Article

An Empirical Investigation of the Effects of Health and Education on Income Distribution and Poverty in SAARC Countries

Kardan Journal of Economics and Management Sciences
4 (3) 1–15

Kardan Publications
Kabul, Afghanistan
DOI: 10.31841/KJEMS.2021.97
https://kardan.edu.af/Research/CurrentIssue.aspx?j=KJEMS

Received: 22-April-2021
Revised: 02-June-2021
Accepted: 14-July-2021

Nassir Ul Haq Wani
Jasdeep Kaur Dhami

Abstract

The purpose of this paper is to inquire into the effects of health and education on income distribution and poverty in selected SAARC countries. A model of income inequality along with a model of poverty, with same explanatory variables, are specified. In these models, the main variables are income level, health status, the level of education and the level of savings. The models are estimated using a panel data set for 5 SAARC countries covering five time periods. The results show that boosting the health and education status in SAARC countries will reduce income inequality and poverty. The results of the empirical examination will help governments in SAARC countries to identify areas that need to be improved upon in order to reduce income inequality and alleviate poverty. The paper is the first of its kind, which provides empirical evidence that the health and education status is negatively associated with income inequality and poverty in SAARC countries.

JEL classification: O12, O15, O50

Keywords: Health services, Education, Poverty, Income, SAARC Countries, Distribution of wealth

Introduction

The current situation of the SAARC countries shows that the present condition in the areas of income inequality and poverty is not satisfactory. Having gone over the international data, one can easily find that the majority of them are developing countries with high levels of poverty and income inequality as per World Development Report (WDR) (World Bank, 2019). Therefore, it is of significance for the governments in SAARC countries to find areas that need to be improved upon in order to solve these problems. It seems that quite different suggestions can be presented. One of them is improving health and education status. In other words, it seems that improving health and education in these countries will reduce poverty and change income distribution for better. Having gone briefly over the plethora of related literature, the present study evaluates the impact of two dimensions of human capital, health and education, on poverty and income inequality in SAARC countries. The results depict that improving the health and education status in SAARC countries will minimize income inequality and poverty. Statistical results of such empirical examination will help governments to single out

areas that need to be improved upon in order to edge off poverty and ameliorate the distribution of income.

The rest of the paper is organized as follows. In the next section, a selected review of the literature is presented. The formulation of a statistical model to be estimated is presented in the following section. Statistical results are presented in the subsequent section. The final section comes up with conclusions and presents some policy recommendations.

2. Literature Review

Using the 2004 World Development Indicators to examine the evidence of declining inequality versus economic divergence over the 1980-2002 period, Bourguignon et al. (2004) discover that inequality has declined by most criteria during this period. However, when one considers country mobility and the impoverishment of about a dozen countries at the bottom of the distribution, the evidence points to a worsening of the global income distribution. Bourguignon and Morrison (2002) find a rapid increase in inequality until the Second World War and smaller increases between 1970 and 1992 when they examine a much longer period (1820-1992). Most inequality was caused by intra-country differences in the early nineteenth century, but it was later caused by inter-country differences. According to Schultz (1998), inter-country income inequality has accounted for roughly two-thirds of global income inequality since the 1970s.Paxson and Shady (2005) demonstrate that wealth and parental education have a positive impact on cognitive ability in a sample of over 3,000 predominantly poor pre-school age children from Ecuador. They also discover that child health and parenting quality measures are related to better performance on young children's language ability.

According to the 2008 WDR, one's opportunities may be influenced by one's birth circumstances or membership in groups. Predetermined circumstances, such as private wealth, one's parents' human capital, and access to public services and infrastructure, all have an impact on one's initial endowments in life. Due to discrimination on the basis of gender, ethnic origin, religious belief, or sexual orientation, membership in a group may result in a different reward. Pradhan et al. (2003) decompose health-status inequality into within- and between-country inequality and discover that within-country variation in standardized height, rather than differences between countries, is the source of the majority of inequality.

It would be beneficial to conduct a literature review on human capital components, specifically health and education. It is obvious that a country's education status is a critical component of human capital.

