

Review

Education as a Factor of Human Capital Formation in Pakistan (1951-1998)

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ABSTRACT

This paper reviews the relationship of Education Science and Technology, human capital formation and economics development of Pakistan since 1951 to 1998. It also examines that how in under developing countries like Pakistan education can accelerate the economic growth of the country. Demographic variables suggest that rapid population growth would put more strain on limited national resources. This will adversely affect the economic growth and employment. Expansion policies are needed to provide productive employment to the growing labour force and human capital formation is necessary for the economic development of Pakistan for which education can play an important role. The relationship of education, private and social rate of return on the basis of economic, social and demography determinants has also been explained.

Key Words: Education; Human capital formation; Pakistan

INTRODUCTION

In spite of considerable economic growth in the country, the fate of the masses remained almost unchanged. The economy failed to absorb the expanding labour force because human development was one of the neglected areas of economic development. In the recent past, the planning strategy has been changed from merely growth oriented to concentrating on distributive justice. To achieve this objective, manpower planning has been accorded high priority by the Government of Pakistan. But planning without a sound statistics is seldom fruitful (Farooq, 1979). This study on human capital formation (HCF) was, therefore, undertaken to bridge this gap in the process of economic planning in Pakistan. The need of human resource developments in Pakistan has paramount importance for the development of national resources and raises such efforts, resulting in increase of human welfare. This is true in view of the example of emerging industrial countries such as South Korea, Taiwan, Hong Kong and Singapore which sustained mainly due to planning and development of human resources.

It reveals a gross under-utilization of country's productive potential paradoxically; the shortage of persons with critical skills is also a prominent feature in our country, reflecting an under-developed state of human resources which is one of the contribution cases of low productivity as well as surplus labour force in our economy similar to many countries of the region. Almost all the Asian countries including Pakistan are searching for additional appropriate strategies to respond to the rapid changes in the global economy. This region collectively possesses great human resources potential. The challenge is to employ them and human capital formation can achieve this goal through education.

Education as a Factor of Human Capital Formation in Pakistan 1951-1998

Theoretical concept. According to GARCIA ADRIANO human capital formation includes the following aspect: (i) to increase knowledge skills and experiences, (ii) to maximize the rate of utilization, (iii) to provide incentives and records to work, and (iv) to find ways and means to increase the allocative efficiency to make decisions and the ability to lead, and to find ways and means to create working environments for human resources to be as creative or innovative. According to Charles and Berger (1988), investment in human capital can take a variety of forms like formal schooling, on-the-job training, job market information, health and sanitation, and migration. An improvement in human activities due to which a person proves himself more productive and more beneficial according to the changes in the economy is called human capital formation. In this process, humans are the assets and productive as stated by Schultz (1961)

Education, as a producer of human capital. According to Schultz (1961), education may lead to higher labour productivity. Knowledge and modern technique of production can lead to technological development. It increases the productivity by equipping them with necessary skills and molding the aptitude of workers. A starting point of theories, of education as a producer of human capital is the fact that educated worker earn, on average, more than uneducated ones. The theories assume, (i) that the additional earning results from the fact that the productivity of educated labour is higher than that of the uneducated, (ii) that this higher productivity becomes available as a result of the additional education.

Role of education in earnings. The conventional theory of human capital developed by Becker (1962) and Mincer (1974) view education and training as the major sources of

human capital accumulation that, in turn, have direct and positive effect on individuals' life time earnings. In the Mincerain earning function, the coefficient of school years indicate the returns to education, i.e., how much addition in earnings takes place with an additional school year (PIDE, 2001a)

There exists a wide range of literature that estimated the rates of returns to education for different countries (Pascharapoulos, 1980, 1994). Pascharapoulos (1994) provide a comprehensive update of the estimated rates of returns to education at a global scale. He observed high social and private profitability of primary education (18% and 9% respectively) in all regions of the world. The private rates of returns at this level were found highest in Asia (39%) as compared to other regions. He also noted a considerable increase in total earning by an additional year of education in all regions of the world; 13% in Sub-Saharan Africa; 10% in Asia; 12% in Europe/Middle East/North Africa; and 12% in Latin America / Caribbean.

