

What drive Regional Economic Inequalities in Tunisia? Evidence from Unconditional Quantile Decomposition Analysis

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Abstract

This paper analyzes the level and main drivers of economic inequality among rural-urban, littoral-inland and nonmetropolitan-metropolitan households in Tunisia using nationally representative data set. On average and across the welfare distribution, households living in privileged regions, mainly in urban and metropolitan areas, are found to be wealthier than their counterparts in rural and nonmetropolitan areas. The analysis finds as well a non uniform inequality (U-shape) across quantiles in the logarithm of household's consumption expenditure per capita suggesting that consumption differentials are found to be much higher at the top end and the bottom than at the middle of the welfare distribution. Using the newly developed methods of decomposition, we endeavor to decompose the distributional welfare differentials among households into endowment effects, explained by differences in households' characteristics, including the head's educational and employment characteristics, and unexplained effects attributable to unequal returns to these covariates. We find that the endowment effects dominate the return effects and contribute more to the overall gap throughout the welfare distribution. General household's characteristics and educational level of the head appear as the main and common drivers of different regional consumption differentials.

Keywords: Regional Inequalities; Unconditional quantile regression decomposition; Tunisia

1. Introduction

Worldwide, the low absolute poverty rate and the high GDP growth are often and broadly used to reveal the pertinence of an economic model. Yet, even if the poverty rate and GDP growth are accepted as good metrics for respectively the social achievements and economic performance of a government, their patterns at the country level may overshadow significant disparities at regional level. Policymakers have several reasons to be concerned about regional and development disparities between different regions in a country. The obvious disconnect between the economic growth and poverty alleviation at international and regional scales has attracted the attention

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of many researchers and policymakers, and boosted them to improving the participation of the poor in the growth process and enhancing more inclusive growth.

The assumption that economic inequality is an ineluctable precondition for growth has been a mainstay of liberal economic theory. Recent researches, particularly over the first two decades of the 21st century, have considered inequality as a double blow to prospects for alleviating poverty, leading to less economic growth and less pro-poor growth (Ravallion, 1997; Chambers and Krause, 2010; UNDP, 2013). The potential wellbeing cost of inequality is strongly linked to different inter-group inequalities, which gives rise to intergenerational transmission of inequities and self-perpetuation of poverty, fuelling social tensions and conflicts in a society (Stewart and Langer, 2007; Kabeer, 2010). The growing regional disparities coupled with deteriorating standards of living and increasing perceptions of exclusion in lagging areas were among the main reasons that prompted people to revolt against the uneven distribution of wealth, seeking a new model of economic, political, and social participation and development. Deep analysis of the main drivers of such regional disparities, which is the main objective of the current paper, can improve understanding of the economic mechanisms underpinning inequality and thus inform policymakers to implement a broad array of appropriate policy instruments and strategies that reduce poverty and inequality traps and foster growth with equity.

There is an extensive theoretical and empirical works on inequality measurement that helped to achieve a better comprehension of the economic processes behind the spatial and temporal variation of suggested indexes at both national and international scales. Reviewing this affluent and expanding literature is daunting and in this section, we will just try to briefly summarize the main recent results of studies focusing on the analysis of inequality in Arab countries. Among the most recent and comprehensive works includes Bibi and Nabli (2009, 2010), Bibi, Castel, and Mejia (2011), Ncube and Anyanwu (2012) and Belhaj Hassine (2015).

One of the common findings of these studies is that income and expenditure distributions in most Arab countries show signs of improvement in the early 2000s but it's still far off the level of middle and upper-income countries in the world. The other issue revealed in these recent studies, more specifically in Belhaj Hassine (2015), which is of serious concern for social cohesion and inclusive growth prospects in the region is the persistence of the interregional disparities. These regional and urban-rural locations of households are found to considerably contribute to welfare gap and their magnitude seems to rise over time in several Arab countries.

For a better understanding of economic inequality in the Arab countries, a variety of approaches to decompose inequality among different groups/regions have been suggested by the recent methodological literature. The well-known approach consists of decomposing the overall inequality into within-group and between-group components using the classic measures of inequality such as the Gini coefficient and the Generalized Entropy (GE) inequality indices. It's notable that these indices as well as others

indicators satisfy desirable principles for decomposition including the Pigou-Dalton transfer principle (Bibi and Nabli, 2009, 2010).

Using such approach in decomposing inequality in the Arab region, Bibi and Nabli (2010) found a significant within-region inequality. Otherwise, using micro-data from different surveys, El-Laithy et al. (2003) reveals that economic inequality is explained mainly by within-region disparities at the national level, whilst only 13 percent to 18 percent can be attributed to lack of fairness between different regions. In this vein, Shahateet (2006), by means of raw data from two Jordanian national household surveys on expenditure and income conducted in 1997 and 2002, found severe regional economic inequality and called then for a more specific space-balanced approach for inequality alleviation.

A new approach that fills in the gaps of classic decomposition methods is the regression-based inequality decomposition using the commonly known Oaxaca-Blinder decomposition. Applying this approach to explore the changes in the distribution of returns to education and gender wage premia in Egypt and Morocco, Said and El-Hamidi (2005) found that the unexplained component in public sector wage premia and gender gaps have declined in Egypt, but substantially increased in Morocco over the 1990s.

As the standard Oaxaca-Blinder decomposition method provides only an estimate of the mean effect of a given variable while that the effects of covariates may differ along the income and expenditure distribution, an improvement of the current technique that takes account this gap is suggested in the empirical literature. The novel technique, called the RIF unconditional quantile regression, proposed by Firpo et al. (2009) and Fortin et al. (2010), and evaluated by Fournier and Koske (2012) allows estimating the impact of explanatory variables at different points on the welfare aggregate distribution. Using this new method of decomposition, Belhaj Hassine (2015) illustrates that metropolitan-nonmetropolitan and urban-rural differences appear to significantly contribute to welfare disparity in many Arab countries, including Tunisia, and their importance seems to augment over time in several countries. She suggests that the urban-rural and regional disparities in returns to household features, especially returns to human capital, could be best addressed by improved education quality and higher flexibility of the labor market and public investments.

On the other side, considerable work has been undertaken on economic inequality and poverty in Tunisia (see for instance Ayadi et al. 2001, 2003). Most commonly, these studies reveal that there has been a significant reduction in the level of poverty and inequality in Tunisia during the last decade, in line with the official statistics of the National Institute of Statistics (NSI). However, when compared to its peers in the middle-income class countries for example, it appears that poverty rate, expenditure inequality and unemployment rate remained at higher level. Similar to other Arab countries, Tunisia still have a long path to achieving social justice and prosperity among people. Economic growth and equality of outcomes are the essential keys to attain such

social justice and fairness as recommended by [Azour \(2014\)](#) and [Tessler, Jamal, and Robbins \(2015\)](#) for Arab countries.

Furthermore, Western regions, particularly the rural areas, have been found in the aforementioned studies, focusing on Tunisia, to contribute broadly to the overall poverty and inequality. It's noteworthy that the majority of these studies are based on the monetary approach that considers income as the sole relevant indicator of welfare, while others authors like [Ayadi, El-Lahga, and Chtioui \(2007\)](#) have used a non-monetary composite asset index as a proxy of the household wealth. Despite the different approaches used to assess the welfare, the agreement among the previous studies is the obvious disparity between urban and rural as well as between littoral and inland areas.

Though the contribution of these studies is immense in advancing awareness on inequality in Tunisia and its peers, little is done to identify the key drivers affecting the extent and direction of change of inequality. Notwithstanding the efforts of Tunisian policy makers to keep the national inequality indicators at a moderate level, severe regional disparities and inter-group inequalities have persisted since the 1990s. All the aforementioned studies have raised attention on these disparities within the country, but few have deeply scrutinized them, in cases where they have, the majority of studies, focusing on the Tunisian context, are limited to a simple analysis and description of the phenomenon without diving into the analysis of the main drivers of these disparities and the investigation of their different effects on different points of the welfare distribution. In this line, in this paper, we attempt to assess the levels and determinants of economic inequality in Tunisia among rural–urban, inland–littoral as well as metropolitan–nonmetropolitan divides, using two household surveys micro-data and unconditional quantile decomposition approach.

The remainder of this paper is structured as follows. In Section 2 we present the used regression and decomposition methods. Section 3 is devoted to a description of the data set and consumption differentials across different regions. Section 4 presents in details the obtained regression and decomposition results and Section 5 concludes and provide some policy implications.

2. Empirical methodology

The methodology that will be used in the current study will be both descriptive and analytical. It seeks firstly to draw a descriptive and graphical analysis of the consumption differentials between surveyed households across rural–urban, inland–littoral and nonmetropolitan–metropolitan divides by plotting the kernel density estimates of logarithmic real per capita yearly household expenditures and using the two-sample Kolmogorov–Smirnov. Following [Albrecht et al. \(2003\)](#), who focus on wage differentials, we plot the raw log consumption differential at each percentile to better highlight the gap in welfare on different points of the cumulative function of consumption.

Secondly, before diving in the decomposition analysis of such differentials, we conduct OLS and unconditional quantile (RIF-OLS) regressions of the logarithmic real per capita

yearly household expenditures to provide us with a more adequate description of consumption determination for each group of population (from each region). The RIF-OLS estimates will be reported separately by region of location at the 10th, 50th and 90th percentiles. Coefficient estimates obtained from these different regressions (OLS and RIF-OLS) will be interpreted as the marginal effects of covariates on the log per capita consumption and corresponding unconditional quantiles of this dependant variable.

Thirdly, we endeavor to analyze the sources of inequality between various regions by using well know decomposition methods: the basic Oaxaca and Blinder decomposition technique (Blinder, 1973; Oaxaca, 1973) and unconditional quantile regression method developed by Firpo, Fortin, and Lemieux (2009). It is worth to note that the RIF-regression model is called unconditional quantile regression when applied to the quantiles. This method consists, as we will explain below, of decomposing the consumption gaps at different quantiles of the unconditional distribution into differences in household and head endowment characteristics like education, age, employment etc., and differences in the returns to these characteristics to identify the specific covariates or group of covariates which contribute to the widening or narrowing the regional economic inequality in the country.

Suppose the mean log per capita consumption function for each group (6 groups) is described by the subsequent equation:

$$E(Y_G|X_G)= X_G\beta_G \quad (1)$$

where Y denotes the logarithmic real per capita yearly household expenditures, X is the vector of household and geographical characteristics (including the constant term), β is the vector of coefficients and G the group of population living in a given region (rural, urban, inland, littoral, nonmetropolitan and nonmetropolitan regions). Then the OLS estimate of β_G assesses the impact of X on the conditional or unconditional mean of Y for group G . It is noteworthy in this regard that the Oaxaca–Blinder decomposition has been used to decompose initially the mean gender wage gap into a composition effect explained by differences in productivity features and an unexplained wage structure effect (called discrimination effect) due to different returns to covariates. Same methodology will be used in the current study to decompose, as noted above, the welfare gap into endowment and return effects.

Accordingly, the mean log welfare gap between households living in opposed regions R and \bar{R} , for instance rural and urban regions, can be written as follows:

$$\bar{Y}_R - \bar{Y}_{\bar{R}} = (\bar{X}_R - \bar{X}_{\bar{R}})\hat{\beta}_G + \bar{X}_{\bar{R}}(\hat{\beta}_R - \hat{\beta}_{\bar{R}}) \quad (2)$$

Where $(\bar{X}_R - \bar{X}_{\bar{R}})\hat{\beta}_G$ is then the endowment effects that represents the contribution of the differences in distributions of household characteristics to inequality at the average and $\bar{X}_{\bar{R}}(\hat{\beta}_R - \hat{\beta}_{\bar{R}})$, denoted returns effect, represents the inequality due to differences (or discrimination) in returns to the household characteristics.

Notwithstanding its usefulness in explaining welfare differences between different population sub-groups due to variations in characteristics between them or alternatively due to discrimination, the Oaxaca/Blinder decomposition method is recently criticized for considering only the decomposition of the mean outcome variable differences, yielding an incomplete representation of the inequality sources. Accordingly, other conventional methods have extended the decomposition beyond the mean and allow the investigation of the entire distribution. Yet these methods share the same weaknesses in that they entail a set of assumptions and computational issues (Fortin, Lemieux, & Firpo, 2010). In this regard, the Recentered Influence Function (RIF) regression approach recently suggested by Firpo, Fortin, and Lemieux (2009) addresses these weaknesses and provides a straightforward regression-based method for performing a detailed decomposition of some distributional statistics such as quantiles, variance, and others statistics. The RIF is the key concept of the unconditional quantile regression, the widely used method of decomposition in the recent literature.

For our case, we can model $RIF(Y, q_\tau)$ as the function of explanatory variables:

$$E(RIF(Y, q_\tau) | X) = X\beta_\tau \quad (3)$$

Where q_τ is the τ th quantile and β_τ the vector of parameters associated to the q_τ . Since the $RIF(Y, q_\tau)$ could not be observed in the practice, we will use in our application the following formula of estimation, used widely in the literature:

$$\widehat{RIF}(Y_G, \hat{q}_\tau) = \hat{q}_\tau + \frac{\tau - I(Y_G \leq \hat{q}_\tau)}{\hat{f}_Y(\hat{q}_\tau)} \quad (4)$$

Where \hat{f}_Y is the estimated marginal density function of Y and I is an indicator function.

After estimating the model in Eq (3) for the 10th (lowest percentile) to 90th (highest percentile) quantiles of the population, we use the obtained unconditional quantile regression estimates to decompose the different gaps into a component attributable to differences in the distribution of characteristics (*endowment effect*) and a component due to differences in the distribution of returns (*returns effect*) as follows:

$$\hat{q}_{R,\tau} - \hat{q}_{\bar{R},\tau} = \overline{RIF}(Y_R, \hat{q}_{R,\tau}) - \overline{RIF}(Y_{\bar{R}}, \hat{q}_{\bar{R},\tau}) = (\bar{X}_G - \bar{X}_{\bar{R}})\hat{\beta}_{G,\tau} + \bar{X}_{\bar{R}}(\hat{\beta}_{R,\tau} - \hat{\beta}_{\bar{R},\tau}) \quad (5)$$

It is worth to note that the issue resulting from the use of categorical predictors can also be straightforwardly resolved using the Yun's method (2005) of normalization.

3. Data and descriptive statistics

3.1. Data

The data used in the current study are drawn from the two waves of the National Survey on Households' Budget, Consumption and Standard of Living (HBCLS) conducted

by the National Institute of Statistics (NIS) in 2005 and 2010². The aim of the two surveys is to determine the level of living standards of households through their food consumption and total expenditure in the two considered years. The surveys are concerned as well with investigating different aspects of the households' living conditions and the extent of their benefit from the collective and basic services such as basic housing services (Water, Sanitation, Electricity), education and health.

