ON THE DECOMPOSITION OF ECONOMIC INEQUALITY: A METHODOLOGY AND AN APPLICATION TO TUNISIA

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Abstract

The paper provides a detailed examination of the structure and dynamics of economic inequality in Tunisia by using harmonized micro-data from national household budget surveys for 2005 and 2010. It assesses the levels and drivers of urban-rural and littoral-inland disparities employing the Firpo et al. (2009) method. The main findings reveal that, in contrast to the decrease in within-region inequality, the between-region inequality has increased slightly over the considered period. Disparities in households' endowments such as human capital, demographic composition, and regional location appear as the main sources of the urban–rural welfare gap, while the coastal-inland is driven mainly by the differences in returns to human capital. Giving these results, any policy intervention aiming at mitigating the impact of economic inequality among regions must consider these key factors to give more chances to next generations to spring out of the poverty and inequality lived by their parents.

JEL Classification: D6, H2

Keywords: Economic Inequality; Consumption expenditures; Unconditional quantile regression decomposition; Tunisia

ملخص

تقدم الورقة دراسة مفصلة لهيكل وديناميكيات عدم المساواة الاقتصادية في تونس باستخدام بيانات متناسقة متناهية الصغر من مسوح الميزانية الوطنية للأسر المعيشية لعامي 2005 و2010. وتقيم مستويات ودوافع التفاوتات بين المناطق الحضرية والريفية والداخلية الساحلية التي يستخدمها فيربو وآخرون. (2009). وتبين النتائج الرئيسية أنه على الرغم من الانخفاض في عدم المساواة داخل المنطقة، فإن التفاوت بين المناطق قد ازداد قليلا خلال الفترة التي ننظر فيها. وتبدو التفاوتات في أوقاف الأسر المعيشية مثل رأس المال البشري والتكوين الديمغرافي والموقع الإقليمي مصدرا رئيسيا للفجوة بين الرفاه الحضري والريفي، في حين أن المناطق الساحلية الداخلية ترجع أساسا إلى الاختلافات في العائدات إلى رأس المال البشري. وبإعطاء هذه النتائج، فإن أي تدخل في السياسات يهدف إلى التخفيف من أثر عدم المساواة الاقتصادية بين المناطق يجب أن ينظر في هذه العوامل الرئيسية لإعطاء المزيد من الفرص للأجيال القادمة للخروج من الفقر وعدم المساواة التي يعيشها والديهما.

1. Introduction

Even though Tunisia's real GDP per capita growth since the 1990s was ranked in the second position of the highest growth rates among the MENA countries, it has not reached the highest rates observed in other upper-middle-income countries over the same period. In contrast to many of its peers, Tunisia did not know any take-off during the past two decades (Nucifora and Rijkers, 2014). Locally, economic conditions and standard of living improved for almost all Tunisians, but considerable disparities persisted between urban and rural areas, as well as between littoral (coastal) and inland (interior) regions. [1] The recent statistics reveal that the average poverty rates remained four times as high in the inland part of the country compared to the richer littoral areas.

The economic policies contributed to deepening these disparities as most private investment was attracted in the export oriented offshore sector located mainly along the coastline, near the main harbors. Besides, public investment and agricultural policies were also skewed the littoral region so that the quality of public services and infrastructure in inland region continued to be deteriorated. The persistence of such disparities and unequal opportunity coupled with lack of transparency and increasing corruption, caused social instability, fueled frustration amongst the unprivileged population and set the stage for the recent 2011 revolution.

The poor, living particularly in the inland region, appear to have shared little in the gains from the Tunisia's growth and their prospects of escaping poverty seem to be hindered by high inequality compared to many middle and upper middle people who take more advantage of relative growing economy. During the last five years after the revolution, the main national strategies and policies for reduction of poverty in Tunisia has given high priority to accelerating poverty alleviation and promoting growth and regional development with more equity between different regions. The adopted strategies and policies are in line with the twin goals of eradication extreme poverty and enhancing common wealth by 2030 that are heading the World Bank's development agenda. These objectives cannot be reached through stand-alone policy approaches, but rather through a multidimensional and integrated reform agenda that entails the active participation of various sectors beyond the state and government. Tackling inequality for the present and future generations has been regarded as a decisive step for supporting prosperity and inclusiveness[2] .

This paper attempts to fill some of the knowledge gaps in the area of inequality with particular focus on examining the extent and main drivers of economic inequality in Tunisia, during the five years before the 2011 revolution. It draws on data from the National Surveys on harmonized Households' Budget, Consumption and Standard of Living (HBCLS) which are typically conducted respectively in 2005 and 2010 by the National Statistical Institute of Tunisia (NSI). The first focus of the study is the extent and recent trends in economic inequality using a set of comparable measures of welfare inequality such as the Gini, p90/p10 and income shares. It also examines the structure of inequality to explore how the differences in household features have an effect on the level of inequality over time. The second is the decomposition of spatial inequalities between urban and rural areas as well as between littoral and inland parts of the country using the Recentered Influence Function (RIF) regression approach proposed by Firpo et al. (2009). The method allows us to explore how the differences in the distributions of household characteristics (endowment effects) and in the returns to these characteristics (returns effect) contribute to the

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[1] The littoral regions are in the Eastern part of the country: Grand Tunis, North East, Centre East and South East; while the inland regions are in the Western part: North West, Centre West and South West

[2] See *http://www.worldbank.org/content/dam/Worldbank/document/WB-goals2013.pdf*

welfare gap inequality. This may highlight the role of development policies and structural reforms in shaping the patterns of regional inequality in Tunisia as well as in its peers.

The study reveals moderate and relatively stable levels of inequality in consumption expenditures with Gini coefficients declining, at the national scale, from 40.96 in 2005 to 37.20 in 2012. These results are consistent with the findings of Belhaj Hassine (2015) and earlier studies by Adams and Page (2003) and Deininger and Squire (1996) who show a moderate decline of inequality in the country. At the regional level, inequality appears to have declined sharply, more than 14 percent, in most Eastern regions and decreased slightly in the Western part by the mid of the last decade. Preliminary analysis of decomposition of inequality by household's attributes shows that the parental education, demographic composition and geographical location of the household, and, to a lesser extent, the age of the household head are the most important determinants of overall economic inequality for the two years 2005 and 2010.

The disparities in consumption expenditures per capita between urban and rural areas appear to be chiefly driven by the better endowment of urban households of educational and demographic characteristics compared to their rural peers. Alternatively, the welfare gap between Inland and Littoral regions appears to be mainly the result of higher returns effects in coastal areas. These findings suggest obviously an urban and Littoral bias in Tunisia's development policies which results on increasing welfare inequalities along urban–rural and regional lines. Besides, the lack of job employment opportunities and low economic performance in Western part of the country may have resulted on lower returns to human capital investments than in the Eastern regions.

Endorsing and promoting more market-oriented policies and private sector development that boost job creation and strengthen the national economy may benefit Tunisians differently according to their human capital endowments, and could lead, in the future, to growing regional disparities in returns, and elevated inequality. The numerous liberalization policies pursued in the context of the structural adjustment program implemented in Tunisia during the 1990s failed to facilitate resource flows and equalize returns across different regions. Additional and hazardous reforms may make the situation worse if the obstacles to achieve balanced regional development are not well determined and appropriately addressed. During this challenging post-revolution period, Tunisian policy makers have a sole chance to embark on a comprehensive strategy of economic restructuring and to undertake suitable reforms founded on broader inclusion and more balanced development.

The remainder of the paper is structured as follows: Section 2 briefly discusses the Tunisian development experience and the main challenges in growth and poverty and inequality alleviation. Section 3 presents the data used and Section 4 gives a descriptive analysis of the evolution and structure of consumption inequality over the considered period. Section 5 focuses on the main drivers of urban–rural and littoral-inland gaps. A summary of key findings and implications for future public policy is presented in Section 6.

