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Deciphering Regional Consumption-Gap in Tunisia:
A Micro-Econometric Analysis Based Desegregated well-being Data

Amal Jmaii[1]

Abstract: This paper uses household desegregated expenditure data to assess the differential impact of consumption expenditure and its components across different expenditures quintiles, between urban and rural regions in Tunisia. It also provides assessment of poverty at east-west level. Using a new approach of semiparametric censored regression model, this paper offers another analysis of the sensitivity of some indicators such as health, food and education, with regional disparity in Tunisia. Socio-demographic characteristics and economic factors, such as educational level, employment sector, and returns to those characteristics (i.e. quality of hospital equipment, level and quality of educational system etc.) were found to be important determinants of urban-rural household welfare disparities. Meanwhile, the paper proposed some policies recommendation based on micro/macro mechanisms in order to reduce regional inequality in Tunisia.

Keywords: Semiparametric censored-regression; household expenditures; consumption-gap; Tunisia

JEL Classification: A10; C14; C19

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1. Introduction

Poverty and income inequality continue to clearly define socioeconomic landscape of developing countries, especially in Africa (Omomowo (2018)). As evidenced by the Millennium Development Goals, the extent of poverty has given rise over the past decade to a global awareness of the need to adopt a coherent strategy to combat this phenomenon. Considered as a social/economic goal, reducing regional welfare-gap remain a priority on the development agenda of governments. Thus, there exists an urgent need to assess the source of persistence consumption-inequalities at national levels (Jmaii et al. (2017)). Measures of household-unit level consumption expenditures are central to determine household well-being as the consumption of good and services is considered as an important determinant of individual welfare (Deaton (1974), Deaton (1997), Deaton and Zaidi (2002)). The challenges of satisfying household consumption needs associated with the absence of well-structured collective consumption, could influence for the condition defined as poverty. Expenditures have significant implications for poverty and regional disparities in developing countries (Mussa (2014), Jmaii et al. (2017)). The analysis of the distribution of consumption allows to better assess the relevance of social policies. In fact, quality of life in a country depends on how consumption is distributed throughout its population (Ravallion and Chen (1997), Cutler and Katz (1992), Kanbur (2001)). Specifically in Tunisia, poverty and regional inequality prevails. A strong variation in poverty rates between regions may cause a sense of injustice and social instability. Poverty in Tunisia, as many developing countries, is concentrated in rural areas and in some regions of the country, particularly the West/rural (INS report;

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Jmaii et al. (2017); Belhadj (2011a); Jmaii and Belhadj (2017)). Thus, the analysis of poverty and inequality at the regional level seems very important to better understand and define the priorities for regional development. In addition, it is widely accepted that the increase in inequality between regions indicates that the alienation and the feeling of injustice increases, as the average living standards become more unequal (Jmaii et al. (2017), Belhadj and Matoussi (2007), Belhadj (2011b)).

This paper focuses on the determinants of regional household welfare gap in Tunisia. Welfare is measured by real per capita household expenditure. We examine regional inequalities in Tunisia by analyzing the rural-urban gap in different category of consumption expenditures. Our empirical analysis relies on the Tunisian Living Standards Surveys from 2010 (the most recent-available survey). The paper makes an empirical contribution to the literature compared to previous studies on the same topic, namely Salehi-Isfahani et al. (2014), Mussa (2014) and Pieters (2011). We use semiparametric censored regression model on log disaggregate consumption expenditures (Chernozhukov and Hong (2002); Chernozhukov et al. (2015); Yang et al. (2017)).

This method enable to take into account the existence of a high number of zeros (especially for education expenditures). The study offers an analysis of the sensitivity of some indicators such as health, food and especially education, with regional disparity. The objective is to identify the extent of regional inequality in Tunisia and to look on how we can improve the fight against it in relation to the millennium development goals.

The remainder of this paper is divided into five sections. Section 2 deals with a brief overview on regional inequality. Section 3 presents some facts about regional welfare disparities in Tunisia. The methodology as well as a description of the used data are discussed in section 4. Section 5 focuses on empirical results. Finally, section 6 conclude and give rise some recommendations.

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2. Literature on Regional Inequality: An overview

There is a consensus on regional inequalities reduction strategies, designed to facilitate empowerment of poor or marginalized (Yeo and Moore (2003), Adams et al. (2004), Brinkerhoff and Goldsmith (2003), Basu (2006) and Blocker et al. (2013)). Traditionally, literature on inequality has emphasized relationship between inequality, poverty and economic growth (Lewis (1954); Kuznets (1955)). In an investigation study between 1998 and 2013, Agyire-Tettey et al. (2018) found a significant spatial disparities in consumption expenditure across selected quantiles and explained the rural-urban consumption gap by differences in returns to household's endowments. Income distribution is an important indicator for analysing poverty and economic development in a country. A better understanding of the pattern and drivers of regional inequality is critical for enhancing social cohesion and inclusive growth in the region. Considerable work has been undertaken on regional inequalities related to developing countries. Nguyen et al. (2007) discuss the welfare inequality between urban and rural areas from 1993 to 1998 in Vietnam. They concluded that inequality differences between the two regions were due to education, ethnicity, and age. In the same context, Albrecht et al. (2009) uses quantile regression, based on Machado Mata decompositions, for the analysis of the wage gap between genders in the Netherlands. They attributed wage gap to the differences between the returns due to the labor market rather than differences in characteristics. Based on Semi-parametric Regression, Jmaii et

