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Education and Earnings nexus in Zimbabwe after the 2005-2008
hyperinflationary period: An empirical analysis

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Abstract

This study seeks to investigate the impact of education on individual earnings after the hyperinflationary period (2005 - 2008). It follows the Mincerian Human Capital Model (log-linear approach). Data is collected through the use of questionnaires from government ministries during the calendar year 2012. The sample consists of 250 individuals (125 males and 125 females). Individual Earnings are regressed against human capital variables, as well as socio-economic variables. According to the results, levels of education and work experience in years are positively and significantly contributing to monthly individual earnings. The study suggests that Government should invest in education. The results also imply that there is dire need for establishment of institutes for technical education that train individuals according to requirements of the labour market and emphasis should be given to such programs which have a gap. This market oriented approach will boost human resources that can play a major role in accelerating the pace of development of the economy in the long run.

Key Words: Earnings, Education, Mincerian Equation, Human Capital Model, Zimbabwe

1. Introduction

Most of the early classical models of earnings determination argued that firms simply take the market wage rate as given when making employment decisions. According to these models earnings are determined through the interaction of market forces solely. Their view behind this argument is that if workers are underpaid in one industry they simply withdraw their labour services and go to those industries offering higher earnings and this will continue until equilibrium is attained.

Unique views emerge with the recent theories of earnings or wage determination which recognise that workers possess some acquired, human capital characteristics such as education, skills and training, which have an influence on their productivity and hence on their remuneration as well (Schultz, 1961 and Becker, 1964). The effect of these human capital features on earnings especially education, has been one of the most debated issues in economics for many decades. Some scholars strongly believe that education is a crucial tool in increasing earnings, while other scholars think otherwise.

The main thrust of this study is therefore to examine the impact of education on the individuals' earnings in Zimbabwe. In other words, it assesses the role of education or its extent in determining the earnings of an individual in the Zimbabwean economy.

The study is organized into six sections. Following this introduction section, Section 2 provides a brief analysis of education and earnings in Zimbabwe. Section 3 gives the theoretical and empirical literature review. Section 4 presents the methodology adopted and justification of variables incorporated in the model. Presentation and discussion of the result findings is done in Section 5 and finally, Section 6 concludes the study as well as giving policy recommendations.

2. A brief analysis of Education and Earnings in Zimbabwe

In Zimbabwe, education has often been seen as the main policy instrument in the fight against poverty, an intrinsic component of development and the well-being of the population because it helps individuals access better jobs and thus raise their labour earnings. However, in practice, its economic efficiency on the contrary, is now more contested.

The dilemma is that, the ability to increase the demand for education depends greatly on the individuals' opinion on how profitable it is on the labour market, that is, it depends on its ability to provide attractive jobs and better remunerations which are commensurate with individuals' level of education. Unemployment of skilled workers, very poor salaries, long-lasting freeze in civil service recruitment, an education system unsuited to the needs of the informal sector, and the deterioration in the quality of public education under pressure from drastic budget restrictions, are all factors that have undermined the value of investment in schooling in Zimbabwe. Education no longer seems to guard against poverty, social exclusion and other vagaries in this country.

The decrease in value of education (as measured by earnings) during the hyperinflationary period (2005-2008) saw many people fleeing for greener pastures. A third of the population or more than three million Zimbabweans are believed to have been living outside the country by end of December 2008 in search for favourable wages and salaries that compensate their investment in education (Makochekeanwa, 2009). It is also observed that 80 percent of staff from government ministries, universities and technical colleges left since 2000 (Adam Smith International, 2007).

During the period 2005 to 2008 (hyperinflationary era), most educated people were forced to turn to black market and informal activities, ranging from foreign currency dealing to cross-border businesses as education was no longer liable for eking a living. A report by the United Nations' (UN) Office for the Coordination of Humanitarian Affairs (OCHA, 2009) indicates that Zimbabwe's unemployment rate peaked at 94 % by end of 2008, with only 6% of the population being formally employed compared to 30% who were formally employed in 2003. In terms of actual figures, OCHA (2009) reported that only 480 000 people were formally employed by end January 2009 compared to 3.6 million people who were employed in 2003. Poverty became an endemic in Zimbabwe, driven by the shrinking economy and hyperinflation. According to OCHA (2009), poverty rates ran near 80%. For example, as of January 2006, the official poverty line was ZWD 17,200 per month (US\$202). However, as of July 2008 this had risen to ZWD 13 Trillion per month (US \$41.00). Most general labourers were paid under ZWD 200 Billion (US 60c) per month. A nurse's salary for example; in September 2008 was estimated to be Z\$12,542 (12 US cents), less than the cost of a soft drink (OCHA, 2009).