2. A Brief Overview of Income Inequality and Poverty in Tunisia

The uneven regional development in Tunisia dates its beginnings in the early 1960s, shortly after the independence when public and private investments were lower in Tunisia's inland regions and more concentrated in the coastal area. Such skewed development plans have resulted in unbalanced distribution of welfare between lagging (rural and inland) and leading (urban and coastal) regions. The disparate pattern of income, proxied by the household consumption expenditures level, across different regions is more marked than that within regions. Indeed, per capita consumption in Midwest, the poorest region in the country, was 1,138 TND per year in 2010, lower than the half

of that of the wealthiest region, the Grand Tunis metropolitan region, where per capita consumption attained 2,390 TND per year (see Table 1 for more details).

The Northern and Southern inland regions are a little better off than the most lagging region (the Midwest) mainly because a large part of their population have migrated massively to metropolitan cities. At 4.7 percent, the Southern littoral region had the highest consumption growth rate in Tunisia during the last decade, where the national average is only 2.9 percent.

When look at the welfare gap within regions, it appears that income inequality persists at unacceptably high level in poor and marginalized rural areas, about half that of the urban areas and less than half of the level seen in large cities. These metropolitan cities keep generally attracting massive streams of migrants from the different lagging areas. In addition to the lower consumption and income levels in rural areas the high poverty and unemployment rates are other issues that should be considered when preparing development plans at the local authority level. Indeed, poverty is higher in the marginalized rural areas; it exceeded of one-half the national average and more than twice the rate seen in large cities where the rate is less than 9 percent in 2010. Furthermore, the recent statistics reveals that, at the end of the last decade, the poverty rates are much higher in the inland regions, averaging 25.9 percent in the Northern part, and are highest in the Midwest, where the average poverty rate attains 32.3 percent.

To address the issue of uneven regional development, policymakers in Tunisia need more deeper analysis using new techniques of measurement and decomposition of inequality in order to assess more appropriately the extent, the structure and the main drivers of such phenomenon. This is the main focus of the current study which seeks, after a brief survey of literature, to suggest a novel analysis of the economic inequality at different levels based on recent and more relevant decomposition method.

3. Data Used

This study derives its main data from two waves of the HBCLSs conducted in Tunisia by the National Institute of Statistics in 2005 and 2010. [3] The sample in each survey is nationally representative and contains a total number of 13,392 households representing nearly 0.61 percent of the total households in the country. [4] To get a representative sample of the population, the surveyed households are distributed across 1,116 districts belonging to non-communal areas, small towns and big cities. These selected districts are chosen objectively from the twenty-four governorates and the seven economic regions (Grand Tunis, North East, North West, Middle East, Middle West, South East and South West) of the country (see Tables 2a and 2b for more details about the households sampled in the two surveys).

4. Static Decomposition of Inequality

As most surveys, the two waves of HBCLSs cover only the consumption items instead of the income. Inequality is assessed, thus, based on the annual household per capita consumption expenditures. [5] Specifically, we exclude actual and imputed values of housing and durable goods expenditures to keep merely both food and nonfood items. A set of inequality indicators, namely

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[3] The 2005 and 2010 National Surveys 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).*

[4] Only 12,318 and 11,281 households have been effectively and respectively surveyed in 2005 and 2010. Then the rates of response in the two surveys attained respectively 91.98 percent in 2005 and 84.24 percent in 2010.

[5] The adjustment for price variations across regions cannot be done for Tunisia as the Consumer Price Indices aren't available at the regional scale.

Gini coefficient, ratio of consumption of the top and bottom deciles (P90/P10) and the consumption shares of the different population quintiles, are estimated at national and regional scales.

Though the diverse methods of assessing economic inequality, Lorenz Curve and Gini Coefficient, which are mathematically related, remain the most commonly and attractive used measures of income/welfare/consumption inequality.[6] The Gini coefficient has been the most popular and simple method for operationalizing economic inequality in the literature. Recognizing the usefulness of such inequality indicator and its spread application in different disciplines, the users of the indicator and literature elsewhere have addressed different concerns about this inequality measure. In essence, several weaknesses have been identified, which this study here attempts to overcome by using others measures. The main shortcoming is the incapacity of the indicator to differentiate the various kinds of inequalities. Lorenz curves may intersect in this case, reflecting different patterns of income distribution, but resulting in very similar Gini coefficient values.

Using the Gini coefficient may overshadow the variations that may occur in different parts of the welfare distribution. Indeed, redistribution from the middle to the poor class may be related to the same variation in the indicator as an increase in the share of consumption of the middle class at the expense of the top quintile. Then additional information on consumption shares by population quintiles allows us to surmount such drawback by highlighting the potential changes in the consumption or income received by different individual groups. Yet, the Gini and shares of inequality complement each other and are needed to deeply and accurately analyze the dynamics of inequality.

Table 3 presents the results of estimation of a set of inequality measures namely the Gini coefficient, the p90/p10 ratio along with the two shares of inequality (low and top quintiles). To improve our understanding of patterns and dynamics of inequality at the regional scale, a clear visual representation of the distributions of welfare (consumption) through the Lorenz curves is given in Figure 1. The results presented in Table 3 reveal three main findings. First, with a Gini coefficient estimated at 37.20% in 2010, Tunisia appears to have a moderately mid-level of economic inequality when comparing to its North African peers, and a lower level of inequality than the rest of African countries. In fact, Tunisia's Gini coefficient is considerably below that of South Africa which attains the highest level of inequality in the world (63.4%). When compared to others Euro-Mediterranean countries[7], Tunisia has slightly higher level than the majority of European developed countries (such as Sweden = 27.3%, Germany = 30.1% and France = 33.1%) and lower level than some Middle Eastern countries (such as Israel = 42.8). Second, economic inequality in Tunisia illustrates a fairly declining trend over the considered period. As shown in Table 2, the Gini coefficient decreased from 40.96% to 37.2% between the two years 2005 and 2010. In her study on inequality in some Arab countries, Belhaj Hassine (2015) find same decreasing trend for Tunisia using three definitions of consumption expenditures.

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[6] The Gini coefficient is equal to double the area between the Lorenz curve and the perfect (45-degree) line. It's equivalent to the size of the area between the Lorenz curve and the perfect line of equality divided by the total area under the line. It ranges between 0 which means perfect equality in the society and 1 (100%) which represents a perfectly unequal society wherein all income is earned by one individual. The formula used to calculate the coefficient is: $G = \frac{2}{\mu_x} \times \int_0^\infty F(x)f(x)dx - 1$; where μ_x is the average of income/consumption and $f(x) = dF(x)/dx$ is the density function of the income/consumption

[7] The Euro-Mediterranean countries are (in alphabetical order): Albania, Algeria, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Egypt, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Jordan, Latvia, Lebanon, Lithuania, Luxembourg, Malta, Mauritania, Monaco, Montenegro, Morocco, Netherlands, Palestine, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Tunisia, Turkey and United Kingdom.

Third, the estimated results, shown in the Table 2, provide evidence that all regions have benefit from the overall decreasing of inequality, but at different levels. While the changing shape of the Lorenz curves, shown in Figure 1, indicates an overall improving in the distribution of welfare (consumption) over the last decade, the figure highlights an increasing gap between regions more specifically between inland and littoral regions. The most considerable improvement is observed in North Eastern region where the Gini coefficient has dropped considerable from 38.19% to 30.11%. Similarly, an obvious decline in the inequality indicator accompanied by a closer Lorenz curve to the diagonal, is observed in others Eastern regions. Contrariwise, inland part of the country, except the South-Western region, has known a slightly decreasing in the Gini coefficient over the period.

Much of the decline in inequality, observed at the national level, seems to be driven mainly by a rise in the welfare share of the poorest population to the detriment of the richest one. In fact, the share of the low quintile grew by more than 10 percent, while the share of the top quintile decreased by more than 7 percent between 2005 and 2010. Except in the North-Western region where the inequality remained at the same level, the decline in the inequality in all regions, more specifically in the Eastern littoral region, seems to be accompanied by an increase in the welfare share accruing to the poorest segment of the population which grew by more than 21 percent over the period.

