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INVESTMENT IN HUMAN CAPITAL AND THE RETURN ON EDUCATION IN ALGERIA

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ABSTRACT

Education is considered as the capacity it owns a producer and developer of Human. It is then a producer of Human capital as investment goods and a tool of social policy. Moreover education is an investment operation which has a return that can be measured. Therefore, various studies were made about Education Return in most countries of the world because of its great importance in the operation of educational planning and directing investment of Human capital. In the past this subject was not given any importance in ALGERIA by researchers. Therefore this study comes as a trial to measure Education Return in Algeria, this paper is based on a fundamental trial of applying a model presented by Jacob Mincer in the year 1958, a modest trial by us to measure, Educational Return investment in Algeria by Using the statistical program Eviews 5.1. Considering Education an investment in Human capital has Return that can be measured, its then of great importance to know how far is the benefits of investment in Education in Algeria. ?

INTRODUCTION

Investment in Human Capital

The definition of the Concept

The developing program of the United Nations defines Human Capital Investment: is all what can increase the productivity of Workers and employers through the technical and scientific skills acquired from Science and Knowledge, it is obvious that Human Capital Investment differs from the Material capital from an important side that this late is not material in his nature, in spite of its importance in increasing the economic production of goods and services (Bilek, 2006). Laroche and al defines: it is the global spantenous preparations and the skills acquired by individuals and press along their lives. The definition tries to combine between the capacity to acquire and develop the human capital. He also defines it that is the corpus of the knowledge ,the qualifications ,skills and all other characteristics acquired, by the human being which can gives social, economic and personal advantages that let him realize the individual, social and economical well-being

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Measuring Human capital

Since the appearance of the theory in the beginning of the sixties century, the subject of measuring Human capital was given a great importance by various researchers in the field of Economy and witness a big Economic debates which are still remaining up to now (Ocde, 1996). Because any measure gives the Human capital is affected according to the concept of Human capital, by Measuring and gathering and also the objective from the measuring. As The human capital is considered non material, is related to knowledge and competencies acquired by individuals in the point of view of (Machlup, 1984) whereas the use of the knowledge as a measure to The human capital faces many problems and obstacles because the skills differ from an economic side to the rest of goods and services in the point of view of researchers (Aghiow1Howitt, 2000).

Among these obstacles we mention

- The field in which is formed the Human capital is the Official Education and the non official one, Education by training and work…ect (Ocide,1998).
- The differences that characterises the Human capital make it difficult to express the Economic activities with one characteristic as well as gathering these characteristics by

individuals to obtain the stocks of Human capital of any nation.

- The nature and the content of informations acquired by individuals in itself is a big deal (problem) because it differs from a person to another. For example if the human capital is measured through the certificates obtained, as its known two persons can have the same certificate but have different competencies and therefore their economic performance will differ.
- Informations and graphs used in the measuring and its globalness and preciseness...ect

For these raisons and others we can say its not easy to achieve a precise and global measuring to human capital, and among the important measures (criteria) used in domain of economy of human capital we can mention:

- Literacy rate.
- The percentage of those obtaining (having a special educational level).
- The number of university's certificates obtainers.
- Number of inventions.
- The average of years of studies of the active class of inhabitants and is the most used the measure.

The investment's theories in Human capital

There are various theories which have dealt with the subject of education as type of investment in human capital; we are going to concentrate on the famous and important one in domain of economy.

The Theory of Human capital

It is considered (BECKER.G.S) as the main economic theory which dealt with the theme of education by analyses from the economic side, that has been introduced works of (MINCER.J. AND SCHULTZ.T.W)

Education and the theory of Investment in Human capital investment SCULTZ)

He tried (SCULTZ, 1961) to give explanations more effective to explain the increase in the income, in his trial to grab the attention of the idea of only giving importance to the material components of human capital but those non materials one called « Investment in Human capital». SCHULTZ.T.W insisted on the necessity of giving importance to the fees of education, health, and the internal immigration to benefit of best opportunities of work investment fees in contrast to what was in the past when the fees were only considered as consuming fees, he also focuses on the role the education (teaching and training in the place of work in order to increase the productivity of the individual and therefore the increase of his income and the nation's income as a whole.

SCHULTZ.T.W based his theory on 03 main hypotheses (points)

1. The economic development that cannot be explained by the increase in the material incomes we can explain it by the increase in the stock inflation of human capital.
2. The differences in incomes of individuals that can be explained by the percentage of their investment in human capital.
3. The justice can be realised by distributing income via the increase of percentage of human capital to material capital (non human).

