The Effect of Gender Inequality in Education on Health: Evidence from Turkey

Seyfettin ERDOĞAN[a]
İstanbul Medeniyet University

Durmuş Çağrı YILDIRIM
Kocaeli University

Özlem TOSUNER
Kocaeli University

Abstract

One of the main variables affecting the level of human capital positively is the improvements in health. The reduction in infant and under-five mortality rates and increase in life expectancy at birth are the basic indicators of improvements in health. One of the major sources of improvements in these variables is education. Theoretical literature by using various indicators shows that there is a long-term relationship between education and health levels. In this paper gender inequality in education has been used as an indicator of education. For, gender inequality in education has a potential strong effect on infant and under-five mortality rates. This paper deals with the relationship between gender inequality in education and health indicators especially for Turkey. The annual data for 1968-2006 periods were tested by Johansen Cointegration method. According to the result of empirical analysis, the effect of gender inequality in education on health is positive in the long run.

Key Words

Gender Inequality, Education, Health, Johansen Cointegration Test, Error Correction Model.

In 2000, 189 member countries of United Nations adopted The Millennium Development Goals to be achieved by 2015. Five out of these eight goals are about education and health. Improvements in these two are essential for development. Health, especially infant and child health receives more attention as key indicators for economic development in the last two decades. The achievement of these goals should not be considered as independent from each other. Education can improve health as well as physical and mental health can increase the possibility of education for an individual. Polices that will lead to an improvement in both education and health should be considered for further development (UNDP, 2000b).

a   **Seyfettin ERDOĞAN, Ph.D.,** is currently a professor at the Department of Economics. His research interest include Macroeconomics, Monetary Theory and Policy, Political Economy. Correspondence: Prof. Seyfettin ERDOĞAN, Istanbul Medeniyet University, Faculty of Political Sciences, Department of Economics, Istanbul/Turkey. E-mail: serdogan@medeniyet.edu.tr Phone: +90 216 280 2504.

Education level can affect health in many ways. First of all, education leads to more job opportunities, more skilled work and thus a higher income. Also education improves the knowledge of a healthy life (Arendt, 2005, p. 149). People that have higher education level earn more than less educated ones and this affects health. The higher income is, the more people consume goods that improve health like health insurance (Cutler & Lleras-Muney, 2010, p. 7). An increase in person's own schooling is suggested to increase his/her own health and also health of their children (Grossman, 2005, p. 18).

Besides, education affects the next generations' health through educated parents, especially women. Mother's schooling is more significant than father's schooling in child health, but both have a positive and significant effect. This is because mothers are more involved with children's health (Grossman, 2005, p. 58). Schultz states that the education of mothers can affect child health in five ways: 1- education may increase the effectiveness of health inputs in child health; 2- education may affect the allocation of health resources. For example more educated mothers will have better information on

optimal allocations and as a result they will have healthier children; 3- education years of parents will increase the total family income. Even if mothers do not work in the market, they marry men with higher incomes; 4- the time of more educated mothers have a higher value i.e. opportunity cost of time is higher, and because of this the time devoted to child care decreases by tears of education; 5-given total income, prices and technology, education affect parents' preferences about child health and family size (Schultz, 1984, pp. 221-222).

One of the World Bank's priorities for development is the education of the girls, because one additional year of schooling of girls reduces the under-five child mortality significantly (World Bank, 1990, p. 81). Women's education ends up with healthier children, for they have better health themselves, better knowledge about health care and nutrition, healthier behaviors (Chen & Li, 2009, p. 413). Also more educated women consume fewer goods like tobacco or alcohol, because these goods have negative externalities to produce a healthy child. According to United Nations gender equality is central to achieving all the other Millennium Development Goals (UNDP, 2003b, p. 85). Ensuring equality of opportunity in education for women will improve both themselves and their children's health. Infant and child health improve by women's education through the better knowledge about health care for themselves and their children. Also they invest more for the health of their children.

When the gender equality in education achieved health indicators will improve, fertility will decline leading to a decrease in school age population. In other words, the gender equality in education indicates improvements in gender inequality in education in favor of women. The educated girls marry late in life and engage in economic activity. Educated women have fewer children and look for medical care for them and their children more often. Also they can provide better care and nutrition for their children which results in a reduction in probability of disease and child mortality rate under-five ages. It could be said that benefits of girls' education ends up with a healthier next generation (UNDP, 2003b, p. 85).

