

## Specialty Training and Wages in Cote d'Ivoire

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Educational policies are struggling to guide the training according to labor market requirements. This paper analyzes the impact of the training specialization on employment and the associated wage. To better capture the effects of training, we estimate the Heckman(1979) two-step model that allows correcting for the sample selection bias. We use a database comprising 4.293 individuals from the Household Living Standards Survey, conducted by the National Statistics Institute (NSI) in 2002. The results show that vocational training provides an advantage in access to employment and higher wages compared to general education. Therefore, national educational policies should more promote vocational training. In addition, the family (marriage, being head of the family) is not a factor which reduces the rate of spouses' activity in contrast to what researchers found in Europe. Nationals of West Africa have as much chance to be occupied as the Ivoirians. The country of origin is not a discrimination factor in the labor market.

*Key Words:* occupation, wages, human capital, training, job search

### Introduction

Job access analysis in Côte d'Ivoire is rather badly known. The analysis of employment's access in the labor market in the Cote d'Ivoire is poorly known. The graduates face problems of integration and their unemployment rate is estimated at 20.7% at the end of the 90s. Kouame and Rakotondra (2001) were interested in the issue of inequality in integration of men and women into the labor market focusing on the area of Abidjan. Their study evidences an unequal integration between men and women due to human capital. For equivalent qualifications, there is almost no gender discrimination in the labor market in Cote d'Ivoire. Kouadio (2005) analyzed the issue of poverty for long-term unemployed. He does not specifically establish a link between poverty and human capital. Today, unlike the 70s, the government is faced with the problem of regulation of the education system and its relevance to the labor market. In Cote d'Ivoire, as in the whole of West Africa, there is no large scale surveys of employment's integration similar to those available in France, Couppie et al.( 2007).

The following work aims at analyzing the labor market situation in Cote d'Ivoire and in particular the impact of the training specialty on employment and wages. To better capture the role of human capital on individual performances, the sample of the study covers a population of 4293 educated individuals with and without school diploma. The works of Becker (1964) are validated by several empirical studies on the importance of human capital on professional success. In the present work, we will emphasize on other factors such as age, work experience, spatial disparity etc. The data we use

are from the living standards of the Ivorian population survey conducted by the National Statistics Institute (INS) in 2002. From the study sample, we estimate a two-stages probit model. First we estimate the probability of access to paid employment. Secondly we estimate a wage equation according to gain Mincer (1974) equation. The wage equation links the logarithm of the monthly wage of workers and individual characteristics of access to employment. So we will correct a selection bias following the method of Heckman (1979).

This article is organized as follows. The first part (I) presents the theoretical framework of employment in the economic developments of Cote d'Ivoire and puts into perspective the role of training specialty. The second part (II) presents the econometric framework and the estimation results.


### The theoretical framework of employment

#### Employment in the economic trends (or developments or evolution) in Cote d'Ivoire

The economy of Cote d'Ivoire has positively grown during fifteen years between 1965 and 1979 following the rise in prices of its main commodities (coffee, cocoa, wood).

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This conducive climate has enabled the creation of jobs in both the public and private sectors. This improvement experiences a turnaround in the 1980s.

### Economic Miracle and graduates employment

After its independence, Cote d'Ivoire continued for several years its growth based on agricultural wealth. Between 1975 and 1977, the world prices of coffee and cocoa rose in a huge way; the price of coffee is multiplied by 3.6 and that of cocoa by 3. The producer prices increased more moderately by 20% for coffee and cocoa 3% in 1977, Berthelemy and Bourguignon (1996). The government is thus the beneficiary of the surge in prices; <sup>Caistabl</sup> then

saves significant resources in 1977 for an amount equivalent to 16% of GDP levied on the commodities earnings tax. This good economic situation has been described as "Ivorian miracle" and anticipated as sustainable by the Ivorian government; since GDP has experienced very strong growth, 10% against 7.6% between 1965 and 1974, the government engages in an extensive program of public investment. This latter grows in real terms at an annual rate of 36%. Attracted by demand, private investment grew at an annual rate of 19%. The goal is to engage the country in a self-centered development process by setting up an industrial fabric import substitution, Assidon (1989). The following table presents the changes between 1965 and 1980 in jobs.