Becker (1962) and Mincer (1958) approached household education decisions in the same way they approached other household decisions, i.e. they are based on optimization behavior. However, their common assumption that markets for educational loans are perfect is untenable because, with the abolition of slavery, human capital cannot be used as collateral. When Loury (1981) develops a model with human capital as the only intertemporal good, he addresses this constraint. Behrman et al. (1989) demonstrate empirically that credit market constraints may be to blame for educational differences. According to Psacharopoulos and Schultz (1988), the increase in earnings associated with additional education is twice as large in poor countries as it is in rich countries. Strauss and Thomas (1995) concentrate on a different aspect of human capital, namely health and nutritional status. The review clearly demonstrates that these are important determinants of productivity and earnings in developing countries. Dasgupta (1993) proposes a model in which he demonstrates how the links between nutrition and income lead to a vicious poverty trap. Thomas and Strauss (1997), on the other hand, discover that different aspects of health affect the wages of both men and women in urban Brazil. In a similar vein, Dao (2008) investigated the impact of human capital components on the extent of poverty and income distribution in 40 developing countries using the least-squares estimation technique in a multivariate linear regression. The percentage of the population living in poverty was discovered to be linearly dependent on the gender parity ratio in primary and secondary schools, the prevalence of child malnutrition, per capita purchasing power parity gross national income, the maternal mortality rate, and the percentage of births attended by skilled health staff.

Using panel data from 1996 to 2015, Sabir and Aziz (2018) examined the impact of health and education on income inequality in 31 developing countries. The System Generalized Method of Moments (System-GMM) technique was used, and the results revealed that education and health play a significant role in reducing income inequality. Coulombe and Tremblay (2001), considering and focusing on developed countries, attribute regional convergence of per capita income in Canada for the 1951-1996 period to the convergence process of human capital indicators based on the percentage of the population with at least a university degree.

2.1. Health and Income Inequality

Health and income inequality have been studied since the 1970s. Wilkinson and Pickett (2009) recently concluded in a series of articles that income inequality has a negative impact on health. However, this viewpoint has been challenged, particularly by scholars who have

pointed out significant inconsistencies in the use of data (Judge, 1995). Recent empirical studies provide a mixed picture of the effect of income inequality on health, with results appearing to be sensitive to (i) the study's underlying regional focus, (ii) estimation methods used, and (iii) unit of observation (individuals, state, or country analysis).

According to the wealth of research reviewed by Lynch et al. (2004), income inequality does not appear to have a negative effect on health status, at least among wealthier nations, including Belgium, Denmark, and Spain. Lynch et al. (2004) argue that income inequality has a positive effect on mortality rates in Belgium (Lorant et al., 2001), inequality is not related to mortality or heart disease in Denmark (Osler et al., 2003), and there is no effect of inequality on disabilities or life expectancy in Spain (Regidor et al., 1997).

Gerdtham and Johannesson (2004) found no significant effect of income inequality on mortality in Sweden. The evidence for the United Kingdom is more mixed. According to Stanistreet et al. (1999), income inequality has some significant effects on health. Hildebrand and Van Kerm (2009) provide additional evidence for 11 European countries. The authors specifically test the relationship using data at the NUTS0 and NUTS1 levels from Austria, Belgium, Denmark, Finland, France, Greece, Italy, Ireland, Portugal, Spain, and the United Kingdom. Although the authors find that income inequality has a statistically significant effect on self-rated health status in EU countries, the magnitude of this effect is negligible. In contrast, empirical findings for the United States show that income inequality has a consistent and negative effect on health status (see Lynch et al., 2004).

In conclusion, the empirical evidence suggests that income inequality has no negative effect on health status, at least among wealthier European countries. In the United States, however, there appears to be consistent evidence of a negative impact of income inequality on health outcomes.

2.2. Income Inequality and Education

Papers examining the impact of income (wealth) inequality on educational attainment can be divided into two broad categories: the first, related to the macroeconomic literature, examines the more general relationship between inequality and growth, and considers education to be a key factor in boosting growth. The second group of studies uses a microeconomic approach to investigate the impact of family income on children's outcomes. Both groups, however, attempt to provide evidence and/or theoretical support for the idea that unequal societies may harm educational investments.

