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Contract Type and Teachers' Absenteeism: The Role of Teachers' Extra-Activities Incomes

Barthelemy M. Senou*

National School of Applied Economics and Management, University of Abomey-Calavi, Cotonou, Republic of Benin

Abstract

The objective of this article is to explore the relationship between the teacher's status, his extra-activities incomes, and his absenteeism. By using a Tobit specification with corner solution after taking into account the teacher's extra activities endogeneity, we estimated a primary teacher's absenteeism model in Republic of Benin with PASEC-CONFEMEN 2005_data. The results highlight that, in Republic of Benin's primaries schools, permanent status favor the teacher's absenteeism than contractual status, and there is a negative correlation between teacher's extra-activities incomes and his absenteeism frequency. Such results contradicts Allen (1981)'s theoretical model. Our results also show that teacher's income appears as a transmission bridge of his statute's effect on his absenteeism. Those results provide ways that shall be explored to reduce teacher's absenteeism, which cost may be revealed of being Important for the efficiency for Republic of Benin educational system.

Keywords

Absenteeism, Income, Efficiency, Contractual, Permanent

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1. Introduction

Absenteeism[1] has been increasing for several decades in both developing and developed countries. This phenomenon is a huge loss of time with many consequences on both employee's income and firm's profits, consequences that resulted nearly 70 billion francs CFA of loss, according to statistics in 2005 in public finance of Benin Republic[2]. Despite those costs, few economic studies have focused on this topic to know the real reasons and consequences. The few empirical and theoretical work on the topic have emerged around two theories: the neoclassical static job supply theory (Allen, 1981), and the efficiency wage theory developed by Shapiro and Stiglitz (1984).

The most developed theory to explain employee absenteeism is undoubtedly neoclassical static labor supply theory based on individual choice between consumption and leisure. The majority of empirical studies in economics is based on this theory and explores the effects of different terms of contract binding employer and employee. An important contribution to this theory's development is the Allen (1981) one. According to the author, absenteeism occurs when an employee must work more than he wants to work in a given period, the worker's reaction consisting to absent to adjust its optimum working time supply to that imposed by the contract. An empirical proof of this is given by Dunn and Youngblood (1986).The second most studied theory is the efficiency wages theory developed by Shapiro and Stiglitz (1984) that highlights the behavior of "shirking": employee avoids work as the salary is not sufficient to compensate the effort he must do by fulfilling his job.

The neoclassical static labor supply basic theory is a way of understanding absenteeism minors some developments to depict the reality. Although it takes into account some of work's characteristics (such as the salary level, contractual

[1] Absenteeism is the missing of teachers from their daily courses
[2] Administrative Reforms Ministry Statistics

* Corresponding author
E-mail address: besenou@yahoo.fr

time, worker's other income and the penalties in case of absences), the neoclassical labor supply theory developed by Allen (1981) predicts a positive effect of worker's other income on the absence time, considered as a normal commodity. In addition, recent researches on African education systems show that teachers' absenteeism, changes according to their statute (PASEC - CONFEMEN, 2005). However, the observed facts on some segments of the labor market, particularly the segment of primary education suggests that teachers with considerable secondary income sources appear to be less absentee, so that one can wonder if it does not challenge the neoclassical theory.

The teacher is a fundamental actor in the educational system and its substitutability among educational production factors is very limited, even impossible, contrary to the case of the labor force in other sectors, including manufacturing companies. The fact that there is an almost teacher's non-substitutability is a fundamental reason that justify our interesting on factors that influence absenteeism in order to reduce it.

The current article proceed to analyze the relationship between primary school teachers' extra activity income in Republic of Benin, their status (i.e. type of contract under which they work) and their absenteeism frequency.

2. Worker's Absenteeism Factors: Some Literature Elements

As noticed by Brown and Sessions (1996) in their synthesis, the economic literature has long remained discreet on the study of absenteeism and its causes, contrary to other social science disciplines. A first thought from the 1970s, is based on the standard work / leisure arbitration model. It considers the absence propensity depending from the gap between, on the one hand, the contractual term binding the employee to his employer and, on the other hand, the optimal work time for the individual, whose maximizes his utility under his budget constraint. The first empirical work on this theoretical idea has been developed in the 1980s (see for example Dunn and Youngblood, 1986). A second thought took as its starting point the shirking model developed by Shapiro and Stiglitz (1984); According to this, the employee chooses the effort level he must do to accomplish its tasks; the " shirker " is the one who maximizes his utility by providing minimal effort. Researches on absenteeism which are based on this model have in common to consider the absence as revealing the level of effort provided by the employee. In this context, and as far as the employer cannot know with exactitude this effort level, the problem may arise in terms of moral hazard. Analyzes conducted by the authors at this level are usually focused on how to limit the supposed effects.