In this paper the effects of the increase in gender inequality in education; in other words, women's education with respect to men on health indicators have been studied. There are plenty of studies in the literature addressing to this topic theoretically and empirically. The contribution of this paper is addressing the subject for Turkey. On the other hand, the analysis of the relationship between gender inequality in education and health level with time series based on macro approach can be considered as another contribution. The rest of the paper consists of four sections. The first section includes the literature survey. The second section is about data and methodology and the last part contains empirical analysis results. The periods of the data have been assessed according to availability. They are 1992-2006 for under-five mortality rate and 1988-2006 for infant mortality rate and 1968-2006 for life expectancy at birth. According to the results obtained, there is a relationship between gender inequality in education and health indicators in the long run. No evidence about short-run dynamics has been found.

Literature Survey

There are plenty of studies in the literature about the effects of education on health. In a study on Danish workers for the 1990-1995 period, Arendt used the self-reported health status, body-mass index, variable for never been smoking and variable for high-blood pressure as health indicators and years of education as education variable by OLS and two Stage LS methods (Arendt, 2001). As a result of the study it was found that there were differences in health status because of education. Education affects self-reported health status, body-mass index and index for never been smoking directly. Also the effect of education increase especially for women. Clark and Royer used the law that increases the minimum school leaving age from 14 to 15 in 1947 in UK and individual mortality age records for the entire population by Regression Discontinuity Method (Clark & Royer, 2008). The results of the study show that the effect of the education on mortality age increases throughout the lifecycle. This means that extra one year of education increases mortality age at an increasing rate in one's life.

The findings of another study which investigates the effect of compulsory schooling law in United Kingdom represents that one more year of education increases the possibility of being in good health significantly (Silles, 2009). Silles run the years of schooling and self-reported good health like long-standing illness, activity or work limiting illness by Ordinary Least Squares and Two Stage Least Squares for the 1980-2003/2004 period. Also Glied and Lleras-Muney (2003) studied the effect of education on overall mortality for US. The results point out that one year of education decreases 5 year mortality rate by 5 percent.

Groot and Van Den Brink (2007) analyzed the self-reported health status according to education in Netherlands by using probit equations estimations. As a result of the study, it was found out that there was a strong positive relationship between education level and health. People that have higher education level report themselves to be in a better health than the lower educated. Years of education affects disease status negatively and has a positive effect on quality of health.

Cutler and Lleras-Muney (2006) also found a strong relationship between education and health, and causality is from education to health. They use individual's health behavior, years of completed education and individual characteristics for estimating the relationship by linear models and logit probability models. They came up with a significant relationship between education and health. As the years of completed education increases, the morbidity rate from acute or chronic diseases decreases. An additional four years of education reduces the risk of mortality by 1.8%, hearth disease by 2.16% and risk of diabetes by 1.3% in United States. They also searched for the intergenerational effect of education on health. As a result, as the level of education of the women increases, then ratio of the low birth weight babies and infant mortality rate decreases.

According to Lindeboom, Nozal, and Van Der Klaauw (2009) the direct effect of education on child health arises from the high capability of obtaining and organizing information about health. When education increases, individuals make better investments in health for their children. They estimated a model that show the effects of education of the parents on a range of child health indicators such as child's weight at birth, whether child had an illness at birth, the number of conditions in the later childhood, the occurrence of chronic, mental and acute conditions, height-for-age-z scores and body mass index. Also years of education as an indicator for education were used. The data for 1965 and 1999 period for United Kingdom was estimated by regression discontinuity techniques with OLS estimation method. The results of this study state that the higher education of the parents, the better the socioeconomic and health outcomes, especially weight at birth and height-for- age- z scores for latter childhood health.

For separating the educational effects of mothers on child health Chen and Li (2009) analyzed a sample of adopted children from China aged between 0 to 4 years by using height-for-age-z scores as de-pendent variable and information about families' education, income, structure as independent variables by ordinary least squares regression method. The results show that an additional year of education increases the height-for-age-z score by 0,064. Although mothers' education is more important than fathers', the average years of education of both parents have the largest effect among all other measures. Besides, in another study Peña and Persson (2000) examined the differences in infant mortality in relation to household and neighborhood socioeconomic conditions and the mother's educational level for the period 1988-1993 in Leon, Nicaragua by Cox Regression Models. The results point out that as the education level of mothers increase, infants have a lower risk of dying, particularly in poor households.