al. (2017) examine regional welfare disparities in Tunisia and found that difference between rural poor households and urban poor households is due essentially to characteristic effects. Greer et al. (1986) proposed a new methodology to measure food poverty and assess the determinants of food consumption and its pattern, using micro-detailed data from Kenya.

In a dynamic analysis of the patterns of household welfare in Jordan, Mansour (2012) highlighted a slight decline in inequality during 2002 – 10 mostly driven by a regional catching-up effect. In a study presenting the pattern of income inequality in the MENA region, Ncube et al. (2014) found that income inequality reduces economic growth and increases poverty in the region. In an analysis of the urban-rural gap in North African countries, Boutayeb and Helmert (2011) show that these countries experienced considerable development in social, economic and health indicators. Unfortunately, regions/socioeconomic groups of the same country have not benefited by these improvements equally. Bibi and Nabli (2009) found that the MENA region has a relatively higher level of income/expenditure inequality, compared to other regions. Adams Jr and Page (2003) revealed that compared to other regions, the MENA has a lower income inequality and poverty rate due to public sector employment and international migration/remittances. The regional gap in education has also been of concern in some studies on Arab countries. In an empirical analysis of inequality of education opportunities in MENA, Salehi-Isfahani et al. (2014) show that inequality in educational achievements is mainly explained by inequality of opportunities. Likewise, Krafft and Assaad (2016) highlighted that inequality of opportunity — unequal resource allocations on the basis of circumstances independent from individuals ' control — can offend people ' s sense of fairness, causing anger and frustration among marginalized groups.

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3. Regional Welfare Disparities in Tunisia: Some Facts

Tunisia still succeed in reducing poverty, but regional inequality keep up to be a challenge and poverty remains dominant in particular regions of the country (i.e. rural and west areas). Several national programmers was implemented to reduce poverty and regional disparities (more details in (Jmaii et al. (2017), p. 662). As a matter of fact, Tunisia has considered as one of the faster growing economies in the MENA region (CHEMINGUI and Sánchez (2012)). The Tunisian economy has recorded an upward trend during the period of 1980–2010. Nation's output increased at an annual rate of 4.3 percent with 4.5 percent since 2000. Unfortunately these improvements have not been distributed fairly between the different regions. The coastal area still have the largest share of wealth. This inequality is most evident in the consumption pattern of the two regions. Meanwhile, as a developing country, Tunisia has engaged with the Millennium Development Goals and has achieved a considerable progress in relation to global poverty reduction but regional disparities still a challenge. This gap - Among other factors - has played a major role in leading to the Tunisian uprising in 2011.A conclusion section is not required. Although a conclusion may review the main points of the paper, do not replicate the abstract as the conclusion. A conclusion might elaborate on the importance of the work or suggest applications and extensions.

3.1. Rural-urban consumption gap in Tunisia

The economic/social disparities between rural and urban areas and their impact on the individuals' standard of living represent an important issue for Tunisia. The population below the poverty line is about 15% (INS report, 2010) and the level of rural poverty were being often double those in urban areas. Despite economic developments in Tunisia, there still wide gap between rural and urban regions (figure 1: The prevalence of poverty in urban area dominates rural area at every point of the distribution) with respect to living condition and economic empowerment
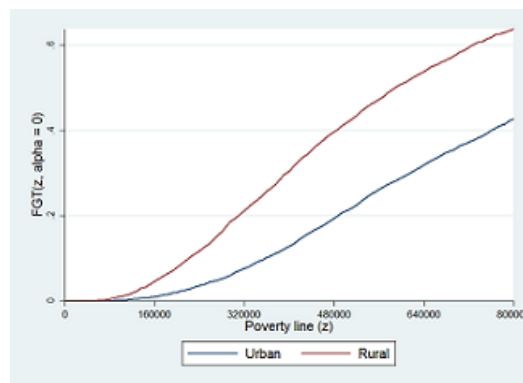
Figure 1. First Order Dominance Curve According to Urban-Rural Decomposition

Source: Own computing based on INS (National Institute of Statistics) data, Tunisia 2010

