

Measuring Poverty, Inequalities and Polarization in Tunisia 2000-2010



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Preface

This report entitled « **Measuring Poverty, Inequalities and Polarization in Tunisia 2000-2010** » is the first product of the “Project to Build the Statistical Capacity of the National Institute of Statistics (INS) in Poverty Measurement and Analysis”. The project was jointly implemented by INS, the African Development Bank and the World Bank. This paper describes improvements and reviews in national monetary practices and outlines the poverty trend over the last decade.

The contribution of the African Development Bank and the World Bank was to develop and build the INS institutional capacity with a view to improving poverty assessment and measurement. This collaboration contributed to: (i) supporting the INS in poverty trend analysis and inequality in line with best international practices; (ii) strengthening the participatory process (through a largely representative technical committee); and (iii) providing an analytical basis for guiding policies through a diagnosis of poverty and vulnerability factors.

This report is intended as an information sharing tool on poverty measurement practices in Tunisia as well as a guide for national statisticians, researchers and policy makers. Apart from reviewing national data collection and poverty measurement practices, the report presents poverty profiles by highlighting the broad trends and patterns observed in Tunisia.

« **Measuring Poverty, Inequalities and Polarization in Tunisia 2000-2010** » was prepared in close collaboration with African Development Bank and World Bank experts. The INS wishes to express its appreciation to these two partners for their support and commitment to the project.

We are thankful to all the national and international institutions that participated in the project by sending resource persons to the technical committee workshops and meetings.

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Executive Summary

At the end of 2011, the National Institute of Statistics (INS) undertook a comprehensive review and update of its poverty measurement methodology in collaboration with the African Development Bank and the World Bank. The task was carried out in consultation with a committee of Tunisian experts, Government representatives and Non-Governmental Organizations.

The team of experts reviewed household survey data (2000, 2005 and 2010) and noted that technically the previous methodology was sound and that preceding poverty measurements had been correctly conducted. The experts also suggested several possible improvements to the methodology in order to fine-tune the results and align them with international best practices.

These studies led to the estimation of the poverty rate in 2010 at 15.5% compared with 23.3% in 2005 and 32.4% in 2000. A household is deemed to be poor if its annual per capita consumption falls below the official poverty line of 1277 dinars in cities and 820 dinars in rural areas.

The extreme poverty rate was estimated at 4.6 % for 2010 compared with 7.6% and 12.0% in 2005 and 2000 respectively.

The annual extreme poverty line stands at 757 dinars per capita in cities compared with 571 dinars in the rural areas.

However, the INS noted that this decline did not benefit the West-Central and South-West regions where the disparities with the rest of the country increased during the decade under review. Furthermore, although the inequalities decreased to a certain extent at national level from a Gini coefficient of 34.4 in 2000 to 32.7 in 2010, they were due more to a decrease in intra-regional inequalities that fell from 23 in 2000 to 20.1 in 2010 than to inter-regional inequalities, which increased from 11.4 in 2000 to 2.6 in 2010. The increase in polarization from 49.9 in 2000 to 62.5 in 2010 confirms the fact that the identification and alienation problems felt by the citizens of disadvantaged Governorates intensified during the 2000-2010 period.

Also, the INS indicated that population groups where family heads are unemployed and/or without formal education are more likely to be poor. Additionally, official poverty rates are higher in rural areas and medium-sized municipalities than in major cities.

A. Introduction

Precise knowledge of the scope of poverty in a country follows from the fundamental need for decision-makers to understand its trend over time in the country in order to better assess the impact of various economic and social policies on the standard of living of the poorest.

In Tunisia, it is common knowledge that poverty is mainly concentrated in the rural areas and some areas of the country, particularly the Centre-West Region. A strong variation in the poverty rate between regions may account for the feelings of injustice and social instability. Thus, the poverty measurement at regional level helps to better define regional development priorities.

The measurement of absolute poverty in Tunisia is a well-established practice. However, despite the various improvements by the INS to its methodology, the fact remains that the very basis of this methodology has stayed unchanged for 30 years. The methodology is based on an absolute conception of poverty and uses total expenditure as the standard of living indicator.

With the major economic changes experienced by the country, this key indicator could no longer reflect the Tunisia of 2012.

Indeed, since the 1980s, the median income has more than doubled and consumption patterns have changed significantly. Policies that promoted widespread public education, particularly for girls, helped to drastically reduce the illiteracy level. Besides, social policies that promoted free healthcare for some population groups and the subsidizing of essential commodities helped to improve health and nutritional conditions resulting in increased life expectancy in the country.

It therefore became necessary to adjust the methodology by applying new poverty measurement techniques in line with the methods used in other countries. This in-depth review was conducted using data from the 2010-2011 National Survey on Households' Budget, Consumption and Standard of Living¹. The 2010 survey was based on a theoretical sample of 13,392 randomly drawn households. It covered the 12 months of the year and the entire country as well as all the socio-professional categories (Table 0). The surveys helped to ascertain the consumption level and wellbeing of Tunisian households. They provide an insight into the standard of living of Tunisians depending on their geographic, demographic and socioeconomic characteristics as well as determine its trend over time. The surveys are also a major source of information on the population's nutritional status and access to public health and education services.

The main aim of this report is to institute a new official method for measuring poverty in Tunisia that would reflect population growth and scientific progress as well as better enhance the data collected. It details the various stages involved in the establishment of the new poverty line and clearly explains the various changes made in relation to the former methodology. In view of the margin of error entailed in survey-based estimates, the report provides in the annex a number of statistical tests to ascertain the robustness of the new calculation method and confirm the validity of the results.

The report also presents the poverty trend in Tunisia over the last ten years and provides estimates of poverty by region, level of education and socio-professional categories.

¹ Carried out by INS every five years since 1970

Table 0: Breakdown of Sample by Region

Region	Sample Size	
	Number of Districts	Number of Households
District of Tunis	240	2880
North-East	156	1872
North-West	144	1728
Centre-East	216	1728
Centre-West	144	2592
South-East	108	1296
South-West	108	1296
Total	1116	13392

B. Presentation of the Main Study Results

1. Review Process

At the end of 2011, INS undertook to review and update its poverty measurement methodology. This exercise was conducted in collaboration with the African Development Bank² and the World Bank. The work was carried out in consultation with a committee of Tunisian academic experts, representatives of public entities and Non-Governmental Organizations.

The team of experts reviewed the household survey data and the methodology used. They noted that the former methodology was sound and that the previous poverty measurements were correctly estimated. Furthermore, the experts suggested several adjustments to align the methodology with international best practices.

Furthermore, the experts recommended that INS should recalculate the poverty line using the new 2010 households' budget consumption survey data in order to better reflect the most common consumption patterns and the cost of living of Tunisian families. They also suggested that the 2005 data be used to validate the methodology by testing its sensitivity to the data. To avoid overloading the presentation and discussion of results, only the 2010 results are presented in the body of the paper.

The following sections present the 2010 poverty assessments based on the new methodology. They briefly introduce concise the various stages of establishment of the new poverty line (definition of the consumption level below which a person is deemed to be poor). Also outlined are the various changes made to the old methodology.

The paper also attempts to analyse the poverty and inequalities trend over time at national and regional levels. An analysis of the sensitivity of all the results to the various methodological options is also conducted to ensure the consistency of results³.

2. First Review: Determination of Wellbeing Indicator (Measurement of Consumption)

The first stage in any attempt to assess the status of poverty in a country consists in determining an individual wellbeing indicator. Consumer spending by households constitutes a good wellbeing indicator. However, such spending often includes the purchase of durable goods (house, car, refrigerator etc.) financed through accrued savings or multiple credit possibilities.

Including the purchases of durable goods in any wellbeing indicator distorts the poverty and inequality measurements given that the

² A key component of the Statistical Capacity Building Programme Grant by the African Development Bank

³ For details on the calculation method used and the robustness of the methodology, see Annex IV

consumption time horizon of such goods (spread over several years) is longer than the conventional time horizon for measuring poverty or inequality (one year). To better understand this, consider a population made up of two individuals, A and B, with a consumption profile as described in Table 1 below:

a) Where durable goods are included in a survey conducted in 2009, it would lead to the conclusion that B is richer than A

b) Conversely, where the same survey is conducted in 2010, it is rather A who will appear richer.

In fact, these two individuals appear to have the same standard of living although their need for durable goods does not appear in the same year.

To better measure the standard of wellbeing of these households, spending in capital and durable goods (such as the purchase of a house, a means of transport and household appliances) were excluded. Irregular expenditures related to non-religious family ceremonies were also excluded.

Ideally, regular expenditures on non-durable goods (i.e., goods whose time horizon does not exceed one year) must be complemented with an estimation of the value of the services provided by the durable goods owned by each household. While such estimation is possible with all the information contained in the INS 2000, 2005, and 2010 surveys for some goods (such as housing), it is not possible for many other goods, especially household appliances (refrigerator, washing machine, television, etc.). Estimating the value of services provided by this type of goods requires the collection of information on the quantity, date of purchase and purchase price. INS plans to collect such data starting from the 2015 survey.

For the 2000, 2005, and 2010 surveys, the value of services provided by housing was estimated for owner-occupied households or non-owner-occupied households which do not pay rent or pay lower than market price rents.

a) For tenant households, the value of services provided by their accommodation is reflected by the rent they pay their landlords.

b) For households, that do not pay rent because they own their home for example, an imputed rent was estimated for each of them. The imputed rent is the amount that such households would have paid if they were renting their homes.

An estimation of the value of the benefit in kind a household enjoys (such as running water or electricity for example) is also included in our estimation of the value of the annual consumption.

This measure of wellbeing is called aggregate consumption. The aggregate consumption of each household was estimated thanks to the comprehensive data on expenditures provided by the National Survey on Households' Budget, Consumption and Standard of Living (EBCNV)⁴. The average levels of these aggregates by quintile, region and environment are given in Tables 1, 2 and 3.

Table 2 shows that consumption increased significantly between 2005 and 2010. Annual average growth of nominal consumption per capita stood at 6.8%. However, taking into account the inflation recorded for the period, annual real consumption per capita increased by an average of only 2.5%. Table 2 also shows that the poorest quintile experienced strong real consumption growth over the period. This result implies that inequalities in terms of consumption between the various social categories decreased between 2005 and 2010.

Although consumption growth was positive in all the country's regions, it was exceedingly low in the North-West Region, which has one of the lowest levels of consumption per capita in the country (Table 3)⁵. The highest growth rates were recorded in the Centre-East and Centre-West regions. For the Centre-West Region, despite posting the highest growth rate, this was insufficient in view of the low consumption level in the region.

Table 4 illustrates consumption trend by residential area namely communal and non-communal. The communal environment consists of two types of urban areas: cities and medium-sized towns. This table shows that the consumption level in communal areas is double that of non-communal areas. The situation did not change much from 2000 to 2010.

⁴ A comparison of aggregate consumption and total expenditure values is given in Annex 1.

⁵ Account is taken of the price differences between the strata, and not between regions since the data does not make it possible to do this in a reliable manner. Nevertheless, available data suggest that prices do not vary significantly between regions within the same stratum.