The papers by Galor and Zeira (1993), Banerjee and Newman (1993), and Perotti (1993) are examples of macroeconomic approaches. Galor and Zeira (1993) show, in particular, that in the presence of imperfect credit markets, wealth distribution affects human capital investments. They propose that the initial distribution of wealth is critical in determining individuals' educational choices and aggregate output in the short and long run by developing an overlapping generation model with intergenerational transmissions. Banerjee and Newman (1993) reach similar conclusions by following the same logic. Their theoretical model suggests that the pattern of occupational (educational) choice is shaped by the initial distribution of wealth. Perotti (1993) investigates the link between income distribution, democratic institutions, and economic growth. The paper's primary goal was to address data and estimation issues. One of Perotti's main conclusions is that there is strong empirical support for the link between income distribution and education decisions, i.e. that more equal societies invest more in education. Furthermore, Filmer and Pritchett (1999) conduct an empirical analysis for 35 countries using household surveys. They show that the poverty index, their proxy for household economic status, is associated with lower school attainment in the poorest 40% of the population. This finding is confirmed by Flug et al. (1998). Flug's empirical investigation is based on macro panel data and suggests that credit market imperfections as well as more unequal income distribution negatively affect secondary school enrolments. Checchi (2003) investigates the problem using an unbalanced panel of 108 countries from 1960 to 1995. His main finding is that there is a strong negative correlation between income inequality and secondary school enrolment. When females have access to any level of education, the effect is magnified. These findings support the notion that low incomes prevent poor families from enrolling in school. As a result, greater income inequality reduces access to education. With the exception of theoretical papers by Galor and Zeira (1993) and Banerjee and Newman (1993), empirical macro-studies fall short of properly addressing the endogeneity of the inequality variable, that is, when other omitted factors are correlated with both the education and inequality measure, or when the causation goes to the other way around (education causes inequality). Thus, caution is needed when interpreting these results.

The second set of studies looks at the impact of family income on children's educational outcomes. The idea underlying this line of research is that rich parents can spend more on their children's education – or have unrestricted access to credit – than poor parents, and that these investments result in better outcomes for their children. Although intuitive, there is no clear evidence in the literature to support

the hypothesis: findings range from a moderate to no effect of parental income on children's educational attainment. It is worth noting that the endogeneity of the income variable in the education equation has been carefully addressed in this class of studies.

The income variable is endogenous because other factors, such as parents' education and ability, may influence both family income and children's outcomes. As a result, the results of these studies are more reliable than those of macro-studies. Ellwood and Kane (2000) investigate the impact of family background on college enrolment in the United States. They discover that enrolment rates have increased in the top income quartile of parents, despite the fact that the positive effect can also be explained by differences in average parental education. However, when the authors controlled for high school achievement, they found no effect. Hence, they conclude that lot of the variation in attending college is probably captured by student own ability.

Acemoglu and Pischke (2001), on the other hand, identify the effect of family income by exploiting changes in the wage distribution in the United States from 1970 to 1990. According to their findings, an increase in family income is associated with a higher probability of enrolling in college. When they estimated separate effects for family income and educational enrolment based on income quartiles, however, they found no support for a differential effect for poor and rich families. Akee et al. (2010) tested whether a permanent exogenous increase in a household's income due to a government transfer affects children's education and criminal behaviour. Their results indicate that changes in a household's permanent income tend to improve the overall child outcomes in terms of educational attainment at ages 19 and 21 and reduced criminal behaviour at ages 16 and 17. Using father's trade union membership and father's occupational status as instruments for income, Shea (2000) claims that income has no effect on child outcomes while Chevalier et al. (2005) find that permanent income matters in children's educational attainment. Loken (2007) uses the Norwegian oil boom of the 1970s and 1980s, which only affected a few regions of the country, as an instrument for increases in household income that is unrelated to parental characteristics. The study found that there is no effect of parents' income on child educational attainment.