SCHULTZ classifies the forms of Investment in human capital to five big groups:

1. Health,
2. Training and formation during the work,
3. The official education,
4. Adults education,
5. Immigration and to benefit of best work opportunities.

His analysis concentrates on the official education, and as he said that: «the attractiveness of this form among the types of human capital investment, -he means the education- the average of its increase can be a solution to solve the clue of the Economic Development.» (SCHULTZ, 1961).

Education and the theory of Human capital (BECKER)

The American economist BECKERG.S in his Works (SCHULTZ.T.W) and (MINCER.J) To make a theory of Human capital Investment, (BECKER, 1993) added in the Human capital Investment all activities that can develop Human resources either in the form of monetary incomes or satisfaction of psychological desires, among the type of these Investment we mention : Education, Training in place of work, Immigration, the search for information about Prices and Incomes, Health, (BECKER, 1993) started his theoretical analysis studying the impacts of Investment in domain of Human capital throughout training on the incomes basing on the theory of establishment 's behaviour. Therefore, he divided the training into two main types: The General training and private one.

First: The general Training: is all training that increases the real productivity of the individual in the company in which he is training, also in any other company he may work in and see.

Second: The private Training: is all training increasing the real productivity of the individual in the company in which he is training but with a higher degree if he works in another company.

(BECKERG.S) continue his theatrical analysis exposing the effects of the investment in education (teaching) on the incomes in the same way that used in the investment in the training in work places with some of changes, as he exposed how is the average investment return is calculated in the Human capital ?

The Probabilities' Theory (GINTIS, 1971)

sees that the theory of Human capital that Education increase the individual's productivity of the worker and put for this reason a mathematical relation relating between the educational level and the income (salary), but in contrast he notices that it does not give any interpretation or explanation to the (Mechanism) to which education affects in the

productivity and then the Income. The theory (GINTIS, 1971) It is a mistake to consider that the educational level of the individual the main factor fixing his Income. And tries to proof that as it wants to present a new interpretation to the role of education in the productivity (GINTIS, 1971). Starting in his analysis from the consideration of the market value of the worker is related to mainly to three types and personal characteristics of the individual that are:

The Mental characteristics: the individual‘s capacities in installation and the logic analysis, the commentary and use of symbols.

The Psychological (Emotional) characteristics: are composed of all things in relation with feeling and emotions that can encourage the worker’s will to perform his work in the right way.

The personal characteristics: Personal characteristic: as sex, race religion, social class, colour of eyes, geographical region. It is noticed that, with the major developments known in the world (particularly in the field of Human rights and the fight against the racial discrimination) does play not any role in determination of the individual ‘s income, thus, sent back(dismissed) from the beginning of the analysis and concentrated on the two other types of characteristics and **GINTIS. H** concludes that education (educational system in general) plays a major role in the development these probabilities needed by the labour market. As a consequence this theory tries to put another interpretation different from that explanation presented by the theory of Human capital about the role of teaching (education) in proofing the changes in salaries (incomes) throughout the personal characteristics and the behaviour’s one resulting from the educational system.

Sing’s theory

Start from the consideration that any individual enter the labour market looking for work processing two types of characteristics known as « constant characteristics & variable ones »Constant characteristics: are all constant characteristics that make the individual unique and cannot change such as: Sex, Colour, Race….Variable characteristics: are all individual characteristics that can be changed, such as: educational level (competencies and knowledge) experiences …..ect.

The Musafet (puryfing-selecting)’theory

The Musafet’s theory (ARROW 1973) starts from the lacks (missing points) registered by some of the applied studies on the theory of Human capital, which noticed its incapacity to present enough interpretations (explanations) in Salaries changes basing on the educational level and experience as changes are explained in the sample. And as a best example in its inability to explain the real and big differences in salaries related to the same educational level and professional experience. The Musafet ‘s Theory considers that the educational level of the individual in general and the certificates obtained in particular plays the role of the discover (musafet) that classify individuals in the labour market because of its objective characteristics (features) in comparison to other features.