Table 1: Consumption Profile

	2009			2010		
	Non-durables	Durables	Total	Non-durables	Durables	Total
A	1000	0	1000	1000	10000	11000
B	1000	10000	11000	1000	0	1000

Table 2: Annual Consumption Per Capita by Consumption Quintile

Quintile	Aggregate Consumption (Current Prices)			Annual Average Growth Rate (in %) 2000-2010	Aggregate Consumption (2005 Prices)			Annual Average Growth (in %) 2000-2010
	2000	2005	2010		2000	2005	2010	
1 ^{er} Quintile	420	546	794	6.6%	483	546	646	3.0%
2 ^{ème} Quintile	728	947	1368	6.5%	838	947	1112	2.9%
3 ^{ème} Quintile	1041	1327	1905	6.2%	1198	1327	1549	2.6%
4 ^{ème} Quintile	1494	1873	2670	6.0%	1720	1873	2171	2.4%
5 ^{ème} Quintile	2945	3790	5064	5.6%	3390	3790	4117	2.0%
Total	1252	1696	2360	6.5%	1441	1696	1919	2.9%

Table 3: Aggregate Consumption Per Capita by Region

Region	Aggregate Consumption (Current Prices)			Annual Average Growth Rate (in %) 2000-2010	Aggregate Consumption (2005 Prices)			Annual Average Growth (in %) 2000-2010
	2000	2005	2010		2000	2005	2010	
Greater Tunis	1738	2331	3228	6.4%	2000	2331	2624	2.8%
North-East	1147	1547	2113	6.3%	1320	1547	1718	2.7%
North-West	979	1292	1613	5.1%	1127	1292	1311	1.5%
Centre-East	1483	1902	2693	6.1%	1707	1902	2189	2.5%
Centre-West	841	1034	1491	5.9%	968	1034	1212	2.3%
South-East	978	1574	2198	8.4%	1126	1574	1787	4.7%
South-West	928	1338	1853	7.2%	1068	1338	1507	3.5%
Tunisia	1252	1696	2360	6.5%	1441	1696	1919	2.9%

Table 4: Aggregate Consumption Per Capita by Area

Area	Aggregate Consumption (Current Prices)			Annual Average Growth Rate (in %) 2000-2010	Aggregate Consumption (2005 Prices)			Annual Average Growth (in %) 2000-2010
	2000	2005	2010		2000	2005	2010	
Communal	1726	2326	3095	6.0%	1985	2326	2516	2.4%
Cities	1992	2640	3696	6.4%	2291	2640	3005	2.8%
Medium Towns	1518	2045	2612	5.6%	1746	2045	2124	2.0%
Non communal	911	1213	1644	6.1%	1048	1213	1337	2.5%
Total	1252	1696	2360	6.5%	1441	1696	1919	2.9%

3. Second Review: Poverty Line Estimation

Poverty is a situation of material and moral deprivation that prevents some individuals from meeting their essential needs.

Poverty line means a minimum level of consumption beyond which a person is considered to be poor, namely without a decent standard of living.

A specific poverty line is estimated for each of the three strata defined in the household surveys: cities, small and medium towns and rural areas. This threshold takes into account Tunisian modes of consumption and cost of living in the various places of residence.

The first step in calculating the poverty line is to estimate the food poverty line. The second consists in complementing the latter with a non-food poverty line in order to obtain an overall poverty line.

Food poverty

The food poverty line is the cost of a basket of food items. The latter may be defined in several more or less subjective ways. The most common way is to set a threshold that ensures that the recommended energy needs are satisfied in accordance with standards of the United Nations Food and Agriculture Organization (FAO) and World Health Organization (WHO).

The recommended caloric requirement for each person surveyed is based on the anthropometric data provided by the survey and level of physical activity. The recommended personal requirements are presented in Table 5.

Caloric requirements increase with the change in the method of calculating energy needs. Indeed, the new methodology uses the ideal weight method to determine individual needs. In 2005 an estimation based on actual weight was used.

Caloric needs vary slightly between the three strata given the differences in household composition and level of physical activity.

To calculate the recommended requirement cost, the next step entails measuring the cost of calories paid for by the poor (food expenditures are divided by the number of calories consumed).

Given that the calorie cost increases as the wealth of households increases, the cost adopted is the median cost of the reference group (the poorest 20% of Tunisians). In the previous methodology, the reference group was defined as households whose total annual expenditure per capita ranged between TND 360 and TND 480⁶.

Thus, food poverty was calculated by multiplying the median cost of one kcal of the reference group of households by the recommended energy need for each stratum. The food poverty line by stratum is given in the last column of Table 5.

Non-food Poverty

Poverty line must also take into account the cost of essential non-food requirements. This is also based on the consumption patterns of a reference group of households (0 to 20 % of households at the bottom of the consumption distribution per capita scale).

Two estimation methods are generally used to calculate the non-food component.

- a) The first measures the lower poverty line that can be interpreted as a survival threshold. It consists in setting the non-food poverty line pertaining to the non-food consumption of poor households whose total consumption per capita level is exactly equal to the food poverty line.
- b) The second measures the higher poverty line. This consists in setting the non-food poverty line at the level of the non-food consumption of non-poor households whose food consumption per capita is exactly equal to the food poverty line.

The detailed methodology for calculating the two components of the poverty line is attached to this report.

These two poverty line establishment approaches were also applied in the previous method, but it is worth noting that new appellations

⁶ This roughly corresponds to persons ranging between 4th and 7th centiles.

were given to these poverty lines in keeping with international terminology.

The official and extreme poverty lines for 2010 are given in Table 6.

To obtain the poverty lines that can be compared to those of previous years (2005 and 2000) the 2010 poverty lines were deflated by the appropriate consumer price indices (CPIs) (Table 6).

For 2010, the annual per capita poverty line was set at TND 1277 in the cities, TND 1158 in medium-sized towns, and TND 820 in rural areas.

The annual extreme poverty line per capita is fixed at TND 757 in the cities, TND 733 in medium-sized towns, and TND 571 in rural areas.

Table 5: Caloric Requirements and Costs in 2010

Stratum	Recommended Energy Requirement	Median Cost of 1000 Kcal for Reference Group (in Thousands)	Food Poverty Line (in TND)
Cities	2273	576	478
Small towns	2304	553	465
Non-communal areas	2327	438	373
Total	2301		

Table 6: Extreme Poverty and Extreme Poverty Lines (in TND per capita and per annum)

Strate	Seuil de pauvreté			Agrégat de consommation (prix 2005)		
	2000	2005	2010	2000	2005	2010
Cities	902	1038	1277	534	615	757
Medium towns	818	941	1158	518	596	733
Non-communal areas	581	669	820	405	466	571

4. Poverty Measurement Results

A household is deemed to be poor if its consumption per capita is below the poverty line.

Incidence of poverty at national level

Calculating the percentage of the population with a consumption level below the poverty line constitutes one of the possible poverty measurement methods. This is referred to as "incidence of poverty".

Based on the aggregate consumption described previously, Table 7 shows the various incidences of poverty (official and extreme) for 2010 and the two previous periods.

Although the method used here does not calculate a national poverty line per se, but rather a poverty line specific to each stratum, estimating the incidence of poverty in each of the three strata may be aggregated (by using an appropriate weighting system) to obtain (both for extreme and official poverty) the incidence of poverty at national level.

The poverty rate stood at 15.5% in 2010 compared with 23.3% in 2005 and 32.4% in 2000.

This significant decline in poverty may be explained by the strong growth between 2000 and 2010, as indicated in Table 2. Indeed, consumption rose faster than prices during the period, causing a significant fall in the proportion of Tunisians living below the poverty line. This is also true for the extreme poverty index which fell from 12% in 2000 to 4.6% in 2010.

Despite this major reduction in poverty nationally, the official poverty rate continues to be nearly twice higher in non-communal areas of Tunisia than in communal areas.

If extreme poverty is used, the gap between the communal areas and the cities worsened. Whereas extreme poverty rate in the communal areas was four times higher than in the cities in 2000, it was seven times higher in 2010.

Incidence of Poverty at Regional Level

The poverty rate varies considerably between the regions of Tunisia, as indicated in Table 8.

The Centre-West and North-West regions remain the poorest, followed by those in the South.

The poverty trend between 2005 and 2010 varies significantly according to regions. As all survey-based estimates entail a margin of error, it is necessary to take this error into account when making comparisons over time and between regions. The results obtained show with a minimum statistical error that the poverty rate declined in all the regions except the North-West where the decrease is statistically insignificant⁷.

However, regional disparities did not reduce. The Centre-West remains the country's poorest region and its backwardness in relation to Tunisia's other coastline regions has even worsened. For example, its extreme poverty rate which was six times higher than that of Greater Tunis in 2000 and became thirteen times higher in 2010.

Moving out of Poverty and "Fragility"

The concentration of households just below the poverty line in 2005 could explain why so many people came out of poverty in the following five years. These households which reportedly witnessed an increase in their real consumption, therefore, found themselves above the poverty line.

However, this observation could not be confirmed statistically given that the 2005 and 2010 surveys did not cover the same households. Monitoring a group of households (or panel study) over time is one of the areas INS seeks to improve. This would differentiate between households in a transitional poverty (hovering around the poverty line) and those in chronic poverty (never come out of poverty). Poverty reduction programmes would be more effective if the nature of the poverty facing each type of household could be specified. These two groups require support specific to their poverty situation.

Figure 1 describes the trend of consumption distribution per capita from 2005 to 2010. In this regard, we have characterized the two types of distribution by their respective relevant poverty lines. Let us take the example of the 2005 consumption distribution. Each observation of the latter is standardized by the poverty line of the stratum to which it belongs. For example, someone living in Greater Tunis in 2005 with an annual consumption level of TND 1038 is assigned the value of 100 in the adjusted 2005 distribution given that it has a 100% poverty line. Similarly, someone living in a non-communal area in 2005 with annual revenue of TND 334.5 is assigned the value of 50, namely 50% of the poverty line of the non-communal areas in 2005. The same process is applied to the 2010 consumption distribution in order to obtain the 2010 adjusted distribution.

The two adjusted distributions are indicated in Figure 1. The X axis represents the 2005 adjusted distribution. Whereas the Y axis represents two different distributions, one is hypothetical and the other effective.

1. The former (counterfactual) corresponds to the 2010 distribution if the latter were identical to the 2005 distribution. We labelled it

⁷ Details of the statistical aspects of these calculations (for example standard errors and sample size) can be found in the full report.

“2005” and it corresponds to the first bisector represented by the discontinuous line.

2005 have a consumption level equal to 120% of the poverty line in 2010.

2. The latter is the actual distribution observed in 2010. It is labelled 2010 in Figure 1 and is represented by the bold curve.

By 2010, the consumption level of many households was just above the poverty line. Households that were in the same relative position on the consumption scale, namely households whose consumption level corresponded to 84% of the official poverty line in 2005, are deemed to be non-poor in 2010. If these were the same households or those similar to those of 2005, they would be in transitional poverty, meaning that they would be vulnerable to economic shocks such as loss of employment or price rises. These shocks can plunge such households back into poverty, especially in the rural areas.

In order to focus on the distribution segment below the poverty line, we limited the maximum value on the X axis to 100. The maximum value on the Y axis was naturally fixed by the consumption level of individuals who in 2010 had a consumption level equal to 100% of the poverty line in 2005. As Figure 1 shows, individuals with an average consumption equal to 100% of the poverty line in

Table 7. Incidence of Poverty by Stratum (%)

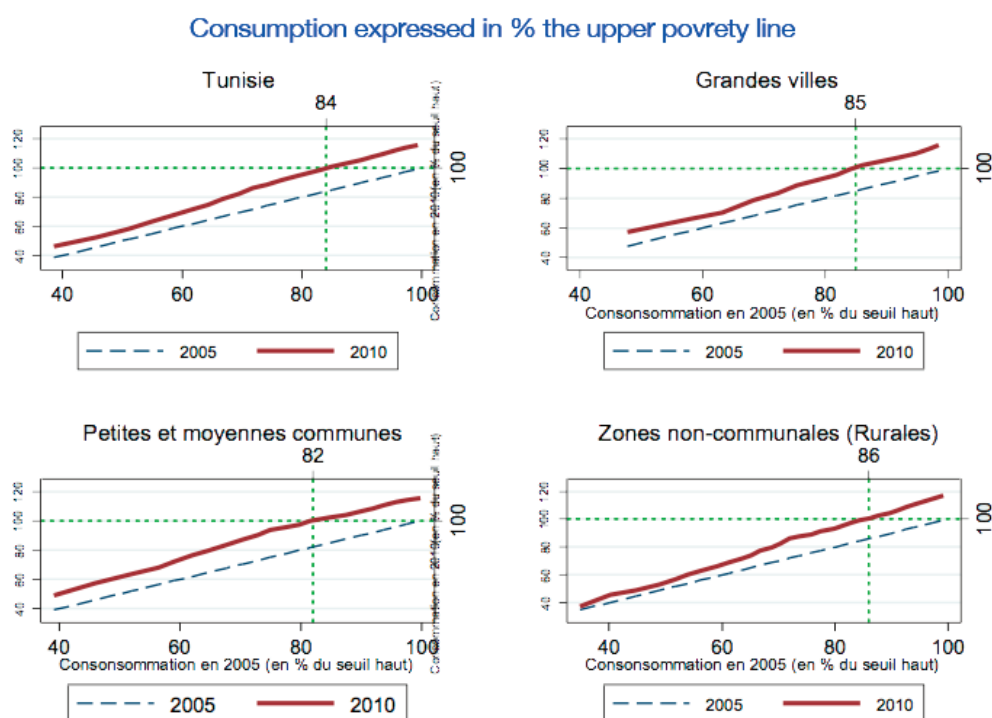
	Poverty Line			Extreme Poverty Line		
	2000	2005	2010	2000	2005	2010
Tunisia	32.4 (0.8)	23.3 (0.7)	15.5 (0.6)	12.0 (0.5)	7.6 (0.4)	4.6 (0.3)
By stratum						
Cities	21.5 (1.4)	15.4 (1.1)	9.0 (1.0)	4.3 (0.6)	2.2 (0.4)	1.3 (0.3)
Medium-sized towns	32.5 (1.3)	22.1 (1.1)	14.0 (0.9)	10.5 (0.8)	6.5 (0.6)	2.9 (0.4)
Non-communal areas	40.4 (1.3)	31.5 (2.6)	22.6 (0.6)	19.1 (1.0)	13.4 (0.9)	9.2 (0.8)

The values in parenthesis indicate standard errors.

