JOURNAL OF DEVELOPMENT ECONOMICS AND FINANCE Vol. 4, No. 2, 2023, pp. 403-419 © ARF India. All Right Reserved URL : www.arfjournals.com https://DOI:10.47509/JDEF.2023.v04i02.07



The Effect of Education on Consumer Rationality

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Article History

Received : 19 August 2023 Revised : 24 September 2023 Accepted : 14 October 2023 Published : 01 December 2023

To cite this article

Uttam Lal Joshi (2023). The Effect of Education on Consumer Rationality. *Journal of Development Economics and Finance*, Vol. 4, No. 2, pp. 403-419. https://DOI: 10.47509/JDEF.2023.v04i02.07 *Abstract:* Consumer rationality may have certain relationship with education of the consumers. This study aims to explore the effect of education on consumer rationality in the present context of Nepal. Survey is conducted to collect data from various wards of Hetauda Sub –Metropolitan City. Binary Logistic Regression Model is applied to analyze and interpret the data. Education, age, income and expenditure are taken as independent variables and the dependent variable consumer rationality has three dimensions- price, quality and brand. Result shows education is not significant to explain consumer rationality on price but it is significant to explain other dimensions-quality and brand at 1 percent level. It signifies Education has positive impact on consumer rationality on quality and brand dimensions. So, policy makers should focus on consumer education to enhance them to be rational on their purchase behavior. It can promote the healthy marketing activities and protect consumers' right.

Keywords: Binary Logistic Regression, brand, consumer rationality, price, quality.

Introduction

An ongoing issue in consumer behavior analysis- consumer rationality which is multidimensional in practice has been studying by different researchers since classical time. Consumer rationality which is a dichotomous topic itself that it can be taken as consumer can be rational in one aspect and in the other side they are biased from it in the practical life in different researches.

The quality of being rational is termed as rationality and most of the theories, laws and principles in economics rest on this assumption. Rationality factors in available all information when the problem or goal involves making a decision. Microeconomic theory assumes rational consumers maximize their utility from all commodity bundles (Redmond, 2000). On the other hand many researchers argue that consumers are biased from rationality due to multiple causes of their nature which implies the controversy arises in consumer behavior theory. The assumption of rationality is strained and possibly self-contradictory. When these ideal conditions is constant and plausible under most of these conditions (Arrow, 1990).

Among the different factors regarding rationality, education is the one that can influence the consumer behavior in daily purchasing activities. Education has an important role because it affects the insurance purchase decision. On the insurance market, there is a discrepancy between the higher potential demand and the rather lower real demand. This discrepancy can be explained by economic reasons, as well as by the lack of education (Ioncica et al., 2012).

Many consumers want information of nutrition, but they often do not apply it as it is hard to apply, not readily available nor perceived as new or useful. Food shoppers are found to consider nutrition as only one of the factors influencing purchases. The choice of nutrition interventions in supermarkets and restaurants can be effective when they imply highly visible as well as targeted messages (Glanz et al., 1992).

The purpose of this study is to explore the effect of education on consumer rationality. It also aims to explain the relationship between education and consumer rationality. For the fulfillment of above mentioned objective the following research questions are developed. What are the impact of education on consumer rationality? And how is education related with consumer rationality?

This paper includes review of literatures in section 2, methodology in section 3, result is included in section 4 then conclusion and implication is explained in section 5.

Review of Literatures

Different literatures related with education and consumer rationality are reviewed minutely. Education may have certain impact on the consumer behavior in purchasing activities. The reviewed literatures are mentioned in the following section.

In the study Fast et al. (1989) state positive relationships of participation in consumer's education involving educational materials with the search involving reports of product test, friends, and advertisements are reported. The increased search showed to improve marketplace efficiency and consumer decision-making, consumer education can be said to be of benefit to consumers.

In the study Steenkamp and Burgess (2002) state theoretically predictable and meaningful nomological relations are obtained with sociodemographics, values, and exploratory consumer behaviors. Moreover, we find systematic impact of income, gender, education level on exploratory consumer behaviors of consumers.

Gliber and Nelson (2003) state most study of real estate is based on neoclassical economics. It is expected that consumers make their decisions that maximize utility and wealth, income and given price constraints. Tastes and preferences are also typically inferred from observing outcomes of consumer behavior. The study of real estate can benefit from inclusion of consumer behavioral concepts. Education would help to explain and predict the behavior of real estate decision-makers with these concepts into real estate.