Table 1. Salary employment in the overall employment in Cote d'Ivoire (thousands)

	1965		1975		1980		Annual grow (%) 65/80
	Workforce	(%)	Workforce	(%)	workforce	(%)	
Agriculture	1487	82	2003	77	2284	72	2,9
Modern Sector:	181	10	340	13	440	14	6,1
- Enterprises	147	8	262	10	326	10	5,5
- Administration	34	2	78	3	114	4	8,4
Informal sector	151	8	245	9	430	14	7,2
Total	1819	100	2588	100	3154	100	3,7

Source: Labazée (1996)

In this favorable employment climate, the government hires officials. The academic training supply is oriented towards the needs of public service in a context of a quasi-systematic hiring of graduates after training, Berthélemy And Bourguignon (1996).

### Economic crisis, structural adjustment and employment reduction policies

Economic growth is slowing in 1979 after a sharp fall in commodity prices. The crisis was understood as cyclical, settled permanently, Hugon and Naima (1998). The general economic crisis erupted in 1980 due to an unanticipated stop soaring prices of coffee and cocoa, the appreciation of the real exchange rate, the weakening of export sectors and public and industrial fabric private.

As Berthélemy and Bourguignon (1996) highlighted, the State, in its policy of industrialization through import substitution, aimed to attract large-

scale foreign capital and investment. Ultimately, the industry enters 1980 in a restructuring and stabilization program. Reducing employment in the public sector and promoting the private sector become the goal of public policy. These reforms actually take effect in 1981 and public spending is frozen; nominal wages are blocked, hiring in public service is restricted and not sure as before after graduation, Azam and Morrison (1994). A second set of measures between 1984 and 1986 reinforces the budget cuts and increases the tax burden. The authorities do no more repay the external nor domestic debt, even less liabilities to suppliers who will experience profound difficulties. The whole share of private employment is reduced.

Payroll employment which had risen sharply, with an annual growth rate of 7% between 1960 and 1980 (there is in Cote d'Ivoire more than half of the corporate wage Africa Francophone West), dropped to an unexpected pace (see table 2).

Table 2: Salary employment and overall employment in Cote d'Ivoire (in thousands) between 1980 and 1992.

	1980		1985		1990		1992		Annual growth %
	Workforce	(%)	workforce	(%)	workforce	(%)	Workforce	(%)	80/92
Agriculture	2284	72	2547	70	2964	69	3150	68	2,7
Modern Sector:	440	14	405	11	385	9	380	8	-1,2
- Entreprises	326	10	257	7	233	5	232	5	-2,8
-Administration	114	4	147	4	152	4	148	3	2,2
Informal Sector	430	14	678	19	964	22	1090	24	8,1
Total workforce	3154	100	3630	100	4313	100	4620	100	3,2

Source: Labazée (1996)

During the 80s, employment fell by 29% within the fully public enterprises and 17% in public majority owned companies, Hugon (1998). The modern private sector has experienced a decrease in employment until the early 90s, especially between 1993 and 1994, Kouadio (1996). After the collapse of corporate wage, the share of employment in the modern sector increased from 13.5% of total employment in 1980 to 7.7% in 1995, which negatively influences the integration of graduates.

#### Unemployment among tertiary graduates in Cote d'Ivoire in the late 90s

The population of well-trained individuals looking for a modern job increases significantly and is essentially an urban phenomenon. Data from the NSI survey of household living standards (1998) measure an unemployment rate of 4.1% in 1995 to 4.9% in 1998. Paid unemployment benefits in developed countries such as France do not exist in Cote d'Ivoire but unemployment average duration is more than 4 years (this threshold defines the long-term unemployment in Cote d'Ivoire, AGEPE, (1998)). This level can disguise the substitution of informal employment in the modern employment in a context of very rapid population growth. A very young population yearns to rely on training to enter professional life by developing its human capital.

It is clear that now, finding a job in Cote d'Ivoire after a higher education is not automatically done. The annual growth of the labor force was 14.2% in 1999 and the growth rate of the total population is 3.3% (RGPH, 1998). At the level of tertiary education, the number of university students is growing at an annual rate of 6.1% and the number of colleges is growing at 7.28% according to the 1998 report on tertiary education.