Notwithstanding this optimistic picture of the decline in the per capita consumption inequality assessed by the aforementioned indicators, distribution patterns in Tunisia may cover enduring and largening between-group differences and regional disparities. It's interesting, hence, to shed more light on the structure of inequality and investigate how the differences in households' features may impact the level of inequality over time. For this reason, we use thereafter a set of household attributes namely: the gender, age, educational attainment, activity and employment status of the head; regional location; urban/rural status; and demographic composition of the household. The choice of these variables is founded on the studies of Ferreira et al. (2008) and Belhaj Hassine and Zeufack (2015) who conducted a similar static decomposition of inequality in Brazil and Tanzania.

The gender of the household head is a dichotomous variable coded "1" for male and "0" for female. His age is divided into five categories: *(i)* under 30, *(ii)* 30-39, *(iii)* 40-49, *(iv)* 50-59, and *(v)* 60+ years. Seven categories are considered for the head's educational attainment: *(i)* no education, *(ii)* primary/lower secondary, *(iii)* secondary, *(iv)* post-secondary or equivalent, *(v)* university, *(vi)* postgraduate, and *(vii)* not stated. Seven groups are considered for the head's activity status: *(i)* employed, *(ii)* unemployed, *(iii)* homemaker, *(iv)* Student, *(v)* pensioners/retired/disabled, *(vi)* others, and *(vii)* not stated. The employment status comprises six categories: *(i)* employee, *(ii)* employer, *(iii)* self-employed, *(iv)* contributing family worker, *(v)* workers not classifiable, and *(vi)* not stated. Households are also classified into five categories by the demographic composition: *(i)* "1-2 adults, no child", *(ii)* "1-2 adults and 1-2 children", *(iii)* "1-2 adult and 3 or more children", *(iv)* "3 adults or more and 0-1 child", *(v)* "3 adults or more, 2-3 children", and *(vi)* "3 adults or more and 4 children or more". The regional locations are the seven regions: *(i)* grand Tunis, *(ii)* North East, *(iii)* North West, *(iv)* Centre East, *(v)* Centre West, *(vi)* South East, and *(vii)* South West. The last attribute is the urban/rural status which is grouped into three categories: *(i)* large cities, *(ii)* medium and small cities, *(iii)* rural area.

Following the conventional decomposition method developed by Cowell and Jenkins (1995), the shares of inequality explained by the aforementioned sets of households' attributes are estimated using the commonly decomposed measures: the mean log deviation Theil_L and the Theil_T indices noted respectively GE(0) and GE(1). The estimation of these two indices, which come

from the General Entropy class, permits to identify the share of consumption inequality explained by the between-group (R_B) and within-groups (R_W) differences in the attributes as follows:

For the index GE(0): $I^0{}_{Betw} = \left[\sum_{j=1}^{k} f_j log\left(\frac{\mu_x}{\mu_{x_j}}\right)\right]$ and $I_{With} = \sum_{j=1}^{k} f_j GE(0)_j$ (1)

For the index GE(1): $I^1{}_{Betw} = \left[\sum_{j=1}^{k} f_j(\frac{\mu_{x_j}}{\mu})log\left(\frac{\mu_{x_j}}{\mu}\right)\right]$ and $I_{With} = \sum_{j=1}^{k} v_j GE(0)_j$ (2)

with $GE(\alpha) = I^\alpha{}_{Betw} + I^\alpha{}_{With}$; f_j: the population share of group j ($j = 1,2,...k$) ; μ_{x_j}:mean consumption of subgroup j, μ_x: the total mean consumption of a household i , v_j : the consumption share of group j. Then, giving the households' attributes (or a set of attributes), the shares of inequality explained by the between-group differences in households' attributes are assessed by $R^\alpha{}_B = I^\alpha{}_{Betw}/GE(\alpha)$ with $\alpha = 0$ or 1.

The results of the static decomposition displayed in Table 4 provides a comprehensive perspective on the importance of household characteristics in explaining welfare disparities within the country. These findings reveal, firstly, that over 13 percent of total per capita consumption inequality in 2005, can be accounted for by inequality between the seven groups of households sorted by the head's education attainment. As shown in this Table, the estimated share decrease in 2010 to nearly 12 percent when using the GE(0) and 13 percent if we consider the second index GE(1). Accordingly, the mean consumption levels of various educational groups is found to increase with growing household head' education level. When the education of the head is above completed postsecondary level, the per capita consumption is more than double. There are, as well, considerable disparities in average per capita consumption levels between household groups headed by university graduates and those headed by postgraduates.

The observed decrease of the differences in consumption level between education groups over time supports the claim that disparities between household groups whose heads have different education levels are narrowed. It appears, too, from the results that households headed by university graduates and postgraduates seem to have been much more able to benefit than other households from the economic growth.

The results, reported in Table 4, revels secondly quite important welfare disparities across spatial locations. The gaps between urban and rural locations as well as between the different geographic regions have been enlarged over the period, albeit per capita consumption inequality slightly decreased over this period as shown above. In 2010, the gaps in average per capita consumption between households living in urban and rural areas as well as between households from the seven geographic locations account for more than 10.40 percent of overall inequality. The disparities between urban and rural areas are found slightly more important than those between geographic regions.

Specifically, the per capita consumption gap between urban and rural groups has been enlarged over the two surveys, increasing by about 3.5 percentage points between 2005 and 2010. This increase could be explained by the considerable expansion of the average per capita consumption level of households living in large cities, which raised proportionately much more than average consumption of household groups located in small and medium cities and rural areas.

Already important at the mid of the last decade, interregional welfare gap has raised over time and seems to have increased by nearly 4 percentage points since 2005. These enlarging disparities is mainly driven by the uneven growth of the average consumptions of household groups across the

different regions, as consumption levels for households in Grand Tunis and coastal zones appear to have increased proportionately more than for households located in the Western inland regions.

Thirdly, the static decomposition of the consumption inequality show considerable welfare disparities between households' demographic types. The share of total inequality attributable to the discrepancies in the mean consumption of these household groups is around 8.5 and 7.5 percent when using respectively Theil-L and Theil-T as inequality measures. Household group composed by 3 adults or more and 4 children or more are much better off than other groups with different demographic composition. Inequality between these groups slightly dropped in 2010, by about 1.7 percentage point (Theil-L) and 1.1 percentage point (Theil-T), due to narrowing gap in the mean consumption level between the third type of household group and other groups.

Differences in gender, age, activity and employment status of the household head appear to have marginal and low explanatory power on per capita consumption inequality barely beyond 3.7 percent. The low share of gender in the decomposition is due mainly to the low percentage of woman-headed households in the selected sample, which amounts to less than 16 percent in the 2010 survey, added to the specific status of women who head their own households. Most of these women are widowed running their own agricultural business or profiting from remittances from family abroad.

Notwithstanding the moderate improvement of economic inequality in Tunisia, the considerable increase of regional disparities and the rural–urban divide, compared to other discrepancies are especially troublesome. The persistence of such location gaps may weaken inclusive growth prospects and endanger economic and social stability in the country. The static decomposition results shown in Table 4, though they are informative concerning the main role played by some household attributes, don't provide enough information concerning the importance of interregional and urban–rural welfare gaps across the entire distribution and about the principal sources of these disparities.

In the following section, we endeavor to address this shortcoming by investigating the difference in the distribution of per capita consumption expenditures between the various geographic locations, and by analyzing the contribution of a set of households' characteristics to such gaps at different points of the welfare distribution.

5. Unconditional Quantile Decomposition of Spatial Inequality

In the current section, the unconditional quantile regression method is applied to investigate the sources of inequality between rural and urban areas as well as between Littoral (Western) and Inland (Eastern) regions. This method allows us to recognize how the disparities in the distributions of observed household features between the different areas contribute to the existing welfare gap and how the marginal effects of these features differ across the entire distribution. It permits as well to estimate the contributions of: (a) differences of household features (endowment effects) and (b) disparities of returns to these features (returns effect) to economic inequality.

A variety of studies in the recent empirical literature have used different decomposition techniques of distributional statistics. The most commonly applied of these techniques are the standard Oaxaca–Blinder decomposition method, the reweighting procedure of Dinardo et al. (1996) and the quantile-based decomposition approach of Machado and Mata (2005). Despite its usefulness and simplicity, Oaxaca-Blinder approach, based on the decomposition of mean welfare differences between two population sub-groups, has been criticized recently for its partial representation of the inequality sources. To overcome this shortcoming, the other conventional methods have extended the decomposition beyond the mean and allow the examination of the whole distribution.

