CROSS-COUNTY POVERTY COMPARISONS IN CHAD: THE IMPACT OF THE OIL REVENUES REDISTRIBUTION POLICY

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Abstract - *This paper analyses the determinants of cross-county poverty disparities in Chad within the context of oil exploitation. Data is provided from the last Chad Household Consumption and Informal Sector Survey (ECOSIT 3) and from the College for Control and Monitoring of Oil Revenues (CCSRP). The incidence of poverty is separately estimated for two groups of counties, according to the amount of oil revenues received with respect to their demographic weights. The difference between the poverty estimates is decomposed into characteristics and coefficients effects following the generalization of Oaxaca-type decomposition for poverty analysis. Results highlight the existence of a highly significant poverty disparity between the two groups of counties. The county-group with a relatively low share of oil revenues has a higher poverty rate than the other group. The effect of county characteristics explains 78.3% of this difference in poverty, while 21.7% is explained by the return effect due to the differential impact of the characteristics over counties. It is expected that to better promote economic inclusion in Chad, the oil revenues redistribution policy should fit the specific local development needs.*

Keywords - CHAD, POVERTY INCIDENCE, LOCAL DISPARITIES, OIL EXPLOITATION, OAXACA DECOMPOSITION, DELTA METHOD

JEL Classification - C20, D63, I30, O13, Q32

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1. INTRODUCTION

Oil exploitation started effectively in Chad from October 2003 and this has significantly improved the country's macroeconomic performance. Indeed, the economic growth rate which averaged at 4% in the 1990s, increased by almost 3 percentage points during the 2000s (INSEED, 2013). Oil revenues constitute the main financial resource to the Chadian government. They account for 88% of total exports since 2004, covering on average 40% of GDP and provide at least 75% of the ordinary budget revenue (BEAC, 2013).

However, the favourable pattern of macroeconomic indicators has not translated into improved living conditions of the population. The country has performed poorly in achieving the Millennium Development Goals (ECA et al., 2014). Its human development index in 2013 was estimated at 0.35 and the country ranked 184th over 187 countries (UNDP, 2013). Similarly, poverty rate fell by only 1 percentage point per year on average between 2003 and 2011 (World Bank, 2014). Results from the last Chad Household Consumption and Informal Sector Survey ECOSIT 3 showed that approximately 47% of Chadians are still living in poverty.

During this time, there were important variations in the levels of living conditions across and within regions in Chad. While poverty slightly declined in some regions, it increased in others. Ethnic conflicts, wars and political instability in Chad over the past years have caused or intensified spatial disparities in living conditions in the country which constitute a major social concern. (Hoinathy 2013). Stakeholders in Chad justify these spatial disparities to inefficiency and arbitration in the redistribution of oil revenues across the regions because it is not indexed to the local development needs. However, this concern had been raised by institutions such as the World Bank, who recommended the adoption by the Chadian government an oil revenues management programme that would reduce poverty and improve living conditions in the whole country (Ndang & Nan-Guer, 2011; Thorbecke, 2013; Fondo et al., 2013). This programme was adopted through Law 001/PR/99 enacted from the discovery of the first oil wells by the end of 1999. The law explicitly states that 70% of direct oil revenues would be allocated to priority sectors across regions (e.g. education, health and human services, rural development, infrastructure, etc.), 15% for public investments, 5% to the oil producing region and 10% devoted to future generations.

The significant reduction of variations in the levels of economic wellbeing across regions is a major objective of the Poverty Reduction Strategy Papers and the National Development Plan of Chad (Mabali & Montobaye, 2015). An assessment of the characteristics explaining these disparities is essential for the design and implementation of spatial anti-poverty policies. This paper therefore aims to analyse the causes of the difference in the level of economic wellbeing in terms of incidence of poverty across counties in Chad. Counties are grouped according to the amounts of oil revenues received with respect to their demographic weights.

The content of the paper is as follows. Section 2 reviews existing literature paying particular attention to the role of oil transfers in alleviating poverty. Section 3 presents the data and the empirical approach. Section 4 discusses the results and Section 5 concludes.

2. LITERATURE REVIEW

The effects of natural resources on poverty alleviation are extensively discussed in literature. Scholars identify two mains channels through which natural resources contribute to improving living conditions (see Loayza et al., 2013; Zambrano and al., 2014). The first channel highlights the direct effects due to the involvement of the populations in the exploitation of the resource. The second channel notes the indirect effects due to public spending of resource revenues and other spill over effects. While the first channel is relevant for natural resources which exhibit an important labour-intensive property, the second channel is more relevant in case of capital-intensive resources. In that context, an appropriate management of oil revenues constitutes the main instrument that the government holds to translate oil exploitation into poverty alleviation.

Moreover, various empirical studies shed light on the evidence that a better achievement of development goals requires an appropriate management of resource revenues by fitting development needs at the local level. Previous works discussed the social and economic efficiencies of different redistribution mechanisms of natural resources rents around the world (Sala-i-Martin & Subramanian, 2003; Sandbu, 2006; Maguire & Winters, 2016). Segal (2011) demonstrated that even a moderate and non-distortionary redistributive scheme could have a major impact on poverty, independent of aggregate growth. The transfer or the redistribution of rents to the population considerably reduces the poverty rates (IMF, 2006; Pauw & Mncube, 2007; Gelb & Grasmann, 2010). The advantage of this scheme is that, rent redistribution can include all citizens without discrimination or it can target the poor class. In Namibia for example, the transfer of 15 dollars to each Namibian per month has helped to increase the schooling rate and reduced poverty (IMF, 2006). The distribution of rents scheme reduced poverty and inequality and, provided households the financial capacity to improve their wellbeing (Pauw & Mncube, 2007).

In Chad, the legal and regulatory frameworks for oil revenues redistribution remain a major concern. Hence, it's crucial to investigate the egalitarian nature of the policy of oil revenues redistribution and its effect on poverty across localities in Chad. This research concern is not new but finds its interest in the existence of large spatial poverty disparities. Some studies have addressed this issue (Ndang & Nan-Guer, 2011; World Bank, 2013; Mabali & Montobaye, 2015) but none of them analysed the causes of cross-county poverty disparities in Chad within the context of oil exploitation.

3. METHODOLOGY

3.1. Data

The study used data from the last Chad Household Consumption and Informal Sector Survey ECOSIT 3 carried out in 2011 by the National Institute of Statistics, Economic and Demographical studies (INSEED). After controlling

for missing data, 9259 households were considered. The indicator used to measure the welfare of the household is the annual expenditure per adult equivalent.The methodology adopted by INSEED to compute the poverty line is based on the essential needs approach. The national absolute poverty lines was 237,942 CFA francs in 2011. It was normalized by an index of cost of living in different regions in order to account for regional disparities and compute regional deflators which help for comparability of results across localities in Chad (INSEED, 2013)[1].

