Human capital and the process of integrating young people into the labor market: The case of the township of Aboisso[1].

CAMARA Ibrahima
Ecole Nationale Supérieure de Statistique et d'Economie Appliquée (ENSEA)
08 BP 3 ABIDJAN 08
ABIDJAN, Côte D'Ivoire
E-mail: icamara83@yahoo.fr

1- Introduction

This paper investigates the specific role of human capital in the process of integrating young people into the labor market of the township of Aboisso. We are interesting in this study in youth aged 15 to 35 years who are no longer provided with schooling or who never were.

In the current crisis facing Ivory Coast[2], the situation of employment of young people should draw the attention of the Governments. Indeed, the unemployment rate of young people is very high especially in urban areas. According to the report of the household Survey 2008 (in Ivory Coast), the unemployment rate in urban areas was 34.1% about five times that observed in rural areas which is 7%. Moreover, young people aged 15 to 35 years in urban areas are also the most exposed to this scourge. Always in 2008, there were just over three million who were looking for employment in the labor market (V Doumbia, 2008).

Despite the considerable investments in human capital, the number of unemployed persons having high educational level is increasing. Between 1998 and 2002, a little more than 15% of unemployed workers were young people with at least a bachelor's degree in the city of Abidjan (Bomisso, 2008). This number would obviously increase with the politico-military crisis that has occurred since September 2002. It is so clear that young people especially those living in urban areas and having high educational levels are facing unemployment. Yet, according to human capital theory, a high level of human capital increases the employability of youth. So, one is tempted to ask the following question:

Does Human capital play an important role in the process of integrating young people into the labor market?

Hence, we are going to answer this question in the case of the township of Aboisso. The choice of this township is important to eradicate the unemployment in large urban areas that are economic centers for the country. Indeed, Aboisso, because of its geographical location and its intensive agriculture, attracts many young people (even foreigners) looking for employment. Furthermore, we know very little about the situation of employment of young people in this township. The results of this study will be so a plea for activities to be undertaken not only to fight against youth unemployment, but also to increase the monthly income of workers.

Human capital according to Becker, refers mainly to skills that persons can rely on the labor market. It is composed mainly of education and health. In this study, human capital is measured by educational level.

Many theories concerning the integration into the labor market require that the integration of young people is determined by labor supply and demand which are the main determinants of wages. However, the human capital theory states that any expenditure which aims at improving the level of education

---

[1]Aboisso is a township located in the South-East of Ivory Coast at 116 kilometers from Abidjan, the economic capital, and near the border with Ghana.

[2]Since 2002, the country is facing a political and military conflict.

of a person increases his productivity and therefore determines his occupational qualification and the remuneration of his job (Schultz and Becker, 1964, 1993). This theory provides an important role in human capital in the integration of youth into the labor market. This importance is shown by many empirical evidences.

Beaud and Pialoux (2003) cited by Duffour and Peretti (2008), found that young people with low educational level face enormous difficulties in finding employment. Nauze Tomasin (2002) found that the degree reduces the risk of unemployment, promotes access to skilled and well-paid jobs. This conclusion is confirmed by the results of the Employment Survey 2001 of the National Institute of Statistics and Economic Studies (INSEE) of France. According to these results, the most active young with a high educational level have more access to skilled jobs. Similarly, these authors have shown that the degree play persistently throughout the career because the relation between salary and degree is very high at any length of service. Charlot (2005) concluded that employability improves with education especially with the advanced technology that is increasingly required by employers. However, N'Gratier, in a study on the employability of young people in Cte d'Ivoire, said that the employment rate is lower among the most educated than among less educated. This finding is contradictory to the human capital theory.

From these empirical studies, it appears that human capital, measured by educational level, plays a major role in access to employment. It reduces the risk of unemployment, provides access to skilled and well-paid jobs. Moreover, it appears that investment in human capital must continue throughout the business cycle to maintain some stability in the labor market.

2- Methodology and Data

To analyse the integration of youth into the labor market, we assess the specific role of human capital at the same time in terms of employment and in terms of monthly income. Indeed, a high employability and / or high salary are considered to be the determinants of a strong integration of youth into the labor market.

Our analysis begins so by estimating the probabilities associated with the different educational levels, in the employability. Then later, from only the subsample of employed workers, we estimate the probability associated with the educational level in the determination of monthly income.

The sample of employed workers are a nonrandom subsample. However, estimating an equation over a subsample obtained selectively in the population can lead to bias (Heckman, 1978). So to correct this bias, the Heckman two-step procedure will be used. Our analysis is also based on the empirical study of Borodak D. (2010)[3].