Shea (2000) claims that income has no effect on child outcomes using father's trade union membership and father's occupational status as income instruments, whereas Chevalier et al. (2005) find that permanent income matters in children's educational attainment. Loken (2007) employs the Norwegian oil boom of the 1970s and 1980s, which only affected a few regions of the country, as a tool for increases in household

income unrelated to parental characteristics. She discovers that parental income has no effect on children's educational attainment. Cameron and Heckman (2002) used a different method and estimated a dynamic model of schooling attainment to investigate the sources of racial and ethnic disparity in college attendance. Their findings suggest that family income matters, but it has its greatest influence on forming the ability and college readiness of children and not in financing college education. Also, family income may be more important for educational transitions at younger ages. Carneiro and Heckman (1998) critically evaluate the two common interpretations of the empirical data showing differences in college participation rates across income groups: I short-run credit constraints and (ii) long-term factors promoting cognitive and non-cognitive child ability, such as family background and parental resources in a child's formative years. They demonstrate that, after controlling for test scores (a student's proxy for innate ability), parental income has little effect on college enrolment. There is also little evidence that financing constraints explain a large portion of the gap in college participation. Finally, Cameron and Taber (2004) investigated the impact of borrowing constraints on educational decisions by employing four distinct strategies: schooling attainment models, instrumental variable wage regressions, and two structural economic models that incorporate both schooling choices and schooling returns. None of the methods produce evidence that borrowing constraints cause inefficiencies in the schooling market. The literature reviewed in this section yielded contradictory findings regarding the relationship between income inequality and educational attainment. The findings of the more robust micro-studies range from a moderate to no effect of income on educational attainment. However, when interpreting these findings, keep in mind that the causal direction can go both ways: inequality affects education, but education can also influence inequality. Disentangling the effect of income inequality on education is a difficult task that necessitates a very robust econometric strategy. However, these findings may be heavily influenced by the researchers' strategy. As such, the aforementioned conclusions should be taken with caution

3. The Econometric Model

Following Daly (1998), Kawachi and Kennedy (1999), Asafu-Adjaye (2004) and Dao (2004), we can present the statistical model as:

$$\boldsymbol{Q_{it}=\beta_0 + \sum \beta_{j1} Y_{it-1} + \sum \beta_{j2} H_{it-1} + \sum \beta_{j3} S_{it-1} + \sum \beta_{j4} E_{it-1} + \mu_{it}} \quad \textbf{(1)}$$

where subscript i refers to a given country and subscript t is time, with t values of 2006, 2009, 2012, 2015, and 2018. In this model:

Q = the income inequality.

Y = the income level.

H = the health status.

S = the level of domestic savings.

E= the level of education.

μ = an error term.

Based on the preceding literature review, we hypothesize that previous levels of income, health status, saving, and education influence income inequality in SAARC countries. Before proceeding, we will explain why these independent variables were chosen and how they affect income inequality. Although the average level of income in an economy is not a precise measure of income inequality, as economies grow, the incidence of inequality may decrease due to the trickle-down effect, which is mentioned in economic literature (Dao, 2004, pp. 14-20). As a result, we anticipate a negative sign for the purchasing power parity gross national income per capita variable.

Education is a significant component since a more literate populace is more aware of health-related variables and is thus better positioned to take preventative actions or seek medical treatment when unwell. Given that improved health and education status helps the poor more than the affluent, we may deduce that enhancing health and education in SAARC nations will reduce economic disparity, as shown in the research (Brainerd and Cuttler, 2004). The degree of savings in a country is used as a proxy for the ability to purchase health care in this context. As a result, we anticipate a negative relationship between savings level and income disparity. After discussing inequality, it is necessary to look at how relevant the same explanatory factors are in explaining cross-country disparities in poverty, using the same sample of SAARC economies. Assuming that these factors have a linear effect on poverty in a nation, we can construct the following statistical model:

$$\boldsymbol{P_{it}=\beta_0 + \sum \beta_{j1} Y_{it-1} + \sum \beta_{j2} H_{it-1} + \sum \beta_{j3} S_{it-1} + \sum \beta_{j4} E_{it-1} + \mu_{it}} \quad \textbf{(2)}$$

In this model again, subscript i refers to a given country and subscript it is time, with t values of 2006, 2009, 2012, 2015, and 2018. In this model:

P = the poverty; and is defined as the percentage of the population under the national poverty line.

Y = the income level.

H = the health status.

S = the level of domestic savings.

E= the level of education.

μ = an error term.