However, these methods are found to share the same drawback of involving a range of assumptions and computational difficulties (Fortin et al. 2010).

In this regard, a new decomposition approach, drawn on the Recentered Influence Function (RIF) regression and suggested by Firpo et al. (2009), have addressed all these drawbacks by performing a detailed decomposition of various distributional statistics like quintiles, variance and Gini coefficient. The new proposed method permits to decompose the welfare gaps at different quintiles of the unconditional distribution into differences in households' endowment features such as age, gender, education, employment status etc., and differences in the returns to these features. Furthermore, the obtained components are decomposed to determine the particular attributes which contribute more to the widening welfare disparity between different sub-groups.

For this purpose, we apply the RIF unconditional quantile regression[8] to investigate the rural-urban as well as the littoral-inland welfare gaps at different points of the consumption distribution. The empirical procedure consists of two phases (Hassine, 2015): The first phase is carried out by estimating unconditional quantile regressions on *log* real per capita household consumption for rural and urban as well as for littoral and inland households. Afterward, a counterfactual distribution that would prevail if rural (inland) households have received the returns that pertained to urban (littoral) areas, is constructed. We compare finally in this stage, the counterfactual and empirical distributions, in order to estimate the part of the welfare disparity attributable to households features differentials (*endowment effect*), and the part explained by differences in returns to those features (*returns effect*), The second phase consists of decomposing the *endowment* and *return* components into the contribution of each covariate.

The model identified by the method can be easily estimated by an ordinary least squares (OLS) regression of the following form:

$$\text{RIF } (y, Q_\theta) = X\beta + \varepsilon \qquad (3)$$

regression and ε is the error term; y is on regression coefficient and ε is the error term. *y* regression coefficient vector and ε is the error *w* Where *y* is the log annual per capita household expenditure, and RIF (y, Q_θ) is the recentered influence function of the θth quantile of *y* estimated by substituting Q_θ by θ^{th} sample quantile and deriving the density of *y* at that point by Kernel method as follows:

$$\text{RIF } (y, Q_\theta) = Q_\theta + \frac{(\theta - I\{y \le Q_\theta\})}{f_y(Q_\theta)} \qquad (4)$$

where f_y is the marginal density function of *y* and *I* is an indicator function. *X* in Eq. (3) is the regressors matrix including the intercept, β is the coefficient and ε is the error term. The set of regressors can be divided into eight groups of variables: *(i)* the first group consists of general household-head characteristics including gender, marital status, age and a dummy variable indicating whether the head is over 65 years; *(ii)* the second group consists of the household human capital assessed by the educational level of the household head recorded as seven dummy variables : *a. no education level, b. primary/lower, c. secondary, d. post-secondary or equivalent , e. university, f. postgraduate; (iii)* the third group consists of the activity status of the household head recorded as two binary variables: *a. employed, b. unemployed*; *(iv)* the fourth group consists of the employment status of the household head recorded as three dummy variables: *a. employee, b. employer and c. self-employed; (v)* the fourth group consists of the main sector of activity of the

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[8] When applied to the quintiles, the RIF-regression model is named unconditional quantile regression.

household head recorded as four dummy variables: *a. government, b. public sector, c. private sector, d. joint/cooperative*; *(vi)* the fifth group includes the industrial sector of the household head recorded as three dummy variables: *a. agriculture and fishing, b. goods-producing (excluding agriculture), c. services-providing*; *(vii)* the sixth group consists of some demographical and economic characteristics of the household such as: *a. size of the household, b. the proportion of household members aged below 14 years, c. the proportion of those aged over 65 years, d. the proportion of earners; (iix)* the last group consists of the geographical location variables: *a. seven regions of residence, b. urban/rural status*.

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 rural–urban inequality as well as the littoral-inland disparities into a component attributable to differences in the distribution of characteristics (*endowment effects*) and a component due to differences in the distribution of returns (*return effects*) as follows:

$$\widehat{Q_\theta^i} - \widehat{Q_\theta^j} = \left\{\widehat{Q_\theta^i} - \widehat{Q_\theta^*}\right\} + \left\{\widehat{Q_\theta^*} - \widehat{Q_\theta^j}\right\} = (\overline{X^i} - \overline{X^j})\widehat{\beta_\theta^i} + \overline{X^j}(\widehat{\beta_\theta^i} - \widehat{\beta_\theta^j}) \tag{5}$$

where $\widehat{Q_\theta}$ is the unconditional quantile of log annual per capita household expenditures, $\overline{X}$ is the vector of covariate averages, and $\widehat{\beta_\theta}$ represents the estimate of the unconditional quantile partial effect. Superscripts i, j, and $*$ are the urban (or inland), rural (or littoral), and counterfactual values. $\widehat{Q_\theta^*} = X^j\widehat{\beta^i}$ is the counterfactual quantile of the unconditional counterfactual distribution which represents the distribution of welfare that would have prevailed for group j (rural/littoral households) if they have received group i (urban/inland households) returns to their features (Hassine, 2015). [9]

The first term on the right-hand side of Eq. (5), $\left\{\widehat{Q_\theta^i} - \widehat{Q_\theta^*}\right\}$, is the endowment effect, it represents the contribution of the differences in distributions of household features to inequality at the θth unconditional quantile. The second term of the right-hand side of the equation, $\left\{\widehat{Q_\theta^*} - \widehat{Q_\theta^j}\right\}$, is the returns effect, it represents the unexplained part of inequality due to differences (or discrimination) in returns to the household characteristics at the θth unconditional quantile. with the aim of deeply analyze the main causes of the observed disparity between different areas of residence, we perform a further decomposition of the estimated endowment and returns effects into the contribution of individual-specific household characteristics as follows:

$$\widehat{Q_\theta^i} - \widehat{Q_\theta^*} = \sum_k (\overline{X^i}_k - \overline{X^j}_k)\widehat{\beta_{\theta,k}^i} \tag{6a}$$

and

$$\widehat{Q_\theta^*} - \widehat{Q_\theta^j} = \sum_k \overline{X^j}_k (\widehat{\beta_{\theta,k}^i} - \widehat{\beta_{\theta,k}^j}) \tag{6b}$$

for *k: 1...K* the total number of covariates

The subsequent two subsections respectively discuss the decomposition findings of the specific rural–urban gaps and the littoral-inland disparity.

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[9] The decomposition results may vary with the selection of the counterfactual distribution. For instance, if the counterfactual used is the distribution that would have prevailed for group *i* if they have received group *j* returns we would obtain different results. The selection of the counterfactual in the current exercise is motivated by the aim of highlighting the household groups living in unprivileged areas.

5.1 Decomposition of rural-urban inequality

The decomposition findings of the rural-urban inequality are presented in Table 5 and Figure 2. The main remark about these results is that differences in households' endowments are the principal sources of inequality between urban and rural households. Indeed, the results show that the contribution of the difference in households' endowments to the urban-rural gap, significantly dominates the contribution of returns across the entire distribution for the two years 2005 and 2010, implying that urban households are better off since they have better characteristics than their rural counterparts.

The results for the two years, shown in the Table 5, reveal as well that the gap between urban rich and rural rich households (0.67 in 2005 and 0.687 in 2010) is larger than the gaps respectively between urban and rural lower-class households (0.556 in 2005 and 0.605 in 2010) and urban and rural middle-class ones (0.538 in 2005 and 0.554 in 2010).[10] While the gap between rural and urban households at middle and upper quantiles has risen slightly (0.016 points) over the considered period, difference in annual per capita consumption between poor urban and rural households has grown considerably reaching 0.605 in 2010. This is mainly driven by an increase in both endowment and returns effects at lower quantiles (see Fig. 2).