At the first step, we estimate from a binary probit, the probability of being employed for each level of education.

Assume that:

(1) $$Y_i = \begin{cases} 1 & \text{if } \textit{the young people is employed} \\ 0 & \text{else} \end{cases} \Leftrightarrow Y_i = \begin{cases} 1 & \text{if } Y_i^* > \tau \ \textit{threshold} \\ 0 & \text{else} \end{cases}$$

with

(2) $$Y_i^* = {}^t X_i \beta + \varepsilon_i$$

Y_i^* is an unobservable variable and the vector ${}^t X_i \beta$ is related to characteristics of a person that can influence his employability and ε_i is the term of error. These characteristics are: sex, age, educational

---

[3]Daniela Borodak uses the Heckman two-step procedure to estimate in a first time (with a binary probit) the probability to migrate or not. Then in a second time, with a multinomial logit and the subsample of the only migrants, he estimates the probabilities of the various forms of migration.

level, educational level of householder, relationship with householder, occupation of householder, number of persons in the household, etc.

Then we calculate the Inverse Mills ratio through the following formula:

(3) $\qquad \hat{\lambda} = \frac{\phi(^tX_i\hat{\beta})}{\Phi(^tX_i\hat{\beta})}$

$\phi(.)$ is the probability density function and $\Phi(.)$, the cumulative distribution function of standard normal distribution.

At the second step, we estimate, from a multinomial ordered logit, the probabilities that the monthly income of employed youth belong to one of the categories of monthly income[4]. In order to correct the possible bias in the choice of non-random sample of employed young people, the variable "Inverse Mills ratio", λ, calculated in the previous step will be introduced as an explanatory variable in the equations of monthly income.

So let suppose R, the monthly income of an employed young people. R has three ordered, unambiguous and independent modalities.

(4) $\qquad R_i = m \quad si \quad R_i^* \in [\tau_{m-1}, \tau_m]$

τ_{m-1} and τ_m are thresholds that are determinated directly during the estimation of the probabilities. R_i^* is a latent variable equal to:

(5) $\qquad R_i^* = (^tZ_i\beta + \mu\lambda_i) + \varepsilon_i$

The vector $^tZ_i\beta$ is related to the person's characteristics and its main activity that may influence the formation of his monthly income. We want to estimate the probability that the monthly income of a young people belongs to the modality i of monthly income. So:

(6) $\qquad Prob(R_i = m) = Prob(R_i^* \in [\tau_{m-1}, \tau_m])$

$m = \{1, 2, 3\}$; $i=1,\ldots,n$; n is the number of employed young people.

Thus, assuming F the distribution function of ε_i, we have:

(7) $\qquad Prob(R_i = m) = \begin{cases} F(\tau_1 - (^tZ_i\beta + \mu\lambda_i)) & \text{if } m = 1 \\ F(\tau_m - (^tZ_i\beta + \mu\lambda_i)) - F(\tau_{m-1} - (^tZ_i\beta + \mu\lambda_i)) & \text{if } 2 \le m \le j-1 \\ 1 - F(\tau_{m-1} - (^tZ_i\beta + \mu\lambda_i)) & \text{if } m = j \end{cases}$

Knowing that $J=3$ and $F(x) = \frac{\exp(x)}{1+\exp(x)}$ (the distribution function of logistic model), the equation (7) becomes as following:

(8) $\qquad Prob(R_i = m) = \begin{cases} \frac{\exp(\tau_1 - (^tZ_i\beta+\mu\lambda_i))}{1+\exp(\tau_1 - (^tZ_i\beta+\mu\lambda_i))} & \text{if } m = 1 \\[2ex] \frac{\exp(\tau_2 - (^tZ_i\beta+\mu\lambda_i))}{1+\exp(\tau_2 - (^tZ_i\beta+\mu\lambda_i))} - \frac{\exp(\tau_1 - (^tZ_i\beta+\mu\lambda_i))}{1+\exp(\tau_1 - (^tZ_i\beta+\mu\lambda_i))} & \text{if } m = 2 \\[2ex] 1 - \frac{\exp(\tau_2 - (^tZ_i\beta+\mu\lambda_i))}{1+\exp(\tau_2 - (^tZ_i\beta+\mu\lambda_i))} & \text{if } m = 3 \end{cases}$

The second step consists on estimating the equation (8). If the coefficient μ associated with the "Inverse Mills ratio" is significant, then we can conclude that there is a selection bias that has been corrected.

It should be noted that for the implementation of the ordered multinomial model, we tested the hypothesis of parallel regression which is violated. So to correct this violation, we finally used the Generalized ordered logit models (gologit2) developed by Fu (1998), mentioned by William (2006).

