded that almost two third of respondents did not understand about inflation and money terminology and almost 54 percent did not recognize the connection between budget deficit and money. Stern (2002) revealed that economic literacy might sound a bit of new thought in economic literature. In the same vein, Jacob et al. (2000) found that the greater part of young Americans has low economic literacy, as well as knowledge about the consumer issues and personal finance.

Basically, economic literacy is apparent because such kind of information is essential to command certain set of tasks associated to economic issues. Various simple examples of these might understand a balance sheet, issuing a check or paying a bill (Walstad and Soper, 1988). Going on a broader level, economic literacy is observed to cover fundamental ideas in economics that all educated people must recognize, obviously a more operationalized and summarizing definition of just what these basic information's are compulsory (Walstad, 1987). Economist has conducted many researches about cause and consequence on persons who are lacking in economic awareness (Walsh and Mitchell, 2005). Most of the studies on economic literacy are conducted in last twenty years. Past decades shows that people have low level of economic as well as financial knowledge. According to Rogers (2014), economic literacy means more than knowledge about own financial matters. It entails understanding how latest economic structures form public relations plus the allocation of wealth and power, as well as awareness with possible alternative structures.

Due to the dearth of literature on the topic, it was imperative to explore the economic literacy scene in Pakistan. Therefore, this study embarks on the investigation of the level of economic literacy and the factors influencing this literacy level.

## **2. Review of Literature**

As writing, reading and working information on important economic concepts is essential for future achievement, economic literacy is the skill to use fundamental economic

concepts to formulate decisions about saving, sharing, earning and spending money. Organization of Economic Literacy (OEL) asserts that economic literacy is not limited to basic economic facts and terminologies rather it is linked with the critical skills that strengthen the economic way of thinking. Adequate economic literacy develops the capacity to communicate knowledge and identify promising unintended consequences of a policy or action. Similarly, Banaszak (1987) suggests that economic literacy involves the understanding and application of basic economic theories in order to make balanced decisions regarding the use of limited resource. Likewise, Economic literacy is the application and understanding of basic economic ideas to real life situations (Salemi, 2005). Therefore, it can be stated that economic literacy is the understanding and knowledge of basic economic concepts and principles as well as their application to the practical daily life economic problems.

Barton (1993) says that fundamental knowledge regarding economics is one of the key educations that students must obtain in order to be successful in life.

They suggested that there is a need to extend the information about issues of economic literacy among university students because all individuals face essential economic problems in their daily life.

Hashim and Kayode (2013) measured the levels of understanding of economic literacy among students of International Islamic University Malaysia based on age, nationality and sex. In this study they used the sample of 200 students and the Test of Economics Literacy (TEL) was used as a research instrument. The study concluded that the level of economic literacy among undergraduates at the International Islamic University Malaysia was still low and educational backgrounds of the students played no significant role in determining the level of economic awareness of the IIUM students.

Grimes et al. (2010) investigated the degree of economic literacy among K-12 teachers in the state of Mississippi. The research concluded that economic literacy varies across the gender, racial ethnicity, age, annual family income and previous level of formal economic instructions. Merwe (2011) explored that education, age, training, gender, experience, race and income affect the economic literacy. The outcomes of the study showed that economic literacy enhances the decision-making capabilities.

Rogers (2014) investigated that only 12 percent teachers in high school who majored in economics were taught economics classes, in comparison 64 percent of teachers who majored in history were taught history classes. The study also founded that elementary teachers took only one 3-credit hour's economics course in college duration. Otto and Riemenschneider (2008) developed a survey in University of Arkansas to asking students what topics were most preferred, also collected demographic information regarding gender, age, specific college and university classification from 397 students. The finding showed that students want programs addressing financial literacy topics (such as investing and personal budgeting) and success skills such as oral presentation and computer use.

In another study, Jappelli and Tullio (2010) estimated the economic literacy by using international panel data on 55 countries through a survey of 400 company leaders during the period of 1995-2008. The regression analysis showed that economic literacy depends on educational attainment, stage of financial expansion, social security and educational

achievement. The study suggested that economic literacy improves the drivers of human capital and financial market improvement and social security reforms.

Yunus et al. (2010) estimated the economic literacy among the secondary school teachers in Perak Malaysia. Primary data was composed of 100 teachers of secondary schools in eight districts in Perak. The study investigated whether education, expenditure, investment and saving have the relationship with economic literacy. It was found that the above-mentioned independent variables were associated with economic literacy.

Kushnirovich (2011) explored the personal economic awareness by using primary data, which was collected during 2010-2011. The result of this study showed that the understanding of the operation and bank activities along with the understanding of common economic terms were superior to understanding of financial and macroeconomic terms among the respondents.