Again, our hypothesis is that past levels of wealth, health status, saving, and education influence poverty in SAARC nations. The anticipated signals and explanation of independent variables are quite similar in this model to the income inequality model.

3.1. Data sources

Three distinct income indicators are employed in estimating the proposed models: real per capita GDP (in 1995 constant US dollars), the human development index (HDI), and educational spending (percent of GDP). The Gini coefficient is a proxy for income inequality (which is measured from the Lorenz curve). The percentage of total domestic savings to GDP is known as domestic savings. The ratio of total primary school enrolments to the population aged 15 to 65 years old represents the educational level. After all, life expectancy at birth is a proxy for health state (in years). Estimates of the Gini coefficient are derived from the World Institute of Development Economics Research database, estimates of HDI are derived from the UN's 2008 and 2009 World Development Reports, and the remaining variables are derived from the 2008 World Development Indicators (World Bank, 2008). The inclusion of SAARC nations in the sample was motivated primarily by the availability of a long enough time series for all of the variables in the model. A full data collection for five nations was gathered. This amounted to 25 observations when combined with data from five time periods for each nation. Summary statistics for the variables utilized in the analysis are provided in Table 1. For example, average life expectancy for the sample period for all countries is 64.5 years.

Table 1: Average of variables for 2006-2018

Variable	Amount
Life expectancy (years)	64.5
Gini coefficient	0.36
Per capita GDP (2017 US$)	1866
HDI	0.65
Educational expenditure (percent GDP)	3.51
Domestic savings (percent GDP)	10.41
Adult literacy rate	6.23
Percentage of the population under the national poverty line	33.4

Source: Data from World Bank, 2020

3.2. Methodology of the Study

This method is employed in this work because of the various advantages of the panel data technique (Baltagi, 1995). The F-test was used to decide between pooling and paneling. This test computes the

following statistic using limited residual sum of squares and unconstrained residual sum of squares:

$$F = \frac{(\text{RRSS}-\text{URSS})/\text{N}-1}{\text{URSS}/\text{NT}-\text{N}-\text{K}},\ \ H_0 \sim F_{N-1,N(T-1)-K}$$

H0 supports the concept that the intercepts are equal in this test (pooling). H1, on the other hand, demonstrates that they are not equal (panel). As a result, the rejection of the null hypothesis implies that the panel technique is preferable. The Hausman (1978) test is used to choose between the fixed effects panel model and the random effects panel model. The statistic in this test is:

$$W = (b_s \beta_s)^1 (M_1 - M_0)^{-1} (b_s - \beta_s)$$

where W is a two-dimensional distribution with R degrees of freedom. M1 is the covariance matrix for the coefficients of the fixed effects model (bs) in this example, and M_0 is the covariance matrix for the coefficients of the random effects model (bs). bs and bs might be statistically different if M_0 and M_1 are correlated. In the Hausman test, H_0 verifies the choice of random effects model, but H1 supports the choice of fixed effects model (Baltagi, 1995). Given the foregoing, we must utilize the F-test to decide between pool and panel.

The computed F is 3.55, which is more than the critical threshold of 1.59 (at 5% level of significance), and so the null hypothesis might be rejected; nevertheless, the Hausman test may be used to distinguish between fixed effects and random effects. The derived x2 statistic is 14.85, which is significantly more than the threshold level of 0.411 (at the 5% level of significance), and hence H0 is rejected. This necessitates the adoption of the fixed effects model.

4. Empirical Results

Table 2 shows the outcomes of the inequality model (estimation of equation (1)). The first set of findings (Model 1) demonstrates that lagged income (as measured by per capita GDP) has a considerable negative influence on inequality. For example, a $100 increase in per capita income in the preceding period reduces inequality by 0.03, when all other factors remain constant. On the other hand, despite the fact that this variable is not statistically significant, health status has a negative impact on inequality. Both the level of savings and education, as expected, have a negative influence on income inequality. However, only the latter is statistically significant.