In this context of highly selective hiring, the type of training received by the student has become an important variable for the integration of graduates. Technical degrees offer more chances for integration into the modern urban sector by job advertisements collected by the Agency for Em-

ployment (AGEPE, 1999). According to AGEPE, five types of training are the most requested namely the technical and mechanical scientific training (38.7%), tourism and hotel business training (17.9%), agricultural training (15.7%), administrative and legal training (9.7%) and economic and financial training (8.7%). The share of jobs oriented towards technical and professional qualifications (69.7%) is significantly higher than that of general education diploma (30.3%).

#### The Role of Specialty Training on the Labor Market

In order to better understand the importance of training specialty on the labor market, we present the formal link between training and employment through the human capital theory, the signal and competition for jobs theory. Becker (1975) contends in the human capital theory that initial training increases the usable skills of individuals in employment. It also establishes a competitive relationship between the labor market and education in a situation where unemployment is only voluntary. Thus individuals choose the length of training depending on the expected performance in terms of salary. For Becker, the salary is closely related to the duration of studies and that degree and specialty play no role.

Unlike the human capital theory, Spence (1973) assumes in the theory of signal that the labor market is not featured by pure and perfect information. The employer does not know in advance the productivity of the candidate whom he hires. He refers to the level, duration of studies and diploma to give an idea of the productive capacity of the worker. The education system is therefore used to filter the workforce in order to signal to employers the productive capacities of individuals. According Lemistre (2003), training specialties have high costs and some specialties are more difficult to monitor and require more cognitive and non-cognitive abilities. Thus, the value in the labor

market signal of each training will be differentiated in terms of employability and wages. Human capital theory and signal theory are supposed complementary. The role of productive skills report does not preclude the assumption that education increases the productive capacities of individuals. The educational system then has two objectives: the production and skill signal. The theory of job competition model of Thurow (1975) also explains wage differences based on attended training specialties. If some specialties lead young people to acquire learning and adaptation abilities superior to other specialties, so they will have access to better paying jobs, Stankiewicz (2003). The formation of specialty such as the level of education while playing a role in the ranking of individuals in the queue.

### The econometric framework

From the survey of living standards of the Ivorian population conducted by the National Statistics Institute (INS) in 2002, we analyze the role of training specialization on the likelihood of access to employment and salary by estimating a bivariate probit model in two stages.

### Literature Review

The salary's equation we use in our model is consistent with equation gains generated by human capital (in terms of education), formulated by Mincer (1958 and 1974) and Becker (1964 and 1975). The gain (salary) of the individual increases with the duration of studies and the professional experience. In the model of human capital, the wage equation is as follows:

$$\ln Y_s = c + rS + aE + bE^2 + u \quad (1)$$

$Y_s$  is individual income,  $S$ , the number of years of study,  $E$ , professional experience. It takes a quadratic form to represent the concavity of the salary level of the profile due to post-school investment in human capital, that is to say, the diminishing returns of work experience.  $C$  is the basic wage without human capital and  $u$ , the error term representing unobserved factors that affect the salary;  $r$  corresponds to the private rate of return to education and measures the increase in income ( $Y_s - Y_{s-1}$ ) resulting from an additional year of education reported the annual cost of this education investment,  $a$  and  $b$  are coefficients. Based on this wage equation, we seek to explain the pattern of our study, the relationship between the probability of access to employment and individual performance characteristics. Bowles (1972) argues that human capital (education level) determines an opportunity corresponding to the fact to choose among jobs with different wage levels. Participation in the labor market and the employment associated wage do not appear to

be independent. The factors explaining the probability of access to employment (training specialty, degree, age, home region, work experience, etc.) are partly those that determine the salary. Similarly, having a salary requires one to work; the unemployed are not taken into account. Or being selected or not in the labor market does not always depend on the observed criteria. Other factors other than education such as being married or being head of household can have an impact on labor market participation. There then arises a problem of endogeneity and selection bias. In the presence of endogeneity, the conditional error term expectation in the explanatory variable is no longer zero and the usual estimators exhibit through, N'Gbo (1990). It is then necessary to estimate jointly the two equations job and salary. To estimate the model of labor market participation and associated wage in our study, we use the Heckman (1979) who proposes a two-stages estimation for cross-sectional data. HECKMAN (1978) presented a general formalization of treating the problem when the dependent variable is continuous and dichotomous explanatory. He shows a method other than that of maximum likelihood the bivariate system. He offers the use of linear regression increased by a term from the first step of estimating the probit conditioning qualitative variable (employment). Thus, he uses the inverse of Mill ration. The OLS estimator on this regression then converges, HECKMAN (1974). The two-steps model estimation allows correct self-selection by first estimating the participation equation in the labor market with the probit model to identify parameters required for the formation of correction variables; taking into account the pass endogenous regression of the gain function (salary) with corrective components after the first stage. Using this technique, the estimated parameters are consistent and unbiased under the assumption of normality of residuals. Docquier, Laurent and Peelman (1998) used a separate method to highlight the influence of human capital, employment and wage formation in Belgium. Regarding Robin (2002), he gives us an explanation of the fate of PhD students in France after obtaining a doctorate in its approach by showing the same model.