Menon (2004) finds that information search among students regarding the choices of private colleges were less than expected in traditional economic theory. Logistic regression analysis was applied for identifying characteristics of the propensity to involve in information search: students perceiving the decision as important and low socioeconomic status students were found more likely to engage in information search.

Ishak and Zabil (2012) state the analysis indicates significant relationship of awareness with effective consumer behavior. The result indicates the awareness shows the prior to effective behaviors of consumers; but unawareness leads to ignorance and reduction in individual capacity to protect and uphold their rights against sellers' expropriations of the sellers.

Tavares and Cardoso (2013) explain the findings based on qualitative study about Portuguese students' choice and conclude that they behave as rational consumers deciding to choose a given institution and attend higher education but not in attending a specific study program.

Zsoka et al. (2013) assert the results show a strong correlation found between the environmental knowledge and the intensity of environmental education. This is due to the environmental education and partly due to the higher intrinsic motivation of committed students that they are voluntarily participate in environmental education, mainly at university level. The environmental education is important in shaping attitudes for sustainable consumption.

Nittala, R. (2014) asserts education been have found education to be one of the factors influencing green consumption behavior by several authors. The study explains the factors affecting the willingness of university teachers for purchasing

green products and the predictors that distinguish teachers that they are willing or unwilling to purchase. It is found that product recycling has a positive impact and eco-labeling, comfort and lack of information have a negative influence on the university teachers' willingness to purchase green products.

Laoviwat et al. (2014) state the results of hypothesis test indicated that education, gender, and household income influenced consumer behaviors, at significance level 0.05. It also found that education has the influence on household income, brand loyalty and brand awareness, at significance level 0.05.

But contrasting result is obtained in the study by Boca (2021) and reveals that consumer behavior consumption is not affected by gender, age, or education. In the correlation analysis result, a positive relation was identified between the consumer attitude, consumer preference, and consumer behavior variables.

Methodology

Sampling Technique and Data

Data are collected from survey of 385 consumers in Hetauda Sub-Metropolitan City using a uniform questionnaire. Being a large size sample the sample size is determined with the formula $n = \frac{z^2 pq}{e^2}$ (Kothari, 2004). Stratified random sampling is applied where 19 wards of the city are taken as different strata for sampling unit determination. Before survey, a pilot study is conducted taking 40 (10%) samples then Cronbach's Alpha test is applied to test the reliability and consistency of the questionnaire. The result showed the reliability and consistency of the questionnaire.

Research Design and Model Specification

After confirming reliability and consistency the sample survey has been conducted for data collection and binary logistic regression model is applied for inferential analysis where the term consumer rationality is a binary variables with three dimensions- price, quality and brand. The model for the test can be specified as given by Gujrati (2004).

$$L_{i} = \ln\left(\frac{P_{i}}{1 - P_{i}}\right) = Z_{i} = b_{0} + \sum_{i=1}^{7} b_{i} X_{i}$$

L is the log odds ratio linear in all parameters that is logit expressed in logistic regression model. Value of L ranges from $-\infty$ to $+\infty$ and value of Z also ranges

from $-\infty$ to $+\infty$. Pi is the probability that ranges from 0 to 1that expresses 1 for being rational and 0 for otherwise. X₁ = education, X₂ = age, X₃ = income and X₄ = expenditure in this model. Income and expenditure are transformed into natural log form. Due to high correlation between income and expenditure separate models are developed for inferential analysis. The econometric models can be specified as

$$RAT = b_0 + b_1EDU + b_2AGE + b_3InINC + \varepsilon$$
$$RAT = b_0 + b_1EDU + b_2AGE + b_3InEXP + \varepsilon$$

Where RAT is for rationality, EDU for education, AGE is age of the consumer, lnINC is log of income, lnEXP denotes log of expenditure and ε indicates error term. Six models are developed for three dimensions of rationality i. e. price, quality and brand due to nigh correlation between income and expenditure.

Result

Consumer rationality is studied in multiple dimensions such as price, quality and brand with the independent factors education, age, income and expenditure. Binary Logistic Regression is applied to test the relationship between dependent and independent variables and six models are developed due to high correlation between income and expenditure that they are taken into separate models.

Correlation

Correlation shows the linear relationship between the variables in which high correlation is problematic that indicate the presence of multicollinearity in the model. Here the correlation between income and expenditure is presented in the table.