In 2005, the difference in household endowments matters more for the wealthiest segment of the population than for the lower and middle classes households, while in 2010, this difference appears more important for the poorest part of the population than for upper classes. This reveals the huge gap that was subsisting at the end of last decade between the urban and rural poor in terms of human capital, family composition, household's employment characteristics and regional location. The differences between urban and rural households in market returns to their features don't appear to matter respectively for the lower tail of the distribution in 2005 and for the middle tail of the distribution in 2010, as poor and middle-class households, wherever they lived, are commonly employed in sectors that pay slightly above the subsistence level. Nevertheless, differences in the urban and rural distributions of returns to household features matter at the upper class in 2010 since wealthiest households in urban areas are generally paid considerably high than their counterparts in rural areas. In this regard, the Figure 2 reveals two contradictory situations: in 2005 the magnitude of the endowment effects is increasing proportionately more than the magnitude of returns effects at upper quantiles, while in 2010, it's apparent from the figure that the magnitude returns effects is growing more than the magnitude of endowment effects at higher tail of the distribution reflecting that in this year, albeit urban households have better characteristics (endowment), the contribution to inequality of disparities in market rewards of household attributes is gaining importance for most wealthy households.

Moreover, the Table 5 shows that rural poor households at the lower quantile have known a deterioration in their endowments and returns over time compared to their counterparts in urban areas. This suggests that the development policies implemented in Tunisia during the considered period were inappropriate to address some of the severe rural poor issues such as combating illiteracy and promoting basic education. Policy makers should then help this unprivileged part of population to catch up their urban counterparts but they should know which urgent interventions to undertake. Table 5 gives, as well, more detailed analysis of the urban-rural differences by showing the contribution of each group of household characteristics to such differences. The main findings, illustrated in this table, reveal that differences in the distribution of household demographic, educational and geographical characteristics followed by differences in the activity

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[10] It's notable, as proven above that the total gap is calculated as the sum of endowment and returns effects.

status and sector of activity of the head matter, in the two years, the most for inequality between urban and rural households for different quantiles.

It appears from the table also that, in 2005, differences in head of household's employment, significantly contributed to the welfare gap between urban and rural households particularly for the upper segment of the population, but in 2010, the magnitude and the significance of such group of variables declined markedly for the upper classes. The industrial sector of head is found, furthermore, to play a key role in explaining the urban-rural disparity among poor households. The inspection of the changes of the distribution of household covariates over time reveals that the effect of differentials in household human capital (assessed by a set of binary variables cited above) have slightly increased between 2005 and 2010 for the poorest quantiles while differences in the household composition appear to have significantly narrowed over time for all quantiles.

On the other hand, differences in returns to industrial sector of the head, demographic composition of the household and regional location are found to be among the key factors contributing to the rural-urban gap in returns to household characteristics over the considered period. The difference in the returns to industrial sector and household composition between urban and rural areas contributes more significantly to inequality between the middle-class households than to inequality between the poor and rich ones, while differences in regional location contributes to urban-rural inequality over time for both middle and upper quantiles. The urban-rural gap in returns to human capital shows a marked significant increase. This suggests that urban markets continue to better reward education than rural markets do, the gap seems to have widened particularly for the middle-class segment of the population.

Notwithstanding poor rural households in Tunisia, during the last decade, seem to have benefitted from the development policies for basic education and employment to catch up with their urban counterparts, the urban-rural gap particularly for the lower quantiles persists and poor continue to suffer from a set of problems such as large family sizes and unemployment. It's notable from the results that the middle- class and well off rural households have slightly narrowed their education gap with the urban counterparts, but remain unable to access better job opportunities nor benefit from higher returns for their employment. This reflects that employment and profit opportunities added to better education system persists to be more and more important in urban than in rural areas.

5.2 Decomposition of littoral-inland inequality

Figure 3 and Table 6 report the detailed decomposition results of the per capita consumption gap between littoral (Eastern part) and inland (Western part) regions and display the contribution of the differences in endowments and returns to this gap for the poorest, median, and most well-off. After computing the total gap for each quantile and year, we find that the welfare inequality between littoral and inland households is increasing at different tails of the distribution, to be larger at the higher quantiles. [11] It appears from the results that the interregional disparity seems to be higher between rich households because returns on households' characteristics are improving faster in the costal part of the country outpacing the improvements in the rest of country. As revealed by Figure 3, the gap in returns between rich households living in coastal regions and those living in inland ones become larger than the gap in endowments which decreases at all tails of the distribution. In 2010 the endowments gap has dropped particularly at the upper quantile indicating

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[11] As defined above, the total gap can be computed easily by summing the endowment and return differences. When looking at the estimated differences in Table 5, we find that the total gap has increased respectively at all quantiles from 0.448, 0.385, and 0.452 to 0.544, 0.499, and 0.571.

a decline in the welfare gap driven by households' endowments differential. Over the considered period (2005-10), littoral households were better off than their inland counterparts since markets in coastal regions pay more for their attributes than markets in the rest of the country. The returns to employment appear to be the dominant factors accounting for littoral-inland differences in returns to household characteristics (0.240), inducing larger interregional inequalities, particularly among well off households.

The education and employment opportunities improved slightly for rich inland households as the endowment effect has decreased respectively to nearly 0.08 and 0.01, but the markets in their areas of residence could not offer them the returns they would have obtained in coastal regions. Inequality in endowments between littoral and inland households increased only for middle class households and decreased sharply for the richest ones, while inequality in returns increased considerably more for the well-off households. This is due to the faster increase over time of returns to the endowments of rich households living in coastal region (Table 6 and Figure 3). It appears, therefore, that even though education and employment opportunities improved for rich inland households, they could not be offered returns equivalent to their counterparts in the coastal areas. The persistent differences in the distribution of household demographic characteristics and human capital endowments between the different geographic locations and the unequal access to more productive employments restricted the ability of households in inland areas to take up the opportunities generated by economic growth and to improve their living standards.

As expected, the main findings reveal that households in littoral areas who enjoy during the last decade's better endowments, have been able to benefit more than their counterparts in littoral areas form the important growth in Tunisia and have seen a significant improvement in returns to their attributes. This, though narrowing differences in household's characteristics, contributed to growing interregional disparities and self-perpetuating poverty in some unprivileged regions, principally rural areas in Central and Nord West.

6. Conclusion and Policy Recommendations

Inequality has been in the core of attention of several researchers and policymakers after the beginning of the Tunisian revolution. One of the main slogans carried by protestors was "*freedom, dignity, and social equality*" and Tunisian people still claim for more equal access to human capital and employment opportunities. The demand for more equity and inclusiveness has been one of the most important challenges that brought the economic inequality issue to the front burner of Tunisian governments' attentions after the revolution. Although inequality and its determinants for some Arab Spring countries has long been a subject of concern to policymakers and scholars, it is only relatively recently that a formal conceptual and empirical research literature on this topic has been developed, and few research papers have explicitly investigated the main causes of such inequality.

This paper is an attempt to address the knowledge gap and contribute to the comprehension of the level, changes, and main drivers of economic inequality in one of these countries, Tunisia. In this study, we endeavor to investigate the sources and the structure of inequality between rural urban areas and inland littoral regions drawing on harmonized micro-data from two national surveys conducted in Tunisia in 2005 and 2010. Given the known magnitude of the regional disparities and imbalances in Tunisia and the significant role that played in social unrest and politics, the current paper attempts to shed more light on the analysis of regional inequalities across the entire welfare distribution. It endeavors as well to illustrate some policy implications for the design of strategies to tackle inequality and promote more equity in the society.

Inequality, assessed by the Gini coefficient and some others standard indicators for the distribution of household annual per capita total consumption expenditures, are found to decrease unfairly across different regions, over the considered period. To understand the origins of such uneven distribution of welfare, a static decomposition of economic inequality was conducted, in the first stage, to unravel the role played by certain household attributes in the inequality of outcomes in Tunisia. The core findings of such decomposition reveal that households' demographic composition, educational level of the head, and regional and urban–rural locations are found to be the main drivers of the overall inequality in the country. Household geographic characteristics (region of residence and urban-rural status) are found as well to significantly contribute to the welfare disparity and their magnitude seems to rise over time.

Given the persistence of the interregional disparities and its potential impact on social cohesion and inclusive growth prospects in the country, the current paper devotes a special attention to determine the main sources of inequality between rural and urban areas and between littoral and inland locations using the RIF unconditional quantile regression across the entire distribution of welfare. In this regard, we decompose the inequality of outcomes at each quantile into the contribution of differences in the distributions of considered household features (endowments effects), and the contribution of differences in the distributions of returns to these features (returns effects).