3.2. West-east consumption gap
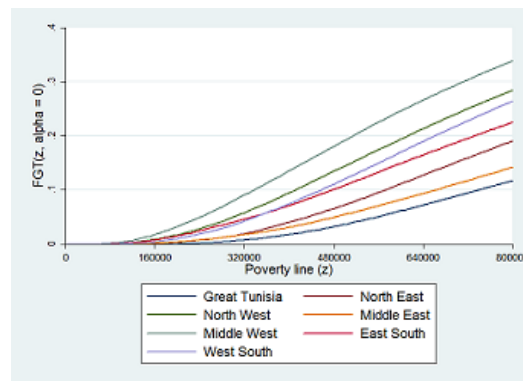
Figure 2. First Order Dominance Curve According to West-East Decomposition

Source: Own computing based on INS (National Institute of Statistics) data, Tunisia 2010

A considerable variation in poverty rates between regions (table 1) may be the cause of social instability and population's movement in Tunisia. The decomposition of the impact of global poverty by region - Tables 1 - is considered as an important profile. Poverty rate varies significantly between regions of the country. Middle west and North west remain the poorest with an incidence of poverty of about, respectively, 31,2% and 25,4 % (table 1). Figure 2 shows the relative distribution of expenditure per capita adjusted according to west-east decomposition. We observe that the Middle West distribution is

stochastically dominated by the other groups. Therefore, in any point of the distribution- no matter what poverty line was chosen- the proportion of poor households is higher in west area than other regions. In addition, a clear ambiguity between the South East and the South West areas reveals, as the cumulative curves intersect (figure 2). Meaning that any change (i.e. increase or decrease) in poverty line can generates a possible change in the ranking of the two regions. Dominance stochastic of first order support literature reviews about the fact of west-east disparities in Tunisia and reveals that the extent of monetary poverty is on average higher in the interior regions than those of the Sahel. From this point, studying deeply regional inequality, in Tunisia, enable to better structure priorities policies for regional development.

Table 1. Relative and Abslute Contribution of Poverty by Region

	Headcount ratio			Poverty Gap Measure			Squared Gap Measure		
	P0	AC	RC	P1	AC	RC	P2	AC	RC
Greater Tunis	0.071	0.0113	0.050	0.007	0.009	0.064	0.002	0.0003	0.023
	(0.004)	(0.002)	(0.004)	(0.003)	(0.0006)	(0.004)	(0.001)	(0.0003)	(0.004)
North East	0.098	0.013	0.092	0.0209	0.014	0.095	0.007	0.0009	0.060
	(0.013)	(0.002)	(0.005)	(0.005)	(0.0008)	(0.005)	(0.003)	(0.004)	(0.006)
North West	0.254	0.036	0.242	0.0704	0.009	0.2473	0.028	0.004	0.249
	(0.013)	(0.002)	(0.006)	(0.007)	(0.001)	(0.008)	(0.005)	(0.008)	(0.010)
Middle East	0.064	0.012	0.082	0.0015	0.003	0.07180	0.0009	0.001	0.064
	(0.011)	(0.002)	(0.006)	(0.004)	(0.001)	(0.006)	(0.003)	(0.0006)	(0.007)
Middle West	0.312	0.047	0.327	0.098	0.015	0.377	0.042	0.006	0.417
	(0.012)	(0.003)	(0.007)	(0.007)	(0.001)	(0.009)	(0.006)	(0.001)	(0.012)
South East	0.135	0.013	0.095	0.034	0.006	0.096	0.0125	0.0013	0.084
	(0.016)	(0.002)	(0.006)	(0.008)	(0.001)	(0.008)	(0.006)	(0.0008)	(0.010)
South West	0.150	0.016	0.108	0.036	0.004	0.099	0.014	0.0015	0.098
	(0.015)	(0.002)	(0.006)	(0.008)	(0.001)	(0.007)	(0.005)	(0.0007)	(0.009)
Total	0.145	0.145	1	0.039	0.039	1	0.016	0.016	1

a; Source: Own computing based on INS (National Institute of Statistics) data, Tunisia 2010 (http://www.ins.nat.tn/indexfr.php (last visit: April 1, 2018))

b; Absolute contribution to national poverty (AC) = Percentage of Tunisians living in this area * Incidence of poverty in the region (%);

c; Relative contribution to national poverty (RC) = CA / National Poverty Rate (%);

d; P_0, P_1 and P_2 are respectively Headcount Ratio, Poverty Gap Measure and Squared Gap Measure Foster et al. (1984).

4. Methodology

4.1. Data

Consumption expenditures measure enable to better highlighting the situation of poor and underprivileged individuals by taking into consideration their access to national anti-poverty programs and saving usage. This measure would also identify haw poor individuals spend their wage (i.e. if they spend the majority of their income on food or health care, they will maybe unable to afford education expenditures or proper housing). We used data from the 2010 National Survey on Households' Budget, Consumption and Living Standard –provided by the INS[1]–the recent available survey. This type survey is conducted every five years and provides socio-demographic/economic characteristics of both

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[1] The entire data sets are available on http://www.ins.nat.tn/indexfr.php (last visit: April 1, 2018)

households and individuals. Indeed, for 2010, it takes a representative sample of 11,281 households with 50,371 individuals. The choice of explanatory variables is based on the literature (Nguyen et al., 2007; Skoufias and Katayam, 2011) and is validated by the Schwarz Bayesian Criterion (SBIC). Therefore, we use household size, the proportion of children under 15 years old in each household and the gender of the household head.