In the 90s, Barmby and al. (1994) conduct an enrichment of the theoretical framework derived from the model of Shapiro and Stiglitz by considering the worker's utility function depending on the worker's income, leisure and health state. More recently, Case and Deaton (2005) attempt to simultaneously take into account the work and health dimensions in a theoretical model by adopting the model provides by Grossman (1972) on the evolution of health.

Beyond these theoretical contributions, the economic analysis of worker absenteeism also knew empirical developments. If it's true that the first rigorous attempt to econometric analysis of absenteeism is the one provided by Allen (1984), it shall not remain least that more recent studies namely those of Barmby and al. (1994) and Basten and al. (2014) have focused on financial considerations in the explanation of the worker's absenteeism. Obviously, this approach is not far from theoretical considerations developed by Allen (1984), but it is important to highlight that most improved econometric tools have been putted in contribution by authors; we noticed for example the use of Weibull random model to figure the transition of the worker from attendance to absenteeism (Barmby et al., 1994).

Without an overview of developments in the 2000s and especially those of Afsa and Givord (2006), we fundamentally retain that the econometric analysis of worker's absenteeism has been confronted to numerous problems among which the difficult measurement of absence, especially problems of estimation's bias including selection bias and some variables' endogeneity ; in a worker's absenteeism analysis recent test, Chaupain Guillot and Guillot (2007) addresses the main problems of methodological order including the absenteeism's measure and econometric questions problems.

Among the econometric problems, there is the question of certain variables exogeneity influencing the worker's absenteeism; if we agree that financial variables such as salary or worker's income are likely to influence the attendance of this last one, it is methodologically fundamental to wonder about the exogenous of these variables which are mostly seen in the economic analysis as themselves determined by a range of other factors. The issue of endogeneity bias becomes fundamental while considering the estimation of worker's absenteeism model (Dunn and Youngblood, 1986; Brown and Sessions, 1996; Case and Deaton, 2005).

Moreover, taking into account these methodological aspects cannot remain without effect on the estimation of worker's absenteeism determinants. The following section describes

the methodology used to estimate the primary school teacher's absenteeism model.

3. Methodology

3.1. Theoretical Model

The theoretical model used is inspired from the one proposed by Allen (1981). In this model, based on the neoclassical labor-leisure arbitration framework, absenteeism is seen as a way for the employee to adjust downward his work time when the contractual working time exceeds the desired working duration. The employee is supposed to solve a maximization problem of a utility function U under budget constraint:

$$Max\ U(C,L)$$

$$s.c\begin{cases} C + D(T_a) = w(T_c - T_a) + R \\ T = T_c + T_a \\ D' \geq 0, D'' \geq 0, D(0) = 0 \end{cases} \quad (1)$$

Where C is consumption and L leisure time, T the worker's total available time, distributed between work time T and leisure time L. D is a punishment function to which is exposed absentee worker, such as a weak probability of promotion and an increased risk of dismissal. Resolution of this program (see Allen, 1981, p. 79) allows to conclude that absenteeism is a function of $w, R, T_c\ and\ D$. So the model predicts that an increase in other income has the effect of increasing the absenteeism, considered here as a normal commodity.

3.2. Empirical Specification

As regard to the empirical literature (Dunn and Youngblood, 1986) and the nature of the explained variable, we use a Tobit specification with corner solution, for at least two reasons: First of all, for standardization reasons, absenteeism is measured in terms of frequency over a period so that the dependent variable is in terms of percentage, the minimum being 0 when the teacher has not been absent during the considered period.

Moreover, there are several people to whom absenteeism is zero, those people do not have all been absent on the reference period. The fact that, person absenteeism is zero is not a lack of information's case here, but rather the person rational choice result; there is therefore no censorship case, but rather a corner solution case.

Assuming that the teacher absenteeism frequency is a simultaneous process (Sènou, 2012), the absenteeism equation is defined by:

$$Y_h^* = X_h'\beta + e_h \quad (2)$$

Where, Y_h^* is a latent variable proxy of the teacher's absenteeism frequency on the reference period. By referencing Allen (1981), we assume that Y_h^* is depending on teacher characteristics, the occupied job, and other variables as extra activity income. X_h is the vector of those explanatory variables, β is a parameters' vector of the model, and e_h, an error term independently and identically normally distributed with an average equal to zero and constant variance σ^2.

Y_h is the h teacher's real absenteeism frequency during the reference period:

$$Y_h = \begin{cases} X_h'\beta + e_h\ si\ Y_h^* > 0 \\ 0\ si\ Y_h^* \leq 0 \end{cases} \quad (3)$$

The Tobit model allows the estimation of the parameters β and σ^2 from X_h and Y_h observations. As the real absenteeism frequency Y_h are either positive or zero, the likelihood function can be expressed in the following way:

$$L\left(\beta, \frac{\sigma^2}{Y_h}, X\right) =$$

$$\prod_{Y_h=0}\left[1 - \Phi\left(\frac{X_h'\beta}{\sigma}\right)\right]\prod_{Y_h>0}\left[\Phi\left(\frac{[Y_h - X_h'\beta]/\sigma}{\sigma}\right)\right] \quad (4)$$

Where, Φ and φ are respectively the distribution function and the density function.Using the maximum likelihood method to estimate the Tobit model is justified by the need to obtain a consistent estimator asymptotically normal.