	Monthly Income	Monthly Expenditure
Monthly Income	1.00	
Monthly Expenditure	0.794	1.00

Significant high correlation is found between income and expenditure that implies the possibilities of multicollinearity in the model so the income and expenditure are kept into separate models to address this problem. There are six models developed for three dimensions of consumer rationality- price, quality and brand then binary logistic model is implied to show the relationship between consumer rationality and education of the consumer in this study.

Logistic Regression Results

Binary logistic regression is applied to show the relationship between education and consumer rationality in our context after correlation test. The correlation result shows the higher correlation between income and expenditure in the collected data so separate models are developed for the calculation of binary logistic regression and the result are presented in the following tables

Regression Result of Rationality on Price

Price is the first dimension of consumer rationality that is dichotomous variable which is regressed on the independent variables education, age, income and expenditure. Result shows all the independent variables are insignificant in terms of rationality on price. That implies rationality on price is not related with these factors. Separate models are developed to test the logistic regression and results are presented in the Tables 2 and 3.

Variable	Coefficient	Std. Error	z-Statistic	p-Value
С	4.675850	5.394256	0.866820	0.3860
EDU	0.167415	0.279593	0.598780	0.5493
AGE	0.008804	0.279593	0.316033	0.7520
lnINC	-0.626090	1.348820	-0.464176	0.6425

Table 2: Binary Logistic Regression Model on Price

McFadden R-squared: 0.002673 LR statistic: 0.404635 Prob(LR statistic): 0.939283

In the Table 2 consumer rationality on price is measured with education, age and income of the consumers. Result cannot show significant relationship between independent and dependent variables. Here the education is not significant to explain consumer rationality on price implies consumers show rationality in every level of education. Even the consumers with lower education show rationality in their purchasing behavior.

Variable	Coefficient	Std. Error	z-Statistic	p-Value
С	-3.837670	4.397234	-0.872746	0.3828
EDU	-0.068904	0.287191	-0.239925	0.8104
AGE	-0.010672	0.026858	- 0.397344	0.6911
lnEXP	1.807216	1.211070	1.492247	0.1356

Table 3: Binary Logistic Regression Model on Price

McFadden R-squared: 0.015705 LR statistic: 2.377432 Prob(LR statistic): 0.497849

In the Table 3 the relation between consumer rationality on price dimension is regressed with the independent variables – education, income and expenditure. The result shows that the independent variables are not significant to explain dependent variable. Here consumer rationality on price has no relationship with education implying the consumers show rationality despite lower level of education. Likewise there is no boundary of age income and expenditure to show rational behavior in purchase behavior. The probability of LR-statistic is not significant at 5% level of significance in both models.

Regression Result of Rationality on Quality

Quality is the second dimension of rationality, the binary variable, regressed on the variables education, age, income and expenditure. Logistic regression is implied and result shows education, income and expenditure are significant to explain rationality on quality.

Variable	Coefficient	Std. Error	z-Statistic	p-Value
С	-12.30457	2.922184	-4.210744	0.0000
EDU	0.635359	0.157863	4.024747	0.0001
AGE	0.002753	0.013825	0.199108	0.8422
lnINC	2.323545	0.721982	3.218285	0.0013

Table 4: Binary Logistic Regression Model on Quality

McFadden R-squared: 0.100557 LR statistic: 37.37721 Prob(LR statistic): 0.000000

Table 4 shows the result of relationship between rationality on quality and the independent variables- education, age and income. The variables education and income is significant to explain dependent variable. Education is significant at one percent with the coefficient 0.63 implies one unit increase in education can increase the probability of odds ratio of quality by 0.63 unit. Then income is significant at one percent level with the coefficient 2.32 implies one percent change in income

Variable	Coefficient	Std. Error	z-Statistic	p-Value
С	-10.29537	2.369269	-4.345378	0.0000
EDU	0.645130	0.156961	4.110119	0.0000
AGE	0.002890	0.013806	0.209332	0.8342
InEXP	1.959303	0.621751	3.151264	0.0016

Table 5: Binary Logistic Regression Model on Quality

McFadden R-squared: 0.099082 LR statistic: 48.65286 Prob(LR statistic): 0.000000

can change odds ratio of the consumer rationality on quality by 2.32 percent in positive direction. LR statistics shows significant at one percent.

Table 5 shows the result of logistic regression of the dependent variable consumer rationality on quality and its independent variables education, age and expenditure. It indicates education is significant at one percent level with the coefficient 0.65 which shows one unit increase in education can increase the probability odds ratio by 0.65 unit. Likewise the expenditure is also significant at one percent that implies one percent change in expenditure can change the log odds of consumer rationality on quality by 1.96 percent in positive direction.