The samples in the two surveys are nationally representative consisting of about 13400 households representing respectively 0.61% and 0.55% of the total households in the country (i.e. 61 and 55 surveyed household are chosen respectively, for every 10,000 households). The two samples are distributed to 1116 census district of all the 24 governorates with its cities and villages and rural areas. Geographically, data are presented by regions in the two surveys after grouping the 24 governorates into seven main regions (Grand Tunis, North East, North West, Center East, Center West, South East and South West) (for more details about the selected samples in the two surveys see Tables 1a and 1b). To focus more on the extend and the main drivers of regional disparities, three geographical classifications of areas will be suggested: rural areas versus urban areas, inland regions versus littoral regions and finally metropolitan governorates versus nonmetropolitan governorates. To our knowledge, the current paper is the first to examine these various regional disparities in one study.

Table 1a Distribution of districts and households sampled by regions (2005 Survey)

Region	Total		Sample size		
	District	Households	District	Households	Household sample percent (%)
Grand Tunis	7 863	533 996	240	2 880	0.54
North East	4 446	316 199	156	1 872	0.59
North West	3 821	269 016	144	1 728	0.64
Central East	7 379	503 248	216	2 592	0.52
Central West	3 871	264 142	144	1 728	0.65
South East	2 711	186 278	108	1 296	0.7
South West	1 644	112 960	108	1 296	1.15
Total	31 735	2 185 839	1 116	13 392	0.61

Source: The Economic Research Forum (ERF): <http://www.erfdataportal.com>; and the NSI, 2010.

² The 2005 and 2010 National Survey on Households' Budget, Consumption and Standard of Living can be downloaded from the National Institute of Statistics (www.ins.nat.tn) or from the Economic Research Forum (ERF) open access micro data (www.erfdataportal.com).

Table 1b Distribution of districts and households sampled by regions (2010 Survey)

Region	Total		Sample size		Household sample percent (%)
	District	Households	District	Households	
Grand Tunis	7 863	268 113	240	2 880	0.45
North East	4 446	370 812	156	1 872	0.50
North West	3 821	296 466	144	1 728	0.58
Central East	7 379	606 287	216	2 592	0.29
Central West	3 871	300 223	144	1 728	0.86
South East	2 711	213471	108	1 296	0.61
South West	1 644	130371	108	1 296	.99
Total	31 735	2 444 128	1 116	13 392	0.52

Source: *The Economic Research Forum (ERF)*: <http://www.erfdataportal.com>; and the NSI, 2010.

Giving that the available surveys do not cover all income items, the consumption expenditures will be used in the current study as a proxy of welfare. It is noteworthy that consumption could be assessed by a set of expenditure measures. In this study, we endeavor firstly to address the comparability issues between three main of these measures through using specific aggregates: (i) the first one taking into account only food expenditures, including all own-produced and in-kind food items; (ii) the second one including all non durables items that are food and nonfood expenses; and (iii) the third expenditure aggregate expanding the latter to take into account actual and imputed values of housing computed following the methodology of [Deaton and Zaidi \(2002\)](#).³

The other issue to take into account is the variation of cost of living across regions and over time. Following [Belhaj Hassine \(2015\)](#), the temporal and regional consumer price indices (CPIs) are applied prior to the computation of the outcome variable, the real yearly household expenditure per capita. While temporal CPIs founded on the inflation rate are available on an annual basis, price indices are not available at the regional level. To get around this issue and take into account the cost-of-living differential between rural and urban areas, we employ for the two surveys (HBCLS 2005 and 2010) the same proxy of regional price suggested by [Bibi, Castel, and Mejia \(2011\)](#). It consists in computing the ratio of urban to the rural poverty line so that the expenditure distribution is valued in urban prices.

The calculations will be made, thereafter, basing on an outcome variable, the log of the real and yearly per capita household total expenditure, and a set of key explanatory variables including family attributes such as gender, age, marital status, educational attainment, and employment and activity status of the head and its sector of activity. It

³ In order to impute for missing rents, we regress the reported rents by subsets of households on a set of housing features and regional dummies. It is worth that durable goods are not included in the computation of expenditures as we have not any information about the current value and age of these items.

includes as well some household's characteristics such as the demographic composition of household, access to core basic services and the geographical location. The selection of these variables, which we list in details below, is founded on the studies by [Ferreira et al \(2008\)](#) and [Belhaj Hassine \(2015\)](#).

The covariates used in regressions and decomposition analysis are :

- Gender of Household head: (i) Female and (ii) Male. (Dichotomous variable);
- Age and squared age of household head: In year and year². (Continuous variables);
- Marital status of the household head: (i) Not in couple and (ii) In couple. (Dichotomous variable);
- Head educational attainment: (i) Illiterate and write & read, (ii) Basic education, (iii) Secondary, (iv) Post secondary or equivalent, (v) University and post graduate. (Categorical variable);
- Head activity status: (i) Not Employed and (ii) Employed. (Dichotomous variable);
- Head employment status: (i) Employee, (ii) Employer, (iii) Self-employed and (iv) Others. (Categorical variable);
- Main sector of head employment: (i) Government, (ii) Public sector, (iii) Private Sector, (iv) Joint/Cooperative and (v) Others. (Categorical variable);
- Industry classification for the main job of the head: (i) Agriculture and Fishing, (ii) Goods-producing (excluding agriculture, (iii) Services-providing, (iv) Others. (Categorical variable);
- Demographic composition of household:
 - Household size. (Discrete variable);
 - Proportion of members aged below 14 years. (Continuous variables);
 - Proportion of those aged over 65 years: (Continuous variables);
 - Proportion of earners: (Continuous variables);
- Access to core basic services:
 - Regular access to improved water: (i) No regular access, (ii) Regular access (Dichotomous variable);
 - Access to sewage: (i) No access, (ii) access (Dichotomous variable);
- Geographical location:
 - Area of location: (i) rural area, (ii) medium and small cities, and (iii) large cities. (Categorical variable);
 - Region of location: (i) Grand Tunis, (ii) North East, (iii) North West, (iv) Centre East, (v) Centre West, (vi) South East, and (vii) South West. (Categorical variable).

3.2. Descriptive regional consumption differentials

Table 2 presents mean and standard deviation of the aforementioned measures of household consumption expenditures, in constant 2005 TND, along with normalized difference of these measures between unprivileged (R) and privileged (\bar{R})⁴ regions for each survey year. Three main findings are revealed by this table. Firstly, inequality in real per capita household expenditure seems to be confirmed between each couple of

⁴ Based on the existing literature, privileged regions (\bar{R}) are defined as urban, littoral and metropolitan areas while the unprivileged ones (R) are rural, inland and nonmetropolitan areas.

regions $(R, \bar{R})^5$ across varying definitions of consumption expenditures as all the estimated normalized differences are positive except the urban/rural gap in food expenditures observed in 2005.

Secondly, while the consumption differential seem to increase slightly in 2005 with a more comprehensive measure of expenditures, the observed gap in 2010, estimated by the normalized difference, is decreasing particularly when adding the nonfood and non durables expenses. Therefore, expanding the food and nonfood expenditure aggregates to include the imputed housing expenses appears to increase the welfare gap between privileged and unprivileged regions in the two survey years. This leads to mention that the added consumption components mainly the housing expenses contributes significantly to different regional inequalities.

Thirdly, consistent with the previous studies we find, when comparing the estimated inequality measures (normalized difference) across the two years, an increasing welfare gap between each couple of regions R and \bar{R} is increasing slightly during the considered period. It is worth that in the subsequent analysis, we will use the total expenditures that includes the nondurables and durables (housing expenses) because it is a more comprehensive measure of consumption and it shows more obviously the extend of the welfare gap between different regions.

To better describe the welfare disparities among households living in privileged and unprivileged regions, we present the kernel density estimates of logarithmic real per capita household expenditure for both groups of population living in R and \bar{R} in Figures 1a, 1b and 1c, from which we can see the contrasted welfare distributions across regions of living. It is gleaned, as well, from these figures that the disparities are more obvious between urban and rural areas and between metropolitan and nonmetropolitan regions; the gap observed between littoral and inland region seem to be less than other regional inequalities. To confirm the existence of such inequalities, we conduct the two-sample Kolmogorov-Smirnov test. As expected, the results of this test show for the three cases and for the two survey years, reject the null hypothesis that the logarithmic real per capita household expenditure for the two groups come from the same distribution (p-value=0.000).

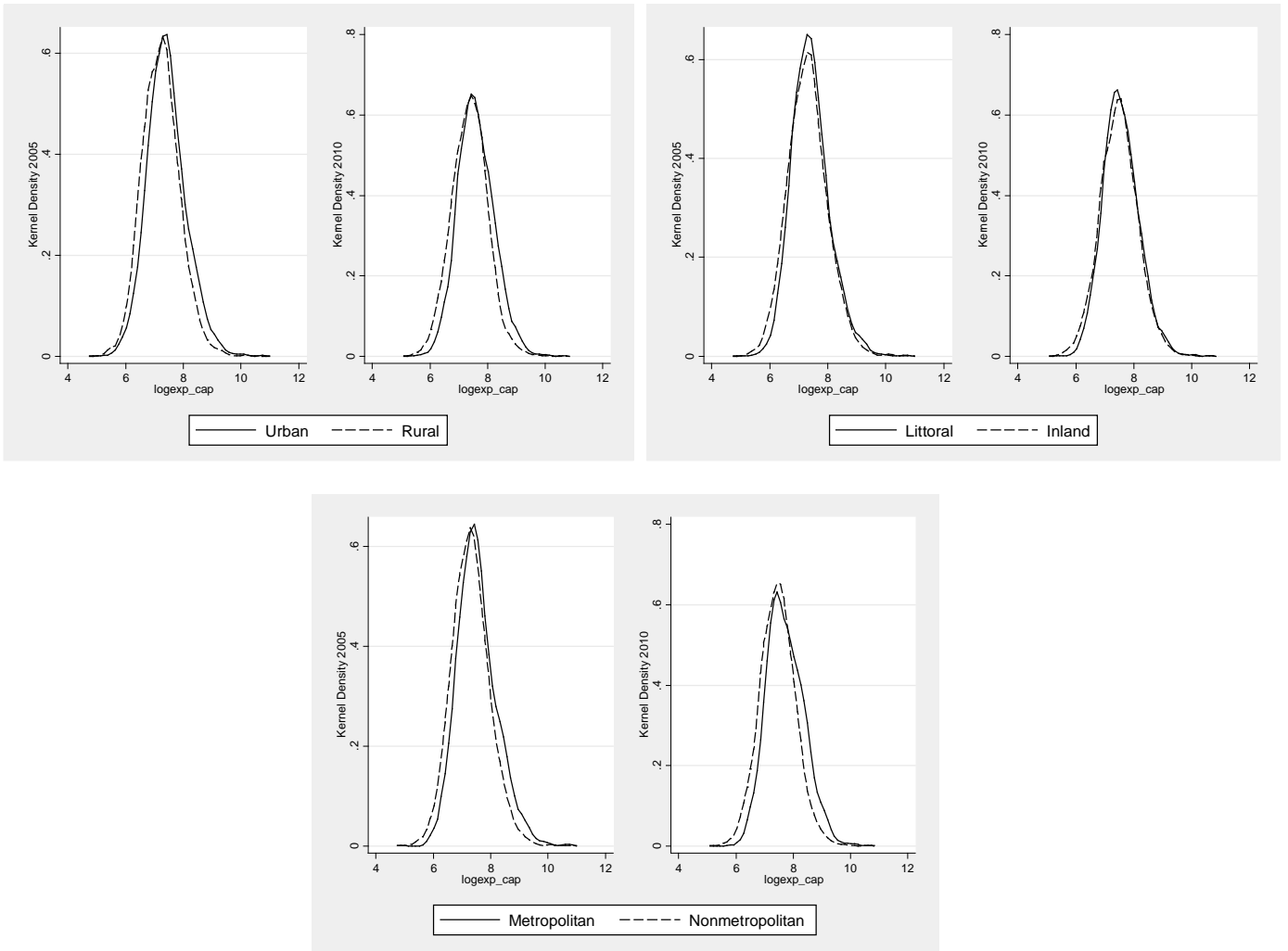


Figure 1. Kernel density estimates of log real per capita household expenditure by region **1a.** Urban/Rural, **1b.** Littoral/Inland, **1c.** Metropolitan/Nonmetropolitan

Table 2: Summary statistics of real per capita household expenditure by region (constant 2005 CPI)

			2005			2010		
			Food expend.	Expend. Food & non-durables ¹	Total expend. ²	Food expend.	Expend. Food & non-durables ¹	Total expend. ²
Urban/Rural	Urban	Mean	708.12	2121.46	2171.72	1039.02	2409.58	2463.2
		SD	560.84	2215.19	2243.19	654.36	1993.1	2018.45
	Rural	Mean	734.05	1714.62	1717.46	707.05	1939.34	1942.97
		SD	784.28	1543.83	1545.55	459.88	1446.74	1450.48
	Normalized Difference ³		- 0.03	0.15	0.17	0.42	0.19	0.21
Coastal/Inland	Coastal	Mean	744.64	2056.41	2101.77	958.3	2305.73	2352.82
		SD	564.47	2038.50	2073.57	605.38	1886.93	1920.92
	Inland	Mean	690.92	1907.26	1929.98	893.3	2193.227	2219.57
		SD	716.64	1993.18	2003.12	622.87	1787.71	1797.16
	Normalized Difference		0.06	0.05	0.06	0.07	0.04	0.05
Metropolitan/Non metropolitan	Metropolitan	Mean	790.20	2365.43	2444.05	1116.05	2747.86	2827.15
		SD	687.36	2560.65	2608.22	707.24	2321.84	2366.04
	N. Metropolitan	Mean	695.59	1866.41	1886.95	867.16	2096.91	2120.4
		SD	633.56	1810.23	1819.41	572.26	1633.95	1641.92
	Normalized Difference		0.1	0.16	0.18	0.27	0.23	0.24

1: This aggregate expenditure is calculated as the sum of food and non food and non durables expenditures.

2: This aggregate expenditure is calculated as the sum of all expenditures except durable goods.

3: Normalized differences are employed to measure covariate overlapping between different areas. They are computed as:
$$\frac{(\bar{X}_R - \bar{X}_{\bar{R}})}{\sqrt{S_R^2 + S_{\bar{R}}^2}}$$
 with \bar{X}_R and $\bar{X}_{\bar{R}}$ and

S_R^2 and $S_{\bar{R}}^2$ are respectively the sample means and the sample variances of consumption variable X for each group R and \bar{R} .

