Impact of Education on Economic Development in Somalia

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Abstract: **The contents of this research paper will analyze the impact of education on economic development in Somalia. The study will also consider variables that might have an influence on per capita income, such as experience. The research paper will consider the impact of education on economic development from one of the parameters used to measure economic development (Per capita income earned), as such the research wıll analyse the correlation between educational attainment and the level of per capita income earned.**

The study will use cross sectional data from World Bank (WB), United Nations Fund for Population (UNFPA), Ministry of National Planning and International Cooperation (MNPIC) and the research firm Kimetrica. The data will be analysed by using SPSS, multiple regression analysis, Pearson correlation test and other econometric tests will be conducted.

This cross-sectional research paper is subject to change if more advanced and highly structured but a similar research shows a different result related to income-education correlation. The study is intended to contribute to the improvement in education system, government policies related to minimum wages and equal pay to equal work by different genders. The study will also look briefly the inefficiency created by tax and transfer policies.

Keywords: **Human capital, Education, Income, Somalıa and ınequality.**

1. INTRODUCTION

Is there an advantage for further studies? Workers and those who are engaged in the labour force always ask the question whether gaining higher level of education and training will bolster their prospects of increasing their income in the long run. There are varied reasons for gaining a higher level of academic qualifications. Most studies on this subject indicate, people strive to gain higher degrees for the prospect of increasing their value of labour. However, there are other co-determinants in the level of income gained.

The income earned by a factor of production (Labour) is mainly determined by the supply and the demand of the labour. In a similar way, the higher the demand of the goods and services produced by a factor of production (labour in this case) determines the income earned by labour in that market. These demands taken with the supply of labour determine income earned in a particular market (Keith G. Lumsden, 2015)

In all capitalist countries, labour earns by far the largest share of the national income. Although each individual has the same amount of time to offer, the income that different individuals can command varies (Keith G. Lumsden, 2015, Alan S. Blinder, 2010)

The effect of education on income will be the main subject matter in this particular study. İncome levels gained by Secondary school diploma holders, first degree graduates and post graduates will be studied. The study is based on the correlation between educational level and per capita income gained in Somalia.

For the past few years income inequality became a stark reality in many parts of the world. In some Middle Eastern oil-

producing economies, the top 10 per cent of income recipients receive approximately 90 per cent of all income, so that total income divided by the population yields a misleading figure as to the well-being of the majority of families. In the USA, where the average income level is one of the highest in the world, approximately 12 per cent of the population is defined to be below the poverty line. İn USA the top 20 per cent of income recipients earn over 40 per cent of the nation's income. The lowest 20 per cent of income earners receive about 5 per cent of the nation's income (Keith G. Lumsden, 2015). Such comprehensive statistics is not available from war ravaged Somalia and the study will analyse the data available to determine income-education correlation, income inequality and gender induced income inequality.

All market economies elect to alter the distribution of income caused through market forces for equity reasons. Governments representing the people enact legislation to provide income for the aged, the sick and the unemployed. Tax and transfer policies constitute a common method for income re-allocation. Individuals with high incomes are taxed and individuals with low incomes receive transfers. In addition, all capitalist economies have a progressive income-tax structure, as income levels increase, a larger proportion of the additional income is removed in the form of income taxes. Many individuals with zero income are supported completely by the government through transfer payments. Taxes and payments in kind, namely goods and services, constitute another method of transferring income within a society. For example, in the UK, many poor families receive free school meals, subsidized housing, and family income supplements (Keith G. Lumsden, 2015, Atkinson, 1999). Any programme that redistributes income within a society causes some individuals, i.e. those taxed, to receive less than their contribution to total output, i.e. less than the value of their marginal products. The recipients of transfers in cash or kind receive incomes in excess of their contribution to total output, i.e. in excess of the values of their marginal products. The above discussion shows that income distribution is not desirable as it creates inefficiency to market economies. The market efficiency can be protected by improving the value of labour through education and training.