Table 2: Dependent Variable: Income Inequality

Variable	Model 1	Model 2	Model 3
C	61.3 (32.03)	4.71 (27.650)	36.6 (18.783)
Y_{t-1}	-0.0003* (8.941)	-0.027* (3.460)	-53.677* (9.522)
H_{t-1}	0.023 (-0.924)	-0.027* (-2.122)	-0.026** (1.453)
E_{t-1}	-2.21 x 10^{-77*}(5.188)	- 0.024 * (2.555)	- 4.75 x 10 - ^{8} * (2.170)
S_{it-1}	-0.023 (1.134)	-0.0007** (1.660)	-.004 (0.260)
R^2	0.932	0.923	0.953
Adjusted R^2	0.911	0.906	0.921

*Notes: Significant at: *5 and * *10 percent levels, respectively; t-ratios are in parentheses; in the first model, income variable is GDP I; in the second model, income variable is education expenditure; in the third model, income variable is HDI*

Educational spending is utilized as a proxy for income in the second set of regressions (Model 2). Income and health status both have a strong negative influence on income disparity in this model. Holding all other variables fixed, a one-year increase in life expectancy in the previous era decreases income inequality in the present era by 0.029. As previously proposed, the coefficients of savings and education have a major impact on health. Per capita income is widely viewed as a restricted measure of economic progress in the associated literature (Schultz, 1998). As a result, the UN devised an alternative metric, the HDI, which assesses a country's achievements in three aspects of human development: longevity, knowledge, and a decent standard of living. Life expectancy at birth is used to calculate longevity; the adult literacy rate and the combined gross primary, secondary, and tertiary enrolment ratio are used to calculate knowledge; and GDP per capita (PPP US$) is used to calculate standard of living. The HDI was utilized as a surrogate for income in the third regression (Model 3). The HDI coefficient is quite substantial and negative in this case. On the other side, health condition is strongly connected to wealth disparity. Holding all other variables fixed, a one-year increase in life expectancy in the previous era decreases income inequality in the present time by 0.026. Here, educational level is also significantly positive, but the level of savings is not significant.

Table 3: Dependent Variable: Poverty

Variable	Model 4	Model 5	Model 6
C	45.27 (4.44)	36.72 (3.15)	223.65 (21.13)
Y_{t-1}	0.0002* (6.29)	-4.59* (22.77)	-51.688*(22188)
H_{t-1}	0.15* (288)	-0.943* (4.88)	-0.113** (1.333)
E_{t-1}	-6.04£10^{27*} (5.187)	-6.12£102^{7*} (2.543)	-3.12 x 102^{8*} (2.145)
S_{it-1}	-0.032 (20.044)	-0.199 (20.067)	-0.054 (20.67)
R^2	0.856	0.852	0.957
Adjusted R^2	0.884	0.834	0.946

*Notes: Significant at: *5 and * *10 percent levels, respectively; t-ratios are in parentheses; in the first model, income variable is GDP l; in the second model, income variable is education expenditure; in the third model, income variable is HDI*

Table 3 shows the results of regressions with poverty as the dependent variable (estimation of equation (2)). The first set of findings (Model 4) demonstrates that income (as measured by per capita GDP) and health status have a strong negative impact on poverty. Holding all other variables fixed, a $100 increase in per capita income in the prior period reduces poverty by 0.02 percent. Holding all other variables fixed, a one-year increase in life expectancy in the preceding era decreases poverty in the present time by 0.15 percent. The level of savings is not statically important in this model, except education. When the income variable is substituted by education spending (Model 5), the results are identical to those obtained in Model 4. Table III's last set of regressions shows the scenario where income is proxied by HDI (Model 6). It can be observed that health status has a detrimental impact on poverty, but not as much as in prior situations. Once again, both the degree of savings and education have a negative influence on poverty, albeit only the latter is statistically significant.

5. Conclusion

The current study investigated the effects of human capital components, such as health and education, on income disparity and poverty rates in selected SAARC nations. A model of income inequality was provided, as well as a model of poverty, both using the same explanatory factors. The primary factors in these models were income level, health status, level of education, and level of savings. The models were calculated using a panel data set comprising five time periods for five SAARC nations. The findings indicate that increasing these nations' health and education levels will reduce economic disparity and poverty. The statistical findings of such empirical studies assist governments in SAARC nations in identifying areas that need to be improved in order to reduce poverty and improve wealth distribution.

Note

The sample consists of the following SAARC countries: Afghanistan, Bangladesh, India, Pakistan and Srilanka.