Butter's and Asarta (2011) calculated the economic understanding in U.S high schools. This study showed that test score of males was higher than female. The main gender gap was originated in Microeconomics issues and smallest gap was originated in Macroeconomics issues. Similarly, Ansong and Gyensare (2012) analyzed the financial literacy at university level. This research explored that female working students express low rank of financial literacy than male working students. The result of this research showed that there was a favorable connection between mother's education, work experience, age and financial literacy. But the work locations, father's education, level of study, access to the media were not considerably connected with financial literacy. They recommended that parents must aggressively catch up education programs on financial issue.

Above mentioned review guided our inquiry regarding the variable selection for the current study. Therefore, as the determinants of economic literacy, the variables like education of the respondent, father's education, mother's education, spending, ATM used record, bank account, resident's location; gender, internet connection and age are considered for this study.

In the recent years various test instruments have been developed to determine economic literacy. However, it is still quite difficult to judge economic literacy of individuals. To determine economic literacy, the National Council on Economic Education (NCEE) in the United States developed specific standardized tests, which consist of four grade levels, including:

- i. Test of Understanding College Economics (TUCE) (Saunders et al, 1981)
- ii. Test of Economic Literacy (TEL) (Soper, 1979)
- iii. Basic Economics Test (BET) (Chizmar and Halinski, 1983)
- iv. Test of Economic Knowledge (TEK) (Soper, 1979)

The Test of Understanding College Economics (TUCE) consists of two different exams, consisting of macroeconomics and microeconomics subjects in the format of multiple choice questions. The main purpose of this test is to measure economic literacy in university and college students, and to do the comparison among the students (Walstad and Rebeck, 2008).

The Test of Economic Literacy (TEL) consists of pre and post-test for basic economic understanding, the test consists of multiple choice questions (Walstad and Soper, 1988). The test covers seven categories including, economic system, basic economic problem, macroeconomics, microeconomics, economic institution, evaluation concepts and world economy (Soper, 1979).

The Basic Economic Test (BET) determines the understanding of basic economic principles in individual the grade 4 to 6 (Chizmar and Soper, 1981). The test also covered the three aspects including understanding, knowledge and application. The Test of Economic Knowledge (TEK) consists of multiple-choice questions and it is a standardized test to measure the economic literacy of individuals in grade Seven to grade Nine (NCEE, 2007).

### 3. Data and Methodology

Through the self-administered questionnaire developed by the National Council on Economic Education (NCEE), in April 2013, by randomly selected 200 university students from the universities of southern Punjab, economic literacy level was determined. The questionnaire was prepared in English language and translated into the languages of Urdu and Punjabi in order to ensure a valid response. Province of Punjab is known as the most populated province of Pakistan. It has been aligned into three regions; Central Punjab, Northern Punjab and Southern Punjab. Southern Punjab is well thought-out as the underdeveloped region of Punjab. A Simple cross sectional survey in written questionnaire form as it may be a low rate of survey but it is inexpensive and easy to reach every respondent.

#### 3.1 OLS Model

The well-known OLS regression technique is employed in the empirical analysis. The following Econometric Models are considered for multiple regressions;

$$Y_i = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + \mu_i \dots\dots\dots(i)$$

$$EL = \beta_0 + \beta_1 Edu\ 1 + \beta_2 Edu\ 2 + \beta_3 Edu\ 3 + \mu \dots\dots\dots(ii)$$

Above expressions are simple model for empirical testing, where in model (i)  $Y_i$  is dependent variable and  $X_i$  indicates the explanatory variables.  $\alpha$  Represents the intercept term and  $\beta_i$  denotes the partial regression coefficient,  $\mu_i$  is error term which satisfies all OLS assumptions, while in model (ii)  $\beta_0$  is the intercept of the model whereas  $\beta_1, \beta_2, \beta_3$  are coefficients of explanatory variables Edu1, Edu2 and Edu3 respectively and  $\mu$  is white noise error terms. The functional form is given as follows:

$$EL = f(\text{gndr, age, edu, spndng, intrnet conectn, rsdnt location, bnk account, ATM rcrd, grdian ocp, fathr edu, mothr edu}) \dots\dots\dots (1)$$

#### 3.2 Logit Model

The familiar Logit technique is in use for the empirical analysis. Following Yasmin (2011) we use Logit technique in this article. The econometric model is used for the multiple regression function.

$$\text{Prob}(Y=1) = F(\beta^0 X)$$

$$\text{Prob}(Y=0) = 1 - F(\beta^0 X)$$

Using the logistic distribution we have

$$\text{Prob}(Y=1) = e^{\beta^0 X} / (1 + e^{\beta^0 X})$$

$$= \square(\beta^0 X)$$

Where:  $\square$  represents the logistic cumulative distribution function

$$E[Y/X] = 0 [1 - F(\beta^0 X)] + 1 [F(\beta^0 X)]$$

$$= F(\beta^0 X)$$

In this Logit model specification we used  $Y=1$  and  $Y=0$ .