In Pakistan, most of the nationally representative household surveys do not contain information on variables, such as, completed years of schooling, age starting, literacy and numeracy skills, quality of schooling and technical training. Due to unavailability of completed school years, one can neither compute the potential experience nor observe the effect of an additional year of schooling on individual earnings.

This review is primarily based on the data of Pakistan Integrated Housing Survey (PIHS) to examine the returns to education by using Mincerian earning function and thus aims to fill the vacuum that, due to the lack of appropriate data, exists in the literature on returns to education in Pakistan. Most of the studies on returns to education in Pakistan used dummy variables for different levels of education where the rates of returns at different levels of education are computed by the estimated coefficients.

Based on the available data in Pakistan, most of the studies, for example, Haque (1977), Hamdani (1977), Khan and Irfan (1985), and Ashraf and Ashraf (1996) estimated the earning functions by defining the dummy variables for different levels of education. In order to examine the inter-provincial differentials in returns to education, Shabbir and Khan (1991) estimated the Mincerian earning function by using a nationally representative sample, drawn from the Population, Labour Force and Migration Survey (1979) for the literate wage earners and salaried males. Later, Shabbir (1994) estimated the earning function on the extended sample of the same data set. These studies found 7 to 8% increase in earnings with an additional year of schooling.

Although the results are consistent with those of comparable lower developing countries (LDCs) but may not reflect the recent developments in Pakistan's economy as these studies are based on the data set, which are 20 years old now. The literacy rate has increased from 26 to 45% and enrolment at primary level has increased by 67%. In this scenario, it becomes imperative to re-test the role of human

Table I. Social Returns to Investment in Education

By region	Primary	Secondary	Higher
Asia	19.9	13.3	11.7
Sub Saharan Africa	24.3	18.2	11.2
Latin America & The Caribbean	17.9	12.8	12.3
Industrial Countries	14.4	10.2	8.7
World	18.4	10.9	10.9
By income group			
Low income	23.4	15.2	10.6
Lower-middle income	18.2	13.4	11.4
Upper-middle income	14.3	10.6	9.5
High income	N/a	10.3	8.2

Source:

i.) Psacharopoulos, 1998

ii.) Haq, 1999, p. 27

capital as both private and public sectors are moving towards more efficiency and productivity.

The role of education in earnings can be calculated by the human capital model developed by Becker (1962) and Mincer (1974) where natural logarithm of monthly earnings are the linear function of completed school years, experience and its square. In mathematical form, the equation can be written as:

$$W_i = \beta_0 + \beta_1 EDU_i + \beta_2 EXP_i + \beta_3 (EXP_i)^2 + U_i \quad (1)$$

Where, (i) W_i = Stands for natural logarithm of monthly earnings, (ii) EDU_i = Represents completed years of schooling, (iii) EXP_i = Labour market experience of ith individual, (iv) β_1 = Marginal rate of return to schooling, (v) A positive value of β_2 and negative value β_3 reflects the concavity of the earning function with respect to experience, and (vi) U_i = Error term, assumed to be normally and identically distribute.

In order to examine the returns to education at different splines of education the following Equation can be used.

$$W_i = \beta_0 + \beta_1 YrsPrim_i + \beta_2 YrsMid_i + \beta_3 YrsMat_i + \beta_4 YrsInter_i + \beta_5 YrsBA_i + \beta_6 YrsProf_i + \beta_7 YrsEXP_i + \beta_8 Yrs (EXP_i)^2 + U_i \quad (2)$$