Many studies have indicated that training and education are the key determinants in real wage growth (Chu 2000; Adsera and Boix 2000; Mehta 2000; and Huang 1999). A further study carried out by Gonzales and Mckinly (1997) indicates that lower income earners realized lower real wage growth compared to higher income earners in most of the developed countries. Workers are rewarded according to their value of labour, those with lower education earn less and those with higher education earn more (Huang 1999). Having said that, it's clear that the level of education gained is the biggest determinant in income inequalities.

Income inequality is much a concern in developed countries as its in less developed countries like Somalia. The causes and consequences are the same in both developed and less developed countries. This paper will try to shed more light whether income gap is caused by the level of education gained.

2. LITERATURE REVIEW

The Impact of human capital on economic development surfaced between 1950's and 1960's when scholars came up first with the notion of human capital. After studying the pros and cons of investing in education to improve agricultural and farm products. Schultz presented his findings in a paper that was titled 'Investment in human capital(Schultz,1961, 10-13). Further studies expanded the relationship between quality education and increased productivity as a bath to economic development (Theodore, 1964). From his studies Schultz clearly proved that contribution of human capital to the United States economy was greater than the contribution of physical capital to the US economy. This demonstrated that investment in education is an investment in economic development as the two became correlated and inseparable. For the first time it has become clear to development economists and governments vying for economic development, improved living standards and better social services to invest in education to achieve such aims. Gary Becker, expanded on Schultz's theories, presenting that investment on education and skills gaining can be considered as investments in human capital (Becker, 1964).

A study carried out by and Spiegel and Benhabib (1994, 56-60) and Pritchett (1996) concluded that achievements in acceptable levels of economic growth and economic development only comes as a result on investments in human capital through trainings and schooling. Other than investment in education, economists have identified many other factors that might result in significant levels of economic development, they include, human brain drain, investments in physical capital and technology, trade policies (import substitution vs export substitution policies) as well as the overall

government institutional environment, and internal and external shocks. It's definitely misleading that only investments in education results in economic development, its only one of the factors but it's the overriding factor. If we take the example of Brazil all the above mentioned can be reflected, the country is developing but many regions are still underdeveloped, there is highly educated and unemployed workforce, Benhabib and Spiegel (1994) and Pritchett (1996) Similar conclusions can be reflected from the works of (Gross, 1985; Murphy, 1990; Cremin 1990).

Poor nutrition impacts on children's ability to develop cognitive capacity to learn, absorb and imagine, children get sick and develop both short and long term complications that retard their ability to learn, children frequently get sick, their class attendance worsens, Jamison, D. and Leslie, J. (1990). A survey on primary school enrolment in Ghana indicates poor health is main cause for delayed school enrolment (Jacoby and Glewwe, 1995), similar study on Kenyan Primary schools indicates calorie consumption impacts school performance (Bwibo, Jansen, Newman and Sigman, 1989) the study highlighted health is the primary cause of either good or bad school attendance.

Investments on Education has drop down effects on health of children, as can be reflected from data collected from less developed countries, there is lower child mortality rate among households in which at least one of the parents is educated compared to households in which none of the parents has never been to any kind of schooling, this is present by demographic and health surveys as well as world fertility survey (Hobcraft, 1993) , both maternal and paternal schooling is associated with higher anthropometrics. The World Bank economists George Psacharopoulos and Maureen Woodhall indicate the average return to education (and human capital) is higher than that to physical capital in LDCs but lower in DCs. Among human investments, they argue that primary education is the most effective for overcoming absolute poverty and reducing income inequality.

Results in the following table and other previous studies on the social rates of return to educational investment, reveal that the highest average returns are from primary education.

Table 1: Average Social Return to Investment in Education

Region	Primary education	Secondary education	Higher education
Asia	16.2	11.1	11.0
Europe/Middle East/North Africa	15.6	9.7	9.9
Latin America/Caribbean	17.4	12.9	12.3
OECD	8.5	9.4	8.5
Sub-Saharan Africa	25.4	18.4	11.3
World	18.7	13.1	10.8

Note: In all cases, the figures are "social" rates of return: The costs include foregone earnings (what the students could have earned had they not been in school) as well as both public and private outlays; the benefits are measured by income before tax. (The "private" returns to individuals exclude public costs and taxes, and are usually larger.)