The concurrence’s (competitive) theory in work

the concurrence (competitive) theory in the work (of Thurow, 1975) mainly to contrast (opposition) to the basic premise of the theory of capital human which says that the education increases the productivity of the individual and considers that the productivity is not the characteristic of the individual, but the characteristic work (the technology), and education (teaching) reveals only the capacities of learner to adapt and learn ,he considers that workers do not differ from each other in the productivity, but by the costs of they afford in learning , training, experience an experience, therefore this theory consider that the employer is ready to form (train) the workers to occupy the suitable jobs (the internal market),and also ready to give higher salaries to the holders of skills to keep them for (a specialized training), but if he is oblige to the external market for work, the educational level is considered as the main fixer to differentiate between the candidates, whereas the employer chose the candidate who realized the conditions of the work’s post with the minimum of educational level required, and when the educational level does not make a difference the concurring candidate for the post the employer then chose one of them.

The theory of reproduction (BOURDIEU et al, 1970)

Sees that the educational system works on the reproduction of dominate classes open opportunities’ egality. The school system is based on the legal elimination of , the popular classes dominated ‘s children because of the culture ‘s weakness -knowledge – they cannot obtain knowledge outside school as the dominate classes do.

The theory of dividing the labour market

This theory criticises the theory of Human capital from the idea that the labour market is the place where the salary of Human capital is fixed and this market is a dividing one and not the unique, thus it (the theory cited above) consider various labour market can be mentioned as flow:

-An initial labour market free for directors (in which two roles are for workers)

- An initial labour market for administration and production’s staff (approximate and constant not creative)

-A secondary labour market for workers less skills: (two roles because marginalized) This theory is based on the fundamental hypotheses in addition to the hypothesis of dividing the labour market:

* the technology of fixing affaires and then the characteristics of the required workers.
* Classes conflicts (Workers- employers’ owner of the work) and the desire of employers to divide the labour market to exploitation is the main raison in the labour market division not the technology.
* The selecting the deepness of the labour market and do not create that division.

Education Return

The definition of Education Return

The average of Education Return is defined as the approximate increases of the individual income obtained from work in a

competitive market, resulting from the addition of years of study in unique amount.

The objective of Education Return measuring

1 Identifying the participation of education in the economic development.
2 Supplying the educational planning with fundamental and useful informations about the relations that link education and the labour market.
3 Supply us with the educational cost in his different processes, the balance of and offer demand.
4 Help to make various comparisons between the economic return from education and the other investment projects.
5 Determinate the educational process and the suitable programs for investment.
6 Direct the relation between spending for higher education and the labour market, the policy of salaries in the state.
7 the planning is useful in(distribution of investment in domain the higher return/ is suggested a way to increase the education competency by increasing the return or decreasing the cost/examining the education cost and comparing it to the entrance of the educated workers…)

The methods and ways to measure the economical rerun of education

Most of the real notes and calculations which its average return investment of various nations of the world was calculated. It urges to reinforce what is known by « Human capital»where the averages of return were calculated according to levels of education in the developing countries. The various comparisons to measure the investment capital, and among these comparisons:

1 The model of Mincer or what is known the beginning of Mincer gain.
2 Becker's model
3 The production equation with the entrance of Human capital

The empirical study

The definition of the used model

The model of Mince (1958) that the theory of Human capital which was applied to measuring the average of return to Human capital Which is known by the return of education of the mincer's gain and since then many theories explained and applied the theory. Among these researchers that of Mincer's in the year 1970 and Schultz 1988 and Card 1998. And its important to mention the will to develop the comparison of Human capital it was the trial of understanding the role that the individual decision of the human capital, on the base of the economical behaviour to explain the differences seen between salaries and this in contrast to the theories of income distribution which is considered outside the analysis. The models of capital are based on the decision of Investment in Human capital by individuals to get red of all non competitive power which result in differences in incomes.

The Mincer's model

- The length of the period of training or education is the main source in workers incomes, and the training increases the productivity of the worker, whereas the training requires reporting for the income for a future (next) period.
- The individuals expect when taking the decision of training to get higher incomes in the future ….the cost of training.
- It is supposed that the training cost is based on the limitation of the ….cost. It means the income obtained by the individuals if he does not join the training establishment.
- It is supposed the stability of benefit prices used by the individuals to limit (or fix) the future changes. Therefore the changes progresses in models to fix the gain equation to consist on several years of study. In general the Human capital in its new classical form the simplified on Education and experience takes the following form:

Y = f(S, EX)

Where:

Y: Salary level
S: number Years of study
EX: years of experience (the individual age minus years of education minus seven years)

$$\ln Y = \alpha + \beta S_i + \delta_1 EX_I + \delta_2 Ex_i^2 + \varepsilon_i$$

EX^2: squaring for the years of experience (measure the nonlinear effects in the equation)