Note: The three alternative consumption expenditure aggregates are adjusted by the CPI to take into account the temporal and spatial variations in cost of living.

Source: Author's calculations from the HBCLS 2005 and HBCLS 2010.

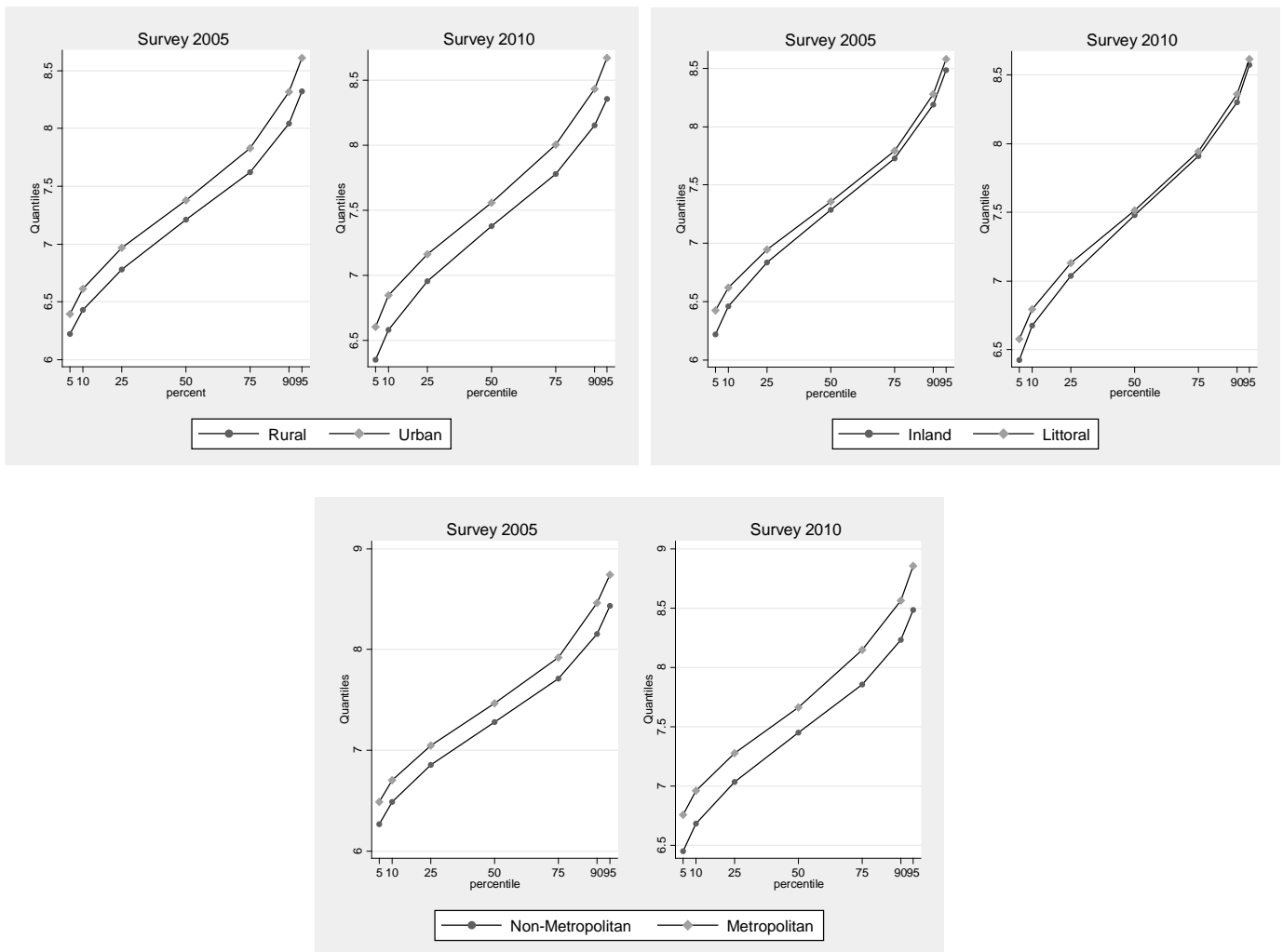


Figure 2. Log real per capita household expenditures by percentiles by region **2a.** Rural/Urban, **2b.** Inland/Littoral/, **2c.** Nonmetropolitan/Metropolitan..

Following the methodology of [Albrecht et al. \(2003\)](#), we plot the real yearly per capita consumption differential at each percentile in Figures 2a, 2b and 2c to investigate the inter-regional differential in per capita consumption for each percentile group. For instance, at the 10th percentile, we see a urban/rural welfare gap of 0.1716 in 2005, which means that the log per capita consumption at the 10th percentile of urban households' per capita consumption distribution is 17.16 log points higher than at the same percentile of rural households' per capita consumption distribution (see Figure 1a). The common remark from Figures 1a and 1c is the more or less constant differential through-out the consumption distribution between privileged region (urban and metropolitan) and unprivileged region (rural and nonmetropolitan) for the two survey years. Yet, the distributional consumption differentials in Figure 1b is found to be in decrease through-out the consumption distribution. The figure reveals that the interregional consumption gap between littoral and inland areas stays at relatively higher levels before the 50th percentile and becomes increasingly lower after this percentile to the last one. In the subsequent section, we will identify the main drivers

behind the varied consumption differentials across the distribution by using the newly developed decomposition methods. We now proceed with presenting the OLS and quantile regression results of the outcome variable on covariates for different regions and across the two years.

4. Empirical results

4.1. OLS Regression results

Turning to the investigation of the main factors driving the intra-regional consumption inequality, we first carry out OLS regressions across the two years with households living in regions R and \bar{R} pooled sample, allowing the effect of each covariate to vary with the geographical dummy (R, \bar{R}). After that, we test the joint significance of all the interaction terms. We reject the null hypothesis that the obtained OLS coefficient estimates are identical for both regions R and \bar{R} (p-value=0.000). Accordingly, we examine the mean per capita consumption determination for each region independently.

Table 2a. and 2b. displays the OLS regression results for each couple of regions with robust standard of errors to correct for heteroscedasticity of unknown forms. The coefficient estimates from these OLS regressions are explained as the marginal effects of covariates on the mean of log per capita consumption of each region. It is gleaned from the results that the demographic composition of households, mainly the proportion of earners, have played main role in intra-regional consumption inequality over the two survey years. The returns to this variable are more than 40% for all regions and reach 84% for nonmetropolitan region in 2005, while others demographic indicators such as household size and proportions of children and older adults have a negative effect on the outcome variable ranging from -4.5% (household size) to -60% (proportion of children). Access to core basic services is found to have significant effect on different intra-regional inequalities over the considered period.

The OLS regressions results reveal as well that general household head's characteristics like age, gender and marital status haven't a significant role in the distribution of consumption in each region as their coefficient are all very small and insignificant statistically for some regions. Schooling dummies are included in the regressions to show the marginal effects of different education levels on consumption. It is gleaned from the two tables that the majority of coefficient estimates of education dummies are significantly higher than 50% and don't differ substantially by year and region. The highest contributions are of the postgraduate education dummy in privileged regions (\bar{R}), which attain 86% in the littoral region. This leads to conclude that higher schooling in privileged regions is mainly associated with higher level of consumption; the returns of postgraduate education is then much higher than other education levels in that regions. It is worth that these returns have decreased slightly over the considered period.

Turning to activity and employment dummies, the OLS results shown in Table 2a and 2b reveal that the welfare premium to employment (activity status) is very higher in

privileged regions, being 21.5% and 20.5% in 2010 respectively for household living in littoral and metropolitan zones; The gap between unprivileged and privileged regions is much more higher in 2010 than in 2005. While the coefficient estimates of employee and self-employment dummies are significantly negatives being respectively, in absolute value, higher than 22% and 18.5% over the period for the majority of regions, nearly all coefficient estimates of employer dummy are insignificant at conventional levels. When looking to coefficient estimates of sector of activity dummies, the results show that returns to private sector are statistically insignificant for all regions and in two years, whereas the returns of public sector are significantly higher, mainly in urban and rural regions where the coefficient estimates exceed the level of 23.5%. We attribute the lower return for household head employed in private sector to the lower wage they earned and lower social security compared to public sector. We also find that returns to industrial dummies are significantly negative for unprivileged regions in the two years and statistically insignificant for privileged ones.

Turning to regional dummies (region and area of location), we find almost all coefficient estimates significantly negative over region and year except those of the "Centre East" variable. This leads to conclude that living in that regions, other than the Centre Eastern one, have a negative effect on the level of consumption. Contrariwise, the returns to region of location in the Centre Eastern part are positive and reach around 11% for both rural and urban household over the considered period. This is expected, as most households in this region, living in both rural and urban areas consume more than their peers in others regions.

Table 3a. OLS estimation results for per capita consumption by couple of regions in 2005

Variables	Rural Area	Urban Area	Inland Region	Littoral Region	Nonmetropolitan region	Metropolitan region
Household size	0.0445*** (0.00629)	-0.0902*** (0.00505)	-0.0649*** (0.00529)	-0.0683*** (0.00844)	-0.0597*** (0.00512)	-0.103*** (0.00877)
Proportion of children	-0.594*** (0.0538)	-0.333*** (0.0423)	-0.497*** (0.0491)	-0.342*** (0.0469)	-0.467*** (0.0388)	-0.269*** (0.0695)
Proportion of older adults	-0.203*** (0.0623)	-0.0837* (0.0474)	-0.140** (0.0566)	-0.0932* (0.0554)	-0.114** (0.0448)	-0.172** (0.0775)
Proportion of earners	0.657*** (0.0575)	0.725*** (0.0378)	0.776*** (0.0474)	0.777*** (0.0442)	0.745*** (0.0375)	0.840*** (0.0628)
Access to water	0.114*** (0.0195)	0.123** (0.0529)	0.150*** (0.0260)	0.145*** (0.0256)	0.146*** (0.0192)	0.184*** (0.0608)
Access to sewage	0.112*** (0.0376)	0.0838*** (0.0171)	0.0755*** (0.0215)	0.0903*** (0.0228)	0.0530*** (0.0173)	0.131*** (0.0343)
Gender of HH	-0.138*** (0.0399)	-0.122*** (0.0391)	-0.0967** (0.0388)	-0.177*** (0.0429)	-0.112*** (0.0306)	-0.292*** (0.0855)
Age of HH	-0.00635 (0.00489)	0.00908** (0.00410)	-0.00268 (0.00481)	0.00891** (0.00442)	6.26e-05 (0.00374)	0.0106 (0.00681)
Age squared of HH	6.70e-05	-8.24e-05**	1.58e-05	-6.26e-05	-2.32e-06	-6.73e-05

	(4.48e-05)	(3.85e-05)	(4.50e-05)	(4.01e-05)	(3.46e-05)	(6.33e-05)
Marital Status	0.0950** (0.0405)	0.120*** (0.0361)	0.127*** (0.0380)	0.105*** (0.0386)	0.110*** (0.0298)	0.210*** (0.0747)
EduHH: Basic education	0.271*** (0.0747)	0.255*** (0.0380)	0.268*** (0.0416)	0.291*** (0.0625)	0.302*** (0.0386)	0.147** (0.0698)
EduHH: Secondary	0.308*** (0.0467)	0.338*** (0.0218)	0.320*** (0.0285)	0.358*** (0.0278)	0.342*** (0.0232)	0.319*** (0.0386)
EduHH: Post Secondary	0.512*** (0.112)	0.524*** (0.0547)	0.450*** (0.0602)	0.635*** (0.0800)	0.464*** (0.0519)	0.671*** (0.0976)
EduHH: University and +	0.765*** (0.0919)	0.800*** (0.0323)	0.743*** (0.0522)	0.860*** (0.0382)	0.758*** (0.0450)	0.842*** (0.0425)
HH's Activity status	0.172*** (0.0468)	0.0911** (0.0421)	0.127*** (0.0490)	0.128*** (0.0405)	0.132*** (0.0361)	0.138** (0.0691)
EmpHH: Employee	-0.236*** (0.0841)	-0.293*** (0.0807)	-0.398*** (0.0817)	-0.179** (0.0809)	-0.369*** (0.0644)	-0.00801 (0.117)
EmpHH: Employer	0.161* (0.0911)	0.0859 (0.0859)	-0.0112 (0.0859)	0.209** (0.0889)	0.0261 (0.0690)	0.350*** (0.129)
EmpHH: Self-employed	-0.0946 (0.0836)	-0.207** (0.0822)	-0.292*** (0.0815)	-0.0786 (0.0825)	-0.262*** (0.0648)	0.0707 (0.120)
SecHH: Government	0.231** (0.0965)	0.173** (0.0736)	0.285*** (0.0871)	0.0770 (0.0755)	0.278*** (0.0681)	-0.157 (0.103)
SecHH: Public sector	0.296** (0.115)	0.275*** (0.0795)	0.443*** (0.0987)	0.128 (0.0818)	0.410*** (0.0771)	-0.107 (0.111)
SecHH: Private Sector	0.0804 (0.0929)	0.000197 (0.0709)	0.0965 (0.0842)	-0.0441 (0.0722)	0.0992 (0.0658)	-0.243** (0.0988)
SecHH: Joint/Cooperative	0.0943 (0.125)	0.269*** (0.0920)	0.313** (0.129)	0.216** (0.0933)	0.313*** (0.0910)	0.0180 (0.132)
IndHH: Agriculture and Fishing	-0.221*** (0.0461)	0.00298 (0.0410)	-0.108*** (0.0384)	-0.0415 (0.0404)	-0.0850*** (0.0313)	-0.0376 (0.0750)
IndHH: Goods-producing	-0.239*** (0.0493)	-0.0466 (0.0305)	-0.0999*** (0.0375)	-0.0898** (0.0365)	-0.105*** (0.0306)	-0.0560 (0.0500)
IndHH: Services-providing	-0.0967** (0.0462)	0.0832*** (0.0265)	0.00930 (0.0334)	0.0702** (0.0320)	0.0175 (0.0273)	0.0966** (0.0420)
Reg: North East	-0.0819** (0.0365)	-0.106*** (0.0227)				
Reg: North West	-0.0248 (0.0354)	-0.158*** (0.0257)				
Reg: Centre East	0.115*** (0.0372)	0.0699*** (0.0189)				
Reg: Centre West	-0.260*** (0.0358)	-0.245*** (0.0303)				
Reg: South East	0.0634 (0.0493)	0.0296 (0.0293)				
Reg: South West	-0.218*** (0.0410)	-0.108*** (0.0275)				
Area: Large cities			-0.106***	-0.159***	-0.123***	-0.249***