These past experiences have adversely affected individuals' confidence and trust in investing in education. Most Zimbabwean citizens still think that spending resources and time schooling or achieving higher education is a drop in an ocean because it will never guarantee a reasonable remuneration as it saw them during the hyperinflationary period. There is therefore a need for the Zimbabwean government to restore the dignity of the labour system by making sure earnings are favourable and commensurate to the level of education acquired by the individual.

Given the above brief background of Zimbabwe's education and earnings fragility situation, the study is aimed at examining the impact of education on individual earnings after the hyperinflationary period. Thus, the study seeks to investigate the impact of education on individual earnings in Zimbabwe, and to derive policy implications and recommendations based on the findings of the research that maybe useful for policy-makers, the government, and the citizens.

Research on earnings determination has been restricted to developed countries. Studies from these developed countries include those by Schultz (1961), Sari (2002), and Fong and Cao (2009) among others. The limited number of similar studies in developing countries is because data on human capital variables is sketchy. Not much research has been done on earnings determination in Zimbabwe either. Velenchik (1994) estimated an earnings function for Zimbabwe's manufacturing sector with hourly earnings as the dependent variable. The results suggest that human capital variables, race and sex have a significant influence on earnings. In the same line, Zhou (2002) investigated the factors that are vital in determining youth earnings in the formal sector in Harare. Youth earnings were regressed against a number of human capital variables, personal characteristics variables as well as socio-economic variables. The results suggest that human capital variables are important determinants of youth earnings in the formal sector.

However, rather than providing a brief overview of recent studies on this area, this study is different from Velenchik (1994) and Zhou (2002) studies in the following ways: This study focuses on the central issue of the impact of education on individual earnings in Zimbabwe after the hyperinflationary period. Zhou (2002) categorised education into categories like Ordinary Level, Advanced Level and Tertiary Level, and he assigned dummies to each category.

Contrary to Zhou's study, this study will regard education as one variable measured by the number of years spent schooling. Zhou (2002) and Velenchik (1994) also included variables like training and race in their models, which of course this study has excluded. Thus the dropping, addition and model specification clarifies out the differences between this study and the above related studies.

The study will assist Zimbabwean citizens with ways they can improve their earnings, and will also restore their confidence in investing in education. Lastly, it will aid the Zimbabwean government in setting up an equitable labour market system and policy making with regards to earnings.

3. Literature Review

3.1 Theoretical Literature Review

A widely used model which affirms the relationship between the level of education and individual's earnings is the Human Capital Theory (HCT) which was proposed by Schultz (1961) and developed extensively by Becker (1964). It is the basis of neoclassical analysis of labour markets, education and economic growth. According to this theory, education raises the productivity of workers by imparting useful knowledge and skills, hence raising workers' future income by increasing their lifetime earnings. It postulates that education's primary function is to augment and expand individuals' stocks of capacities, skills, and personality traits over the duration of the education process. In narrow versions of this model, knowledge and skills are valued instrumentally, insofar as they contribute to increased productivity and hence, other things being equal, to higher earnings (Kim and Sakamoto, 2005:4). The main contention of the human capital theory is therefore that causality runs from education to productivity to earnings and, subsequently, that the labour market returns to education are a consequence of its productivity-augmenting function.

Another theory which seeks to explain the relationship between education and earnings emerges with Spence (1973) and Stiglitz (1975). This theory is known as the Sorting Theory (ST). It encompasses both the Signalling and Screening hypothesis. According to this theory, education may act as a signal of the productive capacity of individuals. In essence, according to this theory, higher levels of education are associated with higher earnings not because they raise productivity, but because they certify that the worker is a good bet for smart work.

Based on these two commonly used theories of earnings determination, it can be inferred that education is a vital tool in effecting changes in individual earnings.

3.2 Empirical Literature Review

Schultz (1961) carried out a study to find out the reasons for lower earnings of the labourers in the U.S.A between 1929 and 1956. He adopted the OLS model, incorporated education as one of his major variable and considered all types of expenditures on education that is; Private and Public expenditures and also opportunity cost of attending school as the investment costs. The study explored almost 11% return from both high school and college education in the United States of America. The study concluded that 36-70% of the unexplained increase in the labour income was interpreted by the returns to the extra education. The results also indicate that the lower level of returns to education was almost equal to the higher return to non-human capital.