Source: Nafziger 2006. Estimations are reported by Psacharopoulos and Patrinos 2002.

3. METHODOLOGY

The study used cross sectional data from World Bank (WB), United Nations Fund for Population(UNFPA), Ministry of National Planning and International Cooperation(MNPIC) and Kimetrica. The studies to be used for the analysis of this research paper were conducted between 2012 to 2016. Four variable were identified having an impact on economic development considering per capita income is one of the three parameters used to measure economic development of a country. The variables are education (level of schooling as proxy) (ed_t), Health Issues (Number of weeks of sickness as proxy) (hi_t), Gender (sex as poxy) (sx_t) and and Age (experience as a proxy) (ex_t). The study will employ Pearson correlations, Cronbach's alpha, multiple regression analysis and Anova analysis.

Conventional neo-classical growth model is expressed as follows:

y = f(k, l)……………………………………………………………………...……(1)

The variables **y, l** and **k** represent the level of income/output in the economy, human capital and physical capital respectively. The relationship or exact functional form between the variables (Dependent and Independent) is normally expressed as follows:

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$$\mathbf{y_t = f(x_t)}\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(2)$$

In the above equation y_t represents the dependent variable (Income) where x_t represents the Independent variables which Impact to y_t at time t , n. Here in the equation n represents the number of independent variables that the model contains. The linear form of the equation can be expressed as follows:

$$\mathbf{y_t = \beta_0 + \beta_i x_{it} + \mu}\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3)$$

In equation 3 , β_0 and β_i represent the ımportant parameters of the model or the intercept and the slope. The economic model depicts deterministic relationship between the predicted (Y_t) and predictor variables represented by (x_t). Furthermore equation 3 is included with an error term (μ) this error term is very important as it captures all variables that effect the predicted but not included into the model.

Following these general specification of the functional and linear form of growth equations, the economic growth function of Somalia is expressed mathematically as follows:

After expressing and specifying the general linear model is expressed as follows:

3.1. Mathematical Form of the Model.

$$Y_t = f(ed_t, sx_t, ex_t, hi_t)\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots4$$

$$Yt = \beta_0 + \beta_1 ed_{t+} \beta_2 sx_{t+} \beta_3 ex_{t+} \beta_4 hi_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.5$$

3.2. Functional form of the model

Y_t represent expected income earned which is variable in which the model is going to predict.

Ed_t represent level of schooling, its predictor variable.

Sx_t represents gender, its predictor variable.

Ex_t represents experience, its predictor variable.

HI_t represents health related issues, its predictor variable.

4. FINDINGS AND DISCUSSIONS

4.1.   Pearson Correlations:

Number of observations can be deduced from the congested inter-colleration variables tables generated from the analysis conducted in SPSS. Firstly, there is moderately statistically significant relationship between income earned and education level (**,304),** there is also significant positive relationship between income and age measured in the number of years of experiance **(.135),** This means as people grew their income also increases because their experiance grows which translates to better incomes**.** However, there is weak negative relationship between income and health problems.

Table 2: Inter-Variable Correlation Matrix and Descrbtive Statistics

	INCOME	DEGREE	SEX	AGE	HEALTH
INCOME	1,000				
DEGREE	,304	1,000			
SEX	-,170	,029	1,000		
AGE	,135	,083	-,054	1,000	
HEALTH	-,098	-,208	,058	,086	1,000

Source: Own Computation using SPSS Results. Note~ N = 1815, correlations greater than .21 are statistically significant (P is less than .05)

4.2.   Linear Regression Analysis:

Regression is a model based technique that is an extention of correlations, just like correlations it deals with the degree of relationship between two or more variables. However, it goes one step further in facilitating to predict the value of variable if we know the other. Here in this regression analysis we are going to predict average percentage change in income earned if we the level of education achieved changes by one unit, but the level of accuracy will depend the

correlations between the variables. The regression analysis generated explains if the education increases by one year how much associated per capita income earned will increase, likewise it explains what happens to income when experience of individuals grew or when people get sick.