As far as the household education and employment characteristics are concerned, we haveincluded the variable of schooling of household head: illiterate (as reference), primary, secondary and higher level. For the employment variable, we select four sectors, respectivelygovernmental sector (as reference),private sector, self-employed and agricultural sector.Since there are frequently monetary transfers from foreign countries, we use a dummyvariable depending on whether a household has received foreign remittances or not.Table 2 reports summary statistics about the used variables in the proposed methodologyin section 5. Statistics reveals that household heads in rural areas are less educated thantheir counterparts in urban ones. Indeed, around 47.68 % of rural household heads areilliterate compared to only 24.07 % in urban areas. Outstandingly, statistics record ahigh educational level (10%) for urban household heads against only 1.29 % for ruralones. These statistics show a substantial disparity between rural and urban householdheads. This gap may be explained by the fact that students in rural/west zone suffer fromgeographic isolation and in most of the time they can't continue post-secondary level dueto insufficient local educational opportunities and moving to another region is expensive.This major difference is also reflected in the employment status of household head. Theshare of rural-individuals employed in the governmental sector is only 8 % compared to theurban areas. Private sector highlight also some disparities. 11.45 % of urban-householdshead work in private sector in reference to the rural zone where the rate touched down5.32 % (half of the urban one).

In relation with consumption mode of poor/non poor households and specificity of eachregion, it seems important to dissect regional consumption-gap taking into considerationthe importance of desegregated consumption expenditures. Education, health and housingexpenses are the most important factors in determining individuals/households well-beingand may strengthens regional household consumption-expenditure disparities Mussa (2014). In the following, we dis-aggregate total household expenditure measured inTunisian dinars into four expenditure components as follows (table 3):

• Food: expenditure on food and beverages including food and beverages consumedfrom vendors and cafes.

• Education: school fees (registration and enrolment), quire-books and other materials, school travel expenses, school uniform (if required) and other related expenses.

• Health: hospitalization, drugs, and out - patient expenses.

• Non-food and other expenditures: including administrative expenses (for examplepurchase of stamps), "Zakat" expenditures[1], Housing: including rent, home improvements, house maintenance and repair and mortgage payments. Clothing: includingthe purchase of clothing and accessories, Telecommunication and transport: telephone, mobile and internet laptops expenses as well as transport and travel expensesbetween cities/regions.

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[1] According to "Chariaa" a muslim is required to give Zakat -some amount (obligatory charity)- to poor individuals/households

Table 2. Rural-Urban Households Characteristics

variables	Rural %	Urban %
Gender		
Men	85.23	84.08
Women	14.77	15.92
Education		
Illiterate	24.07	47.68
Primary level	36.33	38.59
Secondary level	29.67	12.96
Higher level	9.91	1.29
Area		
East	71.10	28.9
West	28.89	71.11
Sector Governmental Sector	19.93	8
Private Sector	11.45	5.32
Self employed	21.29	10.49
Agricultural Sector	4.8	29.85
Housing		
Homeowner	84.39	95.17
Tenant	11.51	1.02
Free housing	4.09	3.8
Foreign transfer	1.58	1.21

Table 3. The Distribution of Different Household Consumption-Expenditure-Categories

Expenditures	Foods	Education	Health	Non-food/other expenditures
Number of observation	11281	11281	11281	11281
Mean	13.427	8.136	10.831	5.910
Standard Deviation	0.618	1.102	2.539	3.220
Skewness	-0.178	-0.389	-2.966	-0.945
Kurtosis	4.281	5.515	13.344	2.978
Number of "0"	0	2629	243	3953

*: *Source: Own computing based on INS (National Institute of Statistics) data, Tunisia 2010 .*

(http://www.ins.nat.tn/indexfr.php)

**: Desagregate expenditures transformed into natural logs

4.2. Semiparametric Censored Regression Model

The objective of this study is twofold; first we want to dissect the gap between poor/non-poor urban households and poor/ non-poor rural households, taking into consideration the west-east gap. Second, we want to stress the role of some consumption expenditures (educational level, health, etc.) in regional disparities aggravation in Tunisia. To meet these two goals, censored quantiles regression model is used. On the one hand, we consider that quantiles represent an approximation of different poverty lines (Jmaii et al. (2017)). Lower quantiles can represent the proportion of poor in the distribution while higher

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quantiles represent the richest proportion[1] . On the other hand, censored quantile regression enable to deal with the higher number of "0" in some category of consumption expenditures (table 3).

Table 4. Urban-Rural Decomposition of Disagregated Consumption Expenditures Per Person and Per Millims

category	Urban	Rural	Pooled
Food	938783	641905	836763
Health	270883	144704	227522
Education	116131	38624	89495
Non-food and other expenditures	1668553	741701	1205295
Total	3102085	1643488	2600782

*Source: INS (National Institute of Statistics) data, Tunisia 2010 http://www.ins.nat.tn/indexfr.php).