Currie and Moretti (2002) investigated the effects of two and four year college openings on years of schooling and then health outcomes of infants by longitudinal models and instrumental variables methodology for the 1970-1999 periods in United States. The results state that infants of college educated women have better birth weight and lower occurrence of prematurity. The estimation results assert that one year of additional education will decrease of the possibility of low weight at birth by 10 percent. Besides, according to the findings of this study an additional year of schooling at low levels of education has larger effect than at the high levels of education on health outcomes.

Desai and Alva (1998) searched for the effects of mothers' education on infant mortality, children's height for age and immunization status in 22 developing countries by fixed effects model. The results state that there is a negative relationship between mothers' education and infant mortality rates. Also mothers' education has a positive significant effect on children's height for age and immunization status. Glewwe (1999) analyzed the effects of mothers' years of schooling on child health in Morocco by ordinary least squares and fixed effects. Mothers' years of schooling have a significantly positive effect on child health, especially their height. Kravdal (2004) studied the impact of community' as well as mothers' education level on under 5 child mortality by multilevel discrete time hazard models in India. Community's i.e. other women's education level has a negative effect on child mortality rate. In other words, as the community's and mothers' education level rises, child mortality rate decreases significantly.

Empirical Analysis

In this paper, the effect of education on health has been analyzed by using a few indicators for health level and gender inequality in education. All data are annual. The data were obtained from SPO (T.R. Prime Ministry State Planning Organization), TURKSTAT (Turkish Statistical Institute) and UNDP-Human Development Reports (1998, 1999, 2000a, 2001 2002, 2003a, 2004, 2005, 2006, 2007/2008, 2009) and CHILDINFO Monitoring the Situation of Children and Women web cites.

We will examine the causality relationship between health and the other education indicators by using the following equation:

$$LIFEEXP_i = \alpha_0 + \beta_1 PS_i + \beta_2 HS_i + \beta_3 VHS_i + \beta_4 UN_i + \varepsilon_t \quad (1)$$

$$U5MR_i = \alpha_0 + \theta_1 PS_i + \theta_2 HS_i + \theta_3 VHS_i + \theta_4 UN_i + \varepsilon_t \quad (2)$$

$$U5MR_i = \alpha_0 + \theta_1 PS_i + \theta_2 HS_i + \theta_3 VHS_i + \theta_4 UN_i + \varepsilon_t \quad (3)$$

In equations LIFEEXP, U5MR and INFMOR above, indicates life expectations at birth, under-five mortality rate and infant mortality rate, respectively. These three indicators represent health level. PS stand for primary school gender ratio, HS for high school gender ratio, VHS for vocational high school gender ratio and UN for university gender ratio and finally ε_t represents residuals. The subscript i denotes time i. Under-five mortality rate (U5MR) is defined as the probability of dying between birth and exactly five years old per 1000 child (UNDP, 2000a, p. 282). Infant mortality rate is defined as the probability of dying between birth and exactly one year old per 1000 baby (UNDP, 2000a, p. 279). Also education indicators are the gender ratio of graduated people which is calculated as number of girls divided by number of boys in the current year. The series that are used for health indicators were chosen from the series which have been used by UNDP to measure the health level (UNDP, 2003a, p. 262, 310). On the other hand under-five mortality rate and infant mortality rate series have been mostly affected by women's education level (World Bank, 1990, p. 81). These series will show the impact of a change in gender inequality on health indicators

that relatively depend on women's education theoretically. Life expectation at birth series is used as an indicator for general health level (UNDP, 2003a, p. 310). This series was chosen to see the impact of a change in gender inequality in education on general health level.

Periods in the analysis were chosen according to the availability of the data. Thus, it is 1992-2006 period for the model in which under-five mortality rate is dependent variable, 1988-2006 period for the model in which infant mortality rate is dependent variable and 1968-2006 period for the model in which life expectancy at birth is dependent variable.

Hence, education indicators are measured as number of graduates there can be multicollinearity between explanatory variables. Every student can attend an upper school. Thus, there can be correlation between education indicators (explanatory variables). For this reason, the multicollinearity problem with VIF (variance inflation factor) test was tested. And the test results show that multicollinearity problem does not exist for all three models.

The first step of causality analysis is investigating characteristics of the data. Thus, we start with analysis of the integrated order of all the variables using ADF test. The integrated orders of all variables are important for determining the model. If all variables are I(0) then we can use Granger causality test. On the other hand if variables are I(1) then we can use Johansen cointegration test or if variables are both I(1) and I(0) then we can use ARDL (Autoregressive Distributed Lag) test. In this paper all data are stationary at first difference level. Therefore, we can use Johansen cointegration test for investigating the relationship between gender inequality in education indicators and health indicators.