3.2. Identification strategy of county-groups

We based our identification strategy on the assumption that, the Oil Revenues Redistribution Policy (ORRD) could help to reduce poverty and improve living standards across counties[2] since investments in social sectors like health, education, water provision and infrastructures are mainly financed by oil revenues in Chad. Indeed, it was acknowledged that to better alleviate resource curse and achieve development goals, natural resource governance requires that redistribution mechanisms be put in place according to development needs in different localities. Thus, assuming that development needs are highly correlated to the size of the population in each geographic unit (county), it is possible to consider a ratio indicating for each county whether the redistribution policy has been favorable or not to its demographic needs. The ratio is given by:

$$r_c = \frac{\frac{OilRevenuesBudget_{County}}{OilRevenuesBudget_{National}}}{\frac{Population_{County}}{Population_{National}}} = \frac{Oil_c}{Dem_c} \qquad [1]$$

where Oil_crepresents the percentage of oil revenue budget received by county c, and Dem_cindicates its demographic weight. A ratio $r_c < 1$ shows that, the oil share received by the county is lower than what its population represents compared to the national population. Thus, such redistribution would be disadvantageous for this county given that the percentage of oil revenues received does not match its demographic needs. Conversely, a ratio $r_c > 1$ would indicate that the redistribution policy is favorable for the considered county. If $r_c = 1$, the de-

[1] These deflators are obtained from a Harmonized Index of Consumer Prices (HICP) computed for N'Djamena city. It is a Laspeyres-Paasche price index that covers household consumption according to national accounts. Households living in N'Djamena serve as the reference population since it is the capital city. The methodology used by INSEED to compute this price index is similar to that used by each National Statistics Institute in all the 17 sub-Saharan African countries within the French-speaking zone. The HICP considered a housewife's shopping basket of 330 foodstuffs that were monthly followed throughout 320 selling points in N'Djamena. About 3000 prices were considered each month. 2005 is the baseline year of this price index for all the foodstuffs. The weights of this price index come from ECOSIT 2 survey carried out in 2003-2004 within 1024 households in N'Djamena.

[2] In Chad, sub-national administrative units are called regions, counties, districts, and sub-districts in decreasing order of size since the Decree N°419/PR/MAT/02 on 17th October 2002. County is the lowest administrative unit for which data from CCSRP about amounts of oil revenues redistributed are available.

mographic needs exactly match then the per capita oil revenue budget for the county is exactly equal to the one at national level:

$$r_c = 1 \quad if \quad \frac{Oil\ Revenues\ Budget_{County}}{Population_{County}} = \frac{Oil\ Revenues\ Budget_{National}}{Population_{National}} \qquad [2]$$

The percentage of oil revenues is computed from administrative data (CCSRP) based on the average amount of direct oil revenues redistributed throughout the country between 2008 and 2011. Information before 2008 is not available, while data after 2011 go beyond the scope of this study. Demographic weights are given by the second General Population and Housing Census conducted by INSEED in 2009. They were easily imputed in the year 2011 under the assumption that, the population has not dramatically changed between the two dates. However, a specific harmonization is required to match data from the data sources used. In addition, ECOSIT 3 and CCSRP don't cover the same number of geographical units. ECOSIT 3 covers 20 regions and 73 counties, while CCSRP covers 12 regions and 62 counties. But, we are still able to recover each region and each county of the CCSRP from the ECOSIT 3 coverage scheme because the high number of geographical units from ECOSIT 3 is derived from the division of some units from CCSRP. Therefore, our baseline coverage scheme is that of CCSRP because it provides the lowest number of geographical units. Then, we regroup counties from the ECOSIT 3 coverage scheme in order to identify the counties from the baseline. Table A1 in annex 1 shows in details the computed values of Dem_c, Oil_c and r_c for each county. This is graphically represented in figure 1.

Finally, our identification strategy assumes a benchmark reference that *better off counties* are those which have received a per capita oil revenue at least higher than that at national level. The ratio r_c allows us to build two groups of counties according to oil transfers received. The first one (say Group A) is represented by counties for which the ratio is greater or equal to 1. The second one (say Group B) is constituted by counties disadvantaged by the redistribution policy for which the ratio is less than 1. To sum up, in the 62 counties in Chad, 24% and 76% are better off and worse off respectively. Our basic hypothesis is that, poverty incidence is higher in Group B than Group A.

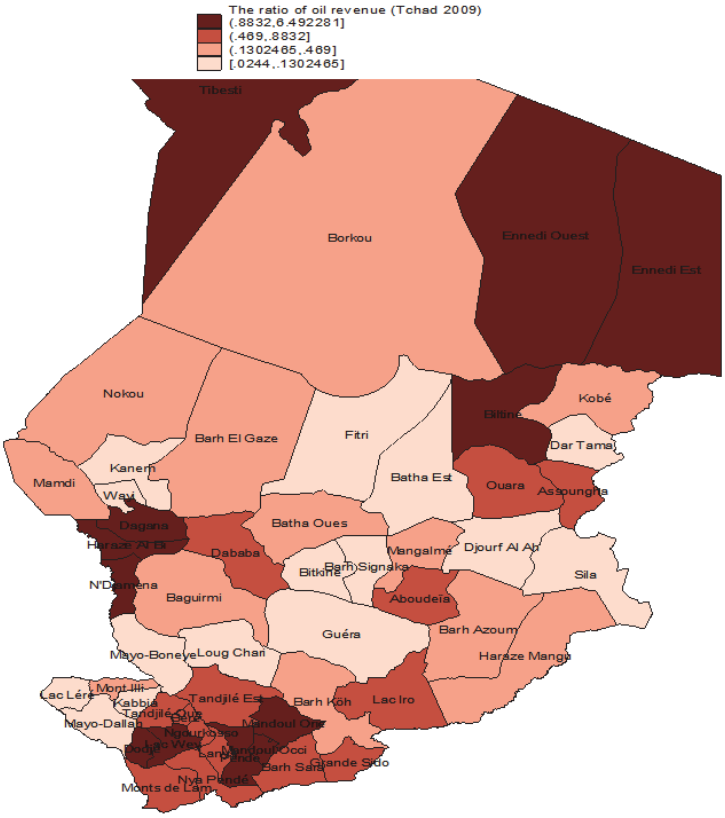
3.3. Regression-based estimation of poverty and Oaxaca-Blinder decomposition approach

This section outlines the decomposition approach used to explore the causes of differential levels of poverty incidence (head count ratio) in county-groups A and B. Numerous studies link poverty incidence to various socioeconomic covariates using Logit/Probit models within a binary variable setting[3]. Ravallion (1996) and Mukherjee and Benson (2003) pointed out that, binary models are relatively sensitive to specification errors and leads to the loss of some information. This observation was also made by the World Bank (2003) who consid-

[3] See for example Geda et al. (2001) in study case of Kenya, Golo (2014) in Togo, Bokosi (2007) in Malawi, Adoho and Boccanfuso (2007) in Guinea, Bigman and Srinivasan (2002) in India.

ered the ratio of income to poverty line as the dependent variable[4]. Retaining the World Bank method, the logarithm of the ratio of income to poverty line is regressed on a set of poverty covariates and the probability of poverty incidence is obtained for each household from the parameter estimates. The poverty incidence for a county-group is computed as the sample average of household level of poverty incidence. Then, the disparity in poverty estimates between county-groups A and B is decomposed using the Oaxaca-Blinder decomposition approach (Oaxaca, 1973; Blinder 1973).