3.3. Diagnostic Tests

The diagnostic tests set to ensure the estimators quality are the endogeneity test and the variables identification test.

First of all, in a regression model $y_t = f(x_t) + \varepsilon_t$, the explained variable x_t is said endogeneous, if it correlate with the error item ε_t, what can be written on formal way by : $Cov(x_t, \varepsilon_t) \neq 0$.

This problem is generally found in the errors variables measurement case, variables missing case or simultaneous errors case (Wooldridge, 2002). By referencing Smith and Blundell (1986), we used the residus significance test or predict valors of the extra activity incomes equation as regressor in the absenteeism equation.

Besides, the matter of obtaining consistent estimators imposed restrictions or identification conditions to the exogeneous variables in the regression model. Considering the Tobit model identification conditions and the identification methods proposed by the littérature ((Mroz and al, (1995) and Waters (1999)), we used the likelihood ratio test.

Then, after performing the endogeneity text on the teacher's extra activity incomes and the variables identification test,

we can estimate the teacher's absenteeism function.

3.4. The Variables

The dependent variable is the teacher's absenteeism frequency during the reference period. The period here is one month or 30 days before the investigation completion date[3]. We divide then per 30 the teacher's absent duration in that period.

Relevant explanatory variables used in the limits of available data consist on some teachers' characteristics and their status, class held by the teacher, teacher's extra activities (out of education), and teacher's lifestyle variables. Among these variables, we have:

The Teacher's status variables: This is the type of contract that bound the teacher to his employer (the State). The teacher may be under a permanent or contractual[4] state. By permanent, we mean teacher recruited by employer to be a state permanent agent, with the granted of all benefits that are regularly recognized to a State employee. The contractual status on the other hand (state contractual or community contractual) is the one under which teachers are hired either by the state for a short duration and renewable under conditions, or by communities.

Thus, employment status appears as one of job security indicators, apart from salary, and inasmuch as a more secure employment is likely to retain the worker, it is expected that the contractual status is more incentive to be absent from work.

The teacher's characteristics: age, gender and marital status.

- *Age*: once old, the teacher as every worker has much more ambitious in achieving (Sènou, 2012) and could be tempted to create more financial resources by absenting himself at specific times to spend with other income-generating activities , such as trade, tutoring, and all other activities that can generate incomes.
- *Gender*: There is an evidence that women are frequently absent at work especially for reasons related to their marital life including care of their young children according to Allen (1981, 1984), Leigh (1985, 1991), Drago and Wooden (1992), and Parenger (1983).
- *Marital status*: in a context of low salary on the one hand, unmarried teacher can be more absentee in order to create alternative sources of income. On the other hand, a married teacher can adopt, not a forecaster behavior but a defensive solution for the precarious situation he lives, and therefore will be more absent in order to create alternative sources of income.

[3] The investigation is done by PASEC CONFEMEN (2004-2005).
4 See the PASEC CONFEMEN Report for any detail on the kind of status.

Economic variables: these are activities driving the teacher out of his main occupation (teaching), and the extra-activities incomes (income that the teacher gets out of his teaching profession).

- *Teacher's other activities*: they are among other trade, agricultural work, tutoring out of working hours. As those activities are potentially income-generating activities, we expect that their fulfillment will increase the teacher's absenteeism.
- *The extra activity incomes*: those can come from trade, farming, tutoring, etc. We prefer the extra activity income to the teacher's salary variable, because in the public service, the salary is not determined by the market. The effect of other income (that we call here extra activity income) has been revealed both on theoretical and empirical level by Allen (1981a, 1984).

The educational level: teachers with an educational level higher than BEPC usually have ambitions to pursue studies in order to leave the primary educational system; primary education becomes for them, a provisional way, time to get advanced degrees to find another opportunity. In contrast to them, those whom the most educational level is BEPC usually do not have such ambitions.

The job satisfaction variables: the effect of job satisfaction on absenteeism has been widely discussed in the literature namely by Freeman (1978), Borjas (1979), and Afsa Givord (2006); generally, workers less satisfied with their working condition are more likely to be absent at work than those who are more satisfied; however, the problem is the satisfaction measurement (Borjas, 1979). Lack of satisfaction indicators reported by the teacher, we use as a proxy of job satisfaction, the will to remain teacher.