While the investigation of urban–rural inequality shows that differences in households' endowments are the main sources of inequality between these two sectors, interregional disparities are found to be mainly driven by the returns effects of certain household characteristics particularly at upper quantiles. It appears from the results of the first spatial decomposition that endowment effects dominate obviously, the returns ones at higher tail of the distribution, illustrating higher welfare gaps between well-off rural and urban households. Notwithstanding the rural development, conducted by several governments over the last decades, urban households in Tunisia continue to be much better endowed than their rural counterparts. This explains perfectly a large part of the welfare gap between the two sectors. The differences in household demographic and educational characteristics and employment opportunity are found to matter the most for inequality at the bottom and middle tails of the distributions, suggesting that differences in such household characteristics have proportionately dominant effects on inequality for poor and middle-class households, while employment characteristics (employment status and sector of activity of the head) are among the main factors accounting for the gaps between urban and rural households at upper quantiles. While the findings of this first decomposition suggest a process of welfare convergence over time between rural and urban rich households in Tunisia, principally due to an obvious decline of the differences in households' endowments in human capital, the disparity in returns to the features is found to rise particularly for this class of households. This suggests that the improvement of the education levels in rural areas, which benefits only to the upper classes households, is not necessarily followed by an improvement of the returns to education and that urban markets still better reward human capital attributes than rural markets would.

The results of the second spatial decomposition of littoral–inland inequality reveal that returns effects appear to dominate the endowment effects particularly at upper quantiles illustrating that though littoral households enjoy higher features, the overall welfare inequality is principally explained by the higher reward of these features in coastal regions. The gap between littoral and inland households in endowments seems to be narrowing over time in the country, while the differences in returns are increasing over time particularly for well-off households primarily driven by an increase of differences in returns to employment. One additional main finding stand out:

despite the huge efforts made by the state to improve access to education, infrastructure, and to control family planning in rural and lagging regions during the independence era, the successor governments have ignored these unprivileged regions. This has caused a deterioration of human capital and household demographic features particularly of lower and middle-class households living in these regions, an aggravation of regional disparities, and a widening of welfare inequalities.

Policies to tackle such welfare inequalities in Tunisia, as well as in others developing countries, can be structured into two groups, as suggested by (Hassine, 2015), founded on whether they improve households' endowments or whether they enhance returns to those specific endowments. Policy interventions to enhance rural and inland households' demographic and educational features should emphasize on both the enhancement of families' demographic composition through more efficient family planning and awareness programs specifically for the poor and middle classes and the improvement of access to schools and better education system. In addition, strategies of interventions should comprise initiatives to develop infrastructure for the provision of public services such as healthcare and skills development programs in rural areas and unprivileged regions. Indeed, the urban–rural and interregional disparities in returns to household features, specifically returns to human capital, can be best tackled by improved education quality, better flexibility of the labor market and public investments to support infrastructure, labor productivity, and economic catch up (Belhaj Hassine, 2015).

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Figure 1: Lorenz Curve in 2005 and 2010

Lorenz Curve by Region
Tunisia 2005 HBCLS

Lorenz Curve by Region
Tunisia 2010 HBCLS

Line of perfect equality — Grand Tunis — North East — North West
Centre East — Centre West — South East — South West
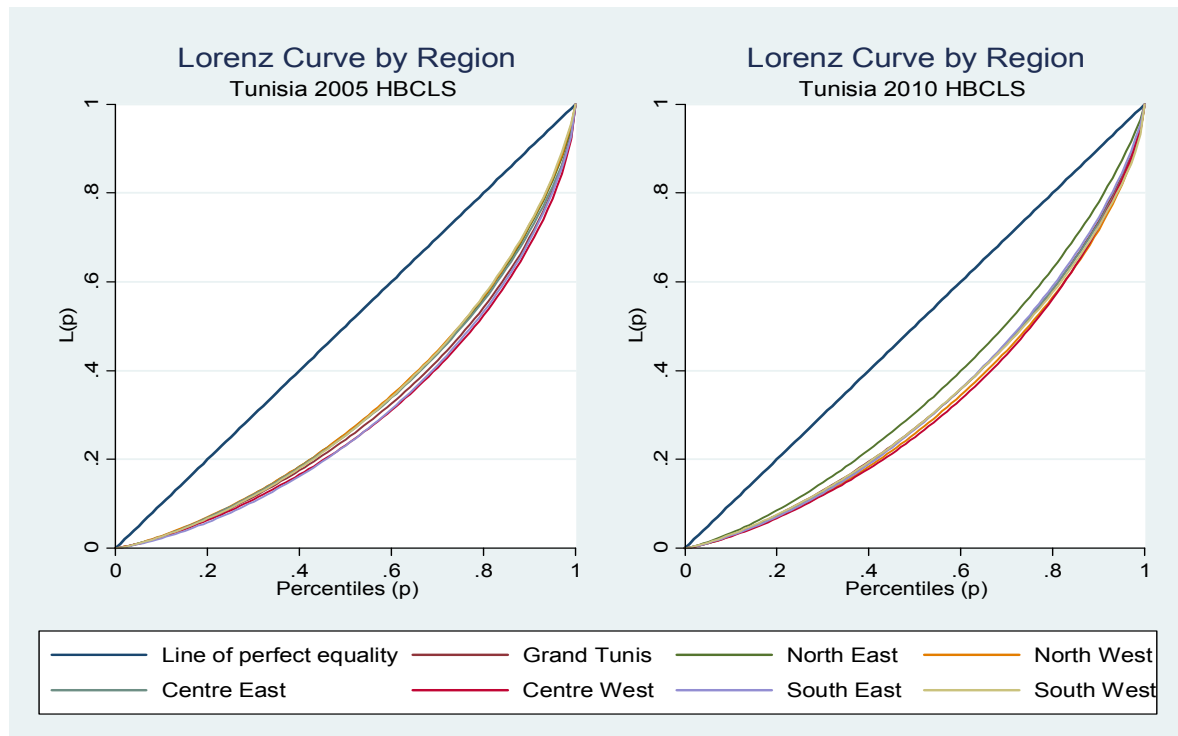
Figure 2: Unconditional Quantile Decomposition of Urban-Rural gap of annual per Capita Consumption (a. 2005- b. 2010)