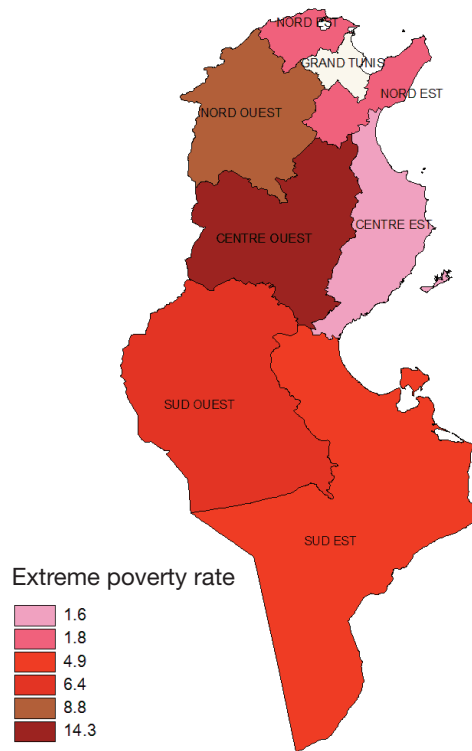
Table 8: Incidence of Poverty by Region (%)

Region	Poverty Line			Extreme Poverty Line		
	2000	2005	2010	2000	2005	2010
Greater Tunis	21.0 (1.7)	14.6 (1.2)	9.1 (0.6)	4.3 (0.7)	2.3 (0.4)	1.1 (0.3)
North- East	32.1 (2.1)	21.6 (1.6)	10.3 (0.6)	10.5 (1.2)	5.4 (0.8)	1.8 (0.5)
North-West	35.3 (1.9)	26.9 (1.9)	25.7 (0.6)	12.1 (1.2)	8.9 (1.1)	8.8 (1.2)
Centre-East	21.4 (1.4)	12.6 (1.1)	8.0 (0.6)	6.4 (0.9)	2.6 (0.4)	1.6 (0.4)
Centre-West	49.3 (2.0)	46.5 (2.1)	32.3 (0.6)	25.5 (1.9)	23.2 (1.7)	14.3 (1.5)
South-East	44.3 (2.4)	29.0 (2.2)	17.9 (0.6)	17.5 (1.9)	9.6 (1.2)	4.9 (1.2)
South-West	47.8 (2.5)	33.2 (2.6)	21.5 (0.6)	21.7 (2.1)	12.1 (1.6)	6.4 (1.3)

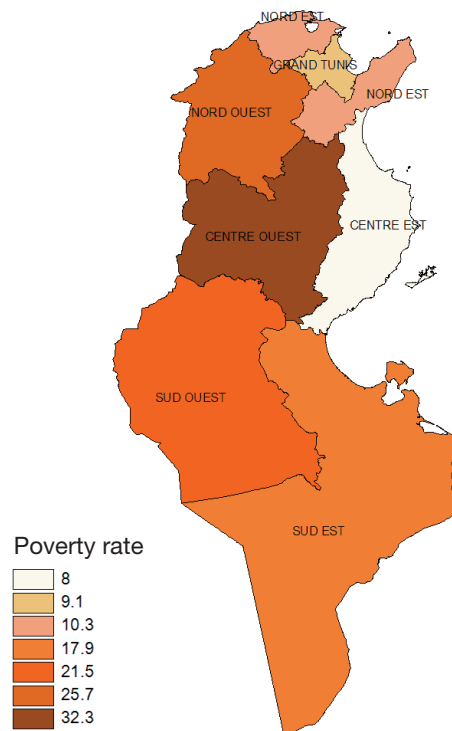
Figure 1. Graph of Density Functions for Consumption by Stratum, in Percentage of the Poverty Line (Poverty Line Marked by a Vertical Line at 1).



Extreme poverty rate by region (2010)



Poverty rate by region 2010)



5. Poverty Profiles

A breakdown of the incidence of overall poverty by stratum and by region presented in Tables 9 and 10 constitutes the first poverty profile. In this section, these profiles are supplemented by an analysis of poverty distribution:

- By defining a priority index to be given to the region in dealing with poverty;
- According to the socio-professional category to which the household head belongs (section 5.2) and;
- According to the standard of education (Section 5.3).

Residential Region and Priority Index

A priority index is constructed to identify the regions in which the issue of poverty must be treated as a priority (Tables 9, 10 and 11). This table indicates that the Centre-West Region which has 41.3% of persons with a consumption level below the lower threshold is the region with the highest priority index and equal

to 3.11. The North-West, South-West and South-East are also potentially identified as priority regions. However, given the scale of the standard error in each of these two regions (about 0.3), a value of this priority ratio of 1.41 in the South-West or 1.07 in the South-East cannot be declared as statically different from 1. Lastly, the North-East, Centre-East and Greater Tunis (littoral) regions are not deemed to be priority regions in 2010. The intervention priorities do not change if the upper threshold is considered instead of the lower threshold, even if the priority gaps are reduced.

The conclusion is that conclude that the Centre-West and, to a lesser extent, the North-West constitute two major pockets of extreme poverty. These regions require special attention.

Furthermore, the situation in the Centre-West and the Centre-North regions worsened considerably between 2000 and 2010. In contrast, in Tunisia's most affluent regions, namely Greater Tunis and the Centre-East, extreme poverty improved. This is the first indication that even whereas growth significantly contributed to reducing the incidence of poverty at the national level, it aggravated inter-regional disparities.

Table 9: Incidence and Contribution to Poverty by Region and Lower Threshold in 2010

	Incidence of Poverty in the Region (%)	Percentage of Tunisians Living in this Region	Absolute Contribution to National Poverty	Relative Contribution	Priority to be given to the region in the treatment of poverty
Greater Tunis	1.1 (0.3)	23.2 (1.1)	0.3 (0.1)	5.5 (1.4)	0.24 (0.06)
North- East	1.8 (0.5)	13.9 (1.1)	0.3 (0.1)	5.6 (1.6)	0.40 (0.12)
North-West	8.8 (1.2)	11.5 (0.9)	1.0 (0.2)	22.1 (3.3)	1.92 (0.31)
Centre-East	1.6 (0.4)	23.3 (1.4)	0.4 (0.1)	7.9 (2.1)	0.34 (0.10)
Centre-West	14.3 (1.5)	13.3 (1.0)	1.9 (0.2)	41.3 (4.1)	3.11 (0.39)
South-East	4.9 (1.2)	9.1 (0.9)	0.4 (0.1)	9.7 (2.5)	1.07 (0.30)
South-West	6.4 (1.3)	5.6 (0.6)	0.4 (0.1)	7.9 (1.8)	1.41 (0.35)
Total	4.6	100.0	4.6	100.0	1.00

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

Absolute contribution to national poverty = Absolute contribution to national poverty /National poverty rate

Priority= Relative contribution/Percentage of Tunisians living in this region - if Priority > 1 the region must be deemed to be priority.

Table 10: Incidence and Contribution to Poverty by Region and Upper Threshold in 2010

	Incidence of Poverty in the Region (%)	Percentage of Tunisians Living in this Region	Absolute Contribution to National Poverty	Relative Contribution	Priority to be given to the region in the treatment of poverty
Greater Tunis	9.1 (1.1)	23.2 (1.1)	2.1 (0.3)	13.6 (1.7)	0.59 (0.08)
North- East	10.3 (1.3)	13.9 (1.1)	1.4 (0.2)	9.3 (1.3)	0.67 (0.11)
North-West	25.7 (1.9)	11.5 (0.9)	3.0 (0.3)	19.1 (2.0)	1.66 (0.22)
Centre-East	8.0 (1.0)	23.3 (1.4)	1.9 (0.3)	12.1 (1.7)	0.52 (0.08)
Centre-West	32.3 (2.1)	13.3 (1.0)	4.3 (0.4)	27.7 (2.5)	2.08 (0.25)
South-East	17.9 (2.2)	9.1 (0.9)	1.6 (0.3)	10.5 (1.7)	1.15 (0.22)
South-West	21.5 (2.2)	5.6 (0.6)	1.2 (0.2)	7.8 (1.2)	1.39 (0.27)
Total	15.5	100.0	15.5	100.0	1.00

Table 11: Regional Priority Ratio from 2000 to 2010

	Lower Threshold			Upper Threshold		
	2000	2005	2010	2000	2005	2010
Greater Tunis	0.36	0.29	0.24	0.65	0.63	0.58
North- East	0.87	0.70	0.40	0.99	0.92	0.67
North-West	1.01	1.16	1.92	1.09	1.15	1.66
Centre-East	0.53	0.34	0.34	0.66	0.54	0.52
Centre-West	2.13	3.03	3.11	1.52	2.00	2.08
South-East	1.47	1.25	1.06	1.37	1.24	1.15
South-West	1.81	1.58	1.40	1.48	1.42	1.39

Socio-professional Category of Household Head

Unemployment is a major cause of poverty (Tables 12 and 13). While individuals living in households with unemployed heads represent only 2% of the total population, they account for 8.9% of the population living below the extreme poverty line. Naturally, the absence of economic support in the household is also a factor of extreme poverty. The most affected homes are also those whose head is a farm worker, followed by those headed by a non-farm worker or a farm operator. Professionals and the self-employed are virtually spared the extreme poverty scourge.

These results are confirmed when priority intervention indices are considered by professional category, (Tables 12 and 13). Households requiring an intervention to mitigate the effects of poverty are those headed by an unemployed person. They are followed by households without economic support at home and households whose head is a farm or non-farm worker. The exceedingly low value of pensioners' 'priority' index (0.25 for the lower threshold and 0.38 for the upper threshold) seems to indicate that, overall, they were able to make enough savings during their working lives to escape poverty.