The teacher union membership: the union role was also discussed in the literature from the pioneering work of Allen (1984), Chaudhury and Ng (1992); empirical facts show a greater propensity of unionized workers to absenteeism, as the workers' union is more constituted by unsatisfied workers (Borjas, 1979; Allen, 1984; Freeman, 1978).

The following table shows all the variables; their terms and their expected effect on teacher's absenteeism.

3.5. Data

The data used in this paper come from the PASEC - Benin 2004-2005 database. This database contains information on teachers, students, classes and schools. Data on teachers and classes have been used in our estimations through a sample of 283 teachers (one teacher per class). It should be noted that these data refer to public schools. In fact, only public schools use state and community contractual teachers. Then integrate private schools in the database will only complicate

the data without providing the relevant elements of analysis.

Table 1. Description, terms and expected variable effects.

Indicator	Variable	*Description*	Modality	Expected Effects
Teachers's absenteeism	ABSENCEFRQ	*Teacher's absenteeism rate during the reference period*	*in* percentage	
Teacher status	PERMANENTT	*Indicate if the teacher is permanent or not*	*1 if the teacher is permanent, 0 if not*	+
	CONTRACTUALT	*indicates whether the teacher is contractual or non-contractual*	*1 if the teacher is contractual, 0 if not*	-
Experience indicator	SCHOOL_ELDERS	*indicates the teacher's elderness of service in the school*	*Discreet*	+
	TEACHING_ELDERS	*indicates the teacher's elderness of service in the job*	*Discreet*	+
Teacher's demographic indicators	MARRIED	*Indicate whether the teacher is married or not*	1 *If the teacher is married, , 0 if not*	+/-
	WIFE	*Indicate the teacher's gender*	*1 If the teacher is a woman, 0 if not*	+
	AGE	*Indicate the teacher's age in years*	*Discreet*	+
	EXTRACTIVITY	*indicates whether the teacher has other income generating activities*	1 *if the teacher has other income generating activities, 0 if not*	+
	NUM_ACTIVITY	*Indicates the number of others activities of the teacher*	*Discreet*	+
	DISTANT_BONUS	*indicates whether the teacher has distant bonus*	*1 if the teacher has removal premiums, , 0 if not*	-
Economic indicators	OTHERINCOME	*Indicates the amount of the teacher's others incomes*	*in f cfa*	+
	AGRICULTURE	*indicates whether the teacher has agricultural work*	*1 If the teacher has agricultural works, , 0 if not*	+
	TUTORING	*indicates whether the teacher does house lessons*	*1 if the teachers does house lessons, , 0 if not*	+
	COMMERCE	*indicates whether the teacher does commerce activities or not*	*1 if the teacher does trade activities,0 if not*	+
Educational lever indicators	BELOW_BEPC	*indicates whether the teacher educational level is lower than BEPC*	*1 if the teacher educational level is lower than BEPC , 0 if not*	-
	BEPC	*indicates whether the teacher educational level is just BEPC*	*1 if the teacher educational level is just BEPC,0 if not*	-
	BEYOND_BAC	*indicates whether the teacher educational level is equal or higher than BEPC*	*1 the teacher educational level is equal or higher than BEPC, 0 if not*	+
Union membership	WORKERS_UNION	*Indicates whether the teacher is among union member or not*	*1 if the teacher is an union member, 0 otherwise*	+
Satisfaction indicator	REMAIN_TEACHER	*Indicates whether the teacher would like to remain teacher or not*	*1 if the teacher would like to stay teacher, 0 if not*	-

Source: contructed by the author.

4. Presentation and Results Analysis

4.1. Sample Characteristics

On average, a primary school teacher is absent about nine days on hundred, the equivalent of f three days per month. One fourth of teachers on the sample are permanent, the teachers' average age is 7.39 years in the profession, and 2.18 years in the school during the survey. Approximately 58.65 % of the teachers have other activities out of school hours, and the average income they owned from those activities is 9403 FCFA per month. Those activities are among other agriculture and trade. We also noticed that only 13.07% of the teachers have at least a bachelor's degree and 68.55 % of them express a desire to remain teacher.

4.2. Statistical Analysis of the Relationship Between Absenteeism and Other Variables

We have initially given interest to the relationship between the type of contract and teacher absenteeism; for this purpose, we observed the absenteeism quintiles.

The table shows that 20% of permanent teachers have an absenteeism rate upper to 20% while 20% of contractual teachers have more than 9.09% of absenteeism. In general, the difference in absenteeism rate is in favor of permanent teachers. We therefore realize that absenteeism is higher among permanent teachers than contractual teachers in primary education. One of reason advanced by the economic theory and confirmed by the empirical facts in the explanation of the worker's absenteeism, is the economic reason, such as arguments related to the worker's income or

to his salary. Being interested to teachers' extra activity income quantiles by the type of contract may then provide useful information.

Table 2. Sample characteristics.