(a) HBCLS 2005

(b) HBCLS 2010

Endowment effects — Return effects
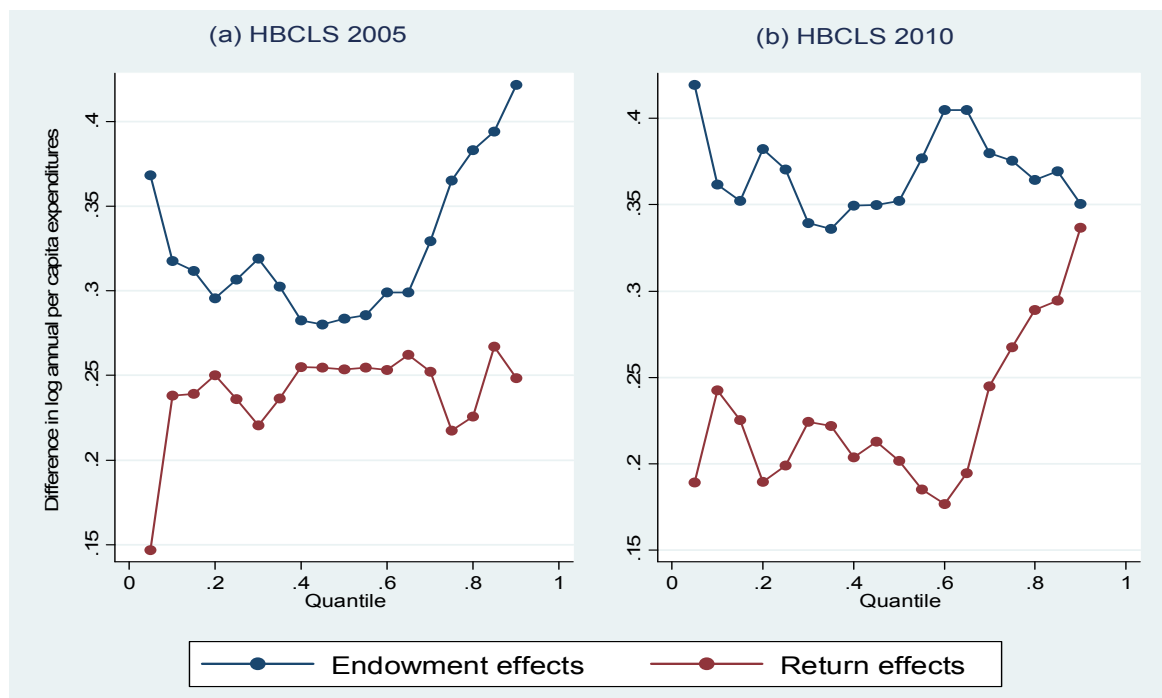
Figure 3: Unconditional Quantile Decomposition of Littoral-Inland gap of annual per Capita Consumption (a. 2005- b. 2010)
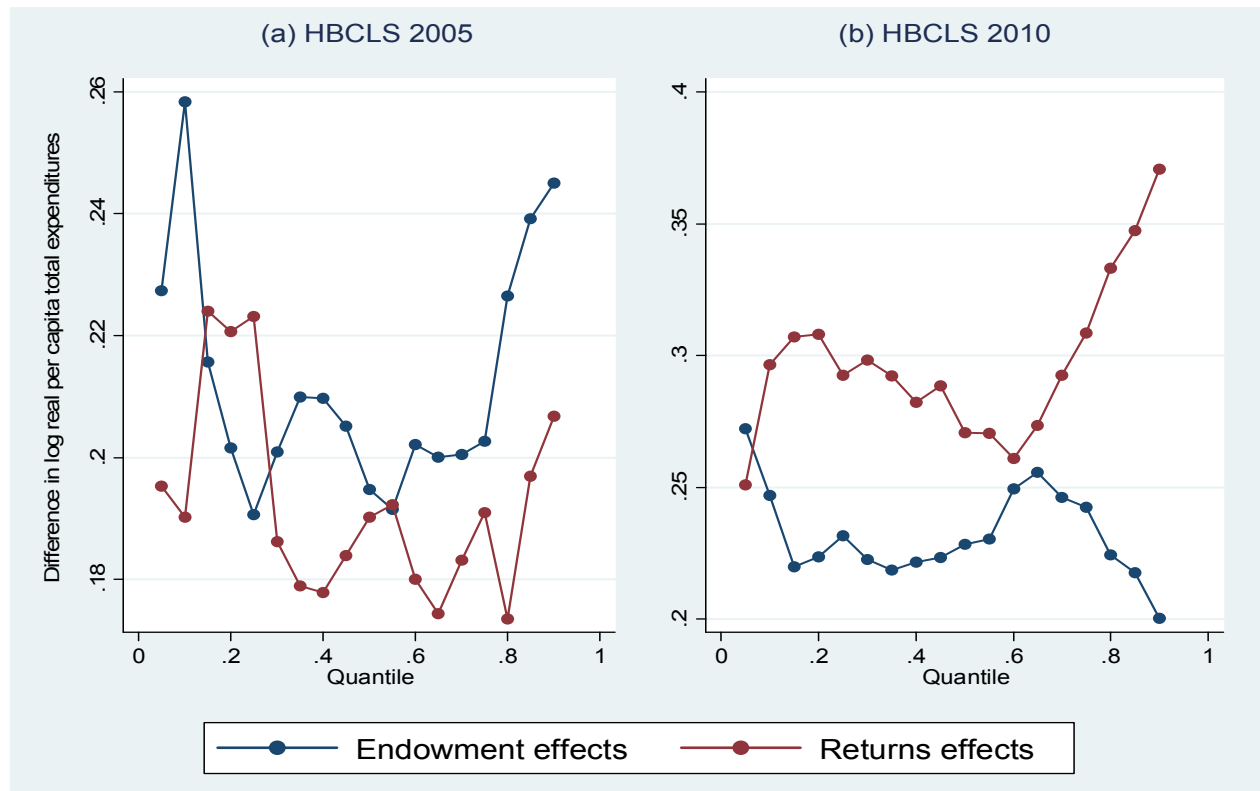
Table 1: Per Capita Consumption in Tunisia by Region. 2010 (2005 TND)

Region	Urban	Rural	Average
Grand Tunis	2,475	1,386	2,390
Northeast	1,884	1,189	1,613
Northwest	1,841	1,162	1,416
Mideast	2,344	1,441	2,084
Midwest	1,652	890	1,138
Southeast	1,989	1,424	1,826
Southwest	1,702	965	1,466
National Average	2,171	1,161	1,820

Source: National Institute of Statistics - Tunisia (NSI 2010)

Table 2a: 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 National Institute of Statistics-Tunisia (NSI), 2005.

Table 2b: Distribution of Districts and Households Sampled By Regions (2010 Survey)

Region	Total		Sample size		
	District	Households	District	Households	Household sample percent (%)
Grand Tunis	7,863	617,523	240	2,880	0.47
North East	4,446	348,691	156	1,872	0.54
North West	3,821	293,535	144	1,728	0.59
Central East	7,379	552,666	216	2,592	0.47
Central West	3,871	305,022	144	1,728	0.57
South East	2,711	202,006	108	1,296	0.64
South West	1,644	124,685	108	1,296	1.04
Total	31,735	2,444,128	1116	13,392	0.55

Source: the National Institute of Statistics-Tunisia (NSI). 2010.

Table 3: Inequality Measures in 2005 and 2010 by Region

Regions	2005				2010			
	Gini (%)	p90/p10	Low Quintile (%)	Top Quintile (%)	Gini (%)	p90/p10	Low Quintile (%)	Top Quintile (%)
Grand Tunis	40.56	6.07	6.04	47.24	34.91	5.02	7.06	42.23
North East	38.19	6.13	6.14	44.95	30.11	4.18	7.77	38.00
North West	37.04	5.76	6.46	43.96	36.77	5.28	6.55	43.49
Centre East	38.65	5.88	6.12	45.23	35.29	4.98	6.80	42.17
Centre West	42.44	6.36	5.67	48.71	37.87	5.78	6.27	44.55
South East	41.26	6.73	5.45	47.08	34.78	5.06	6.76	41.55
South West	38.58	6.20	6.05	44.98	35.97	4.80	7.02	43.26
National	40.96	6.52	5.64	47.10	37.20	5.68	6.22	43.63

Source: authors' own calculations using 2005 and 2010 HBCLS

Table 4: Decomposition of Inequality by Household Attributes

	2005		2010	
	Share of inequality (%) explained by		Share of inequality (%) explained by	
	Theil-L	Theil-T	Theil-L	Theil-T
Gender Head	1.98 (.005)	1.74 (0.011)	3.17 (.005)	2.83 (.006)
Age of Head	2.56 (.006)	2.43 (0.012)	2.11 (.004)	2.04 (.006)
Education of Head	13.23 (.005)	14.80 (0.012)	11.55 (.004)	13.11 (.006)
Activity Status of Head	1.68 (.006)	1.36 (0.011)	1.84 (.004)	1.60 (.006)
Employment of Head	3.10 (.006)	2.94 (0.013)	3.63 (.006)	3.70 (.008)
Family composition	10.14 (.006)	8.62 (0.011)	8.40 (.005)	7.49 (.006)
Urban/Rural Status	7.90 (.005)	7.16 (0.012)	11.33 (.004)	10.68 (.006)
Regional Location	7.03 (.006)	6.49 (.010)	10.99 (.004)	10.41 (.007)

Note: Numbers in parentheses are bootstrap standard deviations based on 100 replications.
Source: authors' own calculations using 2005 and 2010 HBCLS

Table 5: Quantile Decomposition by Urban/Rural Status (2005-2010)