We consider the following model, inspired from (Tobin (1958)):

$$y_i^* = x_i'\beta + \varepsilon_i$$

Where y_i^* is the latent variable and it can be observed only if it is higher than some point y_i^0(named as the threshold point), for i = 1, ..., n, and ε_i is iid distributed.

The observed dependent variable as $y_i = \max\{y_i^0, x_i'\beta_\theta + \varepsilon_{\theta i}\}$ and unit i is observed only if y_i^* cross y_i^0:

$$y_i = \begin{cases} n.a \text{ if } y_i^* \leq y_i^0 \\ y_i^* \text{ if } y_i^* > y_i^0 \end{cases}$$

Conditional quantile functions (Koenker and Bassett Jr (1978))are given by:

$$Q_{Y_i X_i}(\theta X_i) = F^-1(\theta) + X_i'\beta$$

And can be estimated setting $\rho_\theta(\varepsilon) = \varepsilon(\theta - I(\varepsilon < 0))$, as follow:

$$\hat{\beta} = argmin \sum (y_i - max(y_i^0, x_i'\beta_\theta))$$

Where $\rho_\theta(\varepsilon)$ is the control function and I(.) represent the characteristicfunction. This estimation is true as long as the matrix of values of explanatory variables(ie. X = xi) contains a constant able to absorb the θ dependent contribution F$^{-1}(\theta)$.In accordance with Chernozhukov and Hong (2002) and Yang et al. (2017)[2] approach'swe propose the following steps:

• *Step 1*: estimate a probability of the model as follow:

$$\sigma_i = \rho(x_i'\gamma) + \varepsilon_i$$

whereσ_i is the "non-censoring" indicator and $\dot{x}_i'$ takes into account the transformationof the couple (x_i, y_i^0). Second, we select the simple $J_0 = \{i: \rho(x_i'\gamma) > 1 - \theta + c\}$, we consider that c is not too small

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[1]According to Ravallion (1998), monetary poverty line is fixed at a certain percentage of thedistribution of consumption expenditures (or income), usually the mean or the median.

[2]The proposed method by Yang et al. (2017) adapts different forms of censoring including right, left and doubly and interval censored data

and $0 < c < \theta$. For choosing the value of c, theauthors suggest a comparison between the size of J(c) when c = 0 and when it takesother values (for example, c = qth quantile).

• **step 2**: obtain the inefficient initial estimator $\hat{\beta}_0(\theta)$by the standard quantileregression program:

$$\min(\beta) \sum_{i \in J_0} \rho_\theta(y_i - x_i')$$

then we select $J_1 = \{i: \rho(x_i'\gamma)\hat{\beta}_0(\theta) > c_i + \sigma_n\}$

• **step 3**: running the minimization program using J1 instead of J0 to get thethree-step estimator denoted by $\hat{\beta}_1(\theta)$.

• **step 4**:4:(This step is optional), we repeat previous step one (or more) time using thesample$J_\tau = \{i: \rho(x_i'\gamma)\hat{\beta}_0(\theta) > c_i + \sigma_n\}$, in the place of J_1, with $\tau = [1, ..., k]$.

Finally, we get the K-step estimator denoted by $\hat{\beta}_\tau(\theta)$. This estimator is considered asminimum-variance efficient estimator.

5. Empirical Results and Analysis

Using a Chow Test[1], we divided the distribution into two sub-sample: rural and urban.In a second step we applied the proposed methodology for both rural and urban sampleand for the four log-expenditure items (per capita) selected above. Formally, we runfour quantile regressions for the two sub-sample separately. This search framework gaveus interesting results regarding the urban-rural consumption disparity in Tunisia. Inparticular, it emphasizes the importance of education, health and food expendituresas principal responsible factors for regional inequality. It therefore seems important tounderstand the composition of these items and examine their variability depending onhousehold socioeconomic characteristics. As it is indicated in the methodology section weconsider that Lower quantiles can represent the proportion of poor in the distributionwhile higher quantiles represent the richest proportion. Further, coefficients on somevariables, such as age and gender of household head, size of household, do not showparticularly interesting results across quantiles, but some characteristics – educationallevel, employment sector, foreign remittances and west region - are worth examining moreclosely.