The researchers estimated three equations with Johansen's procedure. The cointegration test results for the model which is LIFEEXP is dependent variable can be seen in Table 2. In other words, the relationship between life expectations at birth with gender inequality in education indicators can be seen in Table 1.

Table 1.

Johansen Test Results for Equation (1)

Maximum Eigenvalue Test				Trace Test			
Null (H_0) Hypothesis	Alternative Hypothesis	Test Statistic	Critical Value for 5%	Null (H_0) Hypothesis	Alternative Hypothesis	Test Statistic	Critical Value for 5%
$r = 0$	$r = 1$	84.10	76.97	r= 0	$r > 0$	32.71	34.80
$r = 1$	$r = 2$	51.39	54.07	$r \leq 1$	$r > 1$	23.79	28.58
$r = 2$	$r = 3$	27.60	35.19	$r \leq 2$	$r > 2$	13.32	22.29

According to test results in Table 2 Maximum Eigenvalue test statistic (84.10) exceeds the 5 percent critical value (76.97). We reject the null hypothesis that there is not a cointegrating vector and accept alternative hypothesis. Thus it can be said that there is one cointegrating vector. In other words, in the long run there is a relationship between life expectation and gender inequality indicators. Trace test statistic (32.71) does not exceed 5% critical value (34.80), although according to trace statistic results, it can be said that there is at least one cointegrating vector.

The cointegration test results for the model which is U5MR is dependent variable can be seen in Table 2.

In the theory of cointegration if the series are nonstationary, in the long run the combination of series is stationary. While each variable is I(1) individually, the combination of the variables is stationary, I(0) (Hamilton, 1994, p. 571). Thus the regression which is estimated using nonstationary variables is not spurious (Wooldridge, 2002, p. 571). In other words, while the variables are nonstationary if a particular linear combination of these variables is stationary it can be said that these variables cointegrated (Chatfield, 1996, p. 223).

Johansen test is a maximum likelihood test based on VAR approach. Johansen test has two test statistics: trace test statistic and the maximum eigenvalue test statistic. These test statistics are used for identifying the number of cointegrating vectors. In the trace statistic test the null hypothesis is that cointegrating relationships are less than or equal to "*r*" and the alternative hypothesis is that cointegrating relationships are more than "*r*". On the other hand, in the maximum Eigen-value statistic, the null hypothesis is that cointegreting vector is "*r*"

and alternative hypothesis is that cointegrating vectors are "*r+1*". If cointegration rank is "*r*" then each vector is distinguished by being normalized on a different variable (Greene, 2003, p. 655, Rehman, Iqbal, & Siddiqi, 2010, p. 561).

It is necessary to determine the optimum lag length using VAR approach for applying Johansen's procedure. For the optimum lag length the errors are approximately white noise (Ghali & El-Sakka, 2004, p. 231). According to the optimum lag length test results we find that for all models which LIFEEXP, UMR5 and INFMOR are dependent variables optimum lag length is 1.

According to test results in Table 3 Maximum Eigenvalue test statistic (84.13) exceeds the 5 percent critical value (69.81). We reject the null hypothesis that there is not a cointegrating vector and accept alternative hypothesis. And secondly, we test the null hypothesis which states that there is just one cointegrating vector against alternative hypothesis that there are two cointegrating vectors. The maximum eigenvalue test statistic (52.32) exceeds the 5 percent critical value (47.85). Thus it can be said that there are at least two cointegrating vectors. On the other hand, the results of trace statistic show that there is not a cointegrating vector, although according to trace statistic results in the long run there is at least one relationship between under-five mortality rate and gender inequality in education indicators.

Finally, the cointegration test results for the model which is INFMOR is dependent variable can be seen in Table 3.

The test results in Table 4 show that for both maximum eigenvalue test and trace Test there is at least

Table 2.

Johansen Test Results for Equation (2)

Maximum Eigenvalue Test				Trace Test			
Null (H_0) Hypothesis	Alternative Hypothesis	Test Statistic	Critical Value for 5%	Null (H_0) Hypothesis	Alternative Hypothesis	Test Statistic	Critical Value for 5%
$r = 0$	$r = 1$	84.13	69.81	r= 0	$r > 0$	31.81	33.87
$r = 1$	$r = 2$	52.32	47.85	$r \leq 1$	$r > 1$	30.30	27.58
$r = 2$	$r = 3$	22.01	29.79	$r \leq 2$	$r > 2$	10.77	21.13

Table 3.