Regression Result of Rationality on Brand

Brand is the third dimension of consumer rationality in this study and it is regressed on education, age, income and expenditure of the consumers. Binary logistic regression model is applied for the test that shows education and age are seen significant to explain consumer rationality on brand. The result of the test are given in the Tables 6 and 7. It implies education and age have positive effect on consumer rationality on brand.

Variable	Coefficient	Std. Error	z-Statistic	p-Value
С	1.568432	2.739087	0.572611	0.5669
EDU	0.573765	0.151424	3.789118	0.0002
AGE	0.037259	0.014646	2.543920	0.0110
lnINC	-0.999251	0.694897	-1.437983	0.1504

Table 6: Binary Logistic Regression Model on Brand

McFadden R-squared: 0.037996 LR statistic: 17.06828 Prob(LR statistic): 0.00068

The relationship between education, age and income is given in the Table 6. Education is significant at one percent with the coefficient 0.57 level that indicates one unit increase in education can increase the log odds ratio of consumer rationality

Variable	Coefficient	Std. Error	z-Statistic	p-Value
С	-2.987144	2.297521	-1.300160	0.1935
EDU	0.459334	0.148825	3.086397	0.0020
AGE	0.027832	0.014431	1.928646	0.0538
InEXP	0.237531	0.616777	0.385116	0.7002

Table 7: Binary Logistic Regression Model on Brand

McFadden R-squared: 0.033672 LR statistic: 15.12568 Prob(LR statistic): 0.001712

on brand by 0.57 unit in the positive direction. In the same way age is significant at 5 percent level with the coefficient 0.04 that signifies on unit change in age can change the log odds ratio of rationality on brand by 0.04 unit in positive direction. Income and expenditure cannot show significant in this dimension.

Table 7 shows the result obtained from binary logistic regression of consumer rationality on brand with the independent variables education, age and expenditure of the consumers. Education is significant at one percent level with the coefficient 0.46 implying one unit change in education can change log odds of the rationality on brand by 0.46 units in the positive direction. Likewise age is significant at 10 percent with the coefficient 0.03 that shows one unit increase in age can increase the log odds ratio of rationality on brand by 0.03 units. The probability od LR statistics is also significant at one percent level of significance in this test.

Variance Inflation Factors

Variance Inflation Factors of independent variables education, age, income and expenditure are calculated in the following tables which shows the VIF value more than 5 is problematic that signifies multicollinearity in the model. Multicollinearity is one of the major problem which indicates violation of BLUE properties of OLS. In the tables the values are less than 5 shows the model is free from this problem.

Variables	Coefficient Variance	Uncentered VIF	Centered VIF
С	0.067457	548.4139	NA
EDU	0.000187	29.44371	1.337878
AGE	1.70E-06	21.41196	1.232130
lnINC	0.004390	696.7642	1.336372

Table 8: Variance Inflation Factors

Table 9: Variance Inflation Factors

Variables	Coefficient Variance	Uncentered VIF	Centered VIF
С	0.192757	387.0561	NA
EDU	0.000742	28.81919	1.309501
AGE	6.88E-06	21.43711	1.233577
lnEXP	0.014139	497.8010	1.314621

Conclusion

This study is focused on the impact of education on consumer rationality which has multiple dimensions- price, quality and brand. In the previous studies it is found that rationality has two facets- in some cases rational and in the other biased from it. Consumers have less information about price, quality and brand than the producers and sellers do. Information asymmetry plays major role for less information to the consumers. Among different factors, e ducation is one of the major variable that has significant effect in consumer rationality.

A survey study is conducted to find the impact of education on consumer rationality in our context. Then binary logistic regression model is implied to examine the relationship between the dependent variable consumer rationality on price, quality and brand and the independent variables education, age, income and expenditure. High correlation found between income and expenditure so these independent variables are separated into different models to reduce the effect of multicollinearity. Altogether six models are developed and binary logistic regression model is run to find the relationship separately.

Results show education has significant relationship with consumer rationality on quality and brand at 1 percent level of significance but can't show significant relationship with price. It implies education has positive impact on consumer rationality on quality and brand but it can't show the relation with price related rationality meaning that consumer show rationality even if they are not highly educated but are aware about the price. The coefficient of VIF test is less than 5 that signifies no presence of multicollinearity in the models.