Table 12: Incidence of Poverty by Socio-professional Category and Lower Threshold in 2010

Socio-professional Category	Incidence of poverty for this category (%)	Percentage of Tunisians living in this socio-professional category	Absolute contribution to national Poverty	Relative contribution	Priority to be given to this category in the treatment of poverty
Senior executives and liberal professionals	0	5.1 (0.3)	0	0	0
Middle-level executives and liberal professionals	0	4.4 (0.2)	0	0	0
Other employees	1.3 (0.5)	8.5 (0.3)	0.1 (0.0)	2.4 (0.8)	0.28 (0.1)
Managers of small trades in industry, commerce and services	1.3 (0.4)	8.2 (0.3)	0.1 (0.0)	2.3 (0.8)	0.28 (0.1)
Craftspersons and self-employed in industry, commerce and services	2.9 (1.0)	2.9 (0.2)	0.1 (0.0)	1.8 (0.6)	0.62 (0.21)
Non-farm workers	6.7 (0.6)	29.4 (0.6)	2.0 (0.2)	42.9 (2.8)	1.46 (0.1)
Farm operators	6.7 (1.1)	9.5 (0.4)	0.6 (0.1)	14.0 (2.1)	1.47 (0.23)
Farm workers	13.3 (3.0)	1.9 (0.2)	0.2 (0.1)	5.4 (1.3)	2.84 (0.77)
Unemployed	20.8 (3.6)	2.0 (0.2)	0.4 (0.1)	8.9 (1.8)	4.45 (1.05)
Pensioners	1.2 (0.3)	15.7 (0.5)	0.2 (0.1)	4.0 (1.1)	0.25 (0.07)
Other non-working persons	4.1 (0.7)	8.8 (0.3)	0.4 (0.1)	7.9 (1.3)	0.9 (0.15)
Off-household support	13.1 (2.2)	3.7 (0.3)	0.5 (0.1)	10.5 (2.0)	2.84 (0.6)
Total	4.6	100.0	4.6	100.0	1

Table 13: Incidence of Poverty by Socio-professional Categories and Upper Threshold in 2010

Socio-professional Category	Incidence of poverty for this category (%)	Percentage of Tunisians living in this socio-professional category	Absolute contribution to national Poverty	Relative contribution	Priority to be given to this category in the treatment of poverty
Senior executives and liberal professionals	0.7 (0.3)	5.1 (0.3)	0.0 (0.0)	0.2 (0.1)	0.04 (0.02)
Middle-level executives and liberal professionals	3.6 (1.0)	4.4 (0.2)	0.2 (0.0)	1.0 (0.3)	0.23 (0.07)
Other employees	8.4 (1.2)	8.5 (0.3)	0.7 (0.1)	4.6 (0.6)	0.54 (0.07)
Managers of small trades in industry, commerce and services	7.4 (1.1)	8.2 (0.3)	0.6 (0.1)	3.9 (0.6)	0.48 (0.08)
Craftspersons and self-employed in industry, commerce and services	10.8 (1.9)	2.9 (0.2)	0.3 (0.1)	2.0 (0.4)	0.69 (0.14)
Non-farm workers	24.2 (1.1)	29.4 (0.6)	7.1 (0.4)	45.9 (1.6)	1.56 (0.06)
Farm operators	20.0 (1.7)	9.5 (0.4)	1.9 (0.2)	12.3 (1.1)	1.29 (0.13)
Farm workers	28.9 (4.3)	1.9 (0.2)	0.5 (0.1)	3.5 (0.6)	1.84 (0.36)
Unemployed	40.3 (4.2)	2.0 (0.2)	0.8 (0.1)	5.1 (0.7)	2.55 (0.43)
Pensioners	5.8 (0.7)	15.7 (0.5)	0.9 (0.1)	5.9 (0.7)	0.38 (0.05)
Other non-working persons	15.2 (1.3)	8.8 (0.3)	1.3 (0.1)	8.7 (0.8)	0.99 (0.1)
Off-household support	28.9 (3.0)	3.7 (0.3)	1.1 (0.2)	6.9 (0.9)	1.86 (0.3)
Total	15.5	100.0	15.5	100.0	1

Household Head's Level of Education

The poverty rate differs according to the household head's level of education. As the level increases, the likelihood of being poor diminishes significantly.

Persons dependent on an illiterate head of household represent 28.8% of the total population (Tables 14 and 15). With 23.4% of such individuals living below the official poverty line and 8.4% living below the extreme poverty line, the priority index for persons dependent on an illiterate head of household stands at 1.8 for the lower threshold and 1.5 for the upper threshold. Since this ratio

decreases with an increase in the threshold, it indicates that this population group is highly concentrated at the lower end of the consumption scale.

The situation of persons dependent on a head of household with primary level education is significantly better. Unlike the previous case, the priority rates indicate that these types of individuals are less concentrated in the lower end of the scale. This trend is confirmed for individuals dependent on a head of household with secondary level education. The population group dependent on a head of household with university level education does not know poverty.

Table 14: Incidence of Poverty According to Head of Household's Level of Education and Lower Threshold in 2010

Level of education	Incidence	Share of Total Population	Absolute Contribution	Relative Contribution	Priority
No education	8.4 (0.7)	28.8 (0.6)	2.4 (0.2)	52.6 (2.7)	1.8 (0.1)
Primary	4.7 (0.4)	38.0 (0.6)	1.8 (0.2)	38.8 (2.6)	1.0 (0.1)
Secondary	1.5 (0.3)	25.5 (0.6)	0.4 (0.1)	8.5 (1.5)	0.3 (0.1)
Higher	0.1 (0.1)	7.7 (0.4)	0.0 (0.0)	0.2 (0.2)	0.0 (0.0)
Total	4.6	100.0	4.6	100.0	1.0

Table 15: Incidence of Poverty According to Head of Household's Level of Education and Upper Threshold in 2010

Level of education	Incidence	Share of Total Population	Absolute Contribution	Relative Contribution	Priority
No education	23.4 (1.1)	28.8 (0.6)	6.7 (0.4)	43.5 (1.6)	1.5 (0.1)
Primary	18.1 (0.9)	38.0 (0.6)	6.9 (0.3)	44.4 (1.5)	1.2 (0.0)
Secondary	7.2 (0.6)	25.5 (0.6)	1.8 (0.2)	11.9 (0.9)	0.5 (0.0)
Higher	0.4 (0.2)	7.7 (0.4)	0.0 (0.0)	0.2 (0.1)	0.0 (0.0)
Total	15.5	100.0	15.5	100.0	1.0

6. Inequalities and Polarization in Tunisia

The level of wellbeing in a given country can only be analysed through the average consumption level or poverty rate. The quality of life in a country also depends on how the consumption is distributed among the population. The analysis of consumption distributions helps to better assess the relevance of social policies.

There are several indices for measuring distribution inequalities. The two main indices which measure the dispersion of wellbeing differently but in a complementary manner are the Gini inequality index and the polarization index (section 5.2).

The Gini Inequality Index from 2000 to 2010

The Gini inequality index is a value ranging from 0 to 1 whereby 0 is assigned to complete equality and 1 to extreme inequality.

In calculating inequalities, it is important to exclude capital expenditures. Indeed, households that purchased a house or a car in 2010 do not enjoy a higher standard of living than those who made similar expenditures in 2009. The inclusion of capital expenses in the wellbeing indicator therefore unjustifiably increases the dispersion of expenditures leading to an over-estimation of the true value of standard of living inequality indices. Table 16 presents inequalities based on total expenditure merely for information purposes. In fact we will focus on analysing consumption-based inequalities.

The consumption indicator must also be corrected taking into account the price variations in the country since it also leads to an over-estimation of the true value of inequalities. Indeed, prices are on average 10% higher in cities than in non-communal areas. A person living on TND 110 per week in a city is not richer than someone living on TND 100 in a non-communal area. In view of the absence of regional price indices, we have used the poverty lines as an adjustment factor.

In 2010, the Gini coefficient was 33.6 for the lower threshold and 32.7 for the upper threshold. The difference between the two thresholds is statistically insignificant.

Consumption inequalities did not change between 2000 and 2005. On the other hand, such inequalities decreased by 2 percentage points between 2005 and 2010 irrespective of the poverty line considered.

Although this decrease in inequalities is statistically significant, it could be economically insignificant. Indeed, a reduction in inequalities as measured by the Gini index is economically significant (a majority of the population feel some reduction in the gap between the rich and the poor), if the Gini index drops by at least (and almost certainly) 2 percentage points. However, with a statistical margin of error of 0.64 percentage points, the reduction in inequality is situated in a confidence interval ranging from 0.75 to 3.25 percentage points. Hence, whereas it is 95 per cent certain that inequalities decreased between 2005 and 2010, it is far from certain that this decrease was 2 percentage points, which corresponds to the minimum threshold for a significant reduction of inequalities from an economic standpoint.

The level of inequality does not vary significantly from region to region (Table 17). The only exception is the North-East Region which had an inequality level of less than 0.3 in 2010. This exception was accounted for by a reduction in inequalities of about 6 percentage points between 2005 and 2010. In addition to the reduction being statistically significant, it is also economically significant.

The Centre-West, South-West and South-East also witnessed an appreciable decline in their inequalities (between 3 and 4 percentage points). In the other regions, the Gini index variation is statistically insignificant.

Table 16: Gini Inequality Indices (in %)

		2000	2005	2010
Without correction	Total expenditure	40.4 (0.6)	40.8 (0.7)	38.5 (0.6)
	Consumption	37.5 (0.6)	37.7 (0.6)	35.8 (0.5)
Correction with lower thresholds	Total expenditure	38.1 (0.6)	38.7 (0.6)	36.2 (0.5)
	Consumption	35.3 (0.6)	35.6 (0.5)	33.6 (0.4)
Correction with upper thresholds	Total expenditure	37.4 (0.6)	38.0 (0.6)	35.3 (0.5)
	Consumption	34.4 (0.6)	34.8 (0.5)	32.7 (0.4)

Table 17: Gini Inequality Indices by Geographical Region

Region	Total Expenditure			Annual Consumption		
	2000	2005	2010	2000	2005	2010
Greater Tunis	0.377 (0.011)	0.399 (0.015)	0.376 (0.012)	0.354 (0.012)	0.371 (0.012)	0.354 (0.009)
Nord East	0.371 (0.014)	0.365 (0.011)	0.293 (0.008)	0.336 (0.015)	0.334 (0.009)	0.277 (0.008)
North-West	0.386 (0.027)	0.357 (0.013)	0.358 (0.011)	0.335 (0.009)	0.329 (0.010)	0.331 (0.009)
Centre-East	0.382 (0.013)	0.372 (0.014)	0.360 (0.009)	0.351 (0.014)	0.324 (0.008)	0.319 (0.008)
Centre-West	0.388 (0.009)	0.419 (0.012)	0.374 (0.010)	0.368 (0.008)	0.382 (0.011)	0.349 (0.009)
South-East	0.378 (0.013)	0.402 (0.012)	0.360 (0.012)	0.338 (0.013)	0.378 (0.013)	0.331 (0.009)
South-West	0.373 (0.018)	0.382 (0.013)	0.360 (0.016)	0.347 (0.017)	0.356 (0.014)	0.326 (0.017)

Analysis of Polarization between 2000 and 2010

The income polarization index reflects the extent to which a given population has been fragmented into several distinct groups. Persons in these different groups (different regions, for example) have lifestyles that are homogenous within the same group but considerably different from other groups. Consequently, the individuals in each group develop a strong feeling of identification since they share nearly the same standard of living. It is worth noting that polarization within a population can deepen even in the absence of increased inequalities.

Firstly, a breakdown of overall inequality into an inter-regional component and an intra-regional component shows that inequalities between regions are on the increase while inequalities within the same region are on the decline.

The reduction of intra-regional inequalities originates from the reduction in inequalities in the North-East, Centre-West and South-East and West.

Increased inequalities between regions indicate that the feeling of alienation increases when average standards of living become increasingly unequal between regions. This translates into weaker

growth in the average standard of living in the poorest regions compared to the richer ones thereby aggravating regional disparities. Furthermore, the reduction of intra-regional inequalities from 23% in 2000 to 20.1% in 2010 indicates that the standards of living of residents of the same region (the North-East, Centre-West and South-West) are converging. Residents of the same region, therefore, show an increasing feeling of identification. The relationship between inter-regional inequality index and intra-regional inequality therefore constitutes an appropriate polarization index.