			(0.0290)	(0.0265)	(0.0237)	(0.0431)
Area: Medium and small cities			-0.160***	-0.258***	-0.166***	-0.370***
			(0.0241)	(0.0261)	(0.0191)	(0.0493)
Constant	7.677***	7.259***	7.590***	7.219***	7.472***	7.340***
	(0.140)	(0.126)	(0.129)	(0.125)	(0.102)	(0.205)
Observations	4,679	7,626	6,477	5,828	9,784	2,521
OR-squared	0.346	0.394	0.326	0.401	0.314	0.478

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Author's calculations from the HBCLS 2005

Table 3b. OLS estimation results for per capita consumption by couple of regions in 2010

Variables	Rural Area	Urban Area	Inland Region	Littoral Region	Metropolitan region	Nonmetropolitan region
Household size	0.0814*** (0.00637)	-0.111*** (0.00558)	-0.0866*** (0.00534)	-0.112*** (0.00676)	-0.0820*** (0.00443)	-0.154*** (0.0105)
Proportion of children	-0.553*** (0.0556)	-0.309*** (0.0413)	-0.380*** (0.0462)	-0.377*** (0.0495)	-0.431*** (0.0370)	-0.240*** (0.0796)
Proportion of older adults	-0.0734 (0.0601)	-0.0109 (0.0466)	0.0309 (0.0546)	-0.0636 (0.0527)	-0.0225 (0.0415)	-0.126 (0.0794)
Proportion of earners	0.483*** (0.0562)	0.462*** (0.0354)	0.628*** (0.0445)	0.455*** (0.0412)	0.534*** (0.0339)	0.406*** (0.0629)
Access to water	0.202*** (0.0211)	0.232*** (0.0532)	0.269*** (0.0248)	0.240*** (0.0277)	0.256*** (0.0187)	0.322*** (0.0911)
Access to sewage	0.0683** (0.0323)	0.167*** (0.0180)	0.162*** (0.0204)	0.145*** (0.0265)	0.108*** (0.0162)	0.160*** (0.0521)
Gender of HH	0.0365 (0.0435)	-0.0284 (0.0431)	0.0900** (0.0429)	-0.0132 (0.0448)	0.0562* (0.0332)	-0.0509 (0.0776)
Age of HH	0.00538 (0.00516)	0.0177*** (0.00413)	0.00934** (0.00433)	0.0188*** (0.00507)	0.00904*** (0.00349)	0.0191** (0.00810)
Age squared of HH	-6.90e-05 (4.59e-05)	-0.000163*** (3.72e-05)	-0.000102*** (3.89e-05)	-0.000178*** (4.54e-05)	-0.000105*** (3.11e-05)	-0.000136* (7.40e-05)
Marital Status	0.0359 (0.0413)	0.0655 (0.0405)	0.0115 (0.0406)	0.0458 (0.0410)	0.0415 (0.0312)	0.0621 (0.0688)
EduHH: Basic education	0.270*** (0.0757)	0.233*** (0.0337)	0.297*** (0.0383)	0.216*** (0.0510)	0.291*** (0.0339)	0.252*** (0.0693)
EduHH: Secondary	0.237*** (0.0544)	0.230*** (0.0209)	0.238*** (0.0291)	0.215*** (0.0278)	0.237*** (0.0234)	0.202*** (0.0374)
EduHH: Post Secondary	0.522*** (0.109)	0.420*** (0.0373)	0.385*** (0.0528)	0.503*** (0.0477)	0.433*** (0.0421)	0.453*** (0.0621)
EduHH: University and +	0.387*** (0.0891)	0.631*** (0.0299)	0.580*** (0.0412)	0.677*** (0.0380)	0.575*** (0.0332)	0.719*** (0.0492)
HH's Activity status	0.188*** (0.0645)	0.145*** (0.0530)	0.117** (0.0559)	0.215*** (0.0501)	0.149*** (0.0461)	0.204*** (0.0730)
EmpHH:	-0.283***	-0.327***	-0.354***	-0.279***	-0.341***	-0.220**

Employee	(0.109)	(0.0670)	(0.0775)	(0.0875)	(0.0651)	(0.107)
EmpHH:	0.115	0.0499	0.0197	0.112	0.0281	0.236*
Employer	(0.118)	(0.0717)	(0.0834)	(0.0926)	(0.0693)	(0.121)
EmpHH: Self- employed	-0.0776	-0.234***	-0.184**	-0.202**	-0.195***	-0.159
	(0.111)	(0.0689)	(0.0804)	(0.0885)	(0.0667)	(0.114)
SecHH:	0.122	0.166***	0.169***	0.0553	0.142***	0.0489
Government	(0.103)	(0.0509)	(0.0593)	(0.0905)	(0.0539)	(0.108)
SecHH: Public sector	0.437***	0.235***	0.276***	0.185*	0.223***	0.188
	(0.123)	(0.0679)	(0.0776)	(0.109)	(0.0663)	(0.140)
SecHH: Private Sector	0.0680	-0.0169	0.0280	-0.0694	0.0139	-0.150
	(0.0983)	(0.0452)	(0.0518)	(0.0882)	(0.0491)	(0.106)
SecHH: Joint/ Cooperative	0.269**	0.160***	0.224***	0.136	0.167**	0.182
	(0.130)	(0.0610)	(0.0770)	(0.102)	(0.0651)	(0.131)
IndHH:	-0.177***	-0.0911**	-0.0662	-0.0758*	-0.0891***	0.0240
Agriculture and Fishing	(0.0530)	(0.0405)	(0.0423)	(0.0413)	(0.0316)	(0.0897)
IndHH: Goods- producing	-0.0297	0.0149	0.0675*	-0.0154	0.0492	0.00950
	(0.0609)	(0.0326)	(0.0394)	(0.0423)	(0.0316)	(0.0591)
IndHH: Services- providing	-0.127**	0.00362	-0.00993	-0.0317	-0.0179	-0.0116
	(0.0529)	(0.0293)	(0.0361)	(0.0368)	(0.0283)	(0.0513)
Reg: North East	-0.0706*	-0.155***				
	(0.0402)	(0.0205)				
Reg: North West	-0.272***	-0.332***				
	(0.0422)	(0.0240)				
Reg: Centre East	0.00654	0.119***				
	(0.0439)	(0.0190)				
Reg: Centre West	-0.207***	-0.295***				
	(0.0420)	(0.0261)				
Reg: South East	-0.0772	0.0327				
	(0.0531)	(0.0262)				
Reg: South West	-0.166***	-0.198***				
	(0.0504)	(0.0268)				
Area: Large cities			-0.138***	-0.133***	-0.0854***	-0.270***
			(0.0290)	(0.0283)	(0.0232)	(0.0529)
Area: Medium and small cities			-0.259***	-0.368***	-0.252***	-0.462***
			(0.0238)	(0.0259)	(0.0183)	(0.0546)
Constant	7.709***	7.182***	7.412***	7.342***	7.438***	7.442***
	(0.149)	(0.131)	(0.125)	(0.146)	(0.100)	(0.248)
Observations	4,018	7,260	6,195	5,083	9,289	1,989
R-squared	0.338	0.427	0.360	0.414	0.337	0.458

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Author's calculations from the HBCLS 2010

4.2. Unconditional quantile regression results

The unconditional quantile regression estimates are reported separately by region of location and survey year at the 10th, 50th and 90th percentiles in Tables 4a, 4b and 4c. The coefficient estimates from RIF-OLS regressions, shown in these tables, represent the marginal effects of covariates on the considered unconditional quantiles of log per capita consumption.

We find that RIF-OLS regressions afford a more adequate and accurate description of consumption distribution in each region than OLS regressions. The different unconditional quantile regression results reveal that estimated returns to some household demographic characteristics and housing living conditions for the two years are significantly high and generally different across regions (R and opposed region \bar{R}) and quantiles. For instance, from the OLS regression, the returns to the proportion of earners is around 66% in rural areas and 73% in urban ones in 2005. Yet, these returns vary significantly from nearly 24% at the 10th percentile to 77% at the median and 87% at the 90th percentile for rural households and from 25% at the 10th percentile to 61% at the median and 132% at the 90th percentile for urban households (see Tables 3a and 4a). It is gleaned thus, at least from this example, that the estimated returns from OLS regression apparently conceals the heterogeneity in returns to the aforementioned variable at different points of rural and urban household's consumption distributions.

Similarly to the OLS regression results, the unconditional quantile regression results, shown in Tables 4a, 4b and 4c, reveal no significant and stable effect of general head characteristics (age and gender) on consumption distribution. However the coefficient estimates of dummies for education levels indicate, in accordance with the results obtained from the OLS regressions, that the better educational level, the higher the level of per capita consumption. The RIF-OLS regressions reveal, as well, that the returns to higher schooling increase significantly at the top part of consumption distribution. In fact, in 2005, the marginal returns of university and postgraduate dummy among rural and urban households exceed at the 90th percentile, respectively, 185% and 216%. This result is expected since higher schooling of the head is generally associated with higher earnings specifically among the wealthier part of the population independently of the region of residence.

Turning to employment dummies, we find firstly that coefficient estimates of activity and employee variables, shown in the three tables, indicate that the marginal returns are significant only at lower percentiles. Indeed, returns to activity is around 32% in 2005 and 54% in 2010 among rural households at the lower percentile, while no significant returns are found in the top of the welfare distribution in the two years. This leads to conclude that most rich households anywhere have others sources of income than wages such rental houses and heritage. The results reveal, as well, that coefficient estimates of public sector variable being only significant high at lower percentile in 2005 become significant high at the 50th and 90th percentiles in majority of regions. Therefore, returns to public sector are found in 2010, unlike returns in 2005, to

contribute massively in welfare gap at the middle and higher end of welfare distribution, whereas private sector is found to not have any significant role in consumption inequality. In addition, returns to the majority of industrial dummies are found insignificant except the negative returns to agriculture and industry in rural areas increasing at lower percentiles in 2010.

The unconditional quantile regression results show also that the mean consumption premium to living in rural and urban households is significantly driven up by living in Eastern regions at the top end of welfare distribution. At the median, the coefficient estimate of the North East dummy is significantly negative among rural and urban households (around -10%), and at the 90th percentile, the relative premium is about -50% in 2010 in urban areas. The marginal effect of other Eastern regions are found to be significantly positive mainly in 2005, while the returns of Central and South-Western regions are significantly negative at different percentiles. Similarly, returns to large, medium and small cities are found to be significantly negative in littoral, inland, metropolitan and nonmetropolitan regions. This means that households living in such regions consume less than households living in others areas.

Table 4a. Unconditional quantile regression results for urban/rural areas

Variables	2005						2010					
	Rural area			Urban area			Rural area			Urban area		
	rif_10	rif_50	rif_90	rif_10	rif_50	rif_90	rif_10	rif_50	rif_90	rif_10	rif_50	rif_90
Household size	-0.0368*** (0.00790)	-0.0362*** (0.00807)	-0.0541*** (0.00927)	-0.0570*** (0.00824)	-0.0829*** (0.00715)	-0.127*** (0.0113)	-0.0920*** (0.0140)	-0.0733*** (0.00814)	-0.0864*** (0.00979)	-0.0637*** (0.00895)	-0.118*** (0.00679)	-0.168*** (0.0117)
Proportion of children	-0.592*** (0.0888)	-0.577*** (0.0696)	-0.633*** (0.119)	-0.201*** (0.0558)	-0.410*** (0.0552)	-0.328*** (0.108)	-0.690*** (0.131)	-0.560*** (0.0733)	-0.467*** (0.0927)	-0.273*** (0.0681)	-0.306*** (0.0554)	-0.399*** (0.0978)
Proportion of older adults	-0.278*** (0.0833)	-0.139* (0.0797)	-0.122 (0.143)	-0.192*** (0.0587)	-0.0758 (0.0584)	0.109 (0.126)	-0.160 (0.117)	-0.0639 (0.0796)	-0.0138 (0.121)	-0.176*** (0.0621)	-0.139** (0.0562)	0.108 (0.132)
Proportion of earners	0.244*** (0.0643)	0.770*** (0.0696)	0.872*** (0.154)	0.249*** (0.0382)	0.606*** (0.0459)	1.317*** (0.105)	0.229** (0.0952)	0.583*** (0.0738)	0.621*** (0.125)	0.0869** (0.0421)	0.388*** (0.0444)	0.981*** (0.0971)
Access to water	0.102*** (0.0330)	0.136*** (0.0262)	0.0917** (0.0395)	0.302*** (0.108)	0.176*** (0.0680)	-0.0859 (0.0919)	0.278*** (0.0451)	0.206*** (0.0284)	0.192*** (0.0369)	0.365** (0.151)	0.240*** (0.0858)	0.0926 (0.0729)
Access to sewage	0.0232 (0.0484)	0.142*** (0.0503)	0.184* (0.0975)	0.0710*** (0.0247)	0.0529** (0.0238)	0.166*** (0.0398)	0.0390 (0.0514)	0.0884* (0.0468)	-0.0141 (0.0804)	0.162*** (0.0348)	0.192*** (0.0253)	0.179*** (0.0377)
Gender of HH	0.0126 (0.0625)	-0.144*** (0.0496)	-0.236*** (0.0871)	0.0356 (0.0481)	-0.0598 (0.0462)	-0.378*** (0.0932)	0.191* (0.0982)	0.00443 (0.0530)	-0.0206 (0.0750)	0.130* (0.0685)	0.00427 (0.0484)	-0.268*** (0.102)
Age of HH	-0.0192** (0.00752)	-0.0101 (0.00652)	0.00572 (0.0111)	-0.00528 (0.00481)	0.00891* (0.00526)	0.0270** (0.0108)	0.00738 (0.0107)	0.00341 (0.00682)	0.00253 (0.00972)	-0.000130 (0.00681)	0.0201*** (0.00543)	0.0194* (0.0105)
Age squared of HH	0.000182*** (6.89e-05)	0.000105* (5.95e-05)	-6.70e-05 (0.000100)	4.39e-05 (4.52e-05)	-8.00e-05 (4.90e-05)	-0.000265*** (9.69e-05)	-6.15e-05 (9.36e-05)	-6.13e-05 (6.18e-05)	-6.18e-05 (8.46e-05)	-7.20e-06 (6.00e-05)	-0.000175*** (4.86e-05)	-0.000173* (9.58e-05)
Marital Status	0.0226 (0.0627)	0.0936* (0.0516)	0.186** (0.0814)	0.0370 (0.0444)	0.0956** (0.0430)	0.297*** (0.0879)	-0.107 (0.0883)	0.0839 (0.0523)	0.104 (0.0725)	-0.0446 (0.0617)	0.0907** (0.0461)	0.201** (0.0956)
EduHH: Basic education	0.185* (0.103)	0.201*** (0.0771)	0.539*** (0.180)	0.0493 (0.0305)	0.194*** (0.0451)	0.620*** (0.109)	0.268*** (0.0699)	0.217* (0.113)	0.349* (0.203)	0.0784** (0.0359)	0.204*** (0.0432)	0.443*** (0.105)
EduHH: Secondary	0.114** (0.0532)	0.237*** (0.0556)	0.646*** (0.130)	0.126*** (0.0179)	0.353*** (0.0269)	0.594*** (0.0681)	0.0725 (0.0845)	0.236*** (0.0621)	0.442*** (0.151)	0.0588* (0.0302)	0.201*** (0.0274)	0.391*** (0.0586)
EduHH:Post	0.171* (0.0627)	0.294*** (0.0516)	0.679* (0.0814)	0.104*** (0.0444)	0.368*** (0.0430)	1.198*** (0.0879)	0.263*** (0.0883)	0.298*** (0.0523)	1.034*** (0.0725)	0.112*** (0.0617)	0.397*** (0.0461)	0.836*** (0.0956)