Figure 1: Distribution of oil revenues across counties (ratio r_c)



Source: From CCSRP (2012) and INSEED (2013).

[4] More precisely, the World Bank study considers the logarithm of this ratio which is a common way of allowing for the log normality of the variable. Coudouel et al. (2002) provide a discussion about this World Bank method using linear regression to assess determinants of poverty. This approach was retained by several works studying difference in poverty between groups. Bhaumik et al. (2006) applied it between Serbians and Albanians in Kosovo; Gang et al. (2008) contrasted the situation of scheduled caste and scheduled tribe households with the general population in India; Chattopadhyay (2011) studied the case of West Bengal, an eastern state of India, and compared its two regions (North Bengal and South Bengal).

The rationale for the implementation of Oaxaca-Blinder decomposition is to determine the effect of the difference in the characteristics of the two county-groups that causes disparity in poverty incidence, and to find out the effect of the differential impact of the characteristics over the two regions. Then, policy measures can be considered for enhancing two components that are; *characteristics effect* (effects of the county characteristics) and *coefficients effect* (effects of the differential impact of the characteristics over the counties).

Formally, we follow the model specified by Bhaumik et al. (2006) and Chattopadhyay (2011) based on Yun (2004, 2005) approach synthesizing the Oaxaca-type decomposition for poverty analysis. Poverty incidence can be computed by constructing the ratio $\frac{y}{z}$ of per adult equivalent total expenditure (y) to the poverty line(z) known to be the income-to-needs ratio in literature. It can be used to explain the probability that a household has for getting in a state of poverty. Equation [3] is estimated for $\boldsymbol{N}$ households, where X is the set of poverty covariates and $\varepsilon \sim \mathcal{N}(0, \sigma^2)$ the error term.

$$ln\left(\frac{y_i}{z}\right) = X_i\beta + \varepsilon_i \quad [3]$$

The probability of poverty incidence for the i^{th} household is obtained as follows:

$$\Pr\left(\frac{y_i}{z} < 1\right) = \Pr\left(ln\left(\frac{y_i}{z}\right) < 0\right) = \Pr(\varepsilon_i < -X_i\beta) = \Phi\left(\frac{-X_i\beta}{\sigma}\right) = \Phi(X_i\beta^*) \quad [4]$$

Φ is the C.D.F of standard normal distribution. Using the transformed coefficients $\beta^* = -\frac{\beta}{\sigma}$, Oaxaca-type decomposition can be implemented given that the head count ratio is asymptotically equivalent to the sample average of poverty incidence $\boldsymbol{P}$. Therefore, the poverty measure for each county-group is given by:

$$\boldsymbol{P_j} = \frac{1}{N_j}\sum_{i=1}^{N_j} \Phi\left(X_{ij}\widehat{\beta_j^*}\right) = \overline{\Phi\left(X_j\widehat{\beta_j^*}\right)} \quad [5]$$

where $j = A, B$. The over bar in equation [5] denotes sample average. The difference of poverty estimates between county-groups A and B is decomposed firstly into a linear combination of two components $\boldsymbol{C}$ and $\boldsymbol{D}$ at the aggregate level as follows:

$$\boldsymbol{P_A} - \boldsymbol{P_B} = \overline{\Phi\left(X_A\widehat{\beta_A^*}\right)} - \overline{\Phi\left(X_B\widehat{\beta_B^*}\right)} = \underbrace{\left\{\overline{\Phi\left(X_A\widehat{\beta_A^*}\right)} - \overline{\Phi\left(X_B\widehat{\beta_A^*}\right)}\right\}}_{\boldsymbol{C}} + \underbrace{\left\{\overline{\Phi\left(X_B\widehat{\beta_A^*}\right)} - \overline{\Phi\left(X_B\widehat{\beta_B^*}\right)}\right\}}_{\boldsymbol{D}} \quad [6]$$

The component $\boldsymbol{C}$ is the *aggregate characteristics effect* which represents the portion of the difference of poverty due to the difference in the characteristics (poverty covariates X), given coefficients β. On the other hand, the component $\boldsymbol{D}$ indicates the *aggregate coefficients effect* which represents the portion of the difference of poverty due to the difference in the coefficients, given the characteristics. The decomposition is done from the viewpoint of county-group B. $\overline{\Phi\left(X_B\widehat{\beta_A^*}\right)} = \frac{1}{N_B}\sum_{i=1}^{N_B} \Phi\left(X_{iB}\widehat{\beta_A^*}\right)$ is the counter factual poverty in county-group B, that is, the poverty level that would prevail in county-group B if it

would have the same coefficient vector as is county-group A. Therefore, the *aggregate characteristics effect* (***C***) represents the difference between the actual poverty level in county-group A and the counter factual poverty level in county-group B with county-group A's coefficients $\left(\widehat{\beta_A^*}\right)$. Similarly, the aggregate coefficients effect (***D***) is the difference between the counter factual poverty level in county-group B with county-group A's coefficients and the actual level of poverty in county-group B.

Both components ***C*** and ***D*** contain the effects of all the explanatory variables. Nonetheless, a detailed decomposition analysis allows us to capture the contribution of specific explanatory variables to the overall difference in the poverty incidence between the county-groups (Yun, 2004). Finally, we can test for the statistical significance of the characteristics and coefficients effects at the aggregate and individual levels by employing the delta method (Yun, 2005). Bhaumik et al. (2006) and Chattopadhyay (2011) discussed in details the estimation procedure of the variances of characteristics and coefficients effects from the estimated variance-covariance structure of the coefficients of model in the above equation [3] estimated by maximum likelihood[5].

3.4. Variables and descriptive statistics

The first step of the decomposition consists of estimating equation **[3]** of the linear regression of the logarithm of income-to-needs ratio. The explanatory variables are broadly categorized into six groups[6]. The descriptive statistics of the dependent variable $ln\left(\frac{y}{z}\right)$ and the variables under these characteristics or groups are given in table 2 below. Results of the *t-tests* comparing the mean values of each variable between county-groups A and B are also reported. One can note that, apart from the *Houses* variable, there exists a significant statistical difference between mean values between the two county-groups$\left(\bar{X}_A^k - \bar{X}_B^k\right)$.