The study of Tansel (1994) used Turkey Statistics data for the year 1987 and incorporated variables like education, work experience and gender. Tansel wanted to find out the effect of the mentioned variables on the level of individual earnings in Turkey. Using a Probit model he found out that education affects earnings positively and, elementary and secondary school appeared to pay off more for women than men in Turkey. Thus, the results suggest that education also increases female participation in labour force. Other variables like work experience and gender were also found to have statistically significant impact of the level of earnings.

Nasir and Nazli (2000) traced out the impact of education, technical training, schooling quality and literacy on earnings of wage earners and salaried persons in Pakistan using log-linear regression model. Using the 1996-household survey data, and incorporating explanatory variables like education, work experience among others, the study concluded that education has a positive and significant impact and each additional year of education brings 7% return to earnings of workers.

Lemieux and Card (2001) looked back at the impact of education on individual earnings in Canada when the government was offering scholarships to the returning veterans of World War II. Under this program, the Canadian government paid tuition and provided a relatively generous living allowance for veterans interested in going back to school and also provided some direct financial help to universities to help them cope with this unprecedented influx of new students. OLS method was adopted to assess the impact of education on civilian earnings after the period the Canadian program was under implementation. Lemieux and Card show that the resulting increment in education of the veterans who welcomed the education programs later resulted in a corresponding increase in earnings. In terms of returns to education, their results indicate that each extra year of education induced by this program resulted in at least a 10% increase in earnings.

Zhou (2002) investigated the determinants of earnings in Harare's formal sector by applying an OLS model on households survey data collected in 1996 in which a total of 660 individuals were identified and interviewed. He also employed some human capital variables as well as some personal and socio-economic variables. The results indicate that the numbers of years spent in education are very important determinants of earnings. For example, after Ordinary level the results suggest that higher education lead to higher wages.

Sari (2002) estimated the Mincerian earnings equation using a data set for the city of Bolu in Turkey between 1999 and 2000 to find the impact of work experience and education on the level of earnings. Employing an OLS model and involving work experience, level of education among other variables, the result findings show that the returns to education for one year are 12.1% and returns to work experience are 9.3%.

In order to examine the impact of higher education on women's earnings in Pakistan, Shah (2007) ran an OLS approach on individual data collected from the female teachers working in public sector educational institutions in the year 2005. The study shows a positive impact of education on earnings of teachers; with every rise in educational level, there is an increase in monthly earnings of teachers.

Messinis and Cheng (2009) made an effort to observe the impact of education and job training on labour income for migrant workers in China between the year 2007 and 2008. Using an OLS (log-linear regression model) and incorporating variables like education, job training and work experience, the study concluded that education and work experience play an important role in determining labour income; lower middle school and higher education enhance wages by 12% and 10%, respectively; job training raises income by about 5%.

The empirical studies have confirmed the positive correlation between human capital factors and individual earnings postulated by economic theory. The next section looks at the analysis of education and earnings in Zimbabwe.

4. Methodology

4.1 Model Specification

A framework for specifying the relationship between earnings and education was given by Mincer (1974). Hence, this study will follow Mincer's framework (log-linear regression model) as it has now become the standard in labour economics to express the earnings equation. Some previous scholars like Nasir and Nazli (2002), Zhou (2002) and Shah (2007) among others also employed the same model. The model is expression as:

$$\ln(w_i) = \alpha + \beta_i X_i \quad (1)$$

Where: $\ln(w_i)$ is the natural logarithm of an individual's earnings mostly measured by monthly income or salary. X_i is a vector of explanatory variables and β_i is the vector of coefficients to be estimated. Incorporating all the explanatory variables the function becomes:

$$\ln(w_i) = \beta_0 + \beta_1 EDU_i + \beta_2 EXP_i + \beta_3 WHRS_i + \beta_4 GEN_i + \beta_5 MS_i + \varepsilon \quad (2)$$

Where:

Variable	Description
β_0	Constant
$\beta_1 \dots \dots \beta_5$	Coefficients to be estimated
EDU_i	Level of education of individual i
EXP_i	Work experience of individual i
$WHRS_i$	Working hours of individual i
GEN_i	Gender of individual i
MS_i	Marital status of individual i
ε	Disturbance term or error term

4.2 Justification of Variables

Education (*EDU*)

In order to analyse the complete contribution of education on individual earnings, the study considers the number of years spent schooling because it is illogical or misleading to assume the same rate of return to all levels of education. The respondent's highest level of education might be Ordinary level (11 years), Advanced level (13 years), Diploma level (16 years), or Degree level to PHD level (17-30 years). A positive relationship is expected between education and earnings.