References

Akee, R. K., Copeland, W., Keeler, G., Angold, A., & Costello, E. J. (2010, January). Parents' incomes and children's outcomes: a quasi-experiment. *American Economic Journal: Applied Economics*, 2(1), 85-115.

Acemoglu, D., & Pischke, J.-S. (2001, May). Changes in the Wage Structure, Family Income, and Children's Education. *European Economic Review*, 45(4-6), 890-904.

Baltagi, B.H. (1995), *Econometric Analysis of Panel Data*, Wiley, Chichester.

Banerjee, A. V., & Newman, A. F. (1993, April). Occupational choice and the process of development. *Journal of Political Economy*, 101(2), 274-298.

Becker, G.S. (1962), Investment in human capital: a theoretical analysis, *Journal of Political Economy*, Vol. 70 No. 5, pp. 9-49.

Behrman, J.R., Pollack, R.A. and Taubman, P. (1989), Family resources, family size, and access to financing for college education, *Journal of Political Economy*, Vol. 97 No. 2, pp. 398-419.

Bourguignon, F. and Morrison, C. (2002), "Inequality among world citizens: 1890-1992", *American Economic Review*, Vol. 92 No. 4, pp. 727-44.

Bourguignon, F., Levin, V. and Rosenblatt, D. (2004), "Declining economic inequality and economic divergence: reviewing the evidence through different lenses", *Economy International*, Vol. 100 No. 4.

Cameron, S. V., & Heckman, J. J. (1998, April). Life Cycle Schooling and Dynamic Selection Bias: Models and Evidence for Five Cohorts of American Males. *Journal of Political Economy*, 106(2), 262-333.

Cameron, S. V., & Taber, C. (2004, February). Estimation of Educational Borrowing Constraints Using Returns to Schooling. *Journal of Political Economy*, 112(1), 132-182.

Carneiro, P., & Heckman, J. J. (2002, October). The Evidence on Credit Constraints in Post-Secondary Schooling. *The Economic Journal*, 112(482), 705-734.

Checchi, D. (2003). Inequality in incomes and access to education. A cross-country analysis (1960-95). *Labour*, 17(2), 153- 201.

Chevalier, A., Harmon, C., O'Sullivan, V., & Walker, I. (2005). *The impact of parental income and education on the schooling of their children*. WP05, Institute for Fiscal Studies.

Coulombe, S. and Tremblay, J.F. (2001), Human capital and regional convergence in Canada, *Journal of Economic Studies*, Vol. 28 Nos 2/3, pp. 80-154.

Dao, M.Q. (2004), Rural poverty in developing countries: an empirical analysis, *Journal of Economic Studies*, Vol. 31, pp. 500-8.

Dao, M. Q. (2008). Human capital, poverty, and income distribution in developing countries. *Journal of Economic Studies*. Vol. 35, No. 4, pp. 294-303

Dasgupta, P. (1993), *An Inquiry into Well-being and Destitution*, Oxford University Press, Oxford.

Ellwood, D., & Kane, T. (2000). Who is getting a college education? family background and the growing gaps in enrolment. In S. Danziger, J. Waldfogel, & N. Y. foundation (ed.), *Securing the Future: Investing in Children from Birth to College.*

Filmer, D., & Pritchett, L. (1999). The effect of household wealth on educational attainment: Evidence from 35 countries. *Population and Development Review*, 25(1), 85-120.

Flug, K., Spilimbergo, A., & Wachtenheim, E. (1998, April). Investment in education: Do economic volatility and credit constraints matter ? *Journal of Development Economics*, 55(2), 465-481.

Galor, O., & Zeira, J. (1993, January). Income distribution and macroeconomics. *Review of Economic Studies, 60(1), 35-52.*

Gerdtham, U.G., & Johannesson, M. (2004). Absolute income, relative income, income inequality, and mortality. *Journal of Human Resources*, 39(1), 228-247.

Hausman, J.A. (1978), Specification tests in econometrics, *Econometrica*, Vol. 46, pp. 1251-72.

Hildebrand, V., & Van Kerm, P. (2009). Income inequality and self-rated health status: Evidence from the European community household panel. *Demography*, 46(4), 805-825.