In addition, the sign of the difference for each k variable is in accordance with our basic hypothesis that county-group A is better off compared to the county-group B since it is advantaged by the oil revenues redistribution policy across localities in Chad. For instance, regarding the labour market status, in our sample 26.18% of household heads in group A are wage-earners. This pro-

[5] The World Bank (2003) method proposes the estimation of equation [3] using Ordinary Least Squares (OLS). However, a drawback associated with the OLS estimation is that it produces only a covariance matrix of β, while the covariance matrix of (β, σ) is required to derive the covariance matrix of $\beta^* = -\frac{\beta}{\sigma}$. We follow Bhaumik et al. (2006) to consider the Maximum Likelihood (ML) as the best estimation approach to address this issue.

[6] An important group of characteristics retained in literature concerns the transfers received by the household, especially private transfers and government aid. Data on these variables are not available from ECOSIT 3 survey leading to an omission of this group of characteristics. However, we expect that, the group of characteristics capturing some aggregated socioeconomic variables of the living environment (districts) of the household may help to control for the missing variables since in general, transfers are oriented towards poor environments (districts).

portion is statistically higher at 1% level of significance than the 13.58% of wage-earners in group A. Similarly, in terms of access of public services, the time used to stock up drinking water is statistically lower at 1% level of significance in group A (14.55 minutes) than in group B (19.68 minutes). This is the same for access to health services measured by the time used to go to the nearest health centre.

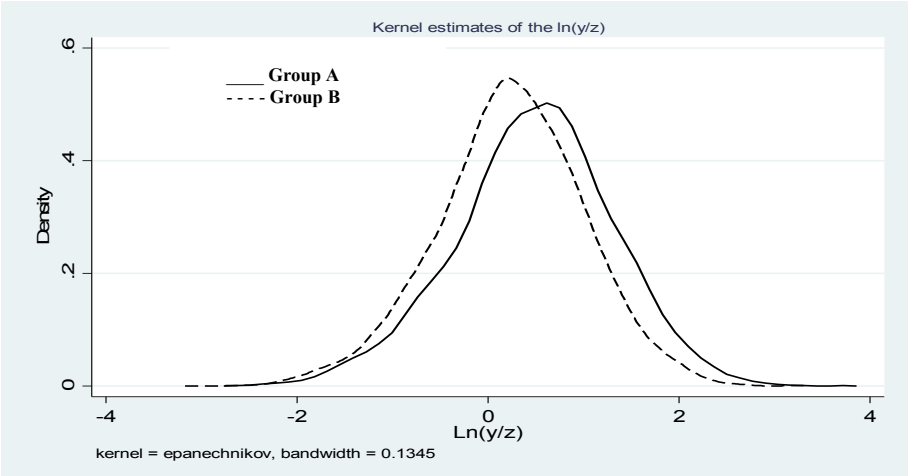
The same pattern is observed when we look at the characteristics of the living environment. In fact, the urbanization and the schooling rates in the districts of county-group A are significantly higher than those of county-group B, while the opposite is observed for poverty and unemployment rates. Also, agriculture constitutes the main activity for more households in group B (47.28%) compared to group A (28.66%).

4. EMPIRICAL RESULTS

4.1. Evidences of poverty disparities between county-groups

We provide some evidences of poverty disparities between county-groups before discussing their causes. This is illustrated in figure 2 of the kernel density estimates of logarithm of the income-to-needs ratio for each county-group. Group A density is to the right of group B density, implying that for the same level of expenditure exceeding the poverty line, there are more people in county-group A than in county-group B areas. It is also apparent that the difference between groups A and B densities is greater in the right tail of the density. Thus, rich households from group A are better off than their group B counterparts to a greater extent and the poor households from group A are better off than their group B counterparts.

Figure 2: Kernel densities of logarithm of the income-to-needs ratio $\ln(y/z)$ by county-group



Source: From ECOSIT 3.

Table 2: Definition and description of variables

Character-istics	Variables under characteristics	Description	Group A $\bar{X}_A^k$	Group B $\bar{X}_B^k$	t-test $\bar{X}_A^k - \bar{X}_B^k$
Dependent variable	$\ln(y/z)$	Logarithm of the income-to-needs ratio	0.4858 (0.831)	0.2365 (0.779)	14.7***
1. Demo-graphic characteris-tics of the household (head)	Household size	Household size (number of individuals living frequently in the household)	5.231 (3.086)	5.514 (2.849)	– 4.54***
	Sex	**1** if the household is male-headed, **0** otherwise	0.7755 (0.417)	0.7360 (0.440)	4.33***
	Age	Age of the household head	41.15 (13.88)	42.51 (15.05)	– 4.41***
	Age^2/100	Squared age of the household head over 100	18.86 (13.13)	20.33 (14.67)	– 4.97***
	Couple	Marital status, **1** if the household head is in couple, **0** otherwise	0.7705 (0.420)	0.8174 (0.386)	– 5.54***
2. Educational status of the household (head)	Without educ.	1 if the head of household has never been provided with schooling, **0** otherwise	0.4646 (0.498)	0.6430 (0.479)	– 17.32***
	Primary educ.	**1** if the head of household has successfully finished at least primary educ., **0** otherwise	0.3032 (0.459)	0.2436 (0.429)	6.37***
	Secondary educ.	**1** if the household head has successfully finished at least secondary educ., **0** otherwise	0.1654 (0.371)	0.0946 (0.292)	10.23***
	Higher educ.	**1** if the household head holds a higher educa-tion level, **0** otherwise	0.0666 (0.249)	0.0186 (0.135)	11.91***
3. Labour market status of the household (head)	Inactive	**1** if the head of household is inactive, **0** otherwise	0.1912 (0.393)	0.2355 (0.424)	– 5.09***
	Unemployed	**1** if the head of household is unemployed, **0** otherwise	0.0821 (0.274)	0.1016 (0.302)	– 3.15***
	Self-employed	**1** if the head of household is a self-employed, **0** otherwise	0.4646 (0.498)	0.5269 (0.499)	– 5.90***
	Wage-earner	**1** if the head of household is a salaried employee, **0** otherwise	0.2618 (0.439)	0.1358 (0.342)	15.47***
4. Wealth status of the household	Land	Logarithm of the value of land household owns (CFA francs)	2.336 (4.727)	3.148 (5.212)	– 7.65***
	Houses	Logarithm of the value of houses household owns (CFA francs)	0.6656 (2.806)	0.7279 (2.905)	– 1.02
	Livestock	Logarithm of the value of the livestock owned by the household (CFA francs)	1.2405 (3.755)	2.6630 (5.195)	– 14.44***
5. Access to public services	Time to water	Time used to stock up with drinking water (minutes)	14.55 (25.30)	19.68 (28.24)	– 8.96***
	Time to health	Time used to go to the nearest health centre (minutes)	42.17 (57.38)	59.13 (79.30)	– 11.28***
6. Characteris-tics of the living environment of the household	Urban	Urbanization rate (proportion of hlds in urban area) in the district where the hld lives	0.7847 (0.411)	0.5963 (0.490)	19.39***
	Schooling	Schooling rate in the district where the household lives	0.5353 (0.153)	0.3569 (0.197)	46.68***
	Poverty	Poverty rate in the district where the house-hold lives	0.2310 (0.180)	0.2923 (0.121)	– 19.50***
	Unemployment	Unemployment rate in the district where the household lives	0.0821 (0.061)	0.1015 (0.065)	– 14.30***
	Agriculture	Proportion of households for which agricul-ture is a main activity in the district	0.2866 (0.253)	0.4728 (0.200)	– 39.45***