### Presentation of the bivariate probit

We consider the following bivariate probit:

$$\begin{cases} Y_1^* = X_1 \beta_1 + \varepsilon_1 \\ Y_2^* = X_2 \beta_2 + \alpha Y_1 + \varepsilon_2 \end{cases} \quad (2)$$

$$\begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \end{pmatrix} \rightarrow N \left[ \begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \sigma_1^2 & \rho \sigma_1 \sigma_2 \\ \rho \sigma_1 \sigma_2 & \sigma_2^2 \end{pmatrix} \right]$$

The variables  $Y_1$  and  $Y_2$  correspond to the respective terms of the two dependent variables.  $X_1$  and  $X_2$  are the predictors of both equations and

$$\begin{cases} Y_1 = 1 \text{ if } Y_1^* > 0 \\ 0 \text{ if not} \end{cases} \quad \text{and} \quad \begin{cases} Y_2 = 1 \text{ if } Y_2^* > 0 \\ 0 \text{ if not} \end{cases}$$

The conditional distribution  $Y_2^*$  of knowing  $Y_1^*$  can be written:

$$Y_2^* = X_2\beta_2 + \alpha Y_1 + \rho \frac{\sigma_2}{\sigma_1} (Y_1^* - X_1\beta_1) + \mu \quad (3)$$

$\mu$  the error term is normally distributed with zero mean and variance  $\sigma_2^2(1-\rho^2)$ . Thus, when  $\rho \neq 0$  we will have  $E(\varepsilon_2 / X_2, Y_1) \neq 0$ . From this condition, the estimate of the second equation without considering the first equation of the original system can have an endogeneity bias. The error terms are forced to unit variance ( $\sigma_1$  et  $\sigma^2=1$ ). In the case of our study the bivariate probit includes a qualitative binary dependent variable (the choice of participation in the labor market) and a continuous dependent variable (the logarithm of the monthly salary of workers).

### The study model

The wage equation inspired by Mincer is as follows:

$$\text{Ln}(W_i) = \alpha_0 + \beta_w X_i + \mu_i \quad (4)$$

$Y_i^*$  is a latent variable. It is the decision threshold which depends on the value or the unobserved satisfaction that the applicant derives from participation or not in the labor market. Used for a supposedly increasing and positive utility,  $Y_i^* > 0$  and  $Y_i^* < 0$  in the case of a disutility.  $Y_i$  is a binary dependent variable that takes the value 1 if the individual is employed and 0 if not.  $X_i$  is a vector of explanatory variables that can influence the status of employment.  $X_i$  includes personal characteristics of the individual (Sex, Age), the family (head of family, marriage), Education (Type

$Y_1^*$  and  $Y_2^*$  are the latent variables explained by the linear combination of  $X_1$  and  $X_2$ . We get:

$\text{Ln}(W_i)$  represents the logarithm of the monthly salary of workers.  $X_i$  is the vector of explanatory variables: sex (male or female), Work Experience, Education (Type of Training, CEPE or No diploma, BEPC, BAC, Deug or license, Master or DEA, Doctorate (PhD), BP or BT, BTS or DUT, Engineer), public employment (choice between private and public, public employment being the reference) Contract type (CDD or CDI respectively fixed-term contract and permanent contract) Number of worked hours per week. Participation in the labor market or the course of employment is taken into account in this equation of wages by education which is the main factor influencing the employability according to the human capital theory. The independent estimation of the wage equation can therefore include an endogeneity bias. To solve this problem we use the method of HECKMAN (1974) described above. The chosen job equation estimated by the probit model is as follows:

$$Y_i^* = \beta X_i + \varepsilon_i \quad \text{on a} \quad \begin{cases} Y_i = 1 \text{ if } Y_i^* > 0 \\ 0 \text{ if not} \end{cases} \quad (5)$$

of Training, CEPE or No diploma, BEPC, BAC, Deug or Licence, Master or DEA, Doctorate, BP and BT, BTS or DUT, Engineer), the country of origin of the individual (Ivorian, Burkinabe, Malian, Guinean, Ghanaian, Liberian) the home region (Abidjan, South without Abidjan, the North, the East, West, Central).