4.2.1.   Correlations:

The regression correlations table explains the degree of relationship between the variables, there statistically significant relationship between income of respondents and their education level (.0304) as well as well age of respondents and their income level (.135). However, there is negative relationship between respondents income, their sex and their health condition, which is (-.170) and (-.098) respectively.

Table 3: Multiple Correlations of variables

	INCOME	DEGREE	SEX	AGE	HEALTH
INCOME	1,000	,304	-,170	,135	-,098
DEGREE	,304	1,000	,029	,083	-,208
SEX	-,170	,029	1,000	-,054	,058
AGE	,135	,083	-,054	1,000	,086
HEALTH	-,098	-,208	,058	,086	1,000

Source: Own Computation using SPSS Results.

Model Summary Table:

The model summary table captures the R values of predicted and predictor variables, this is equivalent to multiple correlation table that shows the degree of relationship between dependent and independent variables.

Table 3: Model Summry Table

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
,304	,092	,091	66350,415	,092	79,208	1	779	,000
,352	,124	,122	65215,963	,032	28,338	1	778	,000
,366	,134	,131	64883,808	,010	8,986	1	777	,003

Source own analysis.

Predictors: (Constant), RS HIGHEST DEGREE, RESPONDENTS SEX, AGE OF RESPONDENT[a]

Predictors: (Constant), RS HIGHEST DEGREE, RESPONDENTS SEX[b]

Predictors: (Constant), RS HIGHEST DEGREE, RESPONDENTS SEX, AGE OF RESPONDENT[c]

Dependent Variable: RESPONDENT INCOME.

4.2.2. Anova Analysis:

The Anova table measures sequentially the statistical significance of the model as it adds more and more predictor variables into the model, the independent variables added into model are sequencially as follows:

Dependent Variable: RESPONDENT INCOME

Predictors: (Constant), RS HIGHEST DEGREE[b]

Predictors: (Constant), RS HIGHEST DEGREE, RESPONDENTS SEX[c]

Predictors: (Constant), RS HIGHEST DEGREE, RESPONDENTS SEX, AGE OF RESPONDENT[d]

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Table 4: Anova

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	511812737927,063	4	127953184481,766	30,398	,000
	Residual	3266342480909,473	776	4209204227,976		
	Total	3778155218836,537	780			

Source: Own Computation using SPSS Results

Dependent Variable: RESPONDENT INCOME Predictors: (Constant), CONDITION OF HEALTH, RESPONDENTS SEX, AGE OF RESPONDENT, RS HIGHEST DEGREE[b]

4.2.3. Stepwise Multiple Regression Matrix Table.

In stepwise multiple regression analysis matrix shows which predictor variables are significant and which are not significant and therefore removed from table after conducting sequential analysis. Statistically significant variables are considered and only these predicotr are worth for further analysis based. Significant variables are listed from the most significant to least significant.

Table 5: Stepwise Matrix

Model	Variables Entered	Method
1	DEGREE	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
2	SEX	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
3	AGE	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).

Source: Own Computation using SPSS Results.

4.2.4. Regression Slopes and Intercepts:

The regression analysis generated explains if the education or age increases by one unit on average how much associated per capita income earned will increase, likewise it explains what happens to income when experience of individuals grew or when people get sick.

Now we can calculate the average percentage increase income earned when education or age increase by one unit by using the following mathematical equation.