The significant relationship between education and rationality on quality and brand indicates educated consumers are more aware about marketing activities and they seem careful while purchasing commodities. But education cannot show the significant influence on price related rationality that indicates consumer show rationality on price dimension even the lack of education. The study of Dettmann et al. (2010) found the share of expenditure on organic vegetables rise with the rise in the level of education.

So policy makers should focus on educate the consumer to support them to be rational in their purchasing behavior that can protect the consumer right of having the quality commodity at reasonable price.

Implication

Consumer rationality, a dichotomous variable, have positive relationship with education of the consumer and it is an emerging issue in consumer behavior theory. Present study shows rationality increases with the increasing level of education and it can be useful in different sectors for policy implication. The policy makers should focus on consumers' education to make aware the consumer about price, quality and brand in present market scenario and budget of education should be increased. The consumer can have benefit from this study to be rational and they can protect their right to get the quality commodity at reasonable price in purchasing behavior. It can support the society for rational decision- making members in their daily economic activities. The study can be used as the reference study in the related literature search for the researcher interested in this field.

Further researches are anticipated in this field due to its vast concerning area and limiting variables are used so more variables should be included in this study. The study based on both quantitative and qualitative variables should be used for detailed and dense study on this topic that can be more fruitful for the society.

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	Correlations		
		Monthly income	Monthly Expenditure
Monthly income	Pearson Correlation	1	.794**
	Sig. (2-tailed)		.000
	N	385	385
Monthly Expenditure	Pearson Correlation	.794**	1
	Sig. (2-tailed)	.000	
	N	385	385
** Correlation is significant	at the 0.01 level (2-tailed)		

Appendix

Logistic Regression Analysis

Dependent Variable: PRL Method: ML - Binary Logit (Newton-Raphson / Marquardt steps) Date: 02/13/23 Time: 11:52 Sample: 1 385 Included observations: 385 Convergence achieved after 4 iterations Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
С	4.675850	5.394256	0.866820	0.3860
EDU	0.167415	0.279593	0.598780	0.5493
AGE	0.008804	0.027856	0.316033	0.7520
LNINC	-0.626090	1.348820	-0.464176	0.6425
McFadden R-squared	0.002673	Mean dependent var		0.950649
S.D. dependent var	0.216881	S.E. of regression		0.217359
Akaike info criterion	0.412926	Sum squared resid 18.00		18.00034
Schwarz criterion	0.453999	Log likelihood		-75.48823
Hannan-Quinn criter.	0.429215	Deviance		150.9765
Restr. deviance	151.3811	Restr. log likelihood		-75.69054
LR statistic	0.404635	Avg. log likelihood		-0.196073
Prob(LR statistic)	0.939283			
Obs with Dep=0	19	Total obs		385
Obs with Dep=1	366			

Dependent Variable: PRL
Method: ML - Binary Logit (Newton-Raphson / Marquardt steps)
Date: 09/27/22 Time: 12:26
Sample: 1 385
Included observations: 385
Convergence achieved after 4 iterations
Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
С	-3.837670	4.397234	-0.872746	0.3828
EDU	-0.068904	0.287191	-0.239925	0.8104
AGE	-0.010672	0.026858	-0.397344	0.6911
LNEXP	1.807216	1.211070	1.492247	0.1356
McFadden R-squared	0.015705	Mean dependent var		0.950649
S.D. dependent var	0.216881	S.E. of regression		0.216822
Akaike info criterion	0.407802	Sum squared resid		17.91141
Schwarz criterion	0.448874	Log likelihood -		-74.50183
Hannan-Quinn criter.	0.424091	Deviance		149.0037
Restr. deviance	151.3811	Restr. log likelihood		-75.69054
LR statistic	2.377432	Avg. log likelihood		-0.193511
Prob(LR statistic)	0.497849			
Obs with Dep=0	19	Total obs		385
Obs with Dep=1	366			

Dependent Variable: QLT

Method: ML - Binary Logit (Newton-Raphson / Marquardt steps)

Date: 02/25/23 Time: 17:24

Sample: 1 385

Included observations: 385

Convergence achieved after 4 iterations

Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
С	-12.30457	2.922184	-4.210744	0.0000
EDU	0.635359	0.157863	4.024747	0.0001
AGE	0.002753	0.013825	0.199108	0.8422
LNINC	2.323545	0.721982	3.218285	0.0013