Variable	*average / proportion*	*Standard error*	minimum	maximum
ABSENCEFRQ *	*8,8%*	*10%*	0	48%
PERMANENTT**	*25%*			
CONTRACTUALT**	*75%*			
SCHOOL_ELDERS *	*2,18 ans*	*1,95 ans*	0	13ans
TEACHING_ELDERS *	*7,39 ans*	*7,34 ans*	0	29 ans
MARRIED **	*69%*			
WOMAN**	*18%*			
AGE *	*32,28 ans*	*8,65 ans*	17 ans	59 ans
OTHERACTIVITY**	*58,65%*			
NUM_ACTIVITY *	*0,37*	*0,50*	0	2
DISTANT_BONUS **	*14,84%*			
OTHERINCOME *	*9403 fcfa*	*16791 fcfa*	0	82500 fcfa
AGRICULTURE **	*14,48%*			
TUTORING **	*12,72%*			
COMMERCE **	*5,65%*			
BEPC **	*10,95%*			
BEYOND BAC **	*13,07%*			
WORKERS_UNION **	*31,10%*			
REMAIN_TEACHER **	*68,55%*			

*variables on which are determined the averages.
** Variables on which are determined the proportions
Source: author computations, by PASEC CONFEMEN 2004-2005 data.

Table 3. Absenteeism quintile by type of contract.

Percentage	Absenteeism rate (%)		*Gap Permanent – contractuals*
	Permanents teachers	*Contractual teachers*	
1st quintile	0	0	0
2nd quintile	9,09	4,45	+4,64%
3rd quintile	12,72	9,09	+3,63%
4th quintile	20	9,09	+11,91%

Source: author computations, by PASEC CONFEMEN 2004-2005 data.

Table 4. Extra activity income quantiles by type of contract.

Percentage	extra activity income (fcfa)		*Gap Permanent – contractuals*
	Permanents teachers	*Contractual teachers*	
1st quintile	0	0	0 fcfa
2nd quintile	0	0	0 fcfa
3rd quintile	0	8250	-8250 fcfa
4th quintile	4838,8	16500	-11661,2 fcfa

Source: author computations, by PASEC CONFEMEN 2004-2005 data.

In a general way, whatever the quantile on which we are, the gap in terms of extra activity income is in favor of contractual teachers. This may suggests that contractual teachers have more additional sources of income than permanent teachers.

Now, let's observe the link between the level of extra activity income and the teacher's absenteeism frequency.

The figure shows that as soon as extra-activity incomes increases, teacher's absenteeism frequency decreases; everything leads us to believe that teachers with the highest additional income are the least absentee , or equivalently, the most absentee teachers, are those whose additional income are the lowest.

Taking into account the entire observations, one might conclude, ceteris paribus, that absenteeism phenomenon is more prevalent among permanent teachers than contractual teachers, and it is observed more among permanent teachers with lower secondary income. Econometric analysis brings more light on the facts revealed by the statistical one.

4.3. Econometric Analysis

4.3.1. Endogeneity Tests Results and Instruments Validation

Like most economic variables, an individual income is potentially endogenous (Clark and al., 2004). Indeed, the

teacher's extra activity income is potentially endogenous because it may depend on, both factors related to the teacher and his environment. Therefore, we have conducted an endogeneity test on teacher's extra activity incomes, which are a significant explanatory variable of teacher absenteeism model. The following table presents the estimation result of education extra-activity income equation.

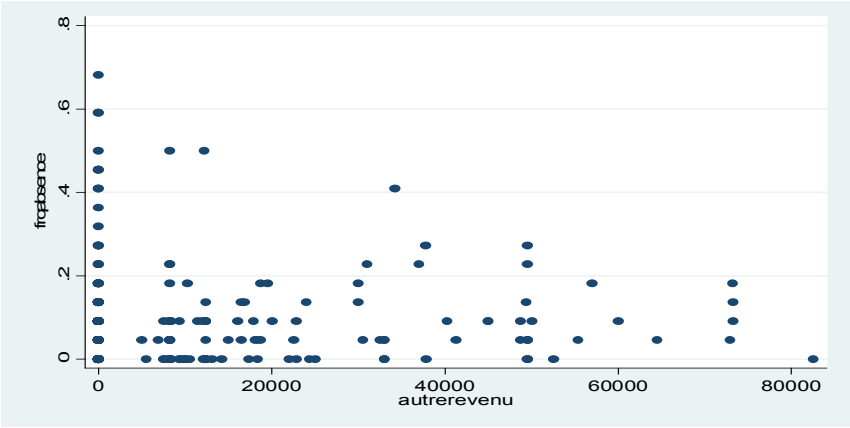

Figure 1. Extra activity income and teacher's absenteeism frequency.

Source: author computations, by PASEC CONFEMEN 2004-2005 data.

By using this model residus vector as regressor in the absenteeism model, we obtain the result of the following table.