The assumption is made here in the probit model that the error  $\varepsilon_i$  is variable according to a law normal average 0 and variance  $\sigma^2$ . The density and distribution functions associated with normal variance  $N(0, 1)$  are as follows:

$$\phi(X) = \frac{1}{\sqrt{2\pi}} e^{-x^2/2}$$

and

$$\Phi(X) = \int_{-\infty}^X \frac{1}{\sqrt{2\pi}} e^{-t^2/2} dt \quad (6)$$

The likelihood of having a job can then be written:

$$\text{prob}(Y_i = 1 / X_i) = \Phi(\beta X_i) = \int_{-\infty}^{\beta X_i} \frac{1}{\sqrt{2\pi}} e^{-t^2/2} dt \quad (7)$$

Assuming symmetry of the density of around 0 one can draw from equation (7) the inverse of the Mills ratio ( $\lambda_i$ ) required to correct the omitted variables bias in the wage equation.

$$\lambda_i = \frac{\phi(\beta X_i)}{\Phi(\beta X_i)} = \frac{\phi(-\beta X_i)}{1 - \Phi(-\beta X_i)}$$

The conditional expectation of the monthly salary taking into account the fact that an individual is employed or not is described as follows:

$$E(\ln(W_i) / X_i, Y_i = 1) = \alpha_0 + \beta X_i + E(\mu_i / X_i, Y_i = 1) \quad (9)$$

$$E(\ln(W_i) / X_i, Y_i = 1) = \alpha_0 + \beta X_i + \rho \sigma_\varepsilon \lambda_i + \omega_i \quad (10)$$

It is assumed here that the error terms follow a multivariate normal distribution.

### Data

For econometric estimations, we use the standard of living survey data of the Ivorian population conducted by the National Statistics Institute (INS) in 2002. This survey has identified the individual characteristics that impact on the employment and wages. Other potential factors like home region, country of origin, family (Head of family, marriage), were taken into account. This study covers a sample of 4293 individuals whether qualified or not. Some are in employment and other unemployed. From a bivariate probit two-stage model we seek to measure the importance of training specialty, graduation, work experience etc., on the likelihood of access to employment and the associated wage. Our data allow us to understand the access to employment of graduates of Cote d'Ivoire in an imbalance economic environment.

### Estimation and Results

The econometric estimations have been made from the STATA Version 2013 software. In this work, we are interested in individuals who have attended school and were able to get a degree or not according to training specialty. This sample of 4293 individuals is relatively balanced with 48% women and 52% men. The overall occupation rate of individuals is 24%. Remember also that only workers who have paychecks and declared to the CNPS (National Social Insurance Fund) were selected in this study to facilitate the distinction between formal wage employment, self-employment and employment informal.

The appendix (1) presents the equivalences of the education variables used.

### Model of employment

The following table presents the results of estimating the employment equation.

Table 3: Equation of participation in the labor market

Explanatory variables	Coefficients	Standard deviations	P> z	Marginal effects
Age	.0367***	.0033187	0.000	.0099 ***
Head of household	1.0329***	.621467	0.000	1.0329 ***
Sexe	.1243**	.0575586	0.031	.0334 **
Marriage	.1483***	.0544902	0.006	.1483 ***
<b>Home country</b>				
Ivorian	.0492	.0802769	0.539	.0130
<b>Education</b>				
Type of Training	.4752***	.1008145	0.000	.1474 ***
BEPC	.2813***	.0713741	0.000	.0824 ***
BAC	.0214	.0928922	0.818	.0058
DEUG or LICENCE	.3786***	.1161312	0.001	.1169 ***
MAITRISE or DEA	.0181	.1422171	0.899	.0491
Doctorate	.5154	.3248925	0.113	.1674
BP or BT	-.3046	.1901752	0.109	-.0712 *
BTS or DUT	-.1917	.1396838	0.170	-.0476
ENGINEER	.2094	.2846982	0.462	.0614
<b>Belonging Region</b>				
ABIDJAN	.3649***	.051377	0.000	.0998 ***
_cons	-2.822	.1322595	0.000	
Number of obs = 4293 LR chi2(15) = 1219.16 Prob > chi2 = 0.0000 Log likelihood = -1758.1403 Pseudo R2 = 0.2575				