The significance of a change in polarization depends on the segment of the wellbeing distribution being focused on (Tables 18 and 19). Where the consumption changes of the affluent class are weighted highly (Table 19) the change in polarization index is not significantly higher than the statistical margin of error to be considered statistically or economically significant. However, where the polarization indices are more sensitive to consumption changes of the middle class (Table 19), they show a significant increase from 2000 to 2005 and stagnation between 2005 and 2010. These results confirm that the feelings of identification and alienation of the citizens of disadvantaged Governorates increased during the 2000-2010 period, whereas such feelings did not actually change for the affluent irrespective of their region of residence.

In conclusion, the reduction of absolute poverty did not stop during the 2000-2010 period but continued to decrease significantly. However, this performance conceals another reality.

Firstly, this reduction did not benefit the poorest regions. On the contrary, absolute poverty in the two poorest regions of the country, namely the Centre-West and the South-West worsened compared to the rest of the country.

Secondly, income distribution did not help reduce poverty significantly. Therefore, poverty reduction results almost exclusively from economic growth and not from a greater contribution by the disadvantaged regions to national wealth creation. This is particularly true for the 2000-2005 period.

Thirdly, even though overall inequalities decreased to some extent, this resulted more from the decrease in intra-regional inequalities than a reduction in inter-regional inequalities. This has produced, especially among the poor, a strong feeling of association between regions and standard of living. The names of some regions conjure up an image of low living standard whereas others suggest high living standards.

Table 18: Breakdown of Inequality by Region and Polarization in Tunisia

	GINI Index		
	2000	2005	2010
General Inequality	34.4 (0.48)	34.8 (0.45)	32.7 (0.34)
Inter-regional Inequality	11.4 (0.32)	13.3 (0.29)	12.6 (0.23)
Intra-regional Inequality	23.0 (0.32)	21.5 (0.29)	20.1 (0.23)
Polarization	49.9 (1.44)	61.9 (1.51)	62.5 (1.27)
Variation of Polarization	12.0 (2.11)		0.6 (1.97)

The values in parenthesis indicate standard error. The values in italic are statistically insignificant. Consumption distribution was adjusted by using the poverty lines.

Table 19: Breakdown of General Inequality by Region and Polarization in Tunisia

	The Poor			The Affluent		
	2000	2005	2010	2000	2005	2010
General Inequality	65.1 (0.44)	65.2 (0.39)	63.9 (0.41)	25.1 (0.50)	25.5 (0.43)	23.4 (0.32)
Inter-regional Inequality	11.8 (0.31)	13.7 (0.28)	13.0 (0.27)	3.6 (0.33)	3.3 (0.28)	3.5 (0.22)
Intra-regional Inequality	53.3 (0.31)	51.5 (0.28)	50.9 (0.27)	21.5 (0.33)	22.2 (0.29)	19.9 (0.31)
Polarization	22.1 (0.60)	26.7 (0.57)	25.4 (0.55)	16.7 (1.50)	14.9 (1.27)	17.6 (1.09)
Variation of Polarization	4.6 (0.83)		1.3 (0.79)	1.8 (1.9)		2.7 (1.68)

The values in parenthesis indicate standard error. The values in italic are not statistically significant. The consumption distribution was adjusted by using the poverty thresholds.

7. Robustness of Results

Table 20 below illustrates the major changes to the old poverty measurement methodology and their impact on the poverty rate.

The study results were also tested with different consumption measurements.

Firstly, these alternative measurements did not yield significantly different index estimations. This is certainly due to incomplete approximation of aggregate consumption resulting from inadequate information in the 2010 survey. INS hopes to obtain the information from the 2015 survey to improve the accuracy of its research on wellbeing distribution in Tunisia.

Secondly, these measurements showed the same trend. Poverty seems to have decreased between 2000 and 2010 thanks to economic growth. However, distribution of this growth between the various zones and regions did not reduce the relative disparity between the inland and coastal regions. This disparity even widened between 2000 and 2010.

INS plans to introduce several improvements in its data collection method in order to improve the accuracy of its household aggregate consumption and, hence, the accuracy of its poverty estimations.

The first improvement consists in collecting information on the stock of durable goods in each household. In this regard, INS also hopes to collect information on the date of purchase and price of such goods. With this information, it will be possible to estimate the value of the services provided by such goods and this will provide a more accurate estimation of the consumption level (and therefore the standard of living) of each household.

The second improvement will consist in monitoring on an annual basis 25% of the households selected in each five-year survey. This will make it possible to conduct longitudinal surveys (also called panel surveys). Only such surveys can help determine the profile of households in chronic poverty, those in transitional (and therefore less severe) poverty and those that do not face the risk of falling into poverty. Knowledge of these profiles will help design more effective and less costly poverty reduction programmes.

C. General Conclusion

Tunisia witnessed a significant reduction of the incidence of poverty from 2000 to 2010. The increase in consumption by the population observed between 2005 and 2010 accounts for this trend. This increase occurred at a more sustained pace than total consumption, which accounts for the significant decrease in the number of poor persons in the country. This observation is compatible with the increase in private demand, as measured in the national accounts.

However, this did not translate into a reduced disparity between the communal and non-communal areas or between the coastal and interior regions. Communal areas, the North-West regions and, especially, the Centre-West continue to show poverty rates significantly higher than the national average. Worse still, the backwardness of these regions compared to the rest of the country worsened from 2000 to 2010 instead of reducing.

Table 20. Summary of the Major Changes to the Previous Poverty Measurement Methodology

(In order of impact on the poverty index)

Change related to:	Previous Methodology	New Methodology
Reference Group	Households whose annual per capita expenditures ranged between TND 360 and TND 480	The poorest 20 % of the population (in terms of per capita consumption)
Caloric requirement per capita	Cities: 2204 kcal/day Small and medium towns: 2204 kcal/day Rural: 2230 kcal/day	Cities: 2272 kcal/day Small and medium towns: 2305 kcal/day Rural: 2327 kcal/day
Method used to estimate non-food component of poverty line	Engel equation using ordinary least squares	Engel using quintile regression
Definition of aggregate consumption	Consumption is measured as total expenditures including the purchase of housing and reimbursements. Imputed rent is estimated as an average by stratum	Consumption is measured as total expenditures excluding purchases of housing and cars, major repairs, purchases of key assets and occasional ceremonies. Imputed rent is estimated according to a regression model

Annex

Annex I: Establishing a Wellbeing Indicator

Poverty measurement requires a wellbeing indicator. The technical choices made in formulating this indicator depend on the nature of the available data.

It is worth noting that the main objective of the survey is to determine the actual standard of living of households through their expenditures. Thus, the survey focused on all the monetary expenditures made by households as well as the procurement of goods and services without corresponding monetary payments. These include own consumption of food and various benefits in kind enjoyed by the household: staff housing, official car, water, electricity, telephone, etc. The benefits and purchases by households that were not directly paid by the latter were evaluated and incorporated in the estimation of their total consumption as imputed expenditures. This made it possible to homogenize households that benefit from or do not benefit from benefits in kind and to make an adequate comparative analysis of wellbeing, inequality and poverty.

It is also worth noting that an imputed rent was charged to all households that own their main residence or those with free accommodation (see Annex 1).

Thus, the data collected helped to identify all the expenditures made during the reference year. These include:

- Monetary expenditures for the consumption of food and non-food items (clothing, hygiene and care, leisure, etc.).
- Housing investment expenditures
- Expenditures for the procurement of means of transport.
- Evaluation of own consumption of food.
- Evaluation of gifts in kind received.
- Evaluation of benefits in kind.
- Evaluation of imputed rent of owner-occupied household or households which enjoy free housing (such as staff housing for example).

1. Evaluation of Imputed Expenditures

Some households enjoy a number of free goods or services. To better identify the level of overall wellbeing of such households, it became necessary to estimate the actual value of such services and include them in the aggregate consumption.

These services are generally broken down into three categories: imputed rent, benefits in kind and social transfers.

1.1 Imputed Rent

Some households own their residences and others enjoy free accommodation. Contrary to tenant households, owner-occupied households do not pay any rent for the housing they occupy. Failure to take into account the services provided by housing to owner-occupied households will result in an under-estimation of the standard of living of the latter in relation to tenant households. In order to better assess the standard of living of such households, we estimated an imputed rent for households that do not pay market rents. To explain the relevance of this estimation, let us consider two households, A and B, which earn and spend TND 500 monthly. Household A is an owner-occupied household and, therefore, the monthly TND 500 spent does not include rent. Household B is a tenant household and therefore the monthly TND 500 includes TND 200 of rent. If the two households occupy identical housing, the standard of living of Household A is equivalent to the standard of living of a third household C which earns and spends TND 700 per month made up of TND 500 exclusive of rent and TND 200 per month to

pay the rent of housing identical to that one occupied by Households A and B. Therefore, the imputed rent is the amount that an owner-occupied household would have paid had it been renting its residence. In this example, the imputed rent of Household A is TND 200 per month.

In the previous surveys, the imputed rent was calculated as the average of market rent by residential stratum. In this report, this amount is charged through a log-linear regression model. With this model and for the tenant households in each stratum, we explained the logarithm of the rent by variables describing the characteristics of the housing (type of construction, building materials for walls and roof, number of rooms, etc.). Geographic location variables were also included in the model.

Hence, the imputed rents are estimated with the help of the following hedonic regression model:

$$\ln(\text{loyer}_i) = \alpha + X_i\beta + u_i\gamma + \sum_{j=1}^J g_{i,j}\delta_j$$

With:

- X_i : a variable vector describing the housing characteristics (number of rooms, type of construction, etc.) of housing i ;
- $g_{i,j}$: governorate j of household i ;
- u_i : household residential area i .

Table A1 illustrates the average value of real and imputed rents by residential stratum.

Table A1: Average Imputed Rent and Average Real Monthly Rent by Area in 2010 (in Dinar)

	Real Rent	Fictitious Rent
Cities	211	197
Small and medium towns	129	130
Non coNon-communalmmunal	119	68
Total	177	132

1.2 Benefits in kind:

Benefits in kind are goods and services provided without direct financial payment. These services form part of the household consumption and must, therefore, be estimated. The method of assessing the monetary value of the goods and services in question varies from one category to another.

The main services used in the survey are:

a - Water and electricity bills: some households are connected to STEG (electricity) and SONEDE (drinking water) without having to pay bills. For such households, an imputed value of the amounts of the bills is estimated through a regression model similar to the one mentioned above. This model included some housing characteristics as well as binary variables indicating the presence of some appliances in the household.

b - Staff vehicle: for households with staff vehicles, the amounts of the costs of insurance, automobile taxes and roadworthiness inspections are calculated using the median value of the residential stratum.

1.3 Indirect social transfers:

For some households, the costs of school tuition and transport are borne by the employer or charitable associations. These expenses are also estimated using the median of households that actually pay for such services.

2. Aggregate Consumption Construction

In constructing the final household aggregate consumption, several alternative approaches were considered. The divergences between them essentially concerned the inclusion or exclusion of some expenditure categories.

To ensure an accurate estimation of household wellbeing, we opted for the most common international practices.

Differences between the various options considered mainly related to investment, purchase of durable goods and exceptional family ceremonies.

2.1 Investment expenditures

This category includes expenditures for housing purchase, construction and major repairs as well as means of transport. Indeed, such expenditures are made for a long term period and do not in any way reflect the usual household consumption for a given year. Secondly, the inclusion of such expenditures in the construction of wellbeing can distort the measurement of inequalities between the various social groups of the population. Where this entails expenditures for the purchase or construction of a house, the imputed rent estimated provides a better account of the annual consumption of the housing service.

2.2 Durable goods procurement expenditures:

This category includes the procurement expenditure of some home appliances (refrigerator, washing machine etc.), leisure (TV, DVD player) and furniture (living room furniture, bedroom furniture etc.). The consumption of such products lasts for several years. Following international standards, the ideal would be to include in the estimation the monetary equivalents of services provided by these goods during the observation year. Unfortunately, the survey does not provide any data on the components required for this estimation, notably the price and year of acquisition of such goods. It would be advisable to collect such data in future surveys.