Secondary	(0.0880)	(0.108)	(0.365)	(0.0186)	(0.0452)	(0.168)	(0.0905)	(0.111)	(0.354)	(0.0217)	(0.0408)	(0.139)
EduHH: University and +	0.120** (0.0568)	0.490*** (0.0935)	1.858*** (0.369)	0.0351* (0.0193)	0.450*** (0.0263)	2.164*** (0.108)	-0.0865 (0.173)	0.341*** (0.103)	0.917*** (0.303)	0.0735*** (0.0201)	0.429*** (0.0266)	1.462*** (0.0942)
HH's Activity status	0.316*** (0.109)	0.136** (0.0597)	-0.0248 (0.0584)	0.347*** (0.114)	0.0549 (0.0613)	-0.163** (0.0777)	0.535*** (0.159)	0.109 (0.0747)	0.00352 (0.0946)	0.352*** (0.136)	0.207*** (0.0664)	-0.0632 (0.0789)
EmpHH: Employee	-0.410*** (0.123)	-0.288** (0.125)	0.159 (0.167)	-0.579*** (0.139)	-0.0720 (0.116)	-0.187 (0.147)	-0.448* (0.237)	-0.335*** (0.130)	-0.174 (0.177)	-0.426*** (0.137)	-0.274*** (0.0946)	-0.378*** (0.138)
EmpHH: Employer	-0.166 (0.130)	0.193 (0.134)	0.546*** (0.182)	-0.323** (0.138)	0.264** (0.121)	0.361** (0.168)	-0.0667 (0.243)	0.0865 (0.144)	0.191 (0.198)	-0.254* (0.139)	0.0870 (0.0977)	0.200 (0.159)
EmpHH: Self-employed	-0.240* (0.128)	-0.0954 (0.126)	0.295* (0.161)	-0.446*** (0.138)	-0.0103 (0.119)	-0.125 (0.153)	-0.234 (0.242)	-0.146 (0.134)	0.0490 (0.179)	-0.340** (0.140)	-0.198** (0.0974)	-0.291** (0.144)
SecHH: Government	0.250 (0.156)	0.309** (0.120)	0.0883 (0.199)	0.234* (0.123)	0.0236 (0.108)	0.142 (0.147)	0.103 (0.216)	0.203* (0.110)	0.143 (0.163)	0.0859 (0.0859)	0.0647 (0.0798)	0.341*** (0.124)
SecHH: Public sector	0.416** (0.168)	0.253 (0.159)	0.0494 (0.276)	0.325*** (0.123)	0.162 (0.115)	0.186 (0.174)	0.429** (0.196)	0.427*** (0.148)	0.327 (0.285)	0.0157 (0.0967)	0.128 (0.0893)	0.336** (0.156)
SecHH: Private Sector	0.176 (0.162)	0.131 (0.114)	-0.230 (0.182)	0.0542 (0.121)	-0.178* (0.106)	-0.0379 (0.137)	0.241 (0.186)	0.145 (0.101)	-0.00911 (0.158)	-0.0547 (0.0825)	-0.110 (0.0740)	0.0769 (0.109)
SecHH: Joint/Cooperative	0.447** (0.175)	-0.0344 (0.170)	0.0716 (0.324)	0.218* (0.128)	-0.0760 (0.128)	0.454** (0.211)	0.443** (0.194)	0.367** (0.145)	0.243 (0.306)	0.00350 (0.103)	0.0869 (0.0942)	0.399** (0.155)
IndHH: Agriculture and Fishing	-0.173** (0.0765)	-0.201*** (0.0630)	-0.238** (0.113)	-0.107* (0.0641)	0.0150 (0.0542)	0.115 (0.0986)	-0.383*** (0.110)	-0.184** (0.0717)	-0.0910 (0.0916)	-0.179** (0.0847)	-0.141** (0.0571)	0.138 (0.0892)
IndHH: Goods-producing	-0.180** (0.0820)	-0.190*** (0.0666)	-0.289** (0.120)	-0.0632 (0.0399)	-0.0259 (0.0394)	0.0356 (0.0819)	-0.311*** (0.115)	0.0122 (0.0808)	0.00308 (0.127)	0.0496 (0.0440)	0.0223 (0.0448)	0.0678 (0.0867)
IndHH: Services-providing	-0.0333 (0.0680)	-0.0589 (0.0612)	-0.147 (0.124)	0.0437 (0.0301)	0.0883*** (0.0332)	0.152** (0.0757)	-0.341*** (0.108)	-0.139** (0.0703)	-0.0629 (0.0944)	-0.0228 (0.0410)	-0.0126 (0.0390)	0.140* (0.0740)
Reg: North East	-0.0244 (0.0513)	-0.102** (0.0509)	0.00329 (0.0944)	0.00236 (0.0276)	-0.103*** (0.0312)	-0.241*** (0.0580)	0.00757 (0.0470)	-0.109* (0.0595)	-0.155 (0.109)	0.0675** (0.0267)	-0.0759** (0.0319)	-0.485*** (0.0525)
Reg: North West	0.0122 (0.0510)	-0.0484 (0.0496)	-0.00992 (0.0878)	-0.0489 (0.0360)	-0.148*** (0.0370)	-0.333*** (0.0606)	-0.242*** (0.0583)	-0.367*** (0.0592)	-0.204* (0.106)	-0.189*** (0.0478)	-0.250*** (0.0339)	-0.573*** (0.0528)
Reg: Centre East	0.0927* (0.0510)	0.124** (0.0496)	0.238** (0.0878)	0.0855*** (0.0360)	0.0924*** (0.0370)	0.0156 (0.0606)	0.0316 (0.0583)	-0.0535 (0.0592)	0.0567 (0.106)	0.108*** (0.0478)	0.199*** (0.0339)	0.0381 (0.0528)

	(0.0498)	(0.0513)	(0.0992)	(0.0205)	(0.0253)	(0.0528)	(0.0543)	(0.0610)	(0.115)	(0.0223)	(0.0244)	(0.0534)
Reg: Centre West	-0.309***	-0.287***	-0.120	-0.330***	-0.205***	-0.130**	-0.271***	-0.264***	-0.0578	-0.363***	-0.228***	-0.336***
	(0.0583)	(0.0486)	(0.0837)	(0.0522)	(0.0351)	(0.0652)	(0.0610)	(0.0590)	(0.107)	(0.0580)	(0.0336)	(0.0526)
Reg: South East	-0.0253	0.0220	0.252**	-0.0338	0.0496	0.128*	-0.0260	-0.112	0.000749	0.0647	0.114***	-0.0491
	(0.0653)	(0.0604)	(0.114)	(0.0392)	(0.0372)	(0.0708)	(0.0872)	(0.0709)	(0.124)	(0.0417)	(0.0343)	(0.0614)
Reg: South West	-0.221***	-0.304***	-0.109	-0.111***	-0.157***	-0.0824	-0.153*	-0.225***	-0.173	-0.193***	-0.162***	-0.253***
	(0.0773)	(0.0562)	(0.0941)	(0.0427)	(0.0366)	(0.0643)	(0.0915)	(0.0690)	(0.114)	(0.0621)	(0.0368)	(0.0550)
Constant	7.191***	7.666***	8.235***	6.599***	7.186***	7.902***	6.817***	7.809***	8.557***	6.619***	7.009***	8.314***
	(0.224)	(0.187)	(0.323)	(0.176)	(0.158)	(0.327)	(0.323)	(0.196)	(0.293)	(0.244)	(0.177)	(0.318)
Observations	4,679	4,679	4,679	7,626	7,626	7,626	4,018	4,018	4,018	7,260	7,260	7,260
R-squared	0.119	0.242	0.144	0.129	0.223	0.237	0.144	0.234	0.114	0.104	0.267	0.246

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4b. Unconditional quantile regression results for littoral/inland regions

Variables	2005						2010					
	Inland region			Littoral region			Inland region			Littoral region		
	rif_10	rif_50	rif_90	rif_10	rif_50	rif_90	rif_10	rif_50	rif_90	rif_10	rif_50	rif_90
Household size	-0.0509***	-0.0533***	-0.0818***	-0.0411***	-0.0658***	-0.0997***	-0.0821***	-0.0830***	-0.114***	-0.0650***	-0.124***	-0.149***
	(0.00816)	(0.00658)	(0.00939)	(0.00872)	(0.0115)	(0.0120)	(0.0110)	(0.00664)	(0.00920)	(0.0115)	(0.00859)	(0.0138)
Proportion of children	-0.448***	-0.477***	-0.590***	-0.228***	-0.461***	-0.236**	-0.442***	-0.338***	-0.357***	-0.400***	-0.439***	-0.417***
	(0.0732)	(0.0599)	(0.113)	(0.0623)	(0.0644)	(0.118)	(0.0891)	(0.0603)	(0.0935)	(0.0958)	(0.0661)	(0.108)
Proportion of older adults	-0.202***	-0.000218	-0.0873	-0.218***	-0.179**	0.143	-0.214**	0.0152	0.167	-0.104	-0.215***	0.0391
	(0.0759)	(0.0685)	(0.140)	(0.0607)	(0.0718)	(0.133)	(0.0901)	(0.0659)	(0.129)	(0.0758)	(0.0655)	(0.140)
Proportion of earners	0.398***	0.782***	1.044***	0.268***	0.686***	1.418***	0.330***	0.584***	1.048***	0.105**	0.443***	0.838***
	(0.0508)	(0.0567)	(0.122)	(0.0418)	(0.0533)	(0.122)	(0.0691)	(0.0558)	(0.112)	(0.0476)	(0.0531)	(0.108)
Access to water	0.205***	0.162***	0.103**	0.105***	0.190***	0.100*	0.330***	0.290***	0.288***	0.392***	0.235***	0.0711
	(0.0472)	(0.0324)	(0.0457)	(0.0383)	(0.0359)	(0.0561)	(0.0576)	(0.0316)	(0.0408)	(0.0549)	(0.0403)	(0.0533)
Access to sewage	0.0713**	0.0369	0.172***	0.0487	0.0931***	0.139***	0.134***	0.166***	0.194***	0.130**	0.223***	0.0754

	(0.0297)	(0.0275)	(0.0519)	(0.0330)	(0.0356)	(0.0511)	(0.0352)	(0.0267)	(0.0457)	(0.0528)	(0.0397)	(0.0508)
Gender of HH	0.00435	-0.0964**	-0.179**	0.0462	-0.127**	-0.445***	0.250***	0.119**	-0.0742	0.179**	-0.0387	-0.186**
	(0.0605)	(0.0469)	(0.0827)	(0.0492)	(0.0520)	(0.102)	(0.0857)	(0.0491)	(0.0856)	(0.0878)	(0.0513)	(0.0937)
Age of HH	-0.0138**	-0.00265	0.00695	-0.00635	0.00437	0.0327***	-0.00729	0.0140**	0.0150	0.0158*	0.0147**	0.0145
	(0.00665)	(0.00615)	(0.0107)	(0.00518)	(0.00592)	(0.0117)	(0.00765)	(0.00561)	(0.00921)	(0.00941)	(0.00650)	(0.0122)
Age squared of HH	0.000113*	1.19e-05	-9.60e-05	7.33e-05	-1.02e-05	-0.000297***	6.81e-05	-0.000145***	-0.000162**	-0.000144*	-0.000136**	-0.000150
	(6.28e-05)	(5.74e-05)	(9.57e-05)	(4.62e-05)	(5.37e-05)	(0.000105)	(6.80e-05)	(5.04e-05)	(8.05e-05)	(8.07e-05)	(5.85e-05)	(0.000113)
Marital Status	0.0805	0.119***	0.204**	-0.0124	0.0999**	0.277***	-0.157**	0.0130	0.212**	-0.0655	0.130***	0.0536
	(0.0595)	(0.0460)	(0.0826)	(0.0432)	(0.0491)	(0.0921)	(0.0777)	(0.0488)	(0.0838)	(0.0772)	(0.0476)	(0.0849)
EduHH: Basic education	0.110***	0.215***	0.503***	0.0793*	0.207***	0.829***	0.182***	0.280***	0.417***	0.0485	0.139*	0.570***
	(0.0410)	(0.0465)	(0.108)	(0.0409)	(0.0791)	(0.198)	(0.0407)	(0.0500)	(0.111)	(0.0422)	(0.0717)	(0.170)
EduHH: Secondary	0.129***	0.307***	0.544***	0.132***	0.376***	0.665***	0.0876**	0.202***	0.410***	0.0221	0.201***	0.375***
	(0.0308)	(0.0349)	(0.0795)	(0.0162)	(0.0346)	(0.0911)	(0.0414)	(0.0360)	(0.0747)	(0.0403)	(0.0362)	(0.0790)
EduHH:Post Secondary	0.153***	0.364***	0.709***	0.105***	0.412***	1.591***	0.191***	0.310***	0.656***	0.118***	0.489***	1.071***
	(0.0316)	(0.0653)	(0.191)	(0.0197)	(0.0555)	(0.229)	(0.0384)	(0.0644)	(0.157)	(0.0285)	(0.0458)	(0.201)
EduHH: University and +	0.0918**	0.533***	1.774***	0.0354**	0.427***	2.405***	0.128***	0.444***	1.064***	0.0387	0.440***	1.753***
	(0.0363)	(0.0391)	(0.167)	(0.0167)	(0.0333)	(0.131)	(0.0378)	(0.0393)	(0.129)	(0.0285)	(0.0339)	(0.117)
HH's Activity status	0.268**	0.121**	-0.0986	0.388***	0.0905	-0.136*	0.513***	0.0773	-0.135	0.229	0.314***	0.0722
	(0.114)	(0.0583)	(0.0616)	(0.112)	(0.0599)	(0.0712)	(0.136)	(0.0637)	(0.0830)	(0.154)	(0.0682)	(0.0730)
EmpHH: Employee	-0.625***	-0.325***	-0.111	-0.383***	-0.0677	-0.000861	-0.525***	-0.248**	-0.390**	-0.345*	-0.362***	-0.301*
	(0.143)	(0.117)	(0.139)	(0.100)	(0.125)	(0.178)	(0.167)	(0.0984)	(0.152)	(0.177)	(0.117)	(0.158)
EmpHH: Employer	-0.327**	0.0636	0.326**	-0.167*	0.310**	0.551***	-0.265	0.129	0.0592	-0.144	0.0211	0.283
	(0.143)	(0.124)	(0.157)	(0.102)	(0.132)	(0.200)	(0.172)	(0.104)	(0.175)	(0.178)	(0.123)	(0.179)
EmpHH: Self-employed	-0.455***	-0.237**	-0.0214	-0.254**	0.0567	0.0977	-0.322*	-0.114	-0.232	-0.303*	-0.291**	-0.184
	(0.143)	(0.119)	(0.138)	(0.102)	(0.127)	(0.181)	(0.174)	(0.103)	(0.158)	(0.180)	(0.120)	(0.160)
SecHH: Government	0.407***	0.204*	0.214	0.0422	0.0649	-0.0823	0.0554	0.0976	0.334***	0.159	0.0368	0.143
	(0.153)	(0.112)	(0.155)	(0.0921)	(0.116)	(0.184)	(0.118)	(0.0801)	(0.130)	(0.161)	(0.111)	(0.167)
SecHH: Public sector	0.581***	0.391***	0.382*	0.117	0.136	-0.216	0.0172	0.293***	0.360**	0.235	0.0923	0.160
	(0.156)	(0.125)	(0.212)	(0.0924)	(0.124)	(0.206)	(0.137)	(0.0964)	(0.184)	(0.163)	(0.124)	(0.206)
SecHH: Private	0.224	0.0300	-0.0827	-0.0546	-0.118	-0.205	-0.0250	-0.00729	0.0787	0.136	-0.104	-0.0545