Work Experience (*EXP*)

It is important to point out that human capital is not homogenous. For example, two individuals with the same level of education could earn different earnings. Thus, the market could value some attributes more than others. The other human capital variable used is work experience. In this study, the number of years on job is used as a proxy for individual's work experience. Rosen (1972) and Mincer (1974) in their studies provided a theoretical justification supporting that work experience has a positive and significant impact on individual earnings.

Gender (*GEN*)

This demographic variable has been found in other studies to have a significant influence on earnings (Miller 1987). Gender variable will take the value of 1 if respondent is male and 0 if female. In many studies males have been found to earn more than females, thus a positive relationship is expected between gender and earnings. From this outlook, it shows that earnings are also gender sensitive.

Marital Status (*MS*)

An individual's marital status indicates whether the individual is married, single, divorced, widowed, cohabiting, civil union or domestic-partnering. Marital Status variable takes the value of 1 if respondent is married and 0 otherwise. Many studies like Kenny (1983), and Loh (1996) have established a strong positive significance of marital status on individual earnings. Therefore, a positive relationship is expected between marital status and earnings.

Working Hours (*WHRS*)

This variable captures the time spent at work by the individual worker and is put forward to explore if it has an impact on the earnings of the individual. Sloman (2004) sites differences in the hours worked as one of the reasons for earnings differences. The structural coefficient of this variable is expected to be positive.

Disturbance or error term (ε)

The error term is modelled as a random variable, meaning that the value of error term varies according to a frequency distribution. This error term captures all other factors excluded from the model, which can also affect the level of earnings of an individual.

4.3 Data Sources

The population for the study comprises individuals working at the government ministries in Zimbabwe during the calendar year 2012. Two hundred and fifty (125 males and 125 females) purposefully sampled individuals employed by the Ministry of Finance, Ministry of Agriculture and Ministry of Mines and Mining Development participated in this study. Most of the information to be used in this study such as earnings, marital status and academic qualifications will be obtained directly from the answers of the respondents. Thus in this study, a questionnaire is used to collect the data. The questionnaire has been pilot tested in order to check on the relevance and usability of the items, and all questions have been found to be clear to the participants. Permission to carry out the study is sought from the respective ministries and participation in the study is voluntary. Names of participants will not be written on the questionnaire to ensure anonymity. Stata 9 is used to estimate the model.

5. Results

5.1 Regression results

The regression model between the endogenous variable and explanatory variables was run and the following results were obtained. A complete set of results is displayed in Appendix A.

Logarithm of Individual Earnings	Coefficient	Standard Error	t-statistic	P-value
Education	0.03395	0.004293	7.91	0.000
Work Experience	0.00669	0.001549	4.32	0.000
Working Hours	-0.00214	0.003774	-0.57	0.574
Gender	0.00852	0.013583	0.63	0.534
Marital Status	0.00110	0.013945	0.08	0.938
Constant	2.12607	0.074434	28.56	0.000

R-squared = 0.8524
Adj R-squared = 0.8356
Prob > F = 0.0000

Using the Prob(F) rule of thumb, the model is statistically significant since it has a value of less than 0.05. Even though for primary data, the vitality of R^2 is not emphasised, from the regression results R^2 is 0.8524 which means that 85.24% of the variation in the model is explained by the explanatory variables while the remainder is by other factors not incorporated in the model.

5.2 Interpretation of Results

Education (*EDU*)

According to the Human Capital Theory by Becker (1964), education is a significant determinant and is positively related with the level of individual earnings. From regression results table above, education variable has a coefficient of 0.03395, a p-value of 0 and an absolute t-value of 7.91 which makes it statistically significant, and this conforms to economic theory. These results also align with other previous studies of Zhou (2002), Nasir and Nazli (2000) only to mention a few. That is, the more the years an individual spends schooling, the higher the earnings he/she can enjoy.