As we can notice, RESIDU_1 variable is significant at 5%, this allow us to conclude that teacher's extra activity income is endogenous. It is therefore important to correct the endogeneity bias; for this purpose, we use estimation by instrumental variable method.

4.3.2. Analysis of the Effect of the Teacher's Status on His Absenteeism and Implications

We present here the results of teacher absenteeism Tobit model estimation, with extra activity income's endogeneity correction; this estimation is done by one step instrumental variable method.

Table 5. Estimation result of extra activity income equation.

Variable	Coefficient	t of student
MARRIED*WOMAN	-1667.336	-1.09
SCHOOL_ELDERS	376.4455	(0.31)
EDUCATION_ELDERS	1446.274 (**)	(2.54)
SCHOOL_ELDERS^2	-17.38272	(-0.14)
EDUCATION_ELDERS^2	-51.56951 (**)	(-2.63)
MARRIED	1527.11	(0.62)
AGE	-665.8411	(-0.86)
AGE²	5.174419	(0.51)
NUM_ACTIVIVITY	20412.64 (**)	(8.81
PERMANENTT	2682.748	(0.74
Number of observations	283	
F (10, 272) 9.89**	9.89**	

* Significant at the 10% threshold ** significant at the 5% threshold
Source: author computations, by PASEC CONFEMEN 2004-2005 data.

Table 6. Estimation results of absenteeism equation with the residus of extra activity income (Residu 1).

VARIABLES	Coefficient	t of student
Dependant variable : ABSENCEFRQ		
PERMANENTT	.0358746	1.05
OTHERINCOME	-1.46e-06	-1.56
AGE	.0064942	0.65
AGE²	-.0000643	-0.44
MARRIED	-.026002	-1.11
EDUCATION_ELDERS	.0010746	0.16

VARIABLES	Coefficient	t of student
EDUCATION_ELDERS²	-.0000482	-0.18
SCHOOL_ELDERS	.0203509	1.45
SCHOOL_ELDERS²	-.0024697	-1.57
BEPC	.0588918 **	2.07
BEYONDBAC	.0121957	0.45
OTHERACTIVITY	-.009741	-0.49
DISTANT_BONUS	.0316509	1.28
WORKERS_UNION	.0105095	0.52
REMAIN_TEACHER	-.0037431	-0.20
MARRIED*WOMAN	-.0164611	-0.60
RESIDU_1	2.47e-06 **	2.12
Sample	283	
Prob > Chi2	0.0843*	

* significant at the 10% threshold ** significant at the 5% threshold
Source: author computations, by PASEC CONFEMEN 2004-2005 data.

Table 7. Estimation results of absenteeism tobit model.

Variables	Coefficients	t of student
OTHERINCOME	-6.51e-06 **	-2.09
PERMANENTT	.0713941 **	2.98
WOMAN	-.0239339	-0.85
AGRICULTURE	.1378517 *	1.74
TUTORING	.1278039 **	2.13
COMMERCE	.0701148	0.91
CONTRACTUALT* WORKERS_UNION	.0003406	0.01
BEPC	.0307965	0.90
BELOWBEPC	-.0517773	-0.67
REMAIN_TEACHER	-.0103137	-0.47
Sample	*283*	
Prob > chi2	0.0481 **	

* significant at the 10% threshold ** significant at the 5% threshold
Source: author computations, by PASEC CONFEMEN 2004-2005 data.

Globally, the model appears significant because of the probability associated with the chi2 statistic (0.0481). In addition, the results show that extra activity income is significant at the 5% level in teacher absenteeism frequency explanation; it is the same for permanent status and practice of the teaching activity after class (tutoring). As far as the practice of agricultural work is concerned, it is significant at 10%. Those results raise two fundamental analyzes.

Permanent employment, an incentive factor to absenteeism?

Generally, it appears from our estimation results that in Republic of Benin primary school, permanent status favors teacher's absenteeism more than contractual status. How to understand such situation? State employee's absenteeism confirms what is usually observed in the public services where workers feel no obligation to be present at their posts, under the pretext that they cannot be easily dismissed. However, the state and community contractuals are in a situation where the contract renewal is based on the assessment made of their behavior by their director, they are then, obliged to have exemplary behavior, which is likely to increase their effectiveness at the post. It should also be noticed that the case of community can be explained by the fact that generally, parents have more eyes on the teachers they hired, mostly son of the town, being therefore in the obligation to give a good image of themselves. In a general way, and especially in rural areas, they also have other non-financial benefits; precautions that aim to encourage good behavior and professional integrity. This result confirms those previously obtained in the statistical analyzes, which results stressed on the prevalence of the absenteeism behavior among permanent teachers [5]. Then, it becomes important to wonder, what are the reasons for the phenomenon persistence among permanent teachers when we know that teacher absenteeism is likely to strain the education quality.