2.3 Expenditures for exceptional family ceremonies:

These involve expenditures made on special occasions (weddings, engagements, funerals etc.) which, once more, do not reflect the usual annual consumption of the households.

2.4 Aggregate consumption:

From the foregoing, four assumptions for constructing aggregate consumption were considered:

Assumption 0: All the annual household expenditures were considered except transfers by households. Despite the inconvenience of this option, it helps to maintain some temporal consistency given that the poverty indicators, for example, calculated since 1980 are based on this aggregate.

Assumption 1: All the annual household expenditures except the investment expenditures were considered.

Assumption 2: Capital expenditures and durable goods expenditures were excluded.

Assumption 3: Capital expenditures, durable goods expenditures and exceptional ceremony expenditures were excluded.

Table A2: Average Consumption per Capita in 2010 According to Different Options

	Assumption 0	Assumption 1	Assumption 2	Assumption 3
Total Consumption Per Capita in 2010	2601	2441	2397	2360

Table A2 clearly shows that the real demarcation line is between the total expenditure concept (Assumption 0) and the consumption concept. Differences between the various consumption measurements are relatively weak. The main reason is that only imputed rent was estimated for the annual consumption value of the housing service. Estimation of the value of the services provided by the other durable goods was not possible for the reasons given above.

In the following section, we mainly use Assumption 0 and Assumption 3. The former provides some consistency in the INS publications in view of the fact that all previous publications were based on the total expenditure concept. The latter provides poverty measures that better reflect the situation of this problem for one year; consumption also provides inequality measures that best reflect the actual disparity in standard of living.

3. Total Consumption Estimation

3.1 National Level

We also applied the four consumption definitions to the 2000 and 2005 surveys. Table A3 illustrates the trend of annual consumption per capita between 2000, 2005 and 2010 based on the four abovementioned assumptions.

Table A3: Annual Expenditure Per Capita between 2005 and 2010

	Assumption 0	Assumption 1	Assumption 2	Assumption 3
Total annual consumption per capita 2000	1424	1313	1283	1251
Total annual consumption per capita 2005	1939	1770	1735	1697
Total annual consumption per capita 2010	2601	2441	2397	2360
Annual growth rate 2005-2010 (current prices)	6.1	6.6	6.7	6.8
Annual growth rate 2005-2010 (constant prices)	1.8	2.4	2.5	2.6

Table A3 shows that while total expenditure increased on average by 6 per cent at current prices from 2005 to 2010, the various consumption measures increased to a higher rate, namely by 6.6% and 6.7% and 6.8% for the third consumption measure. This difference between expenditure and consumption growth of 0.6 percentage points is certainly due to capital expenditure being lower than consumption expenditure.

3.2 Regional Level

The regional analysis of the survey results indicated clear disparities between the country's various regions with regard to average expenditures. Table A4 presents the situation in 2010:

Table A4 a: Annual Expenditure Per Capita by Regions

Region	Total Annual Expenditure			Annual Increase in %
	2000	2005	2010	
Greater Tunis	1917	2609	3498	6.0
North-East	1292	1724	2241	5.4
North-West	1145	1466	1754	3.7
Centre-East	1735	2245	3081	6.5
Centre-West	937	1173	1623	6.7
South-East	1158	1873	2464	5.6
South-West	1030	1510	2064	6.5
Total	1424	1939	2601	6.1

Table A4 b: Aggregate Consumption Per Capita by Region

Region	Aggregate Consumption			Annual Increase in %
	2000	2005	2010	
Greater Tunis	1738	2331	3228	6.7
North-East	1147	1547	2113	6.4
North-West	979	1292	1613	4.5
Centre-East	1483	1902	2693	7.2
Centre-West	841	1034	1491	7.6
South-East	978	1574	2198	6.9
South-West	928	1338	1853	6.7
Total	1252	1696	2360	6.8

Inland (West) and especially Centre-West- regions have the lowest standard of living. This fact, confirmed in all the studies on the Tunisian economy, is ascribable to the scarcity of economic opportunities in these regions. In contrast, in Greater Tunis, where most of the industrial and service activities are concentrated, consumption and expenditure levels are the highest in the country.

3.3 Consumption by residential area:

If households are stratified by their residential areas, one would notice a clear influence of the degree of urbanization on the level of average expenditures as indicated in Table A5.

Table A5 a: Total Annual Expenditure Per Capita by Residential Area

Area	2000	2005	2010	Annual Increase in %
Communal	1726	2326	3095	5.9
Cities	1992	2640	3696	7.0
Medium Towns	1518	2045	2612	5.0
Non-communal	911	1213	1644	6.3
Total	1424	1939	2601	6.1

Table A5 b : Aggregate per capita consumption by place of residence

Area	2000	2005	2010	Annual Increase in %
Communal	1512	2023	2794	6.7
Cities	1776	2328	3324	7.4
Medium Towns	1356	1751	2367	6.2
Non-communal	810	1083	1520	7.0
Total	1252	1696	2360	6.8

3.4 Consumption by Socio-professional Categories

therefore, explains the level of consumption between the population groups as indicated in Table A6:

The socio-professional category of the head of household is an indicator that determines the households' standard of living. It,

Table A6 a: Total Annual Expenditure Per Capita by Socio-professional Category of the Head of Household

SPC of Head of Household	2000	2005	2010	Annual Growth in %
Senior executives and liberal professionals	3014	4305	5311	4.3
Middle-level executives and liberal professionals	2261	2981	3629	4.0
Other employees	1715	2039	2756	6.2
Managers of small trades in industry, commerce and services	1660	2227	3156	7,2
Craftspersons and the self-employed in industry, commerce and services	1264	1580	2235	7.2
Non-farm workers	1117	1351	1860	6.6
Farm operators	1069	1328	1770	5.9
Farm workers	776	1075	1531	7.3
Unemployed	697	997	1503	8.6
Pensioners	1885	2544	3477	6.4
Other non-working persons	1523	2001	2439	4.0
Off-household support	1129	1763	2108	3.6
Total	1424	1939	2601	6.1

Table A6 b: Annual Consumption Per Capita by Socio-professional Category of Head of Household

SPC of Head of Household	2000	2005	2010	Annual Growth in %
Senior executives and liberal professionals	2571	3330	4589	6.6
Middle-level executives and liberal professionals	1881	2318	3080	5.8
Other employees	1488	1777	2431	6.5
Managers of small trades in industry, commerce and services	1421	1983	2813	7.2
Craftspersons and the self-employed in industry, commerce and services	1127	1438	2090	7.8
Non-farm workers	984	1224	1739	7.3
Farm operators	948	1186	1630	6.6
Farm workers	717	988	1428	7.6
Unemployed	642	950	1406	8.2
Pensioners	1695	2303	3153	6.5
Other non-working persons	1386	1850	2319	4.6
Off-household support	1005	1512	1964	5.4
Total	1252	1696	2360	6.8

Executives have the highest expenditure level per capita compared with the unemployed who represent the most economically vulnerable and deprived persons. The average per capita expenditure of the members of a family headed by an executive (TND 5311) is 3.5 times higher than that of a family headed by an unemployed person (whose expenditure per capita is only TND 1503). Admittedly middle-level executives, craftspersons and pensioners have a lower expenditure level than senior executives; this is higher than average expenditure levels and more than double that of unemployed persons.

Table A6 shows that unemployed persons (economically more vulnerable) enjoyed the highest nominal growth (over 8%). This rose

from total expenditure of TND 997 in 2005 to TND 1503 in 2010. The senior executive category always comes top irrespective of the wellbeing indicator selected, with average total expenditure of TND 5311 and annual average consumption of TND 4589 in 2010.

3.5 Consumption by expenditure quintile:

Table A7 illustrates average annual consumption per capita by expenditure quintiles. Consumption ranges from TND 794 for the poorest to TND 5064 for the richest quintile. Therefore, a member of the most affluent quintile enjoys an average consumption level that is 6 times higher than that of a member of the poorest quintile.

Table A7: Total Annual Expenditure Per Capita by Expenditure Quintile

Quintile	2000	2005	2010	Annual Increase in %
1 st Quintile	439	569	815	7.5
2 nd Quintile	772	1012	1422	7.0
3 rd Quintile	1124	1444	2008	6.8
4 th Quintile	1656	2077	2871	6.7
5 th Quintile	3517	4596	5890	5.1
Total	1424	1939	2601	6.1

Table A8 : Annual consumption per capita expenditure quintile

Quintile	2000	2005	2010	Annual Increase in %
1 st Quintile	420	546	794	7.8
2 nd Quintile	728	947	1368	7.6
3 rd Quintile	1041	1327	1905	7.5
4 th Quintile	1494	1873	2670	7.3
5 th Quintile	2945	3790	5064	6.0
Total	1252	1696	2360	6.8

Once again, we notice that members of the poorest quintile have the highest growth rate. This points to pro-poor growth between 2005 and 2010.

Annex II: Poverty Line Estimation

One of the objectives of the survey is to study the poor population and its evolution over time based on the results of similar surveys conducted previously. Although poverty is a complex phenomenon that requires the study of several quantitative and qualitative aspects it is necessary, for practical reasons, to define it in simple statistical terms. Poverty is a situation of material and moral deprivation that prevents a person from meeting his/her essential needs. A household is deemed to be poor if its standard of living, measured here either by the total expenditure per capita or by consumption per capita, is lower than a predetermined level. In literature, this minimum level is often referred to as the poverty line.

The question therefore is how to determine the poverty line. In this regard, international organizations interested in the study of poverty have adopted different approaches in calculating the poverty line. These approaches which are based on different choices of the reference poverty profile and level of food needs have arrived at different evaluations of the poverty line. Naturally, these considerably influence the rates as well as the profiles of the poor population.

The method adopted here to calculate the poverty line consists in basing the assessment of this threshold on food energy needs. The aim is to estimate the cost of a basket of food items that would ensure caloric intake indispensable for an individual's activity (Energy Requirement - EER). To estimate this cost, it is necessary to define a reference group whose consumption basket would be used to determine the average calorie cost. Next, the average calorie cost is used to determine the food component of the poverty line. Having defined this food component, the two poverty lines are determined, namely the lower threshold and the upper threshold.

1. Choosing the Reference Population

There is a standard method for defining the reference population. The choice of the reference population to determine the consumption

basket is rather guided by the analyst's free will. However, it is also true that the measurement of poverty is highly sensitive to the choice of reference population. The group's consumption pattern is crucial to determining the composition of the consumption basket which constitutes the basis of calculation of the food poverty line.

Hence, the question that needs to be addressed is how to select the reference group. The choice is generally consensual. In accordance with the most current international practices, we opt for the population which is within the first quintile (0-20) of the population classified in an ascending order from its relevant standard of living (total expenditure per capita or consumption per capita of the households surveyed).

We use the 2010 survey to calculate the food component and, in the following section, the non-food and overall poverty line. Next, the consumer price index is used to determine the same thresholds that will apply to the 2000 and 2005 survey data. To test the sensitivity of the poverty comparisons to this choice, the 2005 survey is also used to calculate the poverty line as well as the consumer price index to establish the 2000 and 2010 poverty lines.

2. Calculating the Food Poverty Line

The poverty line is the cost of a basket of food products and services needed to satisfy the recommended energy requirements in keeping with the United Nations Food and Agriculture Organization (FAO) and the World Health Organization (WHO).

These requirements were estimated on the basis of a nutritional survey. The latter is used to calculate the recommended and minimum energy needs for each individual (depending on his age, gender, physical activity and anthropometric data).

Table A9: Average Energy Requirements in 2010

Area	EER	MER
Cities	2272	1907
Small and Medium Towns	2305	1896
Non-communal	2327	1853
Total	2301	1887

EER: estimated energy requirements

MER: minimum energy requirements

The calorie cost is obtained by the ratio of the food expenditures of the reference population to their energy intake. For each household, the cost of one calorie is defined as follows:

$$C_i = Y_{f,i} / \text{Intake}_i$$

where,

C_i: cost of one Kcal

Y_{f, i}: Food expenditure for household i

Intake_i: Energy intake for household i

Table A10 illustrates the median cost of 1 Kcal by residential stratum.