$Yt = \beta_0 + \beta_1 ed_t + \beta_2 sx_t + \beta_3 ex_t + \beta_4 hi_t$

β_0 = Is the ıntercept, it explains what is the level of income earned when all other variables are held constant, from the regression analysis the income earned invoking ceterius peripius is 1301393 SH/

ed_t = Is the Slope of the predictor it explains for every additional level of education an individual undertakes their income level on average increases by .177.

ex_t = Is the Slope of the predictor it explains for every additional year of experience an individual ıncome increases by .50

From the regression analysis sex and condition of health (sx_t and hi_t) seemed to have no significant impact on income level earned. Therefore, they are worth discussion.

Table 6: Coefficients

	Standardized Coefficients		t	Sig.	95,0% Confidence Interval for B	
	B	Beta			Lower Bound	Upper Bound
(Constant)	1301393		3,18	,00	4978,20	21049,67
RS HIGHEST DEGREE	.177	,30	8,90	3,87E-18	13512,78	21160,54
(Constant)	49615,69		6,23	7,73E-10	33977,31	65254,08
RS HIGHEST DEGREE	17634,81	,31	9,21	3,06E-19	13874,70	21394,93
RESPONDENTS SEX	-24858,15	-,18	-5,32	1,33E-7	-34024,82	-15691,49
(Constant)	27758,45		2,58	,01	6617,36	48899,54
RS HIGHEST DEGREE	17151,02	,30	8,97	2,23E-18	13396,66	20905,38
RESPONDENTS SEX	-24072,19	-,17	-5,17	2,93E-7	-33206,70	-14937,68
AGE OF RESPONDENT	.501,44	,10	3,00	,00	173,07	829,82

Dependent Variable: RESPONDENT INCOME IN CONSTANT Shillings[a]

4.2.5. Heteroscadacity Assumption:

Heteroscadacicity of the linear regression shows observations of the variances of the residuals in the analysis are not constant across the predictor values. Then the predictive power of the regression model should be roughly equal from lower levels of the values to higher levels of the values analysed.

Histogram
Dependent Variable: RESPONDENT INCOME IN CONSTANT DOLLARS

Mean = -0,01
Std. Dev. = 1,001
N = 1.186
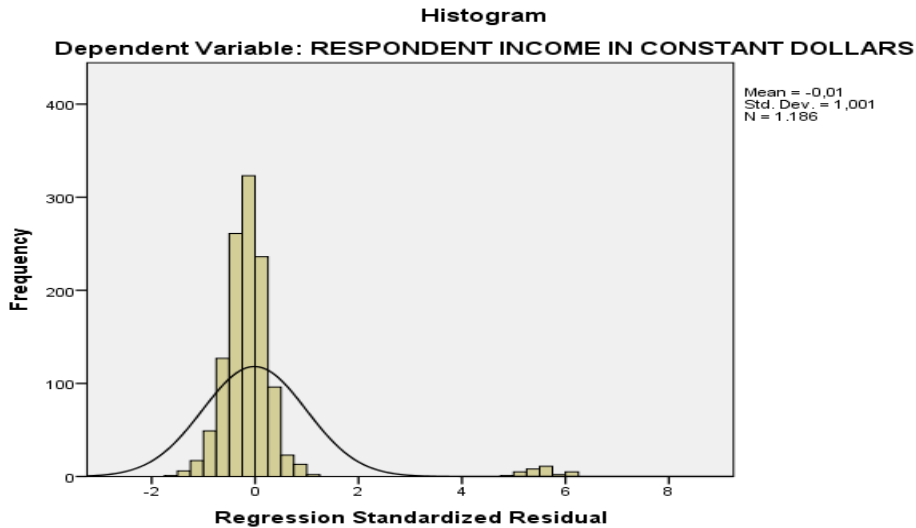
Source: Own Computation using SPSS Results

4.2.6. GLM Univariate Analysis:

General linear model univariate analysis is shown in tables 7, 8 and 9, it measures factorial between groups anova, here in this analysis, the study is going to measure wether the highest degree achieved has an effect on per capita income earned by individuals and also if there is an interaction between highest degree earned, inome and sex of individuals. Table 7 contains sample sizes for each of the groups particularly it only contains the number of persones who responded to the questions related to their degree and income earned. Table 8captures mean income in sex wise as well as it samples sizes of the 10 samples measures. Table 9: Leveen's test is statistically significant, this is an indication of spread of variance scores are not equal, my homogenity of variance assumption was that variance scores are equal, to be more conservative the study should use an alph of .025 instead of an alpha of .05.