---

[4]The different categories of monthly income are: equal or less than 36000 FCFA, between 36000 and 88000 FCFA and more than 88000 FCFA. FCFA means African Financial Community Franc

This model is actually a form of ordered multinomial logit models.

The data used for this study come from the survey on the employability of youth in the township of Aboisso and were collected in 2010 from young people aged 15 to 34 who are no longer provided with schooling or who never were. We obtain a total sample of 2,056 youth whose 2033 are active (so a participation rate of 98.9%). We find that 71.5% of young people who are in the labor market are occupied and only 7.2% of those one have access to the highest monthly income (over 88,000 CFA) on the labor market.

The employment rate is globally about 70,7% in the township of Aboisso. Otherwise, it is higher among the young people with no educational level and weaker among those having a high educational level. It is about 73,2% for the first one and 58% for the second one. Also, the employment rate decreases with the educational level. At the same time, the unemployment rate is estimated to 28,5%. Contrary to the employment rate, it is higher among young people having the high educational level and weaker among those those having no educational level. So it grows with the educational level (See Graph 1).
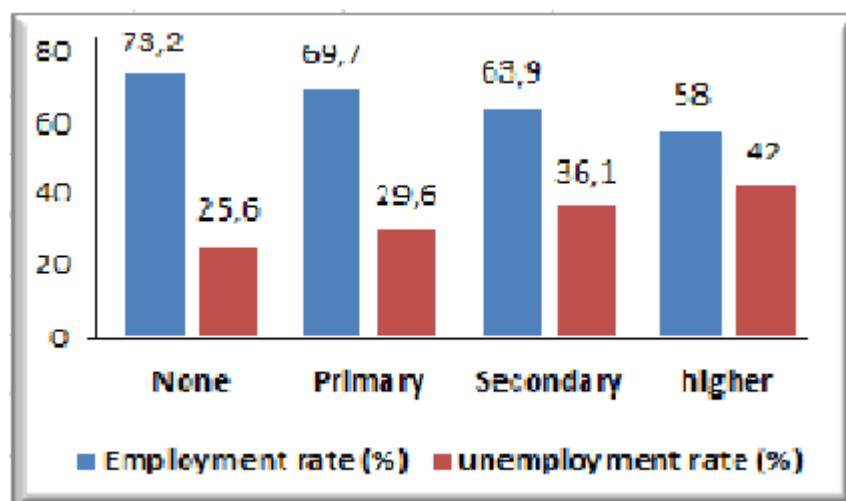
Graph 1: Employment and unemployment rate (%) according to the educational level

3- Empirical results

In fairness of clarity, we only present the results related to the educational level. In fact, we are particularly interesting, ceterus paribus, in the impact of educational level in both estimation. Only marginal effects (change in probability from the modality of reference to another modality) will be subject to interpretation. The results of both estimations are mentioned in the table below.

Both models are globally significant at 5% in view of their p-value which are 0,000. Similarly, the different modalities of educational level are individually significant at 5% in both models. The results are in the table 1 below.

Thus, the results of the first model show that moving from no education to primary education, the probability of being employed decreases by 0.07, ceterus paribus. Also, the probability of being employed decreases by 0.30 (0.76) when moving from no education to secondary education (respectively, high education).

The high employability of young people with low educational level compared to those with a high educational level is due to the fact that young people who have a high educational level are not willing to do precarious jobs. Even if they perform such jobs, most of them do not report in the investigation

and consider themselves as unemployed. The inverse Mills ratio calculated from this initial estimation is introduced in the second step in the estimation of monthly income. Its coefficient is significant in this estimation. This means that the sample of young employed is not random.

The results of the second step estimation reveal that educational level is a discriminating factor in the formation of monthly income. The more the educational level progresses, the more the probabilities of acceding to high incomes increase. Indeed, the analysis of marginal effects indicates that having a primary education instead of having no education decreases the probability by 0.17 to accede to a monthly income less than or equal to 36000 FCFA. Similarly, this probability decreases significantly by 0.66 when having higher education instead of having no education. However, the probability that the monthly income is greater than 88,000 FCFA increases by about 0.05 when one moves from no education to primary education. Likewise, this probability increases by 0.44 when one moves from no education to higher education.