The Factor **β** in this equation represent the average of the special return of one year of study with any importance to the type of study therefore it is called the fundamental gain equation but once used to estimate the averages return to different education processes it is known ,then the wide gain equation on the following form :

$$\ln Y = \alpha + \beta_1 PRIM_i + \beta_2 SEC_i + \beta_3 UNIV_i + \delta_1 EX_i + \delta_2 X_i^2 + \varepsilon_i$$

In this case the average of the special return to every study level on the following:

$$R_{PRIM} = \frac{\beta_1}{S_{PRIM}}$$

$$R_{moy} = \frac{\beta_2 - \beta_1}{S_{moy} - S_{PRIM}}$$

$$R_{SEC} = \frac{\beta_3 - \beta_2}{S_{SEC} - S_{moy}}$$

$$R_{UNIV} = \frac{\beta_4 - \beta_3}{S_{UNIV} - S_{SEC}}$$

Where

$S_{PRIM}, S_{moy}, S_{SEC}, S_{UNIV}$, represent the years of study to every level (primary- intermediate -secondary –university) as follow:

The applied results of the Mincer's gain equation

Statistical results

Using the method of the slightest part (squares) (OSL)) of the Mincer's gain equation was estimated and applied on data of

the Algerian economy. and the in formations were gathered by the distribution of a questionnaire in a sample of 250 workers (both male and female) among (250 questionnaires distributed to return 201 questionnaire after the exclusion 24 cancelled questionnaire only 46 186 were accepted, a questionnaire which represents 74.4 % of the distributed questionnaires:

The main Results of Basic earning equation

$$\ln Y = 8.33 + 0.11S_i + 0.057EX_I - 0.00071EX_i^2$$

(36.21) (9.72) (4.05) (-1.94)

N=186 R^2=0.35 F=32.28

The results show that the correlation coefficient was 0.35 this means that the equation is interpreted in **35%** in differences in monthly salaries in Algeria and this interpretation in what is remaining to other factors were not in the model, and that Statistically significant relationship depending on the test of student and test of Ficher

The main Results of extended earning equation

$$\ln Y = 8.89 + 0.11 \cdot PRIM_i + 0.18 * mo_{y_i} + 0.011 \cdot SEC_i$$

(15.30) (24.30) (17.18) (3.66)

$$+0.14 \cdot UNIV_i + 0.062 * EX_I + 0.0006 \cdot EX_i^2$$

(38.78) (2.23) (-1.13)

N=185 R^2= 0.34 F=15.71

The results shows that the correlation coefficient was 0.34 it is the same value approximately to the fundamental model as results show that there is a stability in experience and its square. The model is validity and morality by level 5%.

The results of the calculation of the rate of return on education in Algeria

Table 1

The educational level	Numbers of years	The average of return %
Primary	**6**	1.89
Intermediate	**9**	2.12
Secondary	**12**	5.51
University	17	7.52

Trough this study we can get several results (conclusions)

- The average of education return in Algeria is less then the international average 10% while the average return for the university level is near the intermediate in the north of Africa and the Middle east 7.1 in the point of view Psacharopouls (PSACHAROPOULS, Georges, 1994, p94.)
- The education return increase once moving from a studying process to a higher one.
- The primary Education return is low then 02% this means the non individual earning investment in this stage and the thing for the intermediate stage (primary -intermediate do not interpret the differences in salaries in comparison with the private return in the secondary stage 5.51% and the university stage 7.52%.
- It is noticed that the average return for the two level secondary- university is considered in comparison to the average reached by the study Benhabibjess and others and estimated of 4.1 (year 1985) but with the model of the production functions. This result conform with the international literature, which recognizes that the educational return during the transition to a market economy rises compared to the socialist stage.

Conclusion

Education is the first element the more important and influent in the formation of Human capital and its return and productivity, thus it is concentrated on Investment in Education or what is called economy of education. In this context the dispense on Education is considered an Investment in Human capital which has many incomes, as the calculation of educational return averages is considered a main condition and of great importance to the operation of a successful educational planning, and for the individuals themselves and the authorities charged of Education, knowing the returns of education of great importance to determinate the demand for Education. It is important then to measure the educational Investment return in order to know its contribution in the economic development in Algeria. Algeria as many countries developing gave a special interest to the sector of education since the independence this is illustrated in the development in the system of education in Algeria.

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