*Note: The standard deviations are reported in parentheses. ***, ** and* indicate the significance levels at 1, 5 and 10% respectively.*
Source: From ECOSIT3.

It is possible to obtain the same statistical results by comparing the poverty incidence estimated for each county-group from equation [5][7]. Our basic hypothesis is confirmed; the poverty incidence in county-group A is lower than the one in county-group B as shown in table 3 below. The difference of poverty estimates ($\boldsymbol{P_A}$ - $\boldsymbol{P_B}$ = – 0.0733) is statistically significant at 1%. However, without using a regression-based approach, the estimated poverty incidences are 0.2579 in county-group A and 0.3601 in county-group B. Therefore, it seems that the regression-based approach does not overestimate the poverty disparity (difference) between the two groups. Furthermore, our results provide justification for analyzing separately the poverty incidence in the two county-groups. Also, the Chi-square test of independence used to determine whether there is a significant relationship between the classification by being Poor/Non poor and by living in county-group A/county-group B gives a highly significant $\boldsymbol{\chi^2_{(1)}}$= 107.73 indicating that these two classifications are not independent.

Table 3: Estimates of poverty incidence in county-groups A and B

Counties groups	Sample size	Poverty incidence using regression-based approach	
		No	Yes
Group A	N_A = 3796	P_A= 0.2579	P_A= 0.2622
Group B	N_B= 5463	P_B= 0.3601	P_B= 0.3355
Difference in poverty incidence: (P_A - P_B) = – 0.0733		*t-test* = – 20.57***	
Independence between the classification by being Poor/Non poor and by living in Group A/Group B: $\boldsymbol{\chi^2_{(1)}}$= 107.73***			

*Note: ***, ** and* indicate the significance levels at 1, 5 and 10% respectively.*
Source: From ECOSIT 3.

4.2. Inter-county poverty decomposition

The difference in the average probability of being poor between county-groups ($\boldsymbol{P_A}$ - $\boldsymbol{P_B}$) can be algebraically decomposed into characteristics and coefficients effects. The results are reported in table 4 below. Both aggregate characteristics and coefficients effects are highly significant. The aggregate characteristics effect is – 0.017, and its share in poverty difference is 78.3%. This means that if the households of the county-group A had the same characteristics as those of the county-group B, given the group A coefficients, then the difference in poverty incidences would have been reduced by 78.3%. On the other hand, the aggregate coefficients effect is – 0.005, and its share in poverty difference is 21.3%. Therefore, the inter-county poverty disparities would have reduced by 21.3% if the coefficients of the variables influencing poverty were same for both county-groups, given the characteristics of group B. Referring to what Chattopadhyay (2011) calls the *resource effect*, it is worth noting that, the scale of the characteristics effect shows that the inter-county poverty disparities would be considerably reduced if the oil revenues redistribution policy offers the same resources (characteristics) in both county-groups.

[7]This is derived from the estimates of the parameters of equation [3] are reported in table A2 in appendix. In general, the poverty covariates are highly significant and affect the logarithm of the income-to-needs ratio as expected.

Table 4: Decomposing the difference of poverty incidence between county-groups ($P_A - P_B$)

Characteristics	Variables under characteristics	Characteristics effect			Coefficients effect		
		Estimate	Percentage		Estimate	Percentage	
Aggregate effect		**Aggregate characteristics effect (*C*)**			**Aggregate coefficients effect (*D*)**		
		- 0.017(0.0012)***	78.3		- 0.005(0.0018)***	21.7	
Decomposition aggregate effect		**Individual characteristics effect (C_k)**			**Individual coefficients effect (D_k)**		
1. Demographic characteristics of the household (head)	Household size	- 0.002(0.0001)***	8.9	21.5	- 0.026(0.0087)***	118.1	456.3
	Sex	0.001(0.0015)***	- 6.9		- 0.000(0.0031)	0.1	
	Age	- 0.030(0.0006)***	137		- 0.094(0.0219)***	423	
	$Age^2/100$	0.027(0.0006)***	- 124		0.035(0.0101)***	- 157	
	Couple	- 0.001(0.0001)***	6.5		- 0.016(0.0040)***	72.1	
2. Educational status of the household (head)	Without educ.	- 0.009(0.0004)***	40.9	28.6	- 0.010(0.0017)***	48.1	68.6
	Primary educ.	0.004(0.0003)***	- 21.8		- 0.005(0.0013)***	23.8	
	Secondary educ.	- 0.000(0.0001)***	2.2		- 0.000(0.0003)	1.6	
	Higher educ.	- 0.001(0.0001)***	7.3		0.001(0.0002)***	- 4.9	
3. Labour market status of the household (head)	Inactive	- 0.000(0.0001)	0.9	-16.5	0.000(0.0004)	- 3.1	- 9.0
	Unemployed	0.001(0.0001)***	- 5.8		0.001(0.0003)**	- 3.5	
	Self-employed	0.001(0.0001)***	- 5.4		0.003(0.0017)	- 12.1	
	Wage-earner	0.001(0.0002)***	- 6.2		- 0.002(0.0004)***	9.7	
4. Wealth status of the household	Land	0.000(0.0001)***	- 3.8	- 3.4	0.001(0.0012)	- 5.8	- 16.5
	Houses	0.002(0.0001)***	- 6.7		0.000(0.0003)	- 2.1	
	Livestock	- 0.002(0.0003)***	7.1		0.002(0.0009)**	- 8.6	
5. Access to public services	Time to water	- 0.000(0.0001)***	1.6	54.7	- 0.002(0.0015)	10.3	54.7
	Time to health	- 0.011(0.0003)***	53.1		- 0.009(0.0026)***	44.4	
6. Characteristics of the living environment of the household	Urban	0.010(0.0004)***	- 48.8		0.003(0.0012)**	- 13.3	
	Schooling	- 0.007(0.0009)***	33.8	- 6.6	- 0.028(0.0060)***	130.2	74.2
	Poverty	0.001(0.0003)***	- 5.9		- 0.006(0.0056)	27.1	
	Unemployment	- 0.002(0.0002)***	8.8		0.007(0.0023)***	- 32.1	
	Agriculture	- 0.001(0.0004)***	5.5		0.008(0.0044)*	- 37.7	
Constant					0.135(0.0150)***		- 607

*Note: The robust standard errors are reported in the parentheses. ***, ** and* indicate the significance levels at 1, 5 and 10% respectively. Group A is the reference group of comparison.*
Source: From ECOSIT3.