5.1. Regional Gap in Education Expenditures

Results of our methodology are given in table 5. We underline the existence of value "zero" for all household characteristics in rural areas for the 5th quantile. This find prove that poor rural households unable to afford education expenditures as they spend themajority of their income on food or health care. In fact, this part represents the mostvulnerable and poorest area compared to other regions of the country. Generally, individualskeep leaving education at the primary level because they do not have the resourcesto finance their education. In addition, differences between urban-rural household's ineducational expenditures remain greater for women than for men. The result showsalso that

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[1]we test if rural coefficients are systematically different from urban coefficients. We found thatp-value is less than 0.05, this is mean that we should reject the null hypothesis of similar coefficients forthe two samples.

expenditure devoted to education increase with the public and private sectorattesting that individuals that are more educated are more likely to have a good job anda decent standard of living. This relationship is stronger in urban areas. The estimationresults also show that compared to the east area, urban households the west spend lesson education. In parallel, for rural areas of this region there are no significant results.Indeed, in Tunisia, leading schools and universities are only localized in the urban regionsparticularly the east area. From these results, we can highlight that urban differential isnearly constantly positive and substantial; consistent with the hypothesis that educationis paying off better for urban areas with specializations that improve the productivity ofeducated people. The patterns of returns to education across the quantiles vary betweenthe West and the East. The returns to education show a significant increase at the upperquantiles in the east urban households. This finding supports the fact that rural/westareas are more vulnerable and exposed to poverty than urban/east areas since it has thelowest part of consumption expenditure.

Table 4. Censored quantiles Regressions of Education Expenditures

Quantiles	0.05				0.25		0.5		0.75		0.9		0.95	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Intercept	0	32.916*	-18.307*	-8.748*	-11.42*	-15.723*	-11.36*	-2.647*	1.526*	6.202*	6.762*	9.638*	10.596*	12.133*
Men	0	-0.080	-0.230*	-0.224*	-0.536*	0.183	-0.762*	-0.040	-0.547*	-0.287*	-0.387*	-0.359*	-0.251*	-0.236*
Household Size	0	0.202*	0.596*	0.265*	0.597*	0.766*	0.520*	0.301*	0.223*	0.088*	0.082*	0.011	0.033	0.010
% Children (Under 15 Years)	0	15.793*	13.615*	15.382*	12.021*	5.199*	3.400*	1.428*	0.939*	0.140	-0.378*	-0.502*	-1.081*	-0.795*
Age	0	1.137*	0.535*	0.452*	0.367*	0.639*	0.726*	0.424*	0.329*	0.191*	0.186*	0.117*	0.066*	0.038*
Age2 *100	0	-1.005*	-0.391*	-0.189*	-0.303*	-0.609*	-0.712*	-0.409*	-0.312*	-0.175*	-0.174*	-0.105*	-0.061*	-0.033*
Tenant	0	-0.378	-0.109	-0.217	0.760	0.212	0.009	0.129	-0.055	0.101	0.090	-0.002	0.346	0.002
Free Housing	0	0.075	-0.408	-0.203	-0.288	-0.183	-0.009	0.077	-0.238	0.009	-0.303*	0.038	-0.561*	-0.078
Primary Level	0	0.124	0.291*	0.277*	0.923*	2.392*	0.728*	0.890*	0.347*	0.666*	0.190*	0.486*	0.100	0.385*
Secondary Level	0	0.614*	0.231*	0.614*	0.825*	3.509*	1.075*	1.672*	0.577*	1.315*	0.441*	1.113*	0.612*	1.030*
High Level	0	2.446*	2.575*	2.112*	2.200*	4.603*	1.747*	2.663*	1.074*	2.085*	0.891*	1.714*	0.960*	1.592*
Gov_sector	0	0.259	0.621*	0.895*	1.389*	0.604*	0.409*	0.214*	0.451*	0.144*	0.273*	0.274*	0.178	0.093*
Priv_sector	0	-0.387	1.218*	0.397*	1.002*	0.556*	0.546*	0.214*	0.517*	0.208*	0.359*	0.242*	0.141	0.137*
Agri_Sector	0	-0.143	0.067	-0.011	0.339*	-0.165	0.339*	-0.130	0.247*	-0.229	0.078	-0.246*	0.078	-0.203
Self	0	0.077	0.398*	0.298*	1.003*	0.586*	0.240*	0.189*	0.372*	0.082	0.495*	0.161*	0.374*	0.074
West Region	0	-0.086	-0.067	-0.054	-0.118	-0.501*	-0.188	-0.310*	-0.059	-0.280*	0.039	-0.330*	-0.016	0.300*
Foreign transfer	0	0.310	0.179	0.345*	0.358	0.612	0.906*	0.262	0.463	-0.255	0.785	-0.143	-0.003	-0.148

* Coefficients are different from 0 at 95%

Source: Own computing based on INS (National Institute of Statistics) data, Tunisia 2010.