Table A10: Median cost of one Kcal of the reference group by stratum in 2010

Area	Median cost of 1000 Kcal in thousands
Cities	576
Small and Medium Towns	553
Non-communal	438

We note that the median cost of one kcal does not vary substantially from one stratum to another. The main reason for this is that the reference group (0-20% of the lowest quintile) is set in relation to the entire population. Households in this group have a similar standard of living. Here, it is worth recalling that the cost of one kcal per household depends on its standard of living. Indeed, the most affluent households buy better quality and, therefore, more expensive food items. Households with similar standards of living will naturally have a relatively similar cost of purchase for one kcal, as illustrated in Table A10.

Thus, the food poverty line is calculated by multiplying the median cost of one kcal of the reference group by the recommended energy requirement at the level of each stratum:

$$Z_{f,d} = C_d * EER_d * 365 \text{ days}$$

where,

Z_{f, d}: Food poverty line for stratum j

C_d: median cost of the reference group of one Kcal for stratum j

EER_i: Energy requirement at the level of stratum i

Table A11: Food poverty line by stratum in 2005 and 2010 in TND

Area	Food poverty line 2010	CPI for the reference population	Food poverty line 2005
Cities	382	1,251	478
Small and Medium Towns	372	1,249	465
Non-communal	301	1,239	373

Once more, the variability of the food poverty line between the various strata is relatively low. As in the case of the median cost of the calorie, the most significant variation is between the communal areas (cities and towns) and the non-communal areas.

3. Estimating the Lower Poverty Line

Poverty line is the sum of two components. One of these components referred to as "food component Z_f", is equal to the food poverty line. The next step is to calculate a component describing the minimum expenditure required to meet the household's non-food consumption items.

To calculate the "non-food component Z_{n-f}" related to the lower poverty line, we observed the behaviour of households whose expenditure level per capita is barely equal to the food poverty line Z_f. These households are quite capable of meeting their basic food needs under the extreme (and nearly impossible) condition of not consuming non-food items. If they do not behave this way, it is because they consider that the portion of expenditure devoted to the purchase of non-food items further improves their level of

satisfaction. The median value of the non-food consumption of these poor households constitutes an initial estimation of the non-food poverty line. The sum of this component and the food component yields the lower poverty line.

To estimate the lower line, Ravallion (1994) proposes that an Engel function of the QAIDS type be specified describing the following relationship between the budgetary portion of food expenditures (w_f), per capita consumption (y) standardized by the food poverty line (Z_f), and the household size (nh) deviated from the average size:

$$w_{a\ lim}^i = \alpha + \beta \ln \left(\frac{y^i}{Z_{a\ lim}} \right) + \gamma \left[\ln \frac{y^i}{Z_{a\ lim}} \right]^2 + \delta (n^i - \bar{n}) + \zeta_{a\ lim}^i$$

Several estimation methods are possible, in particular the ordinary least squares and non-parametric estimations. However, these two methods are highly sensitive to the presence of outliers around Z_f . To avoid this, we use the quantile method to determine the median coefficients of the Engel equation. The Engel equation was estimated separately per stratum.

We note that where a household's consumption level per capita precisely corresponds to the food poverty line and that its size is equal to the average size, the budgetary portion devoted to food products is equal to α . The non-food lower threshold can be easily deduced in the following manner:

$$Z_{n-a\ lim}^{bas} = (1-\alpha)Z_{a\ lim}$$

We can establish a relationship between the food poverty line (Z_f) and the lower line (Z):

$$Z^{bas} = Z_{a\ lim} + Z_{n-a\ lim}^{bas} = (2-\alpha)Z_{a\ lim}$$

Table A12: Share of the Food Component by Stratum

Area	Share of Food Component (α) 2005	Share of Food Component (α) 2010
Cities	0.433	0.415
Small and medium towns	0.475	0.426
Non-communal	0.528	0.468

We note that the share of the food component (of households whose consumption level is close to the food poverty line) fell from 2005 to 2010 in the 3 areas. In view of the fact that the budgetary coefficient of food products diminishes with the standard of living, reduction of the food component proportion indicates an improvement in the standard of living of poor households.

The lower poverty line may be interpreted as a survival threshold given that it corresponds to the bare minimum below which households can no longer satisfy their food needs.

For the reference population chosen, the lower poverty lines are calculated for each stratum, as clearly shown in Table A13:

Table A13: Poverty Line by Stratum in 2005 and 2010

Area	2000	2005	2010
Cities	534	615	757
Small and medium towns	518	596	733
Non-communal	405	466	571

In 2010, the poverty line varied between TND 757 in the cities and TND 733 in the small and medium towns. This corresponds approximately to a monthly income level for a medium household (with a size of 4.5) of TND 284 in the cities and TND 214 per month in the non-communal areas. The first figure approximately corresponds to the guaranteed minimum wage in the non-agricultural sectors for salaried workers under the 48-hour working week system which was TND 272. The second corresponds to the guaranteed minimum agricultural wage (SMAG) which was TND 251 per month in 2010.

4. Upper Poverty Line Estimation

The upper poverty line (Z_u) corresponds to the consumption per capita level required to enable households satisfy their basic food needs without sacrifice. This poverty line, which can only be obtained by iteration, corresponds to the total consumption per capita of households whose food consumption per capita level is exactly equal to the food poverty line. For $y = Z_u$ and a budgetary share

of food equal to Z_f/Z_u , this threshold is to be iterated on the basis of the following equation:

$$\frac{Z_{a \text{ lim}}}{Z^{\text{haut}}} = \alpha + \beta \ln\left(\frac{Z^{\text{haut}}}{Z_{a \text{ lim}}}\right) + \gamma \left[\ln \frac{Z^{\text{haut}}}{Z_{a \text{ lim}}} \right]^2$$

The following table indicates the portion of the food component relative to the upper poverty line.

Table A14: Budgetary Share of Households whose food expenditures are exactly equal to Z_f

Area	2005	2010
Cities	0.389	0.374
Small and medium towns	0.429	0.401
Non-communal	0.491	0.454

Thus, the upper poverty lines by stratum are indicated in Table A15 below.

Table A15: Upper Poverty Line by Stratum in TND

Area	2000	2005	2010
Cities	902	1038	1277
Small and medium towns	818	941	1158
Non-communal	581	669	820

Contrary to households living with consumption level equal to the lower line, households with a consumption level equal to the upper line are capable of satisfying their food needs given by Z_f . Therefore such households do not need to sacrifice a portion of their basic food requirements to meet basic non-food needs.

Annex III: Poverty Trend Between 2005 and 2010

Poverty measurement is by itself a statistical function. It compares the household's wellbeing indicator and the poverty line and translates the outcome into a single number for the entire population, or for a population subgroup that can be defined in relation to a residential area, level of education, professional category, etc. There are many poverty measurements, but three measurements described in the following sections are the most commonly used. These are incidence of poverty, depth of poverty and severity of poverty.

1. Incidence of Poverty

The incidence of poverty corresponds to the portion of the population whose standard of living (measured by expenditures, consumption, income, etc.) is below a given poverty line, be it the

upper or lower line as described in the previous section. This involves the portion of the population that cannot afford the basket of products corresponding to the bare minimum defined by the poverty line.

$$P_0(z) = \frac{100}{N} \sum_{i=1}^N I(y^i < z)$$

To estimate the incidence of poverty, one or several wellbeing indicators need to be defined. Earlier, the choice of this indicator was discussed and two selected. The first reflects, as in the previous INS reports, total expenditure including capital expenditures, purchase of durable goods and those for ceremonial and exceptional occasions. The second excludes expenditures whose consumption horizon exceeds the year of the study and, therefore, corresponds to annual consumption.

Table A16 a: Incidence of Poverty According to the Various Wellbeing Indicators and Poverty Line

National Level

		Total Expenditure			Annual Consumption		
		2000	2005	2010	2000	2005	2010
Tunisia		10.7 (0.5)	6.9 (0.4)	4.3 (0.3)	12.0 (0.5)	7.6 (0.4)	4.6 (0.3)
Area	Cities	4.2 (0.6)	2.5 (0.4)	1.3 (0.3)	4.3 (0.6)	2.2 (0.4)	1.3 (0.3)
	Small and Medium Towns	9.1 (0.7)	5.2 (0.5)	2.6 (0.4)	10.5 (0.8)	6.5 (0.6)	2.9 (0.4)
	Non-communal	17.0 (1.0)	12.5 (0.8)	8.8 (0.8)	19.1 (1.0)	13.4 (0.9)	9.2 (0.8)

Values in parenthesis indicate standard error

Regional Level

		Total Expenditure			Annual Consumption		
		2000	2005	2010	2000	2005	2010
Region	Greater Tunis	4.2 (0.7)	2.4 (0.4)	1.2 (0.3)	4.3 (0.7)	2.3 (0.4)	1.1 (0.3)
	North-East	10.0 (1.2)	4.5 (0.8)	1.7 (0.5)	10.5 (1.2)	5.4 (0.8)	1.8 (0.5)
	North-West	10.7 (1.1)	7.6 (1.0)	8.4 (1.2)	12.1 (1.2)	8.9 (1.1)	8.8 (1.2)
	Centre-East	5.5 (0.7)	2.5 (0.4)	1.7 (0.4)	6.4 (0.9)	2.6 (0.4)	1.6 (0.4)
	Centre-West	22.0 (1.8)	21.4 (1.7)	13.0 (1.4)	25.5 (1.9)	23.2 (1.7)	14.3 (1.5)
	South-East	15.2 (4.2)	8.0 (1.1)	4.6 (1.2)	17.5 (1.9)	9.6 (1.2)	4.9 (1.2)
	South-West	20.0 (1.9)	10.4 (1.5)	6.0 (1.3)	21.7 (2.1)	12.1 (1.6)	6.4 (1.3)

Table A16 b: Incidence of Poverty According to Various Wellbeing Indicators and the Upper Poverty Line

National Level

		Total Expenditure			Annual Consumption		
		2000	2005	2010	2000	2005	2010
Tunisia		29.9 (0.7)	21.5 (0.7)	15.0 (0.6)	32.4 (0.8)	23.3 (0.7)	15.5 (0.6)
Area	Cities	21.5 (1.4)	15.1 (1.0)	9.9 (1.0)	21.5 (1.4)	15.4 (1.1)	9.0 (1.0)
	Small and Medium Towns	28.7 (1.2)	19.6 (1.0)	12.9 (0.9)	32.5 (1.3)	22.1 (1.1)	14.0 (0.9)
	Non-communal	37.2 (1.3)	29.1 (2.4)	21.6 (2.1)	40.4 (1.3)	31.5 (2.6)	22.6 (0.6)

Regional Level

		Total Expenditure			Annual Consumption		
		2000	2005	2010	2000	2005	2010
Region	Greater Tunis	21.5 (1.7)	14.2 (1.2)	9.9 (1.1)	21.0 (1.7)	14.6 (1.2)	9.1 (0.6)
	North-East	29.6 (2.1)	20.3 (1.5)	10.3 (1.3)	32.1 (2.1)	21.6 (1.6)	10.3 (0.6)
	North-West	32.1 (1.8)	24.5 (1.8)	24.5 (1.9)	35.3 (1.9)	26.9 (1.9)	25.7 (0.6)
	Centre-East	18.9 (1.3)	11.3 (1.0)	7.5 (1.0)	21.4 (1.4)	12.6 (1.1)	8.0 (0.6)
	Centre-West	45.0 (2.0)	44.0 (2.1)	31.2 (2.1)	49.3 (2.0)	46.5 (2.1)	32.3 (0.6)
	South-East	39.5 (2.4)	24.6 (2.1)	15.7 (2.0)	44.3 (2.4)	29.0 (2.2)	17.9 (0.6)
	South-West	44.3 (2.2)	29.5 (2.4)	20.3 (2.1)	47.8 (2.5)	33.2 (2.6)	21.5 (0.6)

Irrespective of the wellbeing indicator adopted, the lower poverty line seems to indicate a decrease in the incidence of poverty. This decrease is statistically significant.