\*\*\*, \*\*, \* Significant coefficients at the 1%, 5% and 10%

The results of the job tenure equation are significant in the sense of economic theory and we can draw several conclusions. Age is positively related to employment but weakly significant. That is to say that if we added the high age squared in this equation, the coefficient would be negative. This variable is similar to the experience. The higher is the age, the lower is its positive effect on employment. The gender variable has a positive coefficient but insignificant. The gender discrimination hardly exists on the labor market in Cote d'Ivoire. We can therefore assume that at equivalent degrees, men and women have equal access to employment, Wapoh (2013). Note that the family is a determining factor in the choice of participation in the labor market. Marriage and family head status stimulate the participation rate of people in Africa in general and in Cote d'Ivoire in particular. Unlike studies in France and other developed countries that show the decline in the participation rate of a spouse in favor of domestic work with respect to the size of the family, especially the number of children, Lolivier (2001), our results shows that couples have to work to meet their family responsibilities.

The employment problem in Cote d'Ivoire can be assessed in terms of trade-off between work and leisure when it comes to responding to the consumption of the often large family. Working for income is therefore a constraint for survival and could not be substitutable for leisure or unpaid domestic work. The country of origin of the candidate for employment has interested us in this data-

base to measure the likely effect of discriminating against nationals of West Africa. We assessed the probability of access to employment for people from Mali, Burkina Faso, Benin, Liberia, Ghana or Guinea compared to individuals of the Cote d'Ivoire. The variable of Ivorian has a positive sign but very insignificant. One cannot strongly conclude about the existence of discrimination against populations from West Africa.

Furthermore, it should be noted that the public service is only available for Ivorians. Region of residence reflects meanwhile regional employment disparities. This variable is significant. It shows that the city of Abidjan, the economic capital of Cote d'Ivoire, is the main area of jobs of this country. Regional disparity is clearly evidenced. It is more difficult for Individuals who reside in an area other than the city of Abidjan to find a job. These results are consistent with those of Beauchemin and al. (2010) and Algava and Bèque (2006) which show that in France a high proportion of individuals of African origin has the feeling of being discriminated because of their origin and place of residence. Education has proven since the work of Becker as the main factor that positively influences employability. The chances of finding a job improve for the individual who increases his qualifications or level of education. Mainly, professional or technical training gives more guarantee of access to employment as traditional or general education. By contrast, having BTS reduces the chances of access to employment in Cote d'Ivoire.

**Wage Equation**

The wage equation confirms the absence of gender discrimination in the labor market in Cote d'Ivoire. Women are often even better paid than men. The negative sign of professional experience shows that workers salary increases with experience in employment but at a decreasing rate. Education, as in the participation equation in the labor market, positively impacts the level of wages. This result is consistent with the returns of human capital. The individuals gain is positively associated with the human capital investment levels. We cannot draw from this result that workers in Cote d'Ivoire are paid according to their marginal productivity. At

the university, we see that the Deug and license are paid less. In all cases, professional training provides a better salary compared to traditional degrees. Having a technical training facilitates access to employment and higher wages. The graph (1) shows the changes in average wages per degree and type of training, the evolution of wage differences by specialty. The graph shows an upward trend in wages for both types of training, classic and professional. It appears that the professional or technical BAC is better paid than the BTS or DUT in professional training; Similarly, the general BAC is better paid than the Deug or License in general education. However, we find that the wage gap by training specialties is relatively low.