McFadden R-squared S.D. dependent var Akaike info criterion Schwarz criterion Hannan-Quinn criter. Restr. deviance LR statistic	0.100557 0.472627 1.167942 1.209015 1.184232 491.0349 49.37721	Mean dependent var S.E. of regression Sum squared resid Log likelihood Deviance Restr. log likelihood Avg. log likelihood	0.664935 0.445327 75.55834 -220.8289 441.6577 -245.5175 -0.573581
Prob(LR statistic)	0.000000	0 0	
Obs with Dep=0 Obs with Dep=1	129 256	Total obs	385

Dependent Variable: QLT

Method: ML - Binary Logit (Newton-Raphson / Marquardt steps)

Date: 09/27/22 Time: 12:27

Sample: 1 385

Included observations: 385

Convergence achieved after 3 iterations

Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
С	-10.29537	2.369269	-4.345378	0.0000
EDU	0.645130	0.156961	4.110119	0.0000
AGE	0.002890	0.013806	0.209332	0.8342
LNEXP	1.959303	0.621751	3.151264	0.0016
McFadden R-squared	0.099082	Mean dependent var		0.664935
S.D. dependent var	0.472627	S.E. of regression		0.445611
Akaike info criterion	1.169824	Sum squared resid		75.65482
Schwarz criterion	1.210896	Log likelihood		-221.1910
Hannan-Quinn criter.	1.186113	Deviance		442.3821
Restr. deviance	491.0349	Restr. log likelihood		-245.5175
LR statistic	48.65286	Avg. log likelihood		-0.574522
Prob(LR statistic)	0.000000			
Obs with Dep=0	129	Total obs		385
Obs with Dep=1	256			

Dependent Variable: BRN Method: ML - Binary Logit (Newton-Raphson / Marquardt steps) Date: 09/27/22 Time: 12:28 Sample: 1 385 Included observations: 385 Convergence achieved after 3 iterations Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
С	1.568432	2.739087	0.572611	0.5669
EDU	0.573765	0.151424	3.789118	0.0002
AGE	0.037259	0.014646	2.543920	0.0110
LNINC	-0.999251	0.694897	-1.437983	0.1504
McFadden R-squared	0.037996	Mean dependent var	0.729870	
S.D. dependent var	0.444604	S.E. of regression	0.436625	
Akaike info criterion	1.143222	Sum squared resid	72.63448	
Schwarz criterion	1.184295	Log likelihood	-216.0702	
Hannan-Quinn criter.	1.159512	Deviance	432.1405	
Restr. deviance	449.2087	Restr. log likelihood	-224.6044	
LR statistic	17.06828	Avg. log likelihood	-0.561221	
Prob(LR statistic)	0.000684			
Obs with Dep=0	104	Total obs	385	
Obs with Dep=1	281			

Dependent Variable: BRN Method: ML - Binary Logit (Newton-Raphson / Marquardt steps) Date: 09/27/22 Time: 12:29 Sample: 1 385 Included observations: 385 Convergence achieved after 4 iterations Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-2.987144	2.297521	-1.300160	0.1935
AGE	0.439334	0.148823	1.928646	0.0020
LNEXP	0.237531	0.616777	0.385116	0.7002

McFadden R-squared	0.033672	Mean dependent var	0.729870
S.D. dependent var	0.444604	S.E. of regression	0.438083
Akaike info criterion	1.148268	Sum squared resid	73.12040
Schwarz criterion	1.189340	Log likelihood	-217.0415
Hannan-Quinn criter.	1.164557	Deviance	434.0831
Restr. deviance	449.2087	Restr. log likelihood	-224.6044
LR statistic	15.12568	Avg. log likelihood	-0.563744
Prob(LR statistic)	0.001712		
Obs with Dep=0	104	Total obs	385
Obs with Dep=1	281		

Variance Inflation Factors

Variance Inflation Factors Date: 06/15/22 Time: 14:41 Sample: 1 385 Included observations: 385

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
С	0.067457	548.4139	NA
EDU	0.000187	29.44371	1.337878
AGE	1.70E-06	21.41196	1.232130
LNINC	0.004390	696.7642	1.336372

Variance Inflation Factors Date: 03/07/23 Time: 10:25 Sample: 1 385 Included observations: 385

Variable	Coefficient	Uncentered	Centered
	Variance	VIF	VIF
C	0.192757	387.0561	NA
EDU	0.000742	28.81919	1.309501
AGE	6.88F-06	21.43711	1 233577
LNEXP	0.014139	497.8010	1.314621