Work Experience (*EXP*)

Work experience variable has a positive coefficient of 0.00669 revealing a positive relationship between work experience and earnings; thus conforming to the proposition of information-based model. A t-statistic of 4.32 renders work experience significant in explaining the level of earnings and this is also confirmed by a p-value of less than 0.05. These results are even supported by studies of Nasir and Nazli (2000), Messinis and Cheng (2009), and Sari (2009) who also involved this variable in their models.

Gender (*GEN*)

The Gender Discriminatory Theory (GDT) developed by Farrell (1993) states that men tend to earn more than women. This can be so because of some factors like, context of history, culture, religion or some stereotypes about gender roles. In other words, this model states that, being a man increases the probability of enjoying higher earnings. From the regression results, gender variable has a coefficient of 0.00852, a p-value of 0.534 and an absolute t-value of 0.63 which makes it statistically insignificant. This insignificance might be due to gender policies embraced to equalise the rights of men and women in every sector of the Zimbabwean economy. The Ministry of Women's Affairs, Gender and Community Development for example, was established to close these discrepancies between men and women in Zimbabwe. However, notwithstanding the statistical insignificance, the positive coefficient of the gender variable (0.00852) conforms to economic theory which states that men earn more than women. Studies of Chang and Huang (2005), and Ogloblin and Brock (2005) which employed this variable support these results.

Marital Status (*MS*)

Marital status variable has a positive coefficient of 0.0011 revealing a positive relationship between marital status (being married) and earnings. A t-statistic of 0.08 renders marital status insignificant in explaining the level of earnings and this is also confirmed by a p-value greater than 0.05. It will not be a surprise to find out that marital status variable is statistically insignificant because in the Zimbabwean civil service the earnings tend to be almost similar despite marital status. Previous studies of Zhou (2002) also found out that although marital status variable is statistically insignificant, it maintains a positive relationship with earnings which is similar with what this study has just discovered.

Working Hours (*WHRS*)

The results show that working hours variable has a coefficient of -0.00214, a p-value of 0,574 and an absolute t-value of -0.57. A t-statistic of -0.57 renders working hours variable insignificant in explaining the level of earnings and this is confirmed by a high probability value of 0.574. Working hours variable was expected to have a positive sign but it turned out to be negative. Possible reasons for this inverse relationship might be that, individuals who work for long hours in Zimbabwe are less educated, on the peripheral levels of management and also characterized with less pay.

5.3 Diagnostic Test Results

Multicollinearity

This test was conducted under the null hypothesis that the explanatory variables are correlated (presence of multicollinearity) against the alternative that there is none. In order to detect the presence of multicollinearity, the correlation matrix was used. The table below shows the results from the correlation matrix. A complete display of the results is shown in Appendix B.

	Education	Work Experience	Working Hours	Gender	Marital Status
Education	1.0000				
Work Experience	0.6001	1.0000			
Working Hours	0.2429	0.5643	1.0000		
Gender	0.4278	0.2238	0.0604	1.0000	
Marital Status	0.4030	0.3450	0.1899	0.1236	1.0000

Source: Stata 9

A correlation statistic of greater than 0.8 shows that there is a high correlation between the two variables. However, in this study as presented in the above table, none of the variables are correlated since all pair-wise correlation coefficients are less than 0.8. Therefore, we reject the null hypothesis since there is no multicollinearity.

Heteroskedasticity

The test is performed under the null hypothesis of constant variance across the regressors (homoskedasticity) while the alternative hypothesis states that there is heteroskedasticity across the regressors. The Breusch-Pagan / Cook-Weisberg test is employed to test for heteroskedasticity. Under null hypothesis, the test statistic of the Breusch-Pagan test follows a chi-squared (χ^2) distribution with parameter degrees of freedom that is; the test statistic is $n\chi^2$ with k degrees of freedom. The table below shows the heteroskedasticity test results. A comprehensive display of the results is shown in Appendix C.

Table 4.3 Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

chi ² (1)	3.31
Prob > chi ²	0.0688

Source: Stata 9

In the above scenario, the alternative hypothesis (H_1) states that the error variances increase or decrease as the predicted values of individual earnings increase, for example; the bigger the predicted value of individual earnings, the bigger the error variance is. Looking straight at the p-value; if the p-value is preferably 0.05 or smaller, then the null hypothesis is rejected and there is significant evidence that there is heteroskedasticity. In the situation above, using the Prob(χ^2) rule of thumb, because the p-value (0.0688) is greater than 0.05 we conclude that we do not have heteroskedasticity. Therefore, we do not reject H_0 .