Table 7: Between-Subjects Factors

		Value Label
RESPONDENTS SEX	1	MALE
	2	FEMALE
RS HIGHEST DEGREE	0	LT HIGH SCHOOL
	11 1	HIGH SCHOOL
	2	JUNIOR COLLEGE
	3	BACHELOR
	4	GRADUATE

Source: Own Computation using SPSS Results

The study shows mean and women with same levels of educations and doing the same jos earnd different levels of per capita Income, this true across all levels of education.

Table 8: Income Gender in Constant Shillings

RS HIGHEST DEGREE	RESPONDENTS SEX	Mean INCOME.	Std. Deviation
BELOW HIGH SCHOOL	MALE	2457170	51558,341
	FEMALE	1036006	8929,610

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HIGH SCHOOL	MALE	3781372	51043,450
	FEMALE	2165230	28347,919
JUNIOR COLLEGE	MALE	4357875	58656,020
	FEMALE	3308926	59378,748
BACHELOR	MALE	7749524	107405,551
	FEMALE	3427735	23936,717
GRADUATE	MALE	12633922	147089,959
	FEMALE	6746967	92057,231

Source: Own Computation using SPSS Results.

Table: Dependent Variable: Repondents income in Constant dollars

Tests of between subjects Effects

Table 9: Dependent Variable: Respondent Income in Constant Shillings

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	841868793167,392[a]	9	93540977018,599	22,512	,000
Intercept	1786525409007,425	1	1786525409007,425	429,960	,000
sex	160687901160,383	1	160687901160,383	38,672	,000
degree	609259326631,034	4	152314831657,758	36,657	,000
sex * degree	77623503761,513	4	19405875940,378	4,670	,001
Error	4898857530764,379	1179	4155095445,941		
Corrected Total	5740726323931,771	1188			

Source: Own Computation using SPSS Results R Squared = ,147 (Adjusted R Squared = ,140)

5. CONCLUSİON AND POLİCY RECOMMENDATİONS

In general education has a positive impact on income earned by people and better incomes earned by members of the sociaty translate to better living standards which in turn translates into higher economic development of Somalia. But discrepancies are realised when we consider different genders, experiance and tenature. Unfortunately, the model shows education failed to eluminate such differences because men and women who have the same education at levels seem to earn different incomes.

Experiance seems to matter as older members of the society earned more incomes in relation to younger members of the society, this is reflected from the significantly positive correlation between age and income earned.

The model doesn't show any correlation between health of workers and their payment level, this disapproves the hypothesis of the model is assumed sick members of the society earn less compared to healthier members of the society.

6. RECOMMENDATIONS

The study tried to determine the impact of education on economıc development of Somalia measured from the per income levels. CPI is one of the primary means of measuring economic development alongside life expectancy and education. Using cross sectional data from World Bank and other sources the study employed several analytical tools from SPSS including Pearson Correlations test, Multiple regression analysis and GLM univariate analysis. The study found that in general education has positive ımpact on per capita income which in turn has indirect effect on economic development as the standard of living of people improves upon receiving higher income levels. However, the study also discovered that men and women doing the same job and having same levels of qualifications are not rewarded similarly, in economic terms this is gender based income inequality. The study calls upon the concerned government agencies to develop policies of preventing gender based income inequalities. The study again found that there is significant correlation between experience and per capita income levels earned. The study calls upon the government to put in place tax-transfer policies

to make sure income decrease in inequality is Somalia. In conclusion the study finds its up to the government to establish school feeding programs to improve children learning capacity as well as their concentration and imagination, the government can seek support from international organizational like WFP.

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