$Y=0$  for those individuals whose economic literacy  $\geq 6$

$Y=1$  for those individuals whose economic literacy  $< 6$

As data used for study is of panel type, so we used panel data estimation methods. Fixed effects model is used to test the relationships.

### 3.3. Definition of the Variables

Table 1 presents the definitions of above-mentioned variables.

**Table 1: Relationship and Hypothesis of Variables**

Dependent Variable	Definition	
Economic Literacy	Economic literacy of university students	
Independent variable	Definition	Hypothesis relationship
Gender	0, if respondent is female 1, if respondent is male	-ve +ve
Age	Age of respondents in years	+ve
Internet connection	1, If respondent has internet connection 0, If respondent has no internet connection	+ve -ve
Resident location	1, if respondent lived in city 0, if respondent lived in village	+ve -ve
Education	Education of respondents in years	+ve
Spending	Total spending in a month	+ve
ATM used record	1, if respondent has ATM record 0, if respondent has no ATM record	+ve -ve
Bank account	1, if respondent has a bank account 0, if respondent has no bank account	+ve -ve
Guardian Occupation	0, if respondent guardian is Businessman 1, if respondent guardian is Govt employ 2, if respondent guardian is Private employ	+ve +ve -ve
Father education	Education of respondent father in years	+ve
Mother education	Education of respondent mother in years	+ve

## 4. Results and Discussion

We have total 200 respondents which provided the information about their economic literacy, education, father's education, mother education, spending, ATM used record,

bank account, resident's location, gender, internet connection and age. Through these exogenous variables, we find some descriptive statistics of continuous variables.

Table 2 represents the continuous exogenous variables. This result shows that the average age of respondents is almost 22 years in this research. Education is most important and significant variable of this study. This result shows that the average years of education of students are almost 14 years. Average spending of respondents is Rs.4070. Mean value of father's education is 12.74 years. Average mother's education is near about 12 years. Descriptive statistics show that these all explanatory variables have strong relationships with economic literacy.

The table 3 represents the results of the OLS Regression Model analyzing the Economic Literacy at university level. A probability level of up to 15% ( $p < 0.15$ ) was accepted since the aim of the result was not to predict but merely to determine the influence of specific variables. The explanatory variables; education, spending, gender and father's education are significant at one percent ( $p < .01$ ), five percent ( $p < .05$ ), ten percent ( $p < .10$ ) and 15 % ( $p < .15$ ) levels of significance respectively and have signs in accordance to our hypothesis. It implies that student education has a positive relationship with economic literacy which indicates that those students who have more years of education are more economically literate. This result is supported by the findings of Jappelli and Tullio (2010) and Lusardi et al. (2010). Gender has positively related to the economic literacy and result matches with the study of Worthington (2006). Similarly, as predicted, male student has the chance of 67% more to be economically literate as compared with female. The co-efficient value of father's education (0.150024) indicates that economic literacy of students increase when student's fathers are well educated. The explanatory variables like mother's education and bank accounts both are significant at 10% percent ( $p < .10$ ) level of significance and have sign opposite to our hypothesis. Unexpectedly, those students whose mothers have more years of education have less economic literacy and those students who have bank accounts are 94 % less economically literate as compared to those students who have not a bank account. One reason for this result is that educated mothers do not give the proper time to their children due to their busy job schedule and those students, who have a bank account, normally belong to a rich family therefore; they do not care about the transaction record of their bank account.

The explanatory variables age, resident's location, internet connection, and ATM used record and guardian occupation are statistically insignificant which suggests that this group of variables have not played any role in student's economic literacy at university level.

Table 4 shows that Student education is further categories into three levels Edu1 (12 years education), Edu2 (14 years education) and Edu3 (16 years education) respectively. The student education has a lot of importance in our research therefore; student education is divided into three levels to find out the impact separately. Student education level Edu1 is statistically insignificant which shows that the Edu1 has no impact on economic literacy. Student education level Edu2 and Edu3 is anticipated to be statistically significant at a five percent ( $p < 0.05$ ) and one percent ( $p < 0.01$ ) level. This implies that the students who attain 16 years education are more economically literate.