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Table 5. Censored Quantiles Regressions of Food Expenditures

Quantiles	0.05		0.10		0.25		0.5		0.75		0.9		0.95	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Intercept	12.746*	13.937*	12.481*	14.062*	13.167*	14.249*	13.678*	14.378*	14.252*	14.442*	14.838*	14.655*	14.801*	14.677*
Men	0.135	0.005*	0.157*	-0.003	0.102*	-0.002	0.018	-0.024*	-0.046	-0.016	-0.074*	-0.003	-0.091*	0.002
Household size	-0.095*	0.002*	-0.104*	0.003*	-0.102*	0.015*	-0.106*	0.021*	-0.106*	0.009*	-0.098*	0.004*	-0.088*	0.003*
% children (Under 15 years)	-0.586*	0.001	-0.489*	0.022	-0.520*	0.022	-0.533*	0.044*	-0.586*	0.020*	-0.580*	0.006	-0.568*	0.002
Age	0.015	-0.001*	0.022**	-0.003*	0.014*	-0.009*	0.011*	-0.012*	0.005	-0.004*	-0.006	-0.003*	-0.002	-0.002*
Age2 *100	-0.015	0.001	-0.019*	0.002*	-0.010	0.007*	-0.007	0.011*	-0.002	0.004*	0.006	0.002*	0.003	0.0016*
Tenant	0.121	-0.013*	-0.0207	0.022*	-0.002	-0.024*	-0.063	-0.053*	-0.058	-0.019*	-0.166*	-0.026*	0.237*	0.022*
Free housing	-0.149	-0.002	-0.124	-0.012*	-0.017	-0.035*	-0.040	-0.047*	-0.119*	-0.021*	-0.233*	-0.011*	0.164*	-0.014
Primary Level	0.102*	-0.002	0.103**	-0.001	0.105*	0.007	0.129*	0.049*	0.129*	0.032*	0.092*	0.005*	0.131*	-0.0001
Secondary Level	0.289*	-0.007*	0.223*	-0.010*	0.256*	-0.018*	0.281*	0.015	0.264*	0.033*	0.241*	0.005	0.332*	-0.003
High level	0.602*	-0.011*	0.570*	-0.008	0.640*	0.018*	0.657*	0.019	0.627*	0.026*	0.514*	-0.001	0.565*	-0.0008
Gov_sector	0.308*	-0.004	0.334*	-0.002	0.203*	-0.003	0.111*	-0.010	0.073*	-0.003	-0.036	-0.001	-0.031	-0.007
Priv_sector	-0.021	0.007*	0.134	0.010*	0.197*	0.008	0.162*	-0.005	0.092*	-0.019*	-0.012	-0.015*	-0.143	-0.011*
Agri_sector	0.143*	0.015*	0.272*	0.025*	0.109*	0.072*	0.117*	0.038*	0.111*	0.022*	0.062*	0.009*	0.036	0.004
Self	0.232*	-0.006*	0.143*	-0.011*	0.239*	-0.025*	0.156*	-0.034*	0.116*	-0.008	0.113*	-0.006*	0.081	-0.003
West region	-0.335*	0.254*	-0.272*	0.241*	-0.212*	0.221*	-0.206*	0.270*	-0.177*	0.210*	-0.118*	0.112*	-0.076*	0.096*
Foreign transfer	-0.109	-0.006	0.061	0.001	0.132	0.019	0.186*	0.105*	0.315*	0.119*	0.621*	0.026*	0.489*	0.016*

* Coefficients are different from 0 at 95%

Source: Own computing based on INS (National Institute of Statistics) data, Tunisia 2010.

5.2. Regional Gap in Food Expenditures

Differences in the distribution of food expenditures between urban and rural regions, is the first point to emphasize in this study. In contrast to rural areas, food expenditures of urban households increase with household size. Moreover, for most quantiles we note that there is a positive and significant relationship between food expenditures and education in rural areas. Meaning that education may improves the standard of living in rural areas. Table 4 shows that rural areas in the west region have less food consumption compared to the East region. For both urban and rural zones, a higher level of education increases food expenditure except for the 5th percentile (for urban area). For both urban and rural samples, the coefficients of education are statistically and positively significant. Further, results reveal two different sign of west region for urban and rural distribution. First, all coefficients for rural sample are statistically significant with a negative sign. This mean that rural households in west region spend less on food consumption than east-rural households. Second, all urban coefficients are statistically significant with a positive sign. This mean that urban-west households spend more on food consumption than east-urban households. The receipt of foreign remittances is positively associated with urban and rural food expenditure in the median of the distribution, the 75th, 90th and the 95th quantile. It represent a dummy variable which had a value of 1 if households received foreign remittance or zero otherwise. For 50th quantile, for example, an urban/rural household receiving foreign remittance had approximately 11 (19) per cent higher per capita food expenditure than their counterparts. In particularly, for rural households, the positive relationship between foreign remittance and per capita expenditure rose greatly across the 75th, 90th the 95th quantiles. This prove that obtaining foreign remittance had a positive link with per capita food-expenditure for richer-rural households compared to poorer households.

5.3. Regional Gap in Health Expenditures

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Results highlight a statistically significant and positive relationship between the levelof education and health expenditures. This is true for both urban and rural areas forall quantiles except for the richest of the distribution. Among several explanations forthe link between education and health care is that returns to education, such as higherearnings, ensure better health outcomes and assert that a higher level of education improveindividuals well-being. Further results show a negative association between west regionand health expenditures for all quantiles. A clear message emerges from this results; healthexpenditure in Tunisia is not well targeted to the marginalized regions (west). Further forlower quantile there is no significant relationship between agriculture sector and healthexpenditures. This is true because poor individuals work usually as a migrant workerin this sector so they do not have health insurance and they can not afford treatmentexpenses in most case.