Johansen Test Results for Equation (3)

Maximum Eigenvalue Test				Trace Test			
Null (H_0) Hypothesis	Alternative Hypothesis	Test Statistic	Critical Value for 5%	Null (H_0) Hypothesis	Alternative Hypothesis	Test Statistic	Critical Value for 5%
$r = 0$	$r = 1$	139.63	69.81	r= 0	$r > 0$	56.24	33.87
$r = 1$	$r = 2$	83.39	47.85	$r \leq 1$	$r > 1$	46.42	27.58
$r = 2$	$r = 3$	36.97	29.79	$r \leq 2$	$r > 2$	22.84	21.13

one cointegrating vector. Thus in the long run there is at least one relationship between infant mortality rate and gender inequality in education indicators.

After investigating the long run relationship we can investigate the normalized cointegrating coefficients for equations (1), (2) and (3). Normalized equations can be seen below:

LOGLIFEEXP	PS	HS	VHS	UN
	0.004466	-0.037592	-0.053063	0.321363

When normalizing equation (1) according to LIFE-EXP it can be said that an increase in graduates from UN increases life expectation at birth. The coefficients of PS, HS and VHS variables are negligible. Thus, it can be said that a change in graduates from PS, HS and VHS does not affect life expectation at birth.

LU5MR	PS	HS	VHS	UN
	-2.745847	1.495421	-3.649228	-10.74183

When normalizing equation (2) according to U5MR it can be said that a fall in graduates from PS, HS and UN decreases under-five mortality rate. However coefficient of HS variable is positive. In other words, a decline in graduates from HS increase under-five mortality rate. Thus, it can be said that except HS, graduates from other schools decrease under-five mortality rate.

LINFMOR	PS	HS	VHS	UN
	-1.002164	-3.339693	-0.632653	-1.988147

When normalizing equation (3) according to IN-FMOR it can be said that a decrease in graduates from all schools decreases under-five mortality rate.

After investigating long run relationship we can investigate short run dynamics using error correction model. According to the test results we can say that a relationship between health indicators and gender inequality indicators does not exist in the short-run.

Conclusion

This paper focuses on the relationship between gender inequality and health indicators. In the empirical analysis under-five mortality rate (1992-2006), infant mortality rate (1988-2006) and life expectancy at birth (1968-2006) series were used as health indicators. On the other hand, gender inequality series have been calculated as by dividing graduated women rate to graduated men rate. These indicators have been used to investigate the effect of women education on health indicators. In the long run there is a relationship between education level of women and under-five mortality rate and infant

mortality rate. However, an increase in the number of university graduates improves the life expectancy at birth. Because the coefficients of primary school, high school and vocational high school variables are negligible, a change in these variables will have no impact on life expectancy. Finally, there is not short–run dynamics in the relationship between health indicators and gender inequality indicators.

The positive effect of a decrease in gender inequality in education on the health indicators, which are selected in a large number of theoretical and empirical studies as well as in this study, should be subject of consideration by policy-makers. The policies for the enhancement of qualitative and quantitative aspects of women's education as well as incentive policies to encourage the society should be applied. It should not be forgotten that the success in women's education and education in general is one of the important prerequisites for the sustainable economic development.

References/Kaynakça

Arendt, J. N. (2001). *Education effects on health: Causal or from unobserved components? A panel data analysis with endogenous education*. Retrieved April 15, 2010, from http://www.econ.ku.dk/okojn/Public/Research/jarendt.pdf.

Arendt, J. N. (2005). Does education cause better health? A panel data analysis using school reforms for identification. *Economics of Education Review, 24,* 149-160.

Chatfield, C. (1996). *The analysis of time series: An introduction* (5th ed.). United Kingdom: Chapman and Hall/CRP.

Chen, Y., & Li, H. (2009). Mother's education and child health: Is there a nurturing effect? *Journal of Health Economics, 28*, 413-426.

Clark, D., & Royer, H. (2008). *The effect of education on adult mortality and health: Evidence from the United Kingdom.* Retrieved March 10, 2010, from http://economics.ucr.edu/seminars/fall08/ae/Clark.pdf

Currie, J., & Moretti, E. (2002). *Mother's education and the intergenerational transmission of human capital: Evidence from college openings and longitudinal data* [Working Paper No: 9360]. National Bureau of Economic Research.