Such a result may undoubtedly restart the debate on the link between job security and labor supply. Economic theory teaches that individual labor supply is sensitive to two important employment's characteristics, which are the salary level and job security (Cahuc and Zylberberg , 1996), and we know by this lesson that the worker will be more motivated to be present at his job since he is satisfied with his salary and he has the guarantee that his job is secured. When he realized that his job is precarious , he will develop a shirking behavior (Shapiro and Stiglitz, 1984) that led him to seek

5 See quantiles analysis in 4.2.

auxiliary occupations capable to provide him with income not only complementary, but also alternative in case that he breaks the contract with his employer.

An economic argument to teacher's absenteeism:

As announced earlier, teacher's extra activity income, like other economic variables related to the teacher's purchasing power definition, are likely to influence the teachers' absenteeism behavior. The results show that extra activity incomes "OTHERINCOME'' significantly influence the teacher's absenteeism frequency in primary school. The significant influence of extra activity incomes on the teacher's absenteeism frequency corroborates the theoretical results obtained by Allen (1981), which were confirmed by the empirical work of Allen (1984). At this level, we therefore agreed to recognize the role of factors related to the worker's purchasing power as well as the salary, in the explanation of his absence.

However, the negative sign assigned to this factor raises a question when we focus on the economic theory's lessons about the impact of the worker's other income on labor supply (Allen, 1981). Indeed, in his theoretical model serving as theoretical base to our work research, Allen (1981) predicts a positive effect of the worker's other income on the absence time, considered as normal commodity. The estimation of a significant and negative coefficient of the variable "OTHERINCOME" in the teacher's absenteeism function at the primary school does not confirm these theoretical results ; can we then say that this is a challenge of the economic theory ? Deeper analysis is necessary.

The theoretical positive effect of worker's other incomes on his absence time is explained by the fact that workers with more incomes from other activities make an arbitration that is manifested by a greater importance on those generating activities incomes, which led him to spend more time in those activities. Now, the total time available is limited; the only way he has to increase the time spent on those activities is to "divert" a part of the contractual working time to them. This obliged him to be an absentee.

However, if we stick on this logic, it is difficult to understand how, a high extra activity incomes, in the case of primary school's teachers, could result in a lower absenteeism frequency. The alternative explanation that we try to give to the negative effect of other incomes on absenteeism frequency of primary school's teacher is as follows: the increase of the teacher's other incomes is synonymous with his lifestyle improved, ceteris paribus; the improving of the teacher's lifestyle results in an increasing in his utility, and the more the teacher has a high utility , the more he is willing to perform the contractual working hours, as he knows the punishment waiting for him if he manifests a shirking attitude. This reasoning supposes that there are sanctions which are likely to compel the worker not to shirk. Obviously, increasing in sanctions is likely to reduce the time of absence from work (Allen, 1981). Under those conditions, it is obvious that the teacher absenteeism, far from being interpreted as a reaction of the worker to a job dissatisfaction both from salary and work conditions point of view, appears as a reaction subscribe in a larger context till his extra professional life : other the moral satisfaction, the work's goal is to provide the individual with resources that enable him to meet his needs, but any other activity capable of providing financial resources to the worker may also help to improve the worker's lifestyle. Despite that the theoretical effects of extra-activities incomess on the labor supply is the result of an arbitration between work and leisure, we can realize here that absenteeism is a response of the teacher to the lowest of his other incomes. In other words , while the neo-classical theory postulating that when the other worker's incomes increase, it is optimal to the worker to devote more time to activities that generate those incomes, (the only way to achieve this is being absent), our results which at the first sight refuting the theoretical expectations, are understood as reflecting the fact that it is rather the lowest overall level of worker's incomes which led him to adopt a shirking behavior while working, to get additional incomes through other activities. Those other activities according to our results include farming and tutoring[6].

Indeed, according to those results, the coefficients affected to variables such as AGRICULTURE and TUTORING are significant. The first at a 10% rate, and the second at the 5% rate.

The significance of the first variable " AGRICULTURE " confirms a very proven fact in the Beninese context: in rural areas , teachers generally perform (apart from their main activity), farming, especially during agricultural periods ; this is a work that usually provides enough financial resources knowing that the salary level in the Beninese public service is quite low. The significance of the second variable "TUTORING" supports the expansion tutoring in the Beninese educational system; many teachers are engaged in this activity to obtain very high additional incomes in order to maintain their lifestyle standard. It is an activity that has expanded mainly from the 90s, with the liberalization of education associated with an outbreak of private schools that until then existed only in very small numbers.

To appreciate the true value of the impact of other income on absenteeism, let us now give interested to the magnitudes of these effects.

6 Indeed, from these results , the coefficients assigned to the variables " AGRICULTURE " and " ENSEIGNMT " are respectively significant at the 10 % and 5 %.