Variables	2005						2010					
	10th pctile		50th pctile		90th pctile		10th pctile		50th pctile		90th pctile	
	Endowment	Returns	Endowment	Returns	Endowment	Returns	Endowment	Returns	Endowment	Returns	Endowment	Returns
General HH's Characteristics	-0.00498*	-0.00628	-0.00366*	0.0448	-0.00766	0.0602	0.00364	-0.0211	0.000655	-0.00793	0.00795	-0.200**
	(0.00269)	(0.0487)	(0.00208)	(0.0410)	(0.00490)	(0.0861)	(0.00292)	(0.0609)	(0.00264)	(0.0476)	(0.00534)	(0.0825)
HH's Education	0.0384***	-0.0264	0.0815***	0.0294	0.175***	0.0716	0.0404***	-0.315	0.0864***	0.276**	0.119***	-0.0279
	(0.00482)	(0.0533)	(0.00491)	(0.0381)	(0.0126)	(0.0645)	(0.00494)	(0.200)	(0.00539)	(0.125)	(0.0107)	(0.232)
HH's Activity Status	-0.0300***	0.0543	-0.00201	-0.109**	0.00853	-0.0671	-0.0160**	-0.0642	-0.00744**	0.0370	0.00672*	-0.132*
	(0.0110)	(0.117)	(0.00417)	(0.0533)	(0.00544)	(0.0672)	(0.00674)	(0.127)	(0.00295)	(0.0583)	(0.00364)	(0.0734)
HH's Employment	0.0209	-0.107	0.0104	0.0266	0.0369***	-0.325*	0.0122	-0.0162	0.0160**	-0.0952	0.0147*	-0.0240
	(0.0212)	(0.180)	(0.0103)	(0.103)	(0.0140)	(0.170)	(0.0100)	(0.173)	(0.00734)	(0.105)	(0.00775)	(0.137)
HH's Sector activity	0.0350**	-0.136	0.0283***	-0.139	-0.00843	0.207	0.0328***	-0.219*	0.0294***	-0.0949	0.00107	0.107
	(0.0176)	(0.170)	(0.00891)	(0.0973)	(0.0141)	(0.164)	(0.00726)	(0.131)	(0.00573)	(0.0843)	(0.00774)	(0.107)
HH's Industrial Sector	0.0471**	0.0820	-0.00403	0.182***	0.00735	0.256**	0.0722***	0.0707	0.0117	0.0842*	-0.0125	0.0934
	(0.0219)	(0.0587)	(0.0137)	(0.0455)	(0.0212)	(0.0996)	(0.0217)	(0.0638)	(0.0125)	(0.0442)	(0.0165)	(0.0736)
Household's Composition	0.0993***	-0.00670	0.106***	-0.133**	0.131***	0.00921	0.0620***	0.119	0.0875***	-0.199***	0.0855***	0.0650
	(0.00754)	(0.0791)	(0.00665)	(0.0610)	(0.0109)	(0.123)	(0.00645)	(0.0910)	(0.00739)	(0.0634)	(0.0110)	(0.108)
Regional location	0.112***	-0.104	0.0670***	-0.108**	0.0794***	-0.150*	0.154***	0.123	0.128***	0.105**	0.128***	-0.140**
	(0.0141)	(0.0729)	(0.00865)	(0.0460)	(0.0166)	(0.0770)	(0.0149)	(0.0850)	(0.00924)	(0.0524)	(0.0126)	(0.0677)
Total	**0.318***	**0.238***	**0.284***	**0.254***	**0.422***	**0.248***	**0.362***	**0.243***	**0.352***	**0.202***	**0.350***	**0.337***
	(0.0261)	(0.0327)	(0.0165)	(0.0199)	(0.0298)	(0.0319)	(0.0258)	(0.0340)	(0.0159)	(0.0193)	(0.0232)	(0.0245)
Constant		0.489***		0.460***		0.185		0.566**		0.0968		0.596**
		(0.116)		(0.0856)		(0.168)		(0.231)		(0.148)		(0.262)
Observations	12,309	12,309	12,309	12,309	12,309	12,309	11,279	11,279	11,279	11,279	11,279	11,279

Notes: Standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1)

Table 6: Quantile Decomposition by Littoral/Inland (2005-2010)

Variables	2005						2010					
	10th pctile		50th pctile		90th pctile		10th pctile		50th pctile		90th pctile	
	Endowment	Returns	Endowment	Returns	Endowment	Returns	Endowment	Returns	Endowment	Returns	Endowment	Returns
General HH's Characteristics	-0.00110	-0.0456	-0.00346	-0.0589	-0.0124**	-0.0738	0.00258	-0.0642	0.000951	-0.0200	-0.00117	-0.297***
	(0.00324)	(0.0520)	(0.00243)	(0.0422)	(0.00503)	(0.0805)	(0.00315)	(0.0589)	(0.00232)	(0.0471)	(0.00458)	(0.0743)
HH's Education	0.0135***	-0.254***	0.0409***	-0.162***	0.119***	0.0874	0.0168***	-0.655***	0.0459***	-0.120	0.0790***	-0.334*
	(0.00279)	(0.0667)	(0.00381)	(0.0391)	(0.0107)	(0.0571)	(0.00308)	(0.163)	(0.00390)	(0.146)	(0.00812)	(0.198)
HH's Activity Status	-0.0194***	0.118	-0.00137	-0.0908*	0.00393	0.00821	-0.0108**	-0.0511	-0.00326	0.00408	0.00573**	-0.0564
	(0.00697)	(0.124)	(0.00226)	(0.0527)	(0.00283)	(0.0694)	(0.00545)	(0.132)	(0.00223)	(0.0607)	(0.00251)	(0.0713)
HH's Employment	-0.00231	-0.0706	-0.000257	0.165	0.00523	0.0232	-0.00483	0.114	0.00181	0.174*	0.00932*	0.240*
	(0.0122)	(0.172)	(0.00650)	(0.106)	(0.00943)	(0.195)	(0.00816)	(0.187)	(0.00571)	(0.0986)	(0.00542)	(0.142)
HH's Sector activity	0.00543	-0.104	0.00630	-0.170*	0.00261	-0.0369	0.00596	-0.197	0.00511	-0.151*	-2.40e-06	-0.0744
	(0.00868)	(0.161)	(0.00497)	(0.0994)	(0.00845)	(0.181)	(0.00480)	(0.144)	(0.00377)	(0.0838)	(0.00427)	(0.0968)
HH's Industrial Sector	0.0466***	-0.0184	0.00384	0.0719*	0.00326	0.138	0.0450***	-0.0314	0.0101	-0.0276	0.000226	-0.0497
	(0.0108)	(0.0527)	(0.00562)	(0.0395)	(0.00857)	(0.0868)	(0.0125)	(0.0464)	(0.00628)	(0.0373)	(0.00735)	(0.0584)
Household's Composition	0.0639***	0.220**	0.0568***	-0.000957	0.0806***	-0.204*	0.0456***	0.0976	0.0482***	-0.240***	0.0598***	-0.0503
	(0.00674)	(0.0886)	(0.00603)	(0.0642)	(0.00943)	(0.115)	(0.00653)	(0.0937)	(0.00639)	(0.0632)	(0.00923)	(0.0996)
Regional location	0.152***	0.107***	0.0920***	-0.000518	0.0429***	-0.0597**	0.147***	0.0452**	0.120***	0.0214	0.0475***	-0.0331*
	(0.0142)	(0.0226)	(0.00783)	(0.0151)	(0.0107)	(0.0241)	(0.0145)	(0.0222)	(0.00863)	(0.0149)	(0.00899)	(0.0178)
Total	0.258***	0.190***	0.195***	0.190***	0.245***	0.207***	0.247***	0.297***	0.228***	0.271***	0.200***	0.371***
	(0.0171)	(0.0271)	(0.0110)	(0.0157)	(0.0183)	(0.0263)	(0.0181)	(0.0287)	(0.0121)	(0.0170)	(0.0160)	(0.0212)
Constant		0.238**		0.437***		0.325**		1.038***		0.630***		1.025***
		(0.107)		(0.0774)		(0.139)		(0.187)		(0.161)		(0.225)
Observations	12,309	12,309	12,309	12,309	12,309	12,309	11,279	11,279	11,279	11,279	11,279	11,279

Notes: Standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1)