6. Conclusion and Policy Recommendations

The results compare very well with other studies even outside Zimbabwe. In Zimbabwe the findings are also consistent to those of Velenchik (1994) and Zhou (2002). The magnitude of the impact of education on earnings not only carries important weight for individual decision making, but it is also very significant for policy-makers. With an expected increase in annual rate of return, education is likely to represent one of the best investments a government can make in the face of scarce resources and financial limitations.

Several studies by Wolfe and Haveman (2001) find that those with more education are less likely to rely on public transfers, even when eligible for benefits. The quantitatively most important effect is the impact of higher lifetime earnings on government tax receipts (Davies, 2002). The combination of higher earnings associated with additional education and a progressive income tax system implies that those who earn more as a consequence of additional education also pay more over their lifetimes in tax revenue. Thus the government will enjoy high revenues from taxes. Therefore, by subsidising education or schooling, policy-makers can make education more accessible and more affordable.

The results presented in this study have important implications for private investors in education as well. The results imply that private returns to education are higher for those with higher education. That is; policy makers have to target significant variables within this study.

Many experts argue that investment in education is the surest way to improve the economic outcomes and standard of living for low-income individuals. That is, higher average educational attainment across society likely has other beneficial and less quantifiable effects, such as lower crime and better personal health. Education provides one of the best opportunities to reduce crime and its cost to society, by helping children to gain knowledge, skills and character. Recent works by Grogger (1998), Lochner (1999) and Lochner and Moretti (2004) concluded that higher education levels may lower crime by raising wage rates, which increase the opportunity cost of crime.

Moreover, people with higher levels of education tend to live longer, healthier lives and depend less on government-funded health programs. Grossman and Kaestner (1997), Lleras-Muney and Lichtenberg (2002) and Wolfe and Haveman (2001) survey a huge amount of empirical research on the causal effects of education on health. The overriding conclusion of these scholars is that the empirical evidence supports the belief that education has a causal impact on health outcomes in the developed countries, and in developing countries. Therefore, by subsidising education, the health of the citizens is likely to improve.

Furthermore, the provision of education especially basic (primary and lower secondary) education helps reduce poverty by increasing the productivity of the poor and by reducing fertility. Human capital theory augments this idea by providing a set of implications for policy-makers to alleviate poverty. Broadly speaking, an effective anti-poverty strategy should incorporate the enhancement of education and skills amongst poor households. Davies (2002) notes that the provision of education plays an important role in fostering innovation and advancing knowledge to an extent that those receiving education will become more productive and thus more valuable to employers. Thus it will in turn enhance their productivity in the informal urban and rural economy, and it will also increase their eligibility for paid employment in the formal sector and for advance once they are employed.

Taking account of these additional benefits of education, one would presumably reinforce that improving the provision of education benefits the individual, the government and society respectively. That is, for the Zimbabwean community they need to appreciate this significance of education in explaining earnings and start investing in it with the highest confidence.

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APPENDIX A: REGRESSION RESULTS

Source	SS	df	MS	Number of obs	= 250
				F(5, 244)	= 50.81
Model	.475912462	5	.095182492	Prob > F	= 0.0000
Residual	.082428921	44	.001873385	R-squared	= 0.8524
				Adj R-squared	= 0.8356
Total	.558341382	49	.011394722	Root MSE	= .04328
Inie	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]
edu	.0339496	.0042925	7.91	0.000	.0252988 .0426005
exp	.0066891	.0015486	4.32	0.000	.0035681 .0098102
whrs	-.0021351	.0037737	-0.57	0.574	-.0097405 .0054702
gen	.008524	.0135831	0.63	0.534	-.018851 .035899
ms	.0010975	.0139449	0.08	0.938	-.0270067 .0292016
_cons	2.126067	.0744338	28.56	0.000	1.976055 2.276078

APPENDIX B: MULTICOLLINEARITY TEST RESULTS

(obs=250)	edu	exp	whrs	gen	ms
edu	1.0000				
exp	0.6001	1.0000			
whrs	0.2429	0.5643	1.0000		
gen	0.4278	0.2238	0.0604	1.0000	
ms	0.4030	0.3450	0.1899	0.1236	1.0000

APPENDIX C: HETEROSKEDASTICITY TEST RESULTS

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of ln _{ie}
chi2(1) = 3.31
Prob > chi2 = 0.0688