Furthermore, we can look at the detailed decomposition. Firstly, the individual characteristics effect captures the contributions of explanatory variables to the aggregate characteristics effect. The access to public services, especially water and health, has the highest contribution with a share of 54.7% in the difference of poverty incidences. This is followed by the educational status (28.6%) and the demographic characteristics of the household (21.5%). These are a set of characteristics through which the resource effects may considerably reduce the poverty disparities between county-groups. All the individual charac-

teristics effect turn out to be highly significant except the inactive explanatory variable. Secondly, the aggregate coefficients effect ***D*** is also decomposed into contributions of individual poverty covariates. Within the Oaxaca-Blinder decomposition, these contributions can be interpreted as the *efficiency effect* which gives the differential degree of the utilisation of resources (merely captured by the coefficient estimates from equation [9] assessing the determinants of the income-to-needs ratio).

The characteristics of living environment of the household contribute to 74.2% of the aggregate efficiency effect. This is followed by the educational status (68.6%) and access to public services (54.7%). The variables with negative individual coefficient effect have positive share because the difference in poverty ($\boldsymbol{P_A}$ - $\boldsymbol{P_B}$) is negative. It would mean that county-group A is having a lower coefficient attached to that particular variable compared to county-group B. In other words, county-group A is less efficient than county-group B with respect to utilization of the particular resource. This is the case with variables such as access to public services (time to stock water and health), educational status (below higher education level) or even the labour market status (wage-earner). These variables have more return effects in county-group B in lowering poverty disparities. Therefore, it seems appropriate for the oil revenues received in county-group B to foster provision of public services such as health centres and drilling water, to boost schooling and create more employment opportunities. Variables characterizing the wealth status of the households have positive coefficient effects. It indicates that, the equalization of the coefficients between the two county-groups will make county-group A worse off because by increasing the coefficients, poverty will decrease in county-group B and the poverty difference will be widened.

Lastly, it may be observed that the main reason why households from county-group A have lower probability of being poor than those from county-group B is due to coefficients effect of constant term which is positive with a share of – 607. This indicates that the average baseline per capita expenditure level is higher in county-group A. In other words, even though households living in county-group B hold characteristics which can lower poverty and help them to enjoy stronger poverty mitigating effect of these characteristics compared to households from group A, the coefficients effect of the constant term shows that there is an important baseline gap in poverty incidence between the two county-groups. Therefore, this baseline disparity in poverty incidence is due to the oil revenues redistribution policy which does not allocate oil revenue shares to localities according to their county needs. A better inclusion may be achieved if the ratio of oil revenue shares received to the demographic weights of each locality equals 1 as discussed previously through equation [1].

5. CONCLUSION

This paper explored the causes of cross-county poverty disparities in Chad within a context of oil exploitation. We distinguished between two groups of counties. The group A gathers counties who received oil revenues greater than their demographic weights and assumed advantaged by the Oil Revenues Redis-

tribution Policy (ORRP). On the contrary, counties of group B are assumed disadvantaged by the ORRP since they received amounts of oil revenues less than their demographic weights. Then, we applied Oaxaca-type decomposition inspired by the methodologies of World Bank (2003) and Yun (2004, 2005) to find out the effect of the difference in the characteristics of the two county-groups that causes the disparities in poverty incidences, but also determine the differential impact of the characteristics over the two county-groups.

As expected, results show that county-group B has a higher headcount ratio (33.55%) than its counterpart county-group A which received an intense oil revenues redistribution (26.2%). This difference in poverty incidences is highly significant. As the results of the decomposition of this difference suggest, there exists disparities in the availability of the resources between the two county-groups. This characteristic effect accounts for 78.3% of the difference in poverty. At the same time, there exists disparities in the utilisation of these resources i.e. the efficiency effect which is found less prominent. Basically, the baseline consumption is lower in the county-group B which lags behind the county-group A in terms of both the availability of resources and the utilisation of these resources. Thus, to better promote economic inclusion in Chad, the oil revenues redistribution policy should fit the specific local development needs. Attention should be paid in county-group B with respect to enhancement of important policy variables like the access of public services (water drilling and healthcare facilities), education and employment opportunities. Also, the return effect should be investigated and the causes of low resource utilisation need to be considered.

REFERENCES

Adoho, F.M., & Boccanfuso, D. (2007). "L'approche Blinder-Oaxaca permet-elle d'identifier les causes des écarts de pauvreté en Guinée ?" GREDI Working Paper N°07-16, University of Sherbrooke.

BEAC (2013). *Tableau de bord*. Banque des Etats de l'Afrique Centrale.

Bhaumik, S. K., Gang, I. N., & Yun, M.-S. (2006). "A note on decomposing differences in poverty incidence using regression estimates: Algorithm and example", IZA Discussion Paper N°2262.

Bigman, D., & Srinivasan, P. V. (2002). "Geographical targeting of poverty alleviation programs: Methodology and applications in rural India", *Journal of Policy Modeling,* 24(3), 237-255.

Blinder, A.S. (1973). "Wage discrimination: Reduced form and structural estimates". *Journal of Human Resources,* 28, 279-296.

Bokosi, F. K. (2007). "Household poverty dynamics in Malawi: A bivariate probit analysis", *Journal of Applied Science,* 7(2), 258-262.

CCSRP (2012). *Rapports annuels 2004-2012*, Tchad: Collège de Contrôle et de Surveillance des Revenus Pétroliers.

Chattopadhyay, S. (2011). "Inter-regional poverty comparisons: Case of West Bengal", *Journal of Quantitative Economics,* 9(2), 104-122.

Coudouel, A., Hentschel, J. S., & Wodon, Q. T. (2002). "Using linear regressions for analyzing the determinants of poverty", In J. Klugman (Ed.), *A sourcebook for poverty reduction strategies* (Vol. 2): World Bank.

ECA, AU, AfDB, & UNDP. (2014). *Mdg report 2014: Assessing progress in Africa toward the millenium development goals*. http://www.uneca.org.

ESSO (2012). *Exploration et production pétrolière au Tchad 2003-2012*. Rapport d'activités trimestriel, Tchad.

Fondo, S., Gadom, D.-G., & Totouom, F.A.L. (2013). « Soutenabilité économique d'une ressource épuisable: Cas du pétrole tchadien », *African Development Review,* 25(3), 344-357.