Sector	(0.153)	(0.108)	(0.143)	(0.0913)	(0.114)	(0.172)	(0.106)	(0.0712)	(0.111)	(0.155)	(0.108)	(0.156)
SecHH: Joint/ Cooperative	0.468*** (0.157)	0.00825 (0.155)	0.442 (0.299)	0.0887 (0.106)	0.0372 (0.137)	0.234 (0.239)	0.0960 (0.140)	0.295*** (0.104)	0.323* (0.176)	0.293* (0.161)	0.0389 (0.130)	0.294 (0.217)
IndHH: Agriculture and Fishing	-0.0902 (0.0620)	-0.0828* (0.0497)	-0.159* (0.0908)	-0.106** (0.0531)	-0.0132 (0.0537)	0.107 (0.104)	-0.165** (0.0799)	-0.123** (0.0562)	0.129 (0.0963)	-0.102 (0.0727)	-0.0886 (0.0572)	0.00190 (0.0860)
IndHH: Goods- producing	-0.0979* (0.0572)	-0.0561 (0.0485)	-0.129 (0.0929)	-0.0839* (0.0450)	-0.0762 (0.0483)	0.0336 (0.1000)	0.0655 (0.0667)	0.0576 (0.0531)	0.0781 (0.0983)	-0.0603 (0.0575)	0.0171 (0.0588)	0.0537 (0.108)
IndHH: Services- providing	0.0310 (0.0446)	0.0510 (0.0418)	-0.0621 (0.0894)	0.0121 (0.0329)	0.0619 (0.0419)	0.219** (0.0936)	-0.0587 (0.0625)	-0.0640 (0.0478)	0.114 (0.0883)	-0.116** (0.0536)	-0.0166 (0.0498)	0.0813 (0.0815)
Area: Large cities	-0.0644 (0.0400)	-0.0725* (0.0379)	-0.244*** (0.0707)	-0.121*** (0.0373)	-0.182*** (0.0393)	-0.162** (0.0649)	-0.144*** (0.0475)	-0.165*** (0.0371)	-0.198*** (0.0698)	-0.194*** (0.0497)	-0.283*** (0.0417)	0.152** (0.0637)
Area: Medium and small cities	-0.143*** (0.0384)	-0.128*** (0.0301)	-0.269*** (0.0531)	-0.152*** (0.0379)	-0.287*** (0.0385)	-0.400*** (0.0615)	-0.197*** (0.0478)	-0.292*** (0.0302)	-0.342*** (0.0471)	-0.225*** (0.0497)	-0.429*** (0.0404)	-0.433*** (0.0542)
Constant	6.963*** (0.183)	7.485*** (0.164)	8.441*** (0.301)	6.817*** (0.157)	7.264*** (0.166)	7.499*** (0.344)	6.977*** (0.225)	7.266*** (0.161)	8.146*** (0.269)	6.337*** (0.287)	7.483*** (0.185)	8.515*** (0.342)
Observations	6,477	6,477	6,477	5,828	5,828	5,828	6,195	6,195	6,195	5,083	5,083	5,083
R-squared	0.107	0.205	0.162	0.088	0.221	0.269	0.112	0.236	0.171	0.094	0.248	0.274

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4c. Unconditional quantile regression results for metropolitan/nonmetropolitan regions

Variables	2005						2010					
	Inland region			Littoral region			Inland region			Littoral region		
	rif_10	rif_50	rif_90	rif_10	rif_50	rif_90	rif_10	rif_50	rif_90	rif_10	rif_50	rif_90
Household size	-0.0482*** (0.00669)	-0.0510*** (0.00640)	-0.0734*** (0.00763)	-0.0562*** (0.0145)	-0.1000*** (0.0140)	-0.150*** (0.0223)	-0.0808*** (0.00917)	-0.0824*** (0.00555)	-0.0970*** (0.00757)	-0.0467*** (0.0140)	-0.161*** (0.0124)	-0.248*** (0.0255)
Proportion of children	-0.392*** (0.0578)	-0.485*** (0.0495)	-0.526*** (0.0876)	-0.145* (0.0816)	-0.398*** (0.0943)	-0.109 (0.202)	-0.487*** (0.0752)	-0.424*** (0.0495)	-0.404*** (0.0715)	-0.180 (0.124)	-0.276*** (0.1000)	-0.458** (0.200)

Proportion of older adults	-0.200*** (0.0573)	-0.0369 (0.0561)	-0.0406 (0.106)	-0.269*** (0.0910)	-0.322*** (0.0933)	0.183 (0.226)	-0.136* (0.0710)	-0.0572 (0.0534)	0.0174 (0.0954)	-0.201** (0.0947)	-0.325*** (0.0890)	0.0234 (0.244)
Proportion of earners	0.381*** (0.0402)	0.753*** (0.0456)	1.056*** (0.0985)	0.216*** (0.0510)	0.663*** (0.0746)	1.658*** (0.178)	0.298*** (0.0517)	0.540*** (0.0449)	0.791*** (0.0834)	-0.0262 (0.0561)	0.317*** (0.0744)	0.956*** (0.179)
Access to water	0.144*** (0.0323)	0.173*** (0.0250)	0.122*** (0.0368)	0.169 (0.139)	0.207** (0.0825)	0.0441 (0.129)	0.353*** (0.0419)	0.261*** (0.0253)	0.202*** (0.0324)	0.178 (0.168)	0.477*** (0.142)	0.496*** (0.170)
Access to sewage	0.0803*** (0.0240)	0.0234 (0.0231)	0.0982** (0.0406)	0.0302 (0.0555)	0.132** (0.0539)	0.177** (0.0838)	0.125*** (0.0300)	0.127*** (0.0228)	0.0556 (0.0349)	0.132 (0.0985)	0.231*** (0.0711)	0.164 (0.104)
Gender of HH	0.0178 (0.0453)	-0.107*** (0.0381)	-0.211*** (0.0668)	0.104 (0.0825)	-0.161* (0.0871)	-0.951*** (0.197)	0.250*** (0.0690)	0.0532 (0.0391)	-0.0857 (0.0621)	0.0114 (0.116)	-0.0844 (0.0828)	-0.282 (0.197)
Age of HH	-0.0113** (0.00516)	-0.00181 (0.00493)	0.0128 (0.00833)	-0.00263 (0.00668)	0.00967 (0.00864)	0.0278 (0.0205)	0.00153 (0.00665)	0.0123*** (0.00463)	0.00747 (0.00701)	0.00864 (0.0133)	0.00839 (0.00979)	0.0156 (0.0232)
Age squared of HH	9.60e-05** (4.80e-05)	1.47e-05 (4.55e-05)	-0.000139* (7.48e-05)	5.62e-05 (6.16e-05)	-3.85e-05 (7.95e-05)	-0.000262 (0.000182)	-2.38e-05 (5.91e-05)	-0.000133*** (4.14e-05)	-9.71e-05 (6.10e-05)	-5.29e-05 (0.000109)	-4.25e-05 (8.94e-05)	-0.000102 (0.000216)
Marital Status	0.0419 (0.0434)	0.115*** (0.0375)	0.188*** (0.0645)	-0.0360 (0.0706)	0.136* (0.0794)	0.683*** (0.174)	-0.138** (0.0625)	0.0692* (0.0383)	0.176*** (0.0609)	0.0508 (0.103)	0.179** (0.0738)	0.105 (0.168)
EduHH: Basic education	0.0972*** (0.0365)	0.237*** (0.0432)	0.610*** (0.102)	0.0769*** (0.0228)	0.124 (0.102)	0.649** (0.266)	0.165*** (0.0369)	0.278*** (0.0459)	0.398*** (0.0971)	0.0437* (0.0244)	0.155* (0.0905)	0.889*** (0.245)
EduHH: Secondary	0.146*** (0.0225)	0.337*** (0.0289)	0.584*** (0.0665)	0.0926*** (0.0250)	0.350*** (0.0463)	0.615*** (0.133)	0.0942*** (0.0323)	0.231*** (0.0303)	0.369*** (0.0610)	-0.0223 (0.0579)	0.137*** (0.0453)	0.445*** (0.113)
EduHH: Post Secondary	0.151*** (0.0244)	0.383*** (0.0571)	0.737*** (0.163)	0.0786*** (0.0230)	0.390*** (0.0590)	1.870*** (0.272)	0.179*** (0.0300)	0.397*** (0.0495)	0.732*** (0.144)	0.0924*** (0.0348)	0.390*** (0.0603)	1.163*** (0.254)
EduHH: University and +	0.0831*** (0.0281)	0.538*** (0.0343)	1.834*** (0.148)	0.0304 (0.0194)	0.386*** (0.0374)	2.451*** (0.145)	0.114*** (0.0326)	0.475*** (0.0333)	1.074*** (0.108)	0.0504** (0.0251)	0.411*** (0.0403)	1.984*** (0.141)
HH's Activity status	0.286*** (0.0878)	0.101** (0.0465)	-0.0761 (0.0505)	0.481** (0.192)	0.146 (0.0964)	-0.166 (0.124)	0.475*** (0.115)	0.130** (0.0533)	-0.0887 (0.0677)	0.191 (0.254)	0.330*** (0.113)	0.134 (0.105)
EmpHH: Employee	-0.576*** (0.111)	-0.307*** (0.0978)	-0.0703 (0.116)	-0.340*** (0.132)	0.210 (0.150)	0.0161 (0.321)	-0.487*** (0.142)	-0.283*** (0.0816)	-0.333*** (0.123)	-0.358 (0.234)	-0.264 (0.184)	-0.279 (0.211)
EmpHH: Employer	-0.285** (0.112)	0.122 (0.103)	0.376*** (0.131)	-0.195 (0.132)	0.407*** (0.157)	0.697** (0.349)	-0.239* (0.145)	0.108 (0.0865)	0.121 (0.140)	-0.166 (0.229)	0.104 (0.194)	0.477* (0.261)

EmpHH: Self-employed	-0.415*** (0.113)	-0.193* (0.0990)	0.0209 (0.117)	-0.254* (0.133)	0.276* (0.158)	0.129 (0.324)	-0.337** (0.146)	-0.163* (0.0844)	-0.182 (0.126)	-0.350 (0.238)	-0.192 (0.194)	-0.136 (0.233)
SecHH: Government	0.332*** (0.118)	0.248*** (0.0922)	0.176 (0.125)	-0.0940 (0.0731)	-0.317** (0.151)	-0.300 (0.333)	0.0502 (0.106)	0.106 (0.0681)	0.271** (0.108)	0.197 (0.239)	-0.103 (0.185)	0.188 (0.255)
SecHH: Public sector	0.475*** (0.121)	0.389*** (0.104)	0.252 (0.168)	-0.00881 (0.0710)	-0.207 (0.159)	-0.418 (0.350)	0.0500 (0.115)	0.195** (0.0836)	0.286* (0.168)	0.251 (0.256)	-0.00277 (0.199)	0.157 (0.277)
SecHH: Private Sector	0.175 (0.119)	0.0525 (0.0893)	-0.0946 (0.115)	-0.164** (0.0708)	-0.435*** (0.145)	-0.374 (0.316)	0.0233 (0.0939)	-0.00435 (0.0613)	0.0420 (0.0953)	0.109 (0.250)	-0.286 (0.184)	-0.198 (0.237)
SecHH: Joint/Cooperative	0.387*** (0.129)	0.108 (0.119)	0.328 (0.211)	-0.0176 (0.0762)	-0.337* (0.183)	0.0584 (0.392)	0.147 (0.114)	0.222** (0.0863)	0.179 (0.142)	0.302 (0.253)	-0.0967 (0.211)	0.542 (0.330)
IndHH: Agriculture and Fishing	-0.0894* (0.0469)	-0.0525 (0.0413)	-0.125 (0.0760)	-0.0381 (0.110)	-0.0297 (0.111)	0.237 (0.193)	-0.161*** (0.0605)	-0.139*** (0.0453)	0.0354 (0.0708)	-0.0730 (0.135)	0.0780 (0.123)	0.286 (0.202)
IndHH: Goods-producing	-0.0900** (0.0440)	-0.0645 (0.0406)	-0.136* (0.0778)	-0.0856 (0.0680)	-0.0372 (0.0648)	0.199 (0.137)	0.00585 (0.0525)	0.0394 (0.0459)	0.0883 (0.0790)	-0.0348 (0.0808)	0.0952 (0.0738)	0.108 (0.150)
IndHH: Services-providing	0.0295 (0.0341)	0.0500 (0.0353)	-0.0485 (0.0747)	0.00850 (0.0483)	0.0877 (0.0555)	0.396*** (0.126)	-0.0992** (0.0494)	-0.0516 (0.0414)	0.0878 (0.0671)	-0.0807 (0.0740)	0.0263 (0.0580)	0.166 (0.117)
Area: Large cities	-0.0860*** (0.0311)	-0.110*** (0.0321)	-0.216*** (0.0584)	-0.110 (0.0741)	-0.279*** (0.0647)	-0.207** (0.105)	-0.147*** (0.0366)	-0.128*** (0.0313)	0.00324 (0.0579)	-0.238*** (0.0690)	-0.467*** (0.0718)	-0.140 (0.139)
Area: Medium and small cities	-0.160*** (0.0297)	-0.152*** (0.0248)	-0.261*** (0.0431)	-0.0953 (0.0864)	-0.460*** (0.0729)	-0.501*** (0.116)	-0.211*** (0.0366)	-0.286*** (0.0250)	-0.261*** (0.0366)	-0.224*** (0.0788)	-0.600*** (0.0820)	-0.687*** (0.143)
Constant	6.950*** (0.146)	7.416*** (0.134)	8.133*** (0.236)	6.660*** (0.230)	7.317*** (0.252)	7.989*** (0.620)	6.768*** (0.194)	7.341*** (0.132)	8.358*** (0.204)	6.710*** (0.452)	7.695*** (0.310)	8.470*** (0.667)
Observations	9,784	9,784	9,784	2,521	2,521	2,521	9,289	9,289	9,289	1,989	1,989	1,989
R-squared	0.099	0.195	0.154	0.095	0.256	0.341	0.110	0.220	0.146	0.054	0.271	0.338