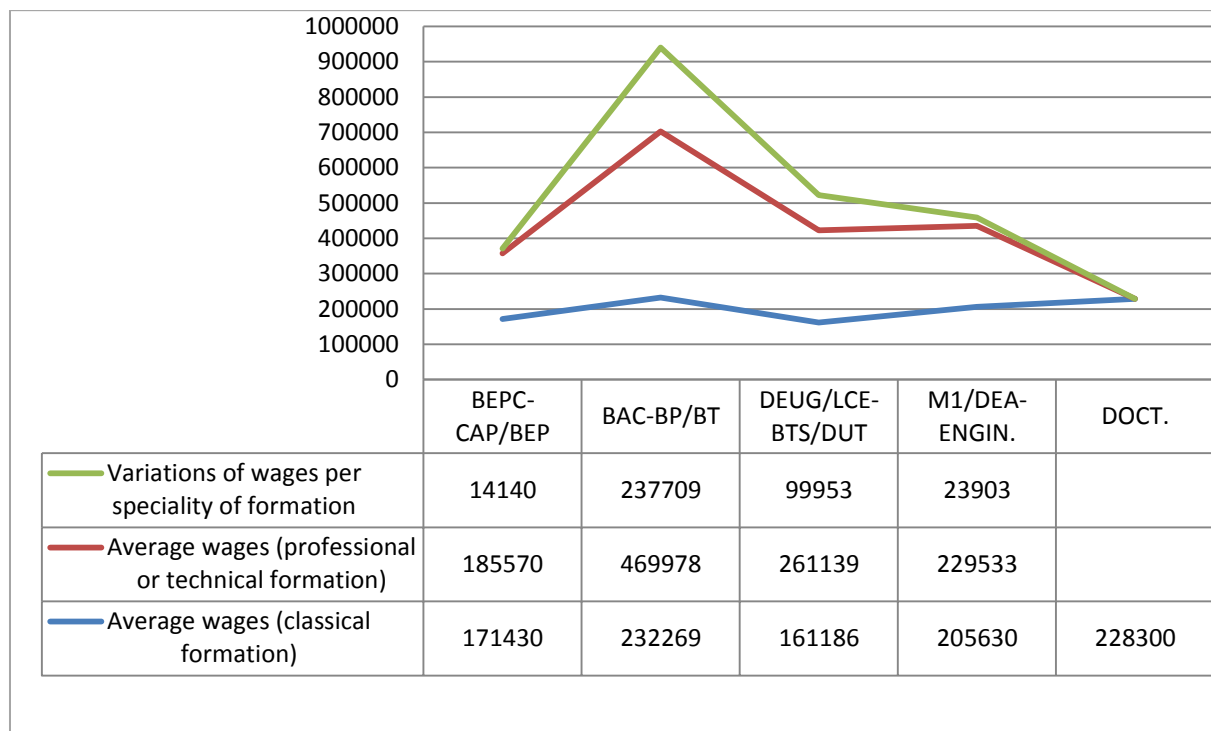


Figure 1: Evolution of average salaries by degree

The in-service training improves workers' wages. It is necessary to continue to accumulate knowledge once working in order to prevent the decline in human capital due to oblivion and obsolescence. Through continuing training that can be specific or general, the worker increases his knowledge capital acquired during initial training. The employee subsequently obtains a higher salary to his starting salary, Topel (1997), Topel and Ward (1992). The positive sign of public employment is opposed to the results obtained in the case of advanced econo-

mies. Laurent (2002) shows in the case of Belgium that working in the public sector is associated with a cut in pay. In Cote d'Ivoire, the modern private sector is less developed. It is the public sector that provides more jobs in the labor market even if the wage level is relatively low. The positive sign of wages in public employment can be explained by the volume of jobs that this sector provides. Laurent (2002) also relativizes his results indicating that the wage gap between the private workers and the public is relatively low.



Table 4: Results of the wage Equation

Heckman selection model -- two-step estimates (regression model with sample selection)			
Explanatory variables	Coefficients	Standard deviations	P> z
sexe	-.0659***	.0236295	0.005
Professional Exp.	-.2427	.2868557	0.397
Type of Training	.0563*	.0292673	0.054
BAC	.0785**	.035639	0.028
DEUG or LICENCE	-.0048	.0394587	0.903
Master1 or DEA	.1090	.0496293	0.028
Doctorate (Phd)	.1471	.091877	0.109
BP or BT	.1693***	.0612989	0.006
BTS or DUT	.0489	.0460339	0.288
ENGINEER	.0511	.0783462	0.514
In-service training	.0959***	.0196072	0.000
Public employment	.1020***	.0187744	0.000
Type of Contract	.0764*	.0403082	0.057
Working hours /week	-.0008***	.000311	0.010
_cons	5.3378	.2910199	0.000
Mills			
lambda	.0086	.0213185	0.686
rho	0.0301		
sigma	.2861		
Number of obs = 4293 Censored obs = 3261 Uncensored obs = 1032 Wald c hi2(14) = 117.27 Prob > chi2 = 0.0000			