Where, YrsPrim, YrsMid, YrsMat, YrsInter, YrsBA, and YrsProf are defined as:

$$\begin{aligned} YrsPrim &= D_5 EDU_i & \text{where } D_5 &= 1 \text{ if } 0 < EDU_i \leq 5 \\ YrsMid &= D_8 EDU_i & \text{where } D_8 &= 1 \text{ if } 5 < EDU_i \leq 8 \\ YrsMat &= D_{10} EDU_i & \text{where } D_{10} &= 1 \text{ if } 8 < EDU_i \leq 10 \\ YrsInter &= D_{12} EDU_i & \text{where } D_{12} &= 1 \text{ if } 10 < EDU_i \leq 12 \\ YrsBA &= D_{14} EDU_i & \text{where } D_{14} &= 1 \text{ if } 12 < EDU_i \leq 14 \\ YrsProf &= D_{16} EDU_i & \text{where } D_{16} &= 1 \text{ if } EDU_i > 14 \end{aligned}$$

The coefficients associated with YrsPrim, YrsMid, YrsMat, YrsInter, YrsBA and YrsProf in Equation 2 imply an increase in income with one-year increase in education at respective levels. For example, the returns to five completed years of education at primary level will be $5 * \beta_1$. Similarly, the returns to for six, seven and eight of education will be $5 * \beta_1 + \beta_2$, $5 * \beta_1 + 2 \beta_2$, and $5 * \beta_1 + 3 \beta_2$, respectively. On the same lines we can compute the returns to education at each level as:

$$\begin{aligned} \text{Returns to Primary} &= 5 * \beta_1 \\ \text{Returns to Middle} &= 5 * \beta_1 + 3 * \beta_2 \\ \text{Returns to Matric} &= 5 * \beta_1 + 3 * \beta_2 + 2 * \beta_3 \end{aligned}$$

Returns to Intermediate= $5 * \beta_1 + 3 * \beta_2 + 2 * \beta_3 + 2 * \beta_4$

Returns to Bachelor's= $5 * \beta_1 + 3 * \beta_2 + 2 * \beta_3 + 2 * \beta_4 + 2 * \beta_5$

Returns to Ma/Prof= $5 * \beta_1 + 3 * \beta_2 + 2 * \beta_3 + 2 * \beta_4 + 2 * \beta_5 + 2 * \beta_6$

Educational Development in Pakistan, An overview.

Educational facilities in the country have witnessed substantial expansion as given in Table II.

Literacy situation in Pakistan. The literacy situation In Pakistan is far from satisfactory position. Only 45% of the population is literate and there are wide inter-regional, inter-gender and inter-provincial inequalities. In Pakistan (Govt. of Pakistan, 2000), the actual system of school education is ever changing through the “upgrading” process. There are various combinations of grades in different schools; grades 1-3 in mosque schools; 1-5 in a complete primary school; grades 1-10 and 1-12 in secondary and higher secondary schools and other combination of grades 1-2, 1-3 and 1-4, as school are upgraded to a complete primary or become a 1-8 primary/middle school.

The upgrading process and the changing structure of education complicate the planning, management and data collection procedures, and requires updating of information at a faster pace. The National Education Policy in 1979 recommended grades 1-8 as elementary or Basic Education and set the goal to achieve “Education For All” (EFA) by the year 2000 (PIDE, 2001b).

CONCLUSIONS AND SUGGESTIONS

1. Specific objectives of the courses should be stated for the intended teaching/learning process accordingly and the instructional goals must be outlined for lessons tailored to educational needs and affiliated with applied fields.
2. Monitoring of the process and methods that are found suitable for transmitting subject matter insight, achieving understanding and improving abilities.
3. The results indicate that not only every additional year of schooling causes a significant rise in earning but higher earnings are found to be associated with higher levels of education. In addition to these, the effect of literacy and numeracy skills is observed to be large and significant.
4. More emphasis should be placed on market oriented

Table III. Literacy Situation in Pakistan in 1998

Literacy	Rate
Total Enrollment Rate	80%
Total Drop out Rate	50%
Total Male Literacy Rate	56.5%
Total Femal Literacy Rate	32.6%
Total Rural Literacy Rate	31%
Total Urban Literacy Rate	57%
Total Literacy Rate	45%
Total Punjab Literacy Rate	47%
Total Sindh Literacy Rate	46.7%
Total NWFP Literacy Rate	37.3%
Total Balochistan Literacy Rate	26.6%
Total Islamabad Rate	69%
Total Fata Literacy Rate	6.4%

Source: Calculated from Govt. of Pakistan, 1998, 99 M/O Finance, Economic Survey 1998-99, pp. 111-117

approach in education. The effectiveness of private school system is a ready example for developing such approach. In addition, special measures are needed to narrow down the gender and regional disparity.