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

4.3. Decomposition results

In this section, we further explore the welfare distribution and the resulting regional wage gaps by using the decomposition technique detailed in Methodology Section. Specifically, we decompose the distributional regional consumption differentials $\hat{q}_{G,\tau} - \hat{q}_{G',\tau}$ into endowment and return effects explained, respectively, by differences in household and head of household characteristics $(\bar{X}_R - \bar{X}_{\bar{R}})\hat{\beta}_{R,\tau}$ and differences (or discrimination) in returns to these characteristics $\bar{X}_{\bar{R}}(\hat{\beta}_{R,\tau} - \hat{\beta}_{\bar{R},\tau})$ at the τ th unconditional quantile. The decomposition results of rural-urban, inland-littoral and nonmetropolitan-metropolitan gaps for the two years at the mean, lowest, median and top quantiles are presented, respectively, in Tables 5a,b, 6a,b and 7a,b. The approximation errors obtained as $\hat{q}_{R,\tau} - \hat{q}_{\bar{R},\tau} - (\bar{X}_R - \bar{X}_{\bar{R}})\hat{\beta}_{R,\tau} + \bar{X}_{\bar{R}}(\hat{\beta}_{R,\tau} - \hat{\beta}_{\bar{R},\tau})$ are all insignificant and small in magnitude, indicating that the RIF-based decompositions provide consistent approximations to the consumption differentials among households. Yet, in the interest of space, we have omitted the approximate errors from the decomposition results.

The aforementioned Tables reveals some important and common findings. First, on average and at different quantiles, households living in privileged regions \bar{R} consume more than their peers in unprivileged regions (R). For instance the Table 5a shows that urban households in 2005 consume 18.6% more than urban households; The average consumption gap after netting out the effects of endowment differences in household and heads' characteristics is about -18.1% indicating the importance of the explained part in the rural/urban consumption gap. When looking on the dynamics of the overall average gap, we find that a significant raise of the gap has occurred over the considered period between rural and urban households and nonmetropolitan/metropolitan (23.6 percentage point in rural/urban gap, and 5.3 points in nonmetropolitan/metropolitan gap). The welfare gap between rural and urban regions is then largely widened, while a slight increase of about 0.2 percentage point is found between inland and littoral regions. Such increase in rural/urban gap leads to conclude that rural households, shown in Table 5a and 5b to have lower expenditures than urban households across all considered population percentiles and for the two years, are the main group affected by the deterioration of the economic situation.

Second, Tables 5a,b and 7a,b reveal that consumption differentials are much larger at higher percentiles than at the bottom and middle parts of consumption distribution; the lower gap is found at the middle percentile (median). It is gleaned from these tables that endowment effects is found to contribute more to the consumption differential than the return effects at the considered percentiles of the consumption distribution. This means that after netting out the effects of regional difference in characteristics, no significant part of consumption differentials exist at the considered percentiles of consumption distribution. Giving that all the endowment effects dominates the return effects, as revealed in the six Tables of decomposition results, we may state that households living in privileged regions over the considered period are better off because they have superior characteristics than their counterparts in unprivileged regions. This corresponds somewhat to the findings by [Belhaj Hassine \(2015\)](#) who focused on the rural-urban and nonmetropolitan-metropolitan gap.

One of the main advantages of the unconditional quantile decomposition is that it allows to investigate the impacts of different covariates along the distribution of an outcome. In this regard, the aforementioned tables show that all the endowment effects follow the same U-shape as the overall gap and tend to be larger at very low and very high percentile of households' welfare distribution except the endowment effect in Table 5b which follow an inverted U-shape. Table 6a and 6b show for the two years same U-shape variation of endowment effects and overall gap across the three percentiles.

Third, in addition to the overall endowment and return effects Tables 5a,b, 6a,b and 7a,b display the detailed decomposition results for these two effects at the mean and selected quantiles for the two survey years showing the contribution of each individual covariate (or group of covariates) to these effects. It is worth to note that the effect of each dichotomous variable is obtained by summing up the contributions of all the dummy variables generated from that variable. A significant and negative sign suggests that the relevant variable contributes significantly and positively to the corresponding endowment or return effect and vice versa.

The findings across the two years reveal that differences in the distribution of general household demographic characteristics including access to core basic services matter the most for inequality between rural and urban, inland and littoral and nonmetropolitan and metropolitan households at the mean, median and lower end and the top of the welfare distribution. The household human capital, evaluated by the educational level of the head, is found to be the most important factor accounting for the gaps among rural–urban better-off households in the two years, while the returns to these group of variables appear to be the dominant factor accounting for rural–urban differences in returns to household characteristics at the top end of consumption distribution in 2010 (10.6%). The Tables 5a and 5b reveal, as well, that geographical location is playing a significant role in explained and unexplained parts of rural-urban gap at lower percentile of the consumption distribution over the considered period. The results, shown in Tables 6a to 7b, indicate that significant endowment and returns effects of educational level is found.

The investigation of the dynamics of the distribution of household and head education covariates over time reveals a slight decline of the contribution of these covariates to the different welfare gaps in Tunisia. Yet, differences in households' human capital, between rural and urban regions, appear to have widened over the period in Tunisia particularly at higher percentiles. The effect of the returns to this group of variable is found to raise substantially for better-off households implying as expected that in Tunisia urban markets are recently paying more for educational attributes than rural markets would. These finding suggest that development policies in Tunisia failed to narrow the gaps between rural and urban household driven mainly by difference in endowments between the two groups of population, at the median and higher percentile of the distribution. , in Egypt mainly through improvement of human capital and of access to basic services. These policies do not seem to have been effective in Syria, Tunisia, and Yemen where the endowment gaps increased strikingly, particularly for poor and middle-class households.

Table 5a. Decomposition at the mean and selected quantiles by rural/urban in 2005

Variables	Mean		10th pctile			median			90th pctile			
	Overall Gap	Endowment	Returns	Overall Gap	Endowment	Returns	Overall Gap	Endowment	Returns	Overall Gap	Endowment	Returns
House charac.		-0.103*** (0.00642)	0.152*** (0.0458)		-0.0687*** (0.00711)	0.204*** (0.0742)		-0.100*** (0.00741)	0.221*** (0.0591)		-0.127*** (0.0115)	0.141 (0.107)
Access to basic serv.		-0.107*** (0.0242)	-0.0134 (0.0526)		-0.0525 (0.0363)	-0.335*** (0.0892)		-0.135*** (0.0317)	0.0396 (0.0673)		-0.132** (0.0558)	0.244* (0.125)
Head charac.		0.00890*** (0.00232)	-0.534*** (0.176)		0.00845** (0.00331)	-0.630** (0.285)		0.00984*** (0.00294)	-0.712*** (0.228)		0.00621 (0.00505)	-0.370 (0.413)
Head educ.		-0.0812*** (0.00739)	0.00329 (0.0267)		-0.0255** (0.0101)	-0.0127 (0.0412)		-0.0532*** (0.00896)	0.0525 (0.0348)		-0.176*** (0.0170)	-0.0182 (0.0619)
Head emp.		-0.0384*** (0.00786)	0.109* (0.0626)		-0.0188* (0.0114)	-0.143 (0.101)		-0.0263*** (0.0101)	0.0933 (0.0809)		-0.0709*** (0.0175)	0.0510 (0.147)
Geographical loca.		-0.0477*** (0.0111)	0.00372 (0.00896)		-0.0415** (0.0164)	-0.0196 (0.0140)		-0.0577*** (0.0144)	0.0229** (0.0116)		-0.0386 (0.0251)	0.0209 (0.0209)
Rural	7.252*** (0.0103)			6.458*** (0.0134)			7.243*** (0.0125)			8.064*** (0.0210)		
Urban	7.438*** (0.00813)			6.622*** (0.0121)			7.391*** (0.00915)			8.337*** (0.0170)		
difference	-0.186*** (0.0131)			-0.164*** (0.0180)			-0.148*** (0.0155)			-0.273*** (0.0270)		
explained	-0.367*** (0.0269)			-0.198*** (0.0392)			-0.363*** (0.0347)			-0.538*** (0.0608)		
unexplained	0.182*** (0.0279)			0.0343 (0.0424)			0.215*** (0.0365)			0.265*** (0.0646)		
Constant			0.461** (0.200)			0.970*** (0.324)			0.498* (0.258)			0.196 (0.469)
Observations	11,033	11,033	11,033	11,033	11,033	11,033	11,033	11,033	11,033	11,033	11,033	11,033

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5b. Decomposition at the mean and selected quantiles by rural/urban in 2010

Variables	Mean			10th pctl			median			90th pctl		
	Overall Gap	Endowment	Returns	Overall Gap	Endowment	Returns	Overall Gap	Endowment	Returns	Overall Gap	Endowment	Returns
House charac.		-0.0989*** (0.00658)	0.110** (0.0430)		-0.0922*** (0.00972)	-0.168** (0.0813)		-0.101*** (0.00753)	0.293*** (0.0578)		-0.112*** (0.0102)	-0.0307 (0.0918)
Access to basic serv.		-0.139*** (0.0231)	-0.119** (0.0570)		-0.145*** (0.0461)	-0.298*** (0.101)		-0.155*** (0.0308)	-0.134* (0.0774)		-0.0666 (0.0480)	0.0817 (0.125)
Head charac.		-0.00239 (0.00213)	-0.345** (0.171)		-0.00695* (0.00400)	0.138 (0.323)		-0.000890 (0.00286)	-0.622*** (0.230)		7.29e-05 (0.00429)	-0.468 (0.366)
Head educ.		-0.0675*** (0.00840)	0.00318 (0.0259)		-0.0135 (0.0162)	-0.00688 (0.0507)		-0.0577*** (0.0110)	0.0661* (0.0346)		-0.142*** (0.0175)	-0.106* (0.0544)
Head emp.		-0.0360*** (0.00665)	-0.00484 (0.0588)		-0.0318** (0.0128)	0.0912 (0.110)		-0.0441*** (0.00865)	-0.0763 (0.0791)		-0.0267** (0.0131)	0.0570 (0.126)
Geographical loca.		-0.0782*** (0.0112)	-0.0218** (0.00907)		-0.0852*** (0.0222)	-0.0413** (0.0175)		-0.0975*** (0.0149)	-0.00586 (0.0121)		-0.0563** (0.0231)	-0.0152 (0.0191)
Rural	7.373*** (0.00987)			6.582*** (0.0173)			7.377*** (0.0122)			8.147*** (0.0178)		
Urban	7.596*** (0.00745)			6.846*** (0.0103)			7.560*** (0.00914)			8.431*** (0.0139)		
difference	-0.223*** (0.0124)			-0.264*** (0.0202)			-0.183*** (0.0153)			-0.284*** (0.0226)		
explained	-0.422*** (0.0253)			-0.375*** (0.0490)			-0.456*** (0.0331)			-0.403*** (0.0512)		
unexplained	0.198*** (0.0262)			0.111** (0.0519)			0.273*** (0.0350)			0.119** (0.0547)		
Constant			0.576*** (0.192)			0.395 (0.360)			0.752*** (0.258)			0.601 (0.411)
Observations	11,148	11,148	11,148	11,148	11,148	11,148	11,148	11,148	11,148	11,148	11,148	11,148

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 6a. Decomposition at the mean and selected quantiles by inland/littoral in 2005