\*\*\*, \*\*, \* Significant coefficients at the 1%, 5% and 10%

Individuals who have a permanent contract receive higher salaries compared to those recruited under a fixed-term contract. The variable type of contract is not significant. Confirming that stable jobs are the highest paid in Cote d'Ivoire would be a hasty conclusion. Regarding the hours worked per week, their increase does not affect the monthly salary. Hence, people work more per week for no additional consideration on their salary. This result reinforces the idea that most of the jobs are in the public sector, where wages have been frozen since the 1980s.

## Conclusion

In the recent economic history of Cote d'Ivoire, the construction of an education system has two stages. In the first, the proper functioning of the economy favored the recruitment of a large number of graduates in the public service and in the modern sector of the economy. In the second, the structural adjustment plans and general changes in the economy have made very difficult such recruitment; the informal sector continued to grow, absorbing the increase in total workforce, which continued to be strongly driven by demographics.

In this context, the analysis of employability according to training specialty is full of lessons and challenges for the education system. Using the 2002 INS data for Ivorian employment and relying on econometric technique to explain the access to

employment and the associated salary using a set of qualitative and quantitative variables, several results emerge for the labor market in the modern sector:

The duration of studies promotes access to employment; technical training gives an advantage in access to well-paying job compared to general education; labor in Cote d'Ivoire market is not very discriminating for women; the family (marriage, being head of the family, indirectly, the number of children) is not a factor that reduces the joint participation rate in contrast to what is found in Europe; Nationals of West Africa are better able to integrate into the job market. The home country is not a brake or a factor of discrimination in the labor market in Cote d'Ivoire. However, there is regional disparity in jobs. Residing in Abidjan increases the likelihood of access to employment. The overall results (usefulness of the training effort preference for technical, value of early experiences of work) advocate are search professionalization of teaching, such as to facilitate access to employment and satisfy the modern sector employers.

From our point of view, the interest of this work is that it puts a specific point on the external efficiency of the Ivorian education system in terms of choice of education policies. What specialty to prefer, to what level of education, and for what? This fundamental question challenges the mass education of the general education whose graduates or not encounter more difficulties in accessing

employment. We suggest for this purpose a more oriented training towards the practical application of knowledge in a perspective of self-employment. Wage employment is rare in Cote d'Ivoire; in the sample of this study in 4293 individuals looking for job, only 24% were able to participate in the labor market.

The model is well suited to a robust integration study. We address a particular aspect of professional integration using data from a national survey that emerges among other things, the future of the students after training with or without a diploma. The model therefore allows for grasping simultaneously the weight of several factors determining employability. An interesting light can be shed on the relationship between employment and academic or professional educational institutions interested in Southern countries, mostly poor systematic knowledge on the integration of their students.

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### Notes

1. Case of stabilization and price support of agricultural productions, more known under the Caistab diminutive, was the official organization of the Ivory Coast charged to manage the sectors of cotton, the cocoa and the coffee to the national scale since its creation in 1960 by Félix Houphouët-Boigny (the first president of Côte d'Ivoire) until its dismantling in August 1999.
2. Aké G.M. GBO is Professor, founder member of the research center of Micro-economic of Development (CREMIDE) at the Department of Economics and Management of University Félix Houphouët-Boigny, Abidjan, Côte d'Ivoire
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**Annexe1**

French Education	Equivalence
CEPE	basic school-leaving qualification
CAP	Youth Training (NVQ Level 1,2)
BEP	BTEC First Diploma, GNVQ Foundation (NVQ Level 1)
BEPC	GCSE'S under C grade (D-G)
Baccalauréat (BAC)	Baccalaureate , A levels
Baccalauréat technologique, professionnel ou Brevet de Technicien (BP Ou BT)	BTEC National Diploma, Advanced (NVQ Level 3)
BTS / DUT	BTEC Higher National Diploma
DEUG	Diploma of Higher Education
Licence	BA, BS/BSc
Maitrise	MS/MSc, MA
Diplôme d'ingénieur	Master's Degree in Engineering
DEA/DESS	MA/MS/MSc (NVQ Level 5)
Doctorat	PhD