5. In view of the existing problems of low participation and high drop out rates in the education system, the current policy reshuffled its priorities and reset its goals with a major thrust on the promotion and development of basic education.

6. Inconsistent education policies and reforms and inadequate level of local capacity for programme formulation and its implementation have resulted in low achievement with respect to literacy and primary education. So there is an urgent need to adopt radical measures and policy instruments.

7. There is need to increase the political will and level of commitments to improve the school participation and reduce drop out rates.

8. Intervention of politicians in the recruitment and transfer of Teacher, Construction of schools without proper assessment of need and location is often held responsible for delays in the implementation of projects and the emergence of under utilized or ghost schools. To deal with these issues and to raise the over all level of achievements it is necessary.

9. Punjab compulsory primary education Act of 1994 should also be introduced in other three provinces.

Table II. Educational Development in Pakistan

Stage	Number of Institutions				Enrollment			
	Total	1947	1998	Female	Total	1947	1998	Female
Primary	8413	1549	162568	44602	770,000	110,000	17298000	7180000
Middle	2190	153	18048	5841	221000	21000	3984000	1551000
High	408	64	11556	3297	58000	7000	1680000	610000
Secondary Vocational	46	18	498	226	4000	1000	85000	14000
Arts and Science College	40	05	735	285	14000	1000	760000	317000
Professional College	--	--	265	16	43608	327	135680	34422
Universities	2	--	26	--	644	56	93608	25550

Source:

i) Derived from Govt. of Pakistan M/O of Finance, ECO Survey various issues 1959-60 to 1998-99.

ii) Govt. of Pakistan Federal Bureau of statistics, 1998, 50 years of Pakistan (1949-1999) Volume- I, Islamabad

10. It is imperative to ensure an effective and optimum utilization of allocated resources to increase internal efficiency and cost effectiveness of the system.
11. A careful inspection and evaluation of educational programmes by neutral bodies or high powered committees may be initiated to avoid implementation delays and gaps.
12. This requires a careful and merit-based choice of the external body to monitor the on-going programmes for their effective implementation.
13. Effective involvement participation and mobilization of communities would be effective for the promotion of basic education and improvement quality.
14. Syllabus for all levels may be revised according to the coming socio-economic needs and equivalent to the international standard.
15. Activity involved teachers must be given preference in syllabus communities.
16. Highly qualified teachers i.e., Ph.D. & M.Phil, may be appreciated in teaching, research and curriculum development instead of Administration.
17. Public-private partnership is needed for the expansion in Basic infrastructure and for technological development.
18. A quantitative and qualitative improvement of S and T manpower require efforts to improve the quality of science and education starting from the secondary level. Science, mathematics and computer should be made compulsory at the school level.
19. In order to improve research and higher education in science and technology the number of Ph.D. holders in these fields must be vastly increased.
20. Universities be selected to conduct teaching at graduate and post graduate level in emerging subjects and technologies like fibre optics, genetic engineering, biotechnology, material science, micro electronics, commerce, business administration, economics and computer technologies.
21. Qarz-e-Hasna fund of banking council should be substantially enlarged to provide loans to the needy students.
22. One technical trade must be compulsory at matric level and at least one hour practical/on-the-job training, so that after matric a student may be earning hand rather than burden on the economy. Admission must be based on aptitude and attitude tests after Matric and majority of the students compulsorily be admitted in vocational, technical and commercial institutions instead of arts education keeping in view the manpower planning and socio-economic needs of the economy.
23. Technology, Business education and commerce education may be introduced in all the colleges of the country rather than Arts education.
24. Agro technical based education must be compulsory for all the rural students, so that they may be useful for their parents and country after getting education.

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