5.4. Regional Rap in Non-Food and Other Expenditures

Results show the importance of non-food and other expenditures in explaining rural-urbanhousehold's consumption gap. On the one hand, results show a positive relationshipbetween educational level and non-food expenditures. This is true for both rural and urbanregions and for all quantiles. One possible explanation for these results is that educationallevel can improve standard of living of poor/non poor individuals. Obviously, clothing, transportation and housing expenditures will increase. On the other hand, there is a significant relationship between government and private sector and non-food expenditures for both urban and rural areas. However, for agriculture sector only urban region shows significant results. Finally, the west dummy variables give rise some noteworthy results. Compared to the west region, the East has the highest living standards; this is clear across all quantile for urban and rural areas. Further, west-households spend less on non-food expenditures (cloth, house, transport ...). This is true as this area have the highest national rate of poverty. Therefore, the priority is mainly to purchase goods needed for survival. The results obtained suggest that the return to employment, education, and other household characteristics are significant indicators of welfare measure in urban and rural regions. Disaggregated household expenditures regression suggested that urban-rural gap could be explained by household endowments and the differences in returns to these endowments. More particularly, rural-poor households who work in agriculture sector are the most vulnerable and affected by poverty. The challenge of policy maker is then to identify specific agricultural/rural development opportunities and focusing on food insecurity and poverty reduction in those areas. Further, the importance of remittances, such as services sector and education are in agreement with previous findings (Jmaii et al. (2017), Jmaii and Belhadj (2017)).

6. Conclusion and Implications for Policy

The goal of this study was to analyse regional disparities in Tunisia from a micro-economic point of view. For this purpose, total household expenditure was disaggregated into four mutually exclusive and exhaustive consumption expenditure items, namely: food, health, education and non-food and other expenditures. We used semi-parametric censored regression model to take into consideration the higher number of "0" in some expenditure items. This methodology gave us a more detailed picture of inequality between rural and urban areas. Indicators can show reliably differences in people's well-being between the two regions. As a result, we assert that education has a much deeper impact on people's

lives than had been previously suggested. The issue of equitable access to education, especially the higher level, is probably a real issue that must be addressed as part of an overall review. A substantial and increasing gap in health existed between urban and rural areas in Tunisia. This result defend the hypothesis that poor rural households spend the majority of their income on food or health care, they will maybe unable to afford education expenditures or proper housing. Results of the proposed methodology are in line with previous studies in Tunisia (Jmaii et al. (2017)) and consistently suggest that policy-makers need to redistribute wealth across regions.

What we did and what we should really do in order to securing a more fair and equal division of wealth in Tunisia? For several decades, the government has implemented reforms that promote education in rural area, especially the west region. Nevertheless, it did not take into consideration the quality of the education program; as a result, educated youth in these areas do not have the capacity to succeed in their national arena and are unable to compete with other graduates in the private market. Indeed, the lack of a good educational level may limit the opportunities for these individuals to find a decent job. This may explain the fact that the gap between the two areas is still wide.

Efficiency and equity remain a challenge for social policy objectives, based on education and health care. In fact, poverty alleviation programs and allocating grants, resources will be allocated more effectively if the most-vulnerable class will be bettertargeted. In addition collecting information about individuals and their economic status, one can distinguish who gains from public grants. The health care financing inequalitymerits ample attention, with need for policy-making to focus on improving the accessibilityto essential health care services, particularly for rural and poor residents. We suggestthat government should gave all rural poor-households an annual amount transfer, ratherthan subsidized health care. Further, attention should be given to farm household's bygovernments, civil society organizations and even the private sector. They should providean institutional environment and inducements that will enable rural-farm householdsthemselves to reduce poverty and achieving agricultural growth.In addition, one of the direct ways to improve the welfareconditions in rural/west regions is to promote a macroeconomic framework for growthenable to operate the market with an efficient manner that attracts investment, createsjobs and generates incomes. To achieve these policies, governments most work on publicgoods improvements (roads, dams, research and development,etc.), in these regions, andpropose investment policies that promote the right balance between spatial equity andeconomic efficiency. Further, macroeconomic instability of the country one can influencethe poor wellbeing. Inflation, for example, is considered as an arbitrary tax which isdisproportionately borne by individuals in lower income brackets. This can have a seriouseffect on the purchasing power of the poor (Fujii (2013)) particularly, poor-individualswho live in rural/west regions where we find potentially higher unemployment rate.

One must be aware that poverty and inequality are multidimensional phenomenon.We should take into consideration the social face to create a socio-economic policies enableto eradicate the regional gap in Tunisia. A comprehensive restructuring of social policycould complement a regional development approach for sustainable poverty reduction andthe establishment of a social justice mentality, which must be reflected at the regionallevel, an issue left for future research.

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