Cutler, D. M., & Lleras-Muney, A. (2006*). Education and health: Evaluating theories and evidence* [Working Paper No:12352]. National Bureau of Economic Research.

Cutler, D. M., & Lleras-Muney, A. (2010). Understanding differences in health behaviors by education. *Journal of Health Economics, 19*, 1-28.

Desai, S., & Alva, S. (1998). Maternal education and child health: Is there a strong causal relationship? *Demography, 35* (1), 71-81.

Ghali, K. H., & El-Sakka, M. I. T. (2004). Energy use and output growth in Canada: A multivariate cointegration analysis. *Energy Economics*, *26*, 225-238.

Glewwe, P. (1999). Why does mothers' schooling raise child health in developing countries? Evidence from Morocco. *The Journal of Human Resources, 34* (1), 124-159.

Glied, S., & Lleras-Muney, A. (2003). *Health inequality, education and medical innovation* [Working Paper No: 9738]. National Bureau of Economic Research.

Greene, W. H. (2003). *Econometric analysis* (5th ed.). Upper Saddle River, NJ: Prentice Hall.

Groot, W., & Van den Brink, H. M. (2007). The health effects of education. *Economics of Education Review, 26*, 186-200.

Grossman, M. (2005). *Education and non-market outcomes* [Working Paper No:11582]. National Bureau of Economic Research.

Hamilton, J. D. (1994). *Time series analysis.* Princeton: Princeton University Press.

Kravdal, Ø. (2004). Child mortality in India: The community level effect of education. *Population Studies, 58* (2), 177-192.

Lindeboom, M., Llena-Nozal A., & Van Der Klaauw, B. (2009). Parental education and child health: Evidence from a schooling reform. *Journal of Health Economics, 28*, 109-131.

Peña, R., & Persson, L.-Å. (2000). The effect of poverty, social inequity, and maternal education on infant mortality in Nicaragua, 1988-1993. *American Journal of Public Health*, *90* (1), 64-69.

Rehman, J., Iqbal, A., & Siddiqi, M.W. (2010). Cointegration-causality analysis between public expenditures and economic growth in Pakistan. *European Journal of Social Sciences, 13* (4), 556-565.

Schultz, T. P. (1984). Studying the impact of household economic and community variables on child mortality. *Population and Development Review, 10* (Suppl. Child Survival: Strategies for Research), 215-235.

Silles, M. A. (2009). The causal effect of education on health: Evidence from the United Kingdom. *Economics of Education Review*, *28*, 122-128.

United Nations Development Programme (UNDP). (1998). *Human development reports, 1998 report.* New York: Oxford University Press.

United Nations Development Programme (UNDP). (1999). *Human development reports, 1999 report.* New York: Oxford University Press.

United Nations Development Programme (UNDP). (2000a). *Human development reports, 2000 report.* New York: Oxford University Press.

United Nations Development Programme (UNDP). (2000b). *Millenium development goals*. Retrieved 15.03.2010 from http://www.undp.org/mdg/basics.shtml

United Nations Development Programme (UNDP). (2001). *Human development reports, 2001 report.* New York: Oxford University Press.

United Nations Development Programme (UNDP). (2002). *Human development reports, 2002 report.* New York: Oxford University Press.

United Nations Development Programme (UNDP). (2003a). *Human development reports, 2003 report.* New York: Oxford University Press.

United Nations Development Programme (UNDP). (2003b). *Millennium development goals: A compact among nations to end human poverty*. New York: Oxford University Press.

United Nations Development Programme (UNDP). (2004). *Human development reports, 2004 report.* New York: Hoechstetter Printing Co.

United Nations Development Programme (UNDP). (2005). *Human development reports, 2005 report.* New York: Hoechstetter Printing Co.

United Nations Development Programme (UNDP). (2006). *Human development reports, 2006 report.* New York: Palgrave Macmillan

United Nations Development Programme (UNDP). (2007/2008). *Human development reports, 2007/2008 report.* New York: Palgrave Macmillan.

United Nations Development Programme (UNDP). (2009). *Human development reports, 2009 report.* New York: Palgrave Macmillan

Wooldridge, J. M. (2002). *Introductory econometrics: A modern approach* (2nd ed.). South Western Educational Publishing.

World Bank. (1990). *World development report 1990, poverty.* Washington, D.C.: World Bank.