Models	1st Model: Binary Probit				2nd Model: Generalized ordered logit models				
	Dependant variable: **Educational level**				Dependant variable: **Monthly income**				
Variable	Modalities	Coeff	α	Marginal Effet	Coef	α	Marginal effect		
							<= 36000	]36000 – 88000]	> 88000
Educational level	None	Reference					Reference		
	Primary	-0,345	0,003	-0,07	0,867	0,001	-0,17 *	0,20 *	0,05 *
	Secondary	-1,102	0,000	-0,30	1,052	0,003	-0,21 *	0,15 *	0,06 *
	Higher	-2,398	0,000	-0,76	3,157	0,000	-0,66 *	0,21 *	0,44 *
	Likehood maximum = -531.1093; pseudo R2 = 0,3978; Prob > chi2 = 0,0000				Likehood maximum = -789,73415; Pseudo R2 = 0,2955; Prob > chi2 = 0,0000				

Table 1: Estimation result

(*) means that the marginal effect is significant at 5%. α is the p-value.

4- Summary and Conclusion

The issue of the contribution of human capital in the process of integrating young people into the labor market is still little studied in Côte d'Ivoire. There are few studies that have focused on this topic in major urban centers, particularly in the township of Aboisso. In this study, we investigated the issue of the contribution of human capital in the process of integrating young people into the labor market of Aboisso. We concluded in the one hand that the educational level negatively affects the employability of youth. Indeed, the more the educational level progresses, the more employability decreases. In the other hand, it positively influences the formation of monthly income. The results show that the more the educational level is higher, the more the monthly income of young people increases.

In sum, this study should help to know if the human capital does contribute strongly to the process of integrating young people into the labor market of Aboisso. According to the results, there is not enough evidence in favor of a positive contribution of human capital in that process. These results should not be seen as implying that human capital theory isn't applied to the labor market of Aboisso. But, one should call into question the structure of labor market and particularly the situation vacant. Indeed, the labor market of Aboisso is dominated by precarious jobs, the only steady jobs being in the

public office whose effectif is limited. One should investigate the way that schooling should correspond to the job in Aboisso.

REFERENCES

Angel de la Fuente and **Ciccone Antonio**, (2002), *Le capital humain dans une économie mondiale fondée sur la connaissance*, RAPPORT FINAL(2002)

Beaud, S. and **Pialoux M.** (2003), *Violences urbaines, violence sociale, Genèse des nouvelles classes dangereuses* , Paris : Fayard.

Becker G.S, (1993), *Human capital: A theoretical and empirical analysis with difference to education*, 3rd edition, the Chicago University press, Chicago

Bomisso Germain, (2008), *Insertion professionnelle des diplômés du supérieur d'Abidjan*, mémoire de fin de cycle, ENSEA, Abidjan

Borodak Daniela, (2010), *Migration de retour et le développement régional dans le pays d'origine : le cas de la Moldavie*, Cahier de recherche 1/2010, Groupe ESC-France

Charlot Olivier, (2005), *Education, emploi et participation au marché du travail dans un modèle d'appariement*, LIBRE, Université de Franche-Comté, Louvain Economic Review 71(1), 2005

Doumbia Vakaramoko, (2008), *L'emploi des jeunes en Côte d'Ivoire*, - Diplôme des Hautes Etudes en Gestion de la Politique Economique, Université de Cocody/CIRES

Duffour L. and **Peretti J. M.**, (2008), *Comportement organisationnel et conception du travail des jeunes faible capital scolaire : proposition d'une typologie*,

Fu and Vincent, (1998), *sg88: Estimating Generalized Ordered Logit Models*, Stata Technical Bulletin 44: 27-30. In Stata Technical Bulletin Reprints, vol 8, 160-164. College Station, TX: Stata Press

Gourieroux C., Monfort A., Renault E., Trognon A., (1987), *Generalised Residuals*, Journal of Econometrics, 34(1/2), 5(32)

Heckman J.J. (1979), *Sample Selection Bias as a Specification Error*, Econometrica, vol. 47.

Jeroen Smits (2003), *Estimating the Heckman two-step procedure to control for selection bias with SPSS*, (http://home.planet.nl/ smits.jeroen)

Nauze-F. Emmanuelle and **Tomasini Magda**, (2002), *Diplôme et insertion sur le marché du travail : approches socioprofessionnelle et salariale du dclassement*, ECONOMIE ET STATISTIQUE N 354

N'gratier Antoine, (nd), *Employabilité des jeunes en Côte d'Ivoire*, mémoire de DEA, Université de Cocody

Veronique Simonnet and **Valerie Ulrich**, (2002), *La formation professionnelle et l'insertion sur le marché du travail : l'efficacité du contrat d'apprentissage*, ECONOMIE ET STATISTIQUE N 337-338, 2000 - 7/8

Williams Richard, (2006), *Generalized Ordered Logit/ Partial Proportional Odds Models for Ordinal Dependent Variables*, The Stata Journal 6(1):58-82.