Table 5 represents the Logit model results in which "McFadden R-squared" is an analogue to the "R-squared" in a conventional regression (Gujarati, 2003). The



“McFadden R-squared” value is 0.20678, which indicates that the model is overall good fit. The correspondent of the F- test in the Linear Regression Model is the Likelihood Ratio (LR) statistic (Gujarati, 2003). According to the Likelihood Ratio (LR) statistic (27.28030), whose p value is 0.007, ( $p < 0.01$ ) indicates that the overall model has significant impact on the economic literacy of students. The explanatory variables spending, student education and age and mother education are significant at the 1 % level of significance and have signs in accordance with our hypothesis except mother education which have opposite sign. The result also showed that more spending lead to increase the economic literacy at university level. Student education has a positive relationship with economic literacy which indicates that those students who have more years of education more economically literate. The co-efficient value of age (0.185472) indicates that economic literacy develops in the students when the age of students increases.

**Table 2: Descriptive Statistics**

Variables	Mean	Maximum	Minimum	St. Deviation
Age	21.94	29	18	2.0588
Education	13.92	16	12	1.3903
Spending	4070	9000	2000	2225.904
Father edu	12.74	18	8	2.37248
Mother edu	11.72	18	8	2.36164

**Table 3: OLS Result Model 1**

Dependent Variable = Economic Literacy			
Variable	Coefficient	t-Statistic	Prob-Value
Constant	-3.962479	-1.366282	0.1754
Age	0.116544	1.244848	0.2165
ATM used record	0.569617	1.081390	0.2825
Bank account	-0.949071	-1.851575	0.0675**
Education	0.479996	3.092895	0.0027****
Father's education	0.150024	1.621199	0.1086*
Gender	0.677359	1.714111	0.0901**
Guardian occupation	0.108779	0.375669	0.7081
Mother edu	-.0173638	-1.865479	0.0655**
Internet connection	0.298135	0.740620	0.4609
Resident location	0.038161	0.096316	0.9235
Spending	0.000339	2.342340	0.0214***
R2= 0.281844 Adj-R2 = 0.182787	F-Statistic= 2.84529 Prob (F-statistic)=0.002437		Durbin-Watson = 1.7848

Note: \*\*\*\* indicate significance at a 1% level; \*\*\* indicate significance at a 5% level; \*\* indicate significance at a 10% level; \* indicates significance at a 15% level

**Table 4: OLS Result Model 2**

Dependent Variable = Economic Literacy			
Variable	Coefficient	t-Statistic	Prob-Value
Constant	4.961538	13.16186	0.0000*
Edu1	0.298135	0.740620	0.4609
Edu2	1.096154	2.374253	0.0196**
Edu3	1.902098	3.416053	0.009*
R <sup>2</sup> = 0.120169 Adj-R <sup>2</sup> = 0.091822	F-Statistic= 6.004742 Prob(F-statistic)= 0.003479		Durbin-Watson= 1.988132

Note: \* indicate significance at a 1% level; \*\* indicate significance at a 5% level.  
(Calculations based on software E-Views 7.1)

**Table 5: Logit Model Result**

Dependent Variable = Economic Literacy			
Variable	Coefficient	Z-Statistic	Prob-Value
Constant	-9.772323	-2.472911	0.0134***
Age	0.185472	1.452543	0.1464*
ATM used record	0.744533	1.113597	0.2655
Bank account	-0.753853	-1.147682	0.2511
Education	0.449211	2.214481	0.0268***
Father education	0.016011	0.138348	0.8900
Gender	0.440722	0.854246	0.3930
Guardian occupation	0.434164	1.208188	0.2270
Mother education	-0.185559	-1.548542	0.1215*
Internet connection	0.398204	0.786248	0.4317
Resident location	-0.005777	-0.011420	0.9909
Spending	0.000605	2.655854	0.0079****
McFadden R squared (0.206786)	LR statistic (27.28030)		Prob(LR statistic) (0.007040)

Note: \*\*\*\* indicate significance at a 1% level; \*\*\* indicate significance at a 5% level; \*\* indicate significance at a 10% level; \* indicates significance at a 15% level

## 5. Conclusion

The purpose of this study was to investigate the determinants of economic literacy at university level in the context of Pakistan. A huge contextual gap existed due to the absence of such kind of studies in Pakistani milieu. The present study effectively contributes to the existing literature on economic literacy by identifying the key variables that determine the level of economic literacy among university students. We found that a student's education and spending are positively associated with economic literacy. The study reveals that father's education is statistically significant and positively related to the respondents' level of economic literacy. The results show that male students reveal

higher levels of economic literacy than female students do. Age is also a significant variable that affects economic literacy of respondents positively, which indicates that age leads practice of learning and experiences which is helpful for economic literacy. The study accentuates the importance of variables contributing towards enrichment of economic literacy among the young students. It gives direction to academicians and economic policymakers regarding the measures they should take in order to equip youngsters with better understanding so that they could enter a world of ever-increasing economic complexity with dignity. The study underscores the need to look into the relationships between other variables such as saving, investment, student course selection that affect economic literacy.

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