The marginal effects of teacher' status and other incomes

The values of the estimated coefficients in the Tobit model are not directly interpretable as marginal effects like the coefficients of a linear regression model. An analysis of the marginal effects has been done on the significant variables during the explanation of the teacher absenteeism frequency.

Table 8. Marginal effect of independent variables on teacher's absenteeism.

Variables	Marginal effect	t of student
OTHERINCOME	-6.51e-06**	-2.09
PERMANENTT	.0713941**	2.98
WOMAN	-.0239339	-0.85
AGRICULTURE	.1378517*	1.74
TUTORING	.1278039**	2.13
COMMERCE	.0701148	0.91
CONTRACTUALT* WORKERS_UNION	.0003406	0.01
BEPC	.0307965	0.90
BELOWBEPC	-.0517773	-0.67
REMAIN_TEACHER	-.0103137	-0.47
sample	283	

* significant at the 10% threshold ** significant at the 5% threshold
Source: Author, from estimations

The marginal effect of the teacher' status is 0.0713941, which means that the passage of contractual status to permanent teacher status increases, significantly at 5 % , the teacher's absenteeism frequency in primary school in 0.071341 %. This will mean for example that if a teacher is absent 10 days on 100 while initially being under the contractual status, making him permanent would cause him to be absent about 10.71341 days (almost 11 days on 100), which is an very important effect while considering the importance of one absence day by the teachers in the class curriculum contents completion.

As for the marginal effect of extra activity incomes on teacher absenteeism, it is estimated at -6.51. 10^{-6}. Then, for a teacher whose extra-activities incomess pass for example from 10000fcfa to 11000fcfa, and who initially used to be absent 10 days on 100, the frequency of absenteeism will decrease ceteris paribus, of 0.065 %, by moving to 9.35 days on 100. Here too, the effect is no less important for the same previous reasons.

5. Conclusion

The negative effect of extra-activities incomess on the teacher absenteeism and the permanent teachers' propensity to absenteeism have been highlighted by our results. The trilogy seems so clearly established: if the contract is permanent, and extra-activities incomess are less important, the teacher will be absent and seek to perform more activities that can give him more resources. This trilogy "absenteeism – extra-activities incomess - type of contract", leads us to wonder whether the extra-activities incomess level does not appear as a "transmission *bridge" of* the contract type effect on the teacher's absenteeism frequency.

Talking about "transmission bridge" of the teacher's contract type effect on his absenteeism frequency, mean to identify factors by which the influence of teacher's contract type can pass through to influence his absenteeism frequency while exercising his function. In the light of our results, we are able to say that in the case of primary education in Benin, the arguments of teachers' lowest incomes are capable to justify absenteeism behaviors that can be observed and are much more common among permanent teachers than contractual teachers. The teacher's total income is composed of his salary and other non-salary incomes from other activities that he performs. The primary school teacher's salary income component has a very low variability from one teacher to another; it is governed by the salary's legislation. If the permanent teachers are more absentee than contractual as shown by both statistical and econometric analysis while the salary conditions of permanent teachers are better compared to those of contract teachers (Bourdon, 2007), the cause of permanent teachers' absenteeism could not be located in salaries. If the salary were the cause, the contractual teachers should be more absentee; so, only the non-salary component can be addressed; this component, according to our statistical analysis, is lower among permanent teachers than contractual teachers while permanents are the most absentee. We have an argument that allows us to acknowledge teacher's incomes weakness as the transmission bridge of the contract type effect on the teacher's absenteeism frequency.

The teacher absenteeism , far of being interpreted as worker's reaction to work's dissatisfaction both of compensation point of view and working conditions point of view, appears as a reaction that can be considered in a larger context, till his extraprofessional life: over moral satisfaction , the objective of the job is to provide the individual with resources so that he can meet his needs; but any other activity capable of providing financial resources to the worker may also help to improve his lifestyle; while the theoretical effects of extra-activities incomess on the worker's life are in the logic that absenteeism, considered a normal commodity, is the result of an arbitration between work and leisure. We realize here that absenteeism is for the teachers an answer in the decreasing of their other incomes. This result, which at a first glance refuting the theoretical expectations , is understood as reflecting the fact that it is rather the lowness of the worker's overall incomes level that led him leaving his job in order to get additional incomes from other activities .

In those conditions, one solution would be for example to upgrade the teaching profession by raising salaries. The opportunity and the benefits of such a measure have been

widely discussed in the literature namely by Duflo (2010).

If we stick to our results, we may ask ourselves, what is then the type of contract between the teacher and the employer which can be compatible with the education system efficiency? Moreover, the answer to this question cannot exclusively rely on economic arguments, in the sense that the employment contract, over economic objective that support it, has also and mainly a legal foundation that cannot be marginalized. Multidisciplinary studies could integrate as well as economic and legal aspects to assess the effectiveness of different types of contract between the teacher and his employer.

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