Gang, I. N., Sen, K., & Yun, M.-S. (2008). "Caste, ethnicity and poverty in rural India", *Review of Income and Wealth,* 54(1), 50-70.

Geda, A., Jong, N., Mwabu, G., & Kimenyi, M. (2001). "Determinants of poverty in Kenya: Household-level analysis", KIPPRA Discussion Paper N°9, Nairobi: Kenya Institute for Public Policy Research and Analysis.

Gelb, A., & Grasmann, S. (2010). "How should oil exporters spend their rents?", Washington D.C., Working Paper N°221, Center for Global Development.

Hoinathy, R. (2013). *Pétrole et changement social au Tchad: Rente pétrolière et monétisation des relations économiques et sociales dans la zone pétrolière de Doba*. Editions Karthala.

IMF (2006). *Bulletin N°12*. Washington D.C.: International Monetary Funds.

INSEED (2013). *Profil de pauvreté au Tchad en 2011*. Tchad: Institut National de la Statistique et des Etudes Economiques et Démographiques.

Loayza, N., Teran, A. M., & Rigolini, J. (2013). "Poverty, inequality, and the local natural resource curse", IZA Discussion Paper N°7226.

Mabali, A., & Mantobaye, M. (2015). "Oil and regional development in Chad: Impact assessment of Doba oil project on the poverty in host region", Etudes et Documents N°15, CERDI.

Maguire, K., & Winters, J. V. (2016). "Energy boom and gloom? Local effects of oil and natural gas drilling on subjective well-being", IZA Discussion Paper N°9811.

Mukherjee, S., & Benson, T. (2003). "The determinants of poverty in Malawi, 1998", *World Development,* 31(2), 339-358.

Ndang, T. S., & Nan-Guer, K. B. (2011). *Réduction de la pauvreté et croissance économique: Cas du Tchad*. AERC Collaborative Research Project on Understanding the Links between Growth and Poverty in Africa.

Oaxaca, R. (1973). "Male-female wage differentials in urban labor markets", *International Economic Review,* 14, 693-709.

Pauw, K., & Mncube, L. (2007). "*Expanding the social security net in South Africa: Opportunities, challenges and constraints*", University of Cape Town, South Africa: Working Paper N°07-128, Development Policy Research Unit.

Ravallion, M. (1996). "Issues in measuring and modelling poverty", *The Economic Journal,* 106, 1328-1343.

Sandbu, M.E. (2006). "Natural wealth accounts: A proposal for alleviating the natural resource curse", *World Development,* 34(7), 1153-1170.

Segal, P. (2011). "Resource rents, redistribution, and halving global poverty: The resource dividend", *World Development,* 39(4), 475-489.

Thorbecke, E. (2013). "The interrelationship linking growth, inequality and poverty in sub-Saharan Africa", *Journal of African Economies,* 22, 15-48.

UNDP (2013). *Rapport sur le développement humain 2013*. New York, Programme des Nations Unies pour le Développement.

World Bank. (2003). *Poverty reduction strategy sourcebook*.

World Bank. (2013). *Dynamic of poverty and inequality since the emergence of oil production*. World Bank - Africa Region.

World Bank. (2014). *World Development Indicators CR-ROM*. Washington D.C.

Yun, M.-S. (2004). "Decomposing differences in the first moment", *Economics Letters,* 82, 275-280.

Yun, M.-S. (2005). "Hypothesis tests when decomposing differences in the first moment", *Journal of Economic and Social Measurement,* 30, 295-304.

Zambrano, O., Robles, M., & Laos, D. (2014). "Global boom, local impacts: Mining revenues and subnational outcomes in Peru 2007-2011", Inter-American Development Bank Working Paper N°509.

ANNEX 1.

Table A1: Demographic weights, oil revenues shares and ratio by region and county

Regions/ Counties	Demographic weights	Oil shares	Ratio	Regions/ Counties	Demographic weights	Oil shares	Ratio
Batha	**0.0442**	**0.0079**	**0.1792**	**Chari Baguirmi**	**0.0524**	**0.0105**	**0.2011**
Batha-Ouest	0.0179	0.0048	0.2655	Baguirmi	0.0190	0.0053	0.2772
Batha-Est	0.0163	0.0020	0.1213	Chari	0.0166	0.0032	0.1907
Fitri	0.0100	0.0012	0.1193	Loug-Chari	0.0168	0.0021	0.1253
Borkou	**0.0085**	**0.0031**	**0.3620**	**Lac**	**0.0393**	**0.0094**	**0.2395**
Borkou	0.0062	0.0021	0.3471	Mamdi	0.0202	0.0066	0.3252
Borkou Yala	0.0023	0.0009	0.4025	Wayi	0.0191	0.0028	0.1489
Guera	**0.0488**	**0.0135**	**0.2764**	**Logone Occidental**	**0.0624**	**0.1312**	**2.1029**
Guera	0.0156	0.0067	0.4314	Lac Wey	0.0300	0.0655	2.1829
Abtouyour	0.0152	0.0027	0.1777	Dodjé	0.0096	0.0197	2.0410
Barh Signaka	0.0094	0.0013	0.1437	Gueni	0.0083	0.0198	2.3777
Mangalmé	0.0086	0.0027	0.3136	Ngourkosso	0.0144	0.0262	1.8185
Hadjer Lamis	**0.0513**	**0.2150**	**4.1865**	**Kanem**	**0.0302**	**0.0041**	**0.1360**
Dagana	0.0171	0.1290	7.5599	Kanem	0.0139	0.0025	0.1767
Dababa	0.0207	0.0322	1.5583	Nord-Kanem	0.0082	0.0008	0.0992
Haraze Al Biar	0.0136	0.0537	3.9534	Wadi-Bissam	0.0081	0.0008	0.1037
Logone Oriental	**0.0706**	**0.1467**	**2.0787**	**Mayo Kebbi Est**	**0.0702**	**0.0117**	**0.1665**
La Pendé	0.0145	0.0508	3.4958	Mayo-Boneye	0.0214	0.0037	0.1744
Kouh Est	0.0092	0.0215	2.3388	Kabbia	0.0207	0.0009	0.0448
Kouh Ouest	0.0045	0.0084	1.8702	Mayo-Lemié	0.0074	0.0009	0.1214
La Nya	0.0128	0.0246	1.9253	Mont Illi	0.0206	0.0061	0.2966
La Nya Pendé	0.0098	0.0158	1.6178	**Moyen Chari**	**0.0533**	**0.0382**	**0.7177**
Monts de Lam	0.0198	0.0257	1.2933	Barh Koh	0.0278	0.0239	0.8592
Mandoul	**0.0569**	**0.1406**	**2.4709**	Grande Sido	0.0097	0.0090	0.9252
Mandoul Oriental	0.0232	0.0833	3.5912	Lac Iro	0.0158	0.0054	0.3411
Barh Sara	0.0197	0.0278	1.4107	**Salamat**	**0.0274**	**0.0157**	**0.5729**
Mandoul Occid.	0.0140	0.0295	2.1049	Barh Azoum	0.0165	0.0077	0.4678
Ouaddaï	**0.0653**	**0.0140**	**0.2149**	Aboudéia	0.0059	0.0067	1.1403
Ouara	0.0298	0.0113	0.3808	Haraze Manguei.	0.0050	0.0013	0.2563
Abdi	0.0097	0.0012	0.1266	**Tandjilé**	**0.0600**	**0.0527**	**0.8796**
Assoungha	0.0259	0.0015	0.0569	Tandjilé Est	0.0231	0.0211	0.9146
Mayo Kebbi O.	**0.0511**	**0.0041**	**0.0799**	Tandjilé Ouest	0.0369	0.0316	0.8578
Mayo-Dallah	0.0303	0.0025	0.0809	**Barh-El-Gazal**	**0.0233**	**0.0061**	**0.2630**
Lac Léré	0.0208	0.0016	0.0785	Barh-El-Gazal Sud	0.0177	0.0043	0.2424
Wadi Fira	**0.0460**	**0.1029**	**2.2345**	Barh-El-Gazal N.	0.0056	0.0018	0.3280
Biltine	0.0153	0.0949	6.1961	**Ennedi**	**0.0152**	**0.0505**	**3.3213**
Darh Tama	0.0162	0.0032	0.1940	Ennedi	0.0055	0.0490	8.9214
Kobé	0.0145	0.0049	0.3361	Wadi Hawar	0.0097	0.0015	0.1577
Sila	**0.0277**	**0.0020**	**0.0737**	**Tibesti**	**0.0023**	**0.0219**	**9.5085**
Kimiti	0.0277	0.0012	0.0442	Tibesti Est	0.0013	0.0213	16.3716
Djourouf Al Alm.	0.0074	0.0008	0.1107	Tibesti Ouest	0.0010	0.0006	0.6098