Variables	Mean		10th pctl		median		90th pctl					
	Overall Gap	Endowment	Returns	Overall Gap	Endowment	Returns	Overall Gap	Endowment	Returns			
House charac.		-0.0928*** (0.00598)	-0.0187 (0.0453)		-0.0760*** (0.00622)	-0.0212 (0.0766)		-0.0889*** (0.00628)	0.0772 (0.0579)		-0.110*** (0.00911)	-0.128 (0.109)
Access to basic serv.		-0.0181*** (0.00480)	-0.00236 (0.0328)		-0.0138* (0.00759)	0.0412 (0.0556)		-0.0109* (0.00589)	-0.0453 (0.0420)		-0.0340*** (0.0106)	-0.0628 (0.0793)
Head charac.		0.00388** (0.00154)	-0.327* (0.175)		0.00395* (0.00238)	-0.353 (0.297)		0.00408** (0.00188)	-0.197 (0.224)		0.00131 (0.00336)	0.121 (0.423)
Head educ.		0.00809** (0.00391)	0.0661*** (0.0212)		0.00770*** (0.00286)	0.0273 (0.0361)		0.0101*** (0.00361)	0.0320 (0.0272)		0.00942 (0.00820)	0.208*** (0.0514)
Head emp.		-0.00226 (0.00291)	-0.0460 (0.0602)		-7.35e-05 (0.00376)	-0.306*** (0.101)		-0.00203 (0.00307)	-0.0367 (0.0769)		-0.00761* (0.00459)	-0.0911 (0.145)
Geographical loca.		0.000337 (0.00431)	-0.00276 (0.00236)		-0.0116* (0.00663)	0.00719* (0.00399)		-0.00187 (0.00525)	-0.00130 (0.00302)		0.0116 (0.00953)	-0.0135** (0.00567)
Inland	7.343*** (0.00935)			6.494*** (0.0131)			7.319*** (0.0109)			8.231*** (0.0193)		
Littoral	7.408*** (0.00887)			6.620*** (0.0130)			7.358*** (0.0102)			8.287*** (0.0200)		
difference explained	-0.0649*** (0.0129)			-0.126*** (0.0185)			-0.0386*** (0.0149)			-0.0566** (0.0278)		
unexplained	-0.101*** (0.00958)			-0.0899*** (0.0111)			-0.0895*** (0.0101)			-0.129*** (0.0173)		
	0.0359*** (0.0119)			-0.0363* (0.0198)			0.0509*** (0.0151)			0.0725** (0.0283)		
Constant			0.367* (0.194)			0.568* (0.329)			0.222 (0.249)			0.0398 (0.469)
Observations	11,033	11,033	11,033	11,033	11,033	11,033	11,033	11,033	11,033	11,033	11,033	11,033

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 6b. Decomposition at the mean and selected quantiles by inland/littoral in 2010

Variables	Mean			10th pctl			median			90th pctl		
	Overall Gap	Endowment	Returns	Overall Gap	Endowment	Returns	Overall Gap	Endowment	Returns	Overall Gap	Endowment	Returns
House charac.		-0.105*** (0.00573)	0.176*** (0.0417)		-0.109*** (0.00825)	0.119 (0.0877)		-0.102*** (0.00608)	0.286*** (0.0567)		-0.112*** (0.00803)	0.0798 (0.0868)
Access to basic serv.		-0.0454*** (0.00533)	0.0356 (0.0315)		-0.0559*** (0.0107)	-0.176*** (0.0662)		-0.0367*** (0.00631)	-0.0519 (0.0429)		-0.0417*** (0.00966)	0.215*** (0.0657)
Head charac.		0.000464 (0.00159)	-0.226 (0.168)		-0.000944 (0.00334)	-1.125*** (0.355)		0.00217 (0.00206)	-0.0316 (0.228)		0.00303 (0.00299)	-0.136 (0.351)
Head educ.		-0.00235 (0.00312)	0.0190 (0.0195)		0.00314 (0.00237)	-0.0480 (0.0410)		-0.00252 (0.00298)	0.0212 (0.0265)		-0.00910* (0.00529)	0.0580 (0.0406)
Head emp.		-0.00222 (0.00259)	-0.0947 (0.0584)		-0.00116 (0.00466)	0.00159 (0.122)		-0.00442 (0.00297)	-0.134* (0.0799)		-0.00320 (0.00373)	-0.124 (0.122)
Geographical loca.		-0.00402 (0.00433)	-0.00474** (0.00185)		-0.00223 (0.00877)	0.00436 (0.00377)		-0.0125** (0.00543)	0.00374 (0.00251)		0.000553 (0.00821)	0.0227*** (0.00428)
Inland	7.486*** (0.00830)			6.681*** (0.0159)			7.481*** (0.00988)			8.299*** (0.0150)		
Littoral	7.554*** (0.00876)			6.793*** (0.0143)			7.515*** (0.0110)			8.360*** (0.0158)		
difference explained	-0.0677*** (0.0121)			-0.111*** (0.0214)			-0.0339** (0.0148)			-0.0608*** (0.0218)		
unexplained	-0.159*** (0.00896)			-0.166*** (0.0141)			-0.156*** (0.00981)			-0.162*** (0.0136)		
	0.0910*** (0.0108)			0.0545** (0.0231)			0.122*** (0.0145)			0.102*** (0.0227)		
Constant			0.185 (0.185)			1.279*** (0.390)			0.0287 (0.252)			0.0317 (0.386)
Observations	11,148	11,148	11,148	11,148	11,148	11,148	11,148	11,148	11,148	11,148	11,148	11,148

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 7a. Decomposition at the mean and selected quantiles by Nonmetropolitan/metropolitan in 2005

Variables	Mean		10th pctl			median			90th pctl			
	Overall Gap	Endowment	Returns	Overall Gap	Endowment	Returns	Overall Gap	Endowment	Returns	Overall Gap	Endowment	Returns
House charac.		-0.0976*** (0.00628)	0.162*** (0.0545)		-0.0877*** (0.00630)	0.272*** (0.0975)		-0.0921*** (0.00650)	0.259*** (0.0691)		-0.117*** (0.00910)	0.00189 (0.134)
Access to basic serv.		-0.0435*** (0.00699)	-0.120 (0.0737)		-0.0590*** (0.0116)	-0.439*** (0.133)		-0.0369*** (0.00887)	-0.107 (0.0933)		-0.0514*** (0.0164)	0.0639 (0.183)
Head charac.		0.00365*** (0.00130)	-0.332 (0.211)		0.00348* (0.00205)	-0.849** (0.378)		0.00403** (0.00162)	-0.696*** (0.268)		0.00243 (0.00293)	-0.106 (0.520)
Head educ.		-0.0466*** (0.00599)	0.0128 (0.0217)		-0.00649 (0.00458)	0.0752* (0.0386)		-0.0340*** (0.00546)	-0.00852 (0.0275)		-0.111*** (0.0135)	0.106** (0.0532)
Head emp.		-0.0183*** (0.00443)	-0.0728 (0.0755)		-0.0236*** (0.00656)	-0.439*** (0.135)		-0.0100* (0.00518)	-0.0360 (0.0958)		-0.0323*** (0.00852)	0.172 (0.186)
Geographical loca.		0.0286** (0.0121)	0.00762 (0.0189)		-0.00953 (0.0200)	0.0927*** (0.0338)		0.0291* (0.0153)	0.0128 (0.0240)		0.0666** (0.0284)	-0.0351 (0.0465)
Nonmetro.	7.326*** (0.00712)			6.516*** (0.0104)			7.301*** (0.00841)			8.181*** (0.0151)		
Metrop.	7.538*** (0.0143)			6.701*** (0.0206)			7.478*** (0.0156)			8.479*** (0.0300)		
difference	-0.212*** (0.0160)			-0.185*** (0.0231)			-0.178*** (0.0177)			-0.298*** (0.0336)		
explained	-0.174*** (0.0147)			-0.183*** (0.0199)			-0.140*** (0.0167)			-0.242*** (0.0309)		
unexplained	-0.0387** (0.0165)			-0.00184 (0.0285)			-0.0378* (0.0209)			-0.0555 (0.0398)		
Constant			0.303 (0.242)			1.285*** (0.433)			0.539* (0.307)			-0.0455 (0.596)
Observations	11,033	11,033	11,033	11,033	11,033	11,033	11,033	11,033	11,033	11,033	11,033	11,033

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 7b. Decomposition at the mean and selected quantiles by Nonmetropolitan/metropolitan in 2010

Variables	Mean			10th pctl			median			90th pctl		
	Overall Gap	Endowment	Returns	Overall Gap	Endowment	Returns	Overall Gap	Endowment	Returns	Overall Gap	Endowment	Returns
House charac.		-0.102*** (0.00630)	0.348*** (0.0560)		-0.107*** (0.00784)	0.314*** (0.0951)		-0.104*** (0.00672)	0.467*** (0.0824)		-0.100*** (0.00744)	0.204* (0.115)
Access to basic serv.		-0.0964*** (0.00702)	-0.129 (0.101)		-0.148*** (0.0142)	0.102 (0.166)		-0.0949*** (0.00920)	-0.353** (0.151)		-0.0454*** (0.0131)	0.130 (0.211)
Head charac.		0.00292 (0.00196)	-0.406* (0.224)		0.000924 (0.00345)	-0.369 (0.381)		0.00477* (0.00245)	-0.482 (0.329)		0.00911*** (0.00323)	-0.956** (0.461)
Head educ.		-0.0384*** (0.00480)	0.0110 (0.0222)		-0.0129*** (0.00417)	-0.0363 (0.0381)		-0.0355*** (0.00473)	0.0816** (0.0325)		-0.0630*** (0.00791)	0.0148 (0.0456)
Head emp.		-0.0167*** (0.00376)	0.0254 (0.0799)		-0.00615 (0.00634)	0.0751 (0.135)		-0.0229*** (0.00448)	0.00718 (0.118)		-0.0178*** (0.00589)	0.0408 (0.165)
Geographical loca.		-0.0188* (0.0111)	0.0417** (0.0176)		0.0151 (0.0225)	0.0779*** (0.0301)		-0.0236 (0.0147)	0.0655** (0.0258)		-0.0544** (0.0212)	-0.0249 (0.0360)
Nonmetro.	7.457*** (0.00648)			6.682*** (0.0116)			7.449*** (0.00798)			8.231*** (0.0109)		
Metropo.	7.722*** (0.0145)			6.958*** (0.0185)			7.660*** (0.0194)			8.567*** (0.0257)		
difference	-0.265*** (0.0159)			-0.276*** (0.0219)			-0.211*** (0.0210)			-0.337*** (0.0279)		
explained	-0.270*** (0.0133)			-0.258*** (0.0221)			-0.276*** (0.0159)			-0.272*** (0.0219)		
unexplained	0.00504 (0.0159)			-0.0181 (0.0293)			0.0653*** (0.0225)			-0.0651** (0.0318)		
Constant			0.115 (0.260)			-0.181 (0.440)			0.279 (0.382)			0.526 (0.535)
Observations	11,148	11,148	11,148	11,148	11,148	11,148	11,148	11,148	11,148	11,148	11,148	11,148

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

5. Conclusion and policy implications

Regional inequality is at the core of debates on the revolution's causes and achievements in Tunisia, as well as in the Arab world. The prime question surrounding such debates, which is difficult to answer definitely, is whether or not inequality has played a key causal role in the December 2010 revolution and the Arab Spring. Yet, the requirement for more equity between privileged and unprivileged regions and implementation of inclusive growth policies has brought the economic inequality issue to the front burner of Tunisian policy makers' priorities. Though this study is not a novelty in the literature on this issue focusing on a the assessment of inequality and determination of its main drivers for some Arab countries, it could be considered as a contribution to the understanding of the extent, evolution, and determinants of consumption expenditure inequality in Tunisia by investigating mainly the sources of inequality between rural urban, inland littoral and nonmetropolitan metropolitan regions.

The empirical analysis is drawn on micro-data from the two Household Budget Consumption & Living Standard surveys conducted in 2005 and 2010 in Tunisia. These two surveys permit us not only to assess inequality levels and its dynamics over the considered period, but also to investigate the main drivers and structure of inequality. Taking into account the magnitude of economic inequalities and imbalances between privileged and unprivileged regions in Tunisia and their significant and enduring contribution to social unrest during pre-and post revolution, the current study devotes a special focus on the analysis of rural–urban, inland–littoral as well as metropolitan–nonmetropolitan welfare gaps across the entire distribution of household yearly real per capita total consumption expenditures. Based on the results of the analysis, some policy implications are suggested for the design of relevant strategies to overcome the inequality issues and promote equity between different regions.

Drawing on the two nationally representative surveys data, we investigate the determinants of welfare gaps among households living in different regions using OLS and unconditional quantile regressions after conducting a brief descriptive analysis by means of kernel density and cumulative percentiles plots showing particularly obvious disparities between rural and urban areas and nonmetropolitan and metropolitan regions. We find that the used OLS regressions cannot afford an adequate and accurate description of welfare determination. The unconditional quantile regression findings show a significant welfare gap and substantial differences in the coefficient estimates on households and head characteristics at different quantiles of the consumption distributions between rural and urban and nonmetropolitan and metropolitan regions. The overall gaps between these regions, ranging in average between 18.6% (rural-urban) and 26.5% (nonmetropolitan-metropolitan), are found, in the two years to follow a U-shape across the lower, middle and higher percentiles of the consumption distributions. The evolution of regional inequalities, captured by the overall gap estimates, over time shows an obvious widening rural-urban gap across the entire distribution in Tunisia mainly driven by differences in households characteristics and head educational level.

To help a better investigation of the main drivers of inequality in log monthly real per capita total expenditure across the entire distribution between different regions of location, we use in the current paper the unconditional quantile decomposition of inequality based on RIF regressions. Using this well developed method in the literature, the welfare gap is

decomposed at each quantile into the contribution of differences in the distributions of observed household and head characteristics and geographical locations and the contribution of differences in the distributions of returns to these characteristics. The main results of the decomposition analysis reveal that endowment effects dominate returns effects and that these effects are larger at higher quantiles in most cases, indicating higher welfare gaps between better-off rural and urban, inland and littoral and nonmetropolitan and metropolitan households. Despite rural development being a very important part of policies and strategies adopted by the Tunisian government since the independence, urban households remain to be much better endowed than their rural counterparts and this contributes massively to the welfare gap between the two areas. The endowment effects are found to more strongly dominate at the higher tails of the distributions, suggesting that differences in household and head characteristics have proportionately the obvious and significant effects on welfare gap.

The decomposition results show as well that households' demographic composition, access to core basic services, education of the head, and geographical location are the most important drivers of regional inequality in Tunisia mainly between urban and rural households. For instance, families at the top end of consumption distribution headed by postgraduate men are found to be more comfortable than their peers who may face severe hardships. It is noteworthy in this regard that persistence of the interregional divides is of serious concern for social cohesion and inclusive growth prospects in Tunisia as stated [Belhaj Hassine \(2015\)](#).

Giving the findings of the current exercise, we suggest that strategies of development to be addressed for the alleviation of the regional welfare inequalities in Tunisia, as well as in other Arab countries, should focus mainly on the improvement of the rural and nonmetropolitan households' demographic and educational endowments through a set of relevant family planning and awareness programs particularly for the disenfranchised population in these regions. We suggest as well that policy interventions should also include initiatives to develop and enhance the infrastructure for the provision of public core services such as education and healthcare, and skills development programs in rural areas and unprivileged regions aiming to narrow the gap between different regions. It is worth to note in this regard that most of development and education strategies implemented in Tunisia during the last decades were biased toward urban and metropolitan regions, which has contributed in widening regional inequalities for a long time. Therefore, It is time for policy makers in Tunisia to develop and implement a relevant positive discrimination policy in order to overcome to reduce regional imbalances and bridge the transformation between the turmoil of the recent revolution revolts and the promise for better future.

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