Judge, K. (1995). Income distribution and life expectancy: A critical appraisal. *British Medical Journal*, 311, 1282-5.

Kawachi, I. and Kennedy, B.P. (1999), Income inequality and health: pathways and mechanisms, *Health Services Research*, Vol. 34, pp. 215-27.

Loken, K. V. (2007, January). Family income and children's education: using the Norwegian oil boom as a natural experiment. *Labour Economics*, 17(1), 118-129.

Lorant, V., Thomas, I., Deliege, D., & Tonglet, R. (2001). Depriviation and mortality: The implications of spatial autocorrelation for health resources allocation. *Social Science & Medicine*, 53(12), 1711-1719.

Loury, G. (1981), Intergenerational transfers and the distribution of earnings, *Econometrica*, Vol. 49 No. 4, pp. 843-67.

Lynch, J., Smith, G. D., Harper, S., Hillemeier, M., Ross, N., Kaplan, G. A., et al. (2004). Is income inequality a determinant of population health? Part 1. A systematic review. *Milbank Quarterly*, 82(1), 5-99.

Mincer, J. (1958), Investment in human capital and personal income distribution, *Journal of Political Economy*, Vol. 66 No. 4, pp. 281-302.

Osler, M., Christensen, U., Due, P., Lund, R., Andersen, I., & Diderichsen, F. (2003). Income inequality and ischaemic heart disease in Danish men and women. *International Journal of Epidemiology*, 32(3), 375-380.

Paxson, C. and Schady, N. (2005), *Cognitive Development among Young Children in Ecuador: The Roles of Wealth, Health and Parenting*, World Bank, Washington, DC.

Pradhan, M., Sahn, D.E. and Younger, S.D. (2003), Decomposing world health inequality, *Journal of Health Economics*, Vol. 22 No. 2, pp. 271-93.

Perotti, R. (1993). Growth, Income Distribution and Democracy: What the Data Say. 1(2), 149-187.

Psacharopoulos, G. (1985), Returns to education: a further international update and implications, *Journal of Human Resources*, Vol. 20.

Regidor, E., Navarro, P., Dominguez, V., & Rodriguez, C. (1997). Inequalities in income and long-term disabilities in Spain: analysis of recent hypothesis using cross sectional study based on individual data. *British Medical Journal*, 315, 1130-5.

Sabir, S., & Aziz, N. (2018). Impact of Health and Education on Income Inequality: Evidence from Selected Developing Countries. *Business and Economic Review*, *10*(4), 83-102.

Schultz, T.P. (1988), Education investments and returns, in Chenery, H. and Srinivasan, T.N. (Eds), *Handbook of Development Economics*, Elsevier, Amsterdam, pp. 543-630.

Schultz, T.P. (1998), Inequality in distribution of personal income in the world: how it is changing and why, *Journal of Population Economics*, Vol. 11 No. 3, pp. 307-44.

Shea, J. (2000, August). Does parents' money matter? *Journal of Public Economics*, 77(2), 155-184.

Stanistreet, D., Scott-Samuel, A., & Bellis, M. A. (1999). Income inequality and mortality in England. *Journal of Public Health Medicine*, 21(2), 205-207.

Strauss, J. and Thomas, D. (1995), Human resources: empirical modelling of household and family decisions, in Behrman, J. and Srinivasan, T.N. (Eds), *Handbook of Development Economics*, 3A, Elsevier Science, Amsterdam.

Thomas, D. and Strauss, J. (1997), Health and wages: evidence on men and women in urban Brazil, *Journal of Econometrics*, Vol. 77 No. 1, pp. 159-85.

Wilkinson, R., & Pickett, K. (2009). *The spirit level, why more equal societies almost always do better*. Allen Lane.

World Bank (2019), World Development Report 2019: Development and the Next Generation, Oxford University Press, New York, NY.

About the Authors

Dr. Nassir Ul Haq Wani, *Head, Department of Research and Development, Kardan University, Kabul Afghanistan. <n.wani@kardan.edu.af>*

Dr. Jasdeep Kaur Dhami, *Professor and Director, CT University, Punjab, India. <bawa_mangat@yahoo.com>*