Note: In absence of data on oil revenues redistribution within the capital city N'Djamena, this region (about 10% of total population) is considered as a county and its ratio greater than 1.
Source: From CCSRP (2012) and INSEED (2013).

ANNEX 2.

Table A2: Determinants of poverty – dependent variable $\ln(y/z)$

Characteristics	Variables under characteristics	Group A (N_A = 3796)	Group B (N_B = 5463)	National level (N = 9259)
1. Demographic characteristics of the household (head)	Household size	- 0.081 (0.008)***	- 0.092 (0.007)***	- 0.088 (0.005)***
	Sex	0.033 (0.055)	- 0.019 (0.044)	- 0.009 (0.034)
	Age	0.001 (0.007)	- 0.014 (0.005)***	- 0.009 (0.004)**
	Age^2/100	- 0.005 (0.007)	0.011 (0.005)**	0.005 (0.004)
	Couple	0.041 (0.056)	- 0.037 (0.050)	0.009 (0.037)
2. Educational status of the household (head)	Primary educ.	0.067 (0.048)	0.135 (0.037)***	0.102 (0.030)***
	Secondary educ.	0.192 (0.066)***	0.303 (0.055)***	0.244 (0.044)***
	Higher educ.	0.368 (0.056)***	0.507 (0.088)***	0.396 (0.045)***
3. Labour market status of the household (head)	Unemployed	- 0.045 (0.071)	- 0.016 (0.063)	- 0.014 (0.049)
	Self-employed	0.043 (0.054)	0.021 (0.041)	0.043 (0.033)
	Wage-earner	0.090 (0.056)	0.216 (0.060)***	0.164 (0.040)***
4. Wealth status of the household	Land	0.010 (0.003)**	0.007 (0.002)***	0.007 (0.002)***
	Houses	0.012 (0.006)*	0.020 (0.004)***	0.016 (0.003)***
	Livestock	0.012 (0.004)***	0.014 (0.002)***	0.013 (0.002)***
5. Access to public services	Time to water	- 0.001 (0.001)	- 0.000 (0.000)	- 0.000 (0.000)
	Time to health	- 0.000 (0.000)	- 0.001 (0.000)***	- 0.001 (0.000)***
6. Characteristics of the living environment of the household	Urban	0.476 (0.052)***	0.308 (0.027)***	0.359 (0.025)***
	Schooling	- 0.711 (0.134)***	- 0.613 (0.077)***	- 0.535 (0.065)***
	Poverty	- 1.876 (0.203)***	- 2.079 (0.139)***	- 1.819 (0.119)***
	Unemployment	0.770 (0.293)***	0.625 (0.256)**	0.411 (0.191)**
	Agriculture	0.281 (0.146)*	0.106 (0.096)	0.039 (0.082)
Constant		1.049 (0.197)***	1.588 (0.131)***	1.371 (0.112)***

*Note: The robust standard errors are reported in the parentheses. ***, ** and* indicate the significance levels at 1, 5 and 10% respectively. Group A is the reference group of comparison. Source: From ECOSIT3.*

LES DISPARITÉS RÉGIONALES DE PAUVRETÉ AU TCHAD : L'IMPACT DE LA POLITIQUE DE REDISTRIBUTION DES REVENUS PETROLIERS

Résumé - *Cet article analyse les déterminants des disparités départementales de pauvreté au Tchad après la mise en place d'une politique de redistribution des revenus tirés de l'exploitation du pétrole. Les données proviennent de la dernière Enquête sur la Consommation et le Secteur Informel au Tchad (ECOSIT 3) et du Collège de Contrôle et de Surveillance des Revenus Pétroliers (CCSRP). L'incidence de la pauvreté est estimée séparément pour deux groupes de départements définis selon les montants de revenus pétroliers reçus rapportés à leur poids démographique. Les résultats font apparaître une forte disparité de pauvreté entre ces deux groupes : le groupe de départements ayant reçu une part relativement faible de revenus pétroliers connaît un taux de pauvreté plus élevé que l'autre groupe. Les différences de pauvreté sont expliquées à l'aide de la méthode de décomposition de Blinder-Oaxaca adaptée à l'analyse de la pauvreté proposée par Yun (2004, 2005). Les caractéristiques départementales expliquent 78,3% des écarts de pauvreté, tandis que 21,7 % est expliqué par l'impact différencié de ces caractéristiques sur les deux groupes de département. Il apparaît nécessaire, pour promouvoir l'inclusion économique au Tchad, de mettre en œuvre une politique de redistribution des revenus pétroliers mieux adaptée aux besoins spécifiques du développement local.*

Mots-clés - TCHAD, INCIDENCE DE LA PAUVRETÉ, DISPARITÉS LOCALES, REVENUS PÉTROLIERS, MÉTHODE DE BLINDER-OAXACA