The upper poverty line indicates the same scenario as the lower threshold. The expenditure indicator shows a statistically significant decline in the incidence of poverty by 6 percentage points in Tunisia from 2005 to 2010. The consumption indicator indicates a more significant decline in the incidence of poverty. The latter is about 8 percentage points and is still statistically significant.

Despite these appreciable reductions in poverty, the Centre-West region continued to post record poverty levels in the country in 2010. Despite a reduction in the incidence of poverty, it was not sufficient to close the gap separating it from the rest of the country's regions.

Incidence of poverty does not reflect the magnitude of the poverty problem. Indeed, for the same poverty rate, this measure does not indicate whether the level of average consumption of the poor was closer or farther from the poverty line. The poverty deficit helps to offset this shortcoming.

2. Poverty Depth (Poverty Gap)

This measure is proportional to the average distance separating household expenditures or consumption from the poverty line. It records the average collective deficit (or consumption) in relation to the poverty line for the entire population.

The depth of poverty is obtained from the sum of all the deficits of the poor population (assuming a zero deficit for the non-poor) and by dividing this by the total population size. In other words, it helps to estimate the total resources needed to bring the poor population to the poverty line.

$$P_1(z) = \frac{100}{N} \sum_{i=1}^N \left(\frac{z-y^i}{z} \right) I(y^i < z)$$

As in Table A16 concerning the incidence of poverty, Tables A17 provide the results of the poverty deficit in relation to the two wellbeing indicators selected and the two poverty lines determined.

Table A17 a: Poverty Depth by Various Wellbeing Indicators and Poverty Threshold

National Level

		Total Expenditure			Annual Consumption		
		2000	2005	2010	2000	2005	2010
Tunisia		2.5 (0.1)	1.51 (0.11)	0.92 (0.08)	2.8 (0.2)	1.66 (0.11)	0.99 (0.09)
Area	Cities	0.7 (0.1)	0.43 (0.11)	0.18 (0.05)	0.7 (0.1)	0.43 (0.11)	0.17 (0.05)
	Small and Medium Towns	2.0 (0.2)	1.16 (0.15)	0.48 (0.09)	2.4 (0.2)	1.33 (0.16)	0.57 (0.10)
	Non-communal	4.3 (0.3)	2.83 (0.24)	2.03 (0.22)	4.7 (0.3)	3.08 (0.26)	2.12 (0.23)

Regional Level

		Total Expenditure			Annual Consumption		
		2000	2005	2010	2000	2005	2010
Region	Greater Tunis	0.7 (0.1)	0.38 (0.09)	0.16 (0.05)	0.6 (0.1)	0.40 (0.10)	0.14 (0.04)
	North-East	1.9 (0.3)	1.06 (0.22)	0.27 (0.10)	2.0 (0.3)	1.10 (0.22)	0.27 (0.11)
	North-West	2.3 (0.3)	1.46 (0.25)	1.66 (0.28)	2.5 (0.3)	1.75 (0.29)	1.76 (0.29)
	Centre-East	1.1 (0.2)	0.38 (0.10)	0.31 (0.11)	1.2 (0.2)	0.41 (0.10)	0.33 (0.12)
	Centre-West	6.3 (0.7)	5.30 (0.52)	3.28 (0.43)	7.2 (0.7)	5.67 (0.56)	3.53 (0.46)
	South-East	3.7 (0.6)	1.77 (0.29)	0.94 (0.30)	4.2 (0.6)	2.14 (0.34)	1.00 (0.31)
	South-West	5.0 (0.6)	2.35 (0.43)	1.14 (0.29)	5.6 (0.7)	2.54 (0.43)	1.31 (0.35)

Table A17 b: Poverty Depth by Various Wellbeing Indicators and Poverty Line

National Level

		Total Expenditure			Annual Consumption		
		2000	2005	2010	2000	2005	2010
Tunisia		8.6 (0.3)	5.79 (0.23)	3.75 (0.20)	9.3 (0.3)	6.21 (0.24)	3.85 (0.20)
Area	Cities	5.5 (0.5)	3.51 (0.33)	2.10 (0.26)	5.3 (0.5)	3.46 (0.32)	1.95 (0.25)
	Small and Medium Towns	8.2 (0.4)	5.27 (0.36)	3.00 (0.26)	9.2 (0.5)	5.93 (0.39)	3.21 (0.28)
	Non-communal	11.3 (0.5)	8.34 (0.47)	5.97 (0.45)	12.4 (0.6)	8.94 (0.49)	6.15 (0.45)

Regional Level

		Dépense totale			Consommation annuelle		
		2000	2005	2010	2000	2005	2010
Region	Greater Tunis	5.2 (0.5)	3.23 (0.33)	2.03 (0.28)	5.0 (0.5)	3.21 (0.34)	1.88 (0.28)
	North-East	7.9 (0.7)	4.83 (0.47)	2.02 (0.32)	8.3 (0.7)	5.05 (0.49)	1.97 (0.32)
	North-West	8.4 (0.6)	5.98 (0.56)	6.40 (0.65)	9.4 (0.6)	6.64 (0.61)	6.66 (0.65)
	Centre-East	4.7 (0.4)	2.55 (0.28)	1.57 (0.28)	5.3 (0.5)	2.77 (0.28)	1.60 (0.28)
	Centre-West	15.4 (1.0)	14.51 (0.91)	9.34 (0.81)	17.1 (1.1)	15.34 (0.93)	9.80 (0.83)
	South-East	12.2 (1.0)	6.82 (0.71)	3.89 (0.69)	13.7 (1.0)	7.89 (0.76)	4.10 (0.70)
	South-West	14.6 (1.0)	8.54 (0.87)	5.42 (0.71)	15.7 (1.1)	9.42 (0.90)	5.68 (0.73)

The change in the direction of poverty recorded in Tables A16 is, to a large extent, confirmed by the results provided in Tables A17. Most of the changes in the poverty deficit occur at both national and regional levels.

In the Centre-West Region, although the poverty deficit shows a downward poverty deficit trend, contrary to reduction in the incidence of poverty, it is not statistically significant when the lower thresholds are taken into consideration.

3. Poverty Severity (Poverty Gap Squared)

Poverty severity is a measure that is more sensitive to variations in the consumption of the poorest and is less sensitive to variations in the consumption of the more affluent of the poor population. In other words, this measure is sensitive to inequalities within the poor population. To address this, the simplest way will be to weigh the poverty deficit of each individual through a parameter that varies

positively with its degree of deprivation. This parameter can very well be the poverty deficit itself, which yields a measure $P_2(z)$ representing poverty severity:

$$P_2(z) = \frac{100}{N} \sum_{i=1}^N \left(\frac{z-y^i}{z}\right)^2 I(y^i < z)$$

Hence, it is easy to determine whether the two regions have the same poverty deficit $P_1(z)$: the one with the most accurate value of the poverty severity $P_2(z)$ has a less significant inequality level. Furthermore, for a limited poverty reduction budget, the best way of maximizing the reduction of $P_2(z)$ will be to target the poorest members of the population first and the less poor later.

Tables A18 present the results of the poverty severity trend between 2005 and 2010 at the national level and at more disaggregated levels. This is once more done for the two wellbeing indicators (total expenditure and consumption) and the two poverty line levels (lower and upper poverty lines).

Table A18 a: Poverty Severity by Various Wellbeing Indicators and Lower Poverty Line

National Level

		Total Expenditure			Annual Consumption		
		2000	2005	2010	2000	2005	2010
Tunisia		0.9 (0.1)	2.28 (0.11)	1.41 (0.09)	1.0 (0.1)	2.43 (0.12)	1.45 (0.09)
Area	Cities	0.2 (0.0)	1.24 (0.16)	0.70 (0.10)	0.2 (0.0)	1.19 (0.15)	0.64 (0.10)
	Small and Medium Towns	0.7 (0.1)	2.08 (0.18)	1.06 (0.12)	0.8 (0.1)	2.32 (0.19)	1.14 (0.13)
	Non-communal	1.6 (0.2)	3.39 (0.24)	2.40 (0.22)	1.8 (0.2)	3.63 (0.25)	2.47 (0.22)

Regional Level

		Total Expenditure			Annual Consumption		
		2000	2005	2010	2000	2005	2010
Region	Greater Tunis	0.2 (0.0)	1.12 (0.14)	0.65 (0.11)	0.1 (0.0)	1.10 (0.14)	1.10 (0.14)
	North-East	0.6 (0.1)	1.75 (0.22)	0.61 (0.12)	0.6 (0.1)	1.80 (0.22)	1.80 (0.22)
	North-West	0.8 (0.1)	2.19 (0.26)	2.37 (0.29)	0.8 (0.1)	2.46 (0.29)	2.46 (0.29)
	Centre-East	0.3 (0.1)	0.85 (0.12)	0.52 (0.12)	0.3 (0.1)	0.91 (0.12)	0.91 (0.12)
	Centre-West	2.6 (0.3)	6.43 (0.51)	4.01 (0.42)	2.9 (0.4)	6.78 (0.53)	6.78 (0.53)
	South-East	1.4 (0.3)	2.71 (0.34)	1.49 (0.34)	1.6 (0.3)	3.13 (0.38)	3.13 (0.38)
	South-West	1.9 (0.3)	3.44 (0.43)	2.03 (0.32)	2.1 (0.3)	3.72 (0.44)	3.72 (0.44)

Table A18 b: Poverty Severity by Various Wellbeing Indicators and Poverty Line

National Level

		Total Expenditure			Annual Consumption		
		2000	2005	2010	2000	2005	2010
Tunisia		3.5 (0.1)	0.53 (0.05)	0.30 (0.03)	3.8 (0.2)	0.58 (0.05)	0.32 (0.04)
Area	Cities	2.0 (0.2)	0.14 (0.05)	0.04 (0.01)	1.9 (0.2)	0.14 (0.05)	0.04 (0.02)
	Small and Medium Towns	3.4 (0.2)	0.39 (0.06)	0.14 (0.03)	3.7 (0.2)	0.44 (0.06)	0.18 (0.04)
	Non-communal	4.8 (0.3)	1.02 (0.11)	0.70 (0.09)	5.3 (0.3)	1.10 (0.12)	0.73 (0.10)

Regional Level

		Total Expenditure			Annual Consumption		
		2000	2005	2010	2000	2005	2010
Region	Greater Tunis	1.8 (0.2)	0.12 (0.05)	0.03 (0.01)	1.7 (0.2)	0.14 (0.05)	0.03 (0.01)
	North-East	3.0 (0.3)	0.39 (0.10)	0.06 (0.03)	3.1 (0.3)	0.40 (0.09)	0.06 (0.03)
	North-West	3.2 (0.3)	0.49 (0.11)	0.52 (0.11)	3.5 (0.3)	0.57 (0.12)	0.55 (0.11)
	Centre-East	1.7 (0.2)	0.11 (0.04)	0.10 (0.05)	1.9 (0.2)	0.11 (0.04)	0.10 (0.05)
	Centre-West	7.2 (0.6)	1.97 (0.25)	1.19 (0.19)	8.1 (0.6)	2.11 (0.27)	1.28 (0.20)
	South-East	5.2 (0.5)	0.59 (0.12)	0.31 (0.12)	5.8 (1.7)	0.71 (0.14)	0.34 (0.13)
	South-West	6.6 (0.6)	0.78 (0.17)	0.34 (0.11)	7.1 (0.6)	0.84 (0.18)	0.38 (0.13)

The poverty severity variations confirm to a large extent the variations in the incidence of poverty and poverty deficit. The continued decrease in poverty from 2000 to 2010 therefore does not appear to hinge on the choice of the wellbeing indicator (expenditure or

consumption), poverty line (lower or upper) and poverty index (incidence, deficit or severity). The robustness analysis undertaken in the following chapter will ascertain this trend on a wider interval of the poverty lines and a set of more significant poverty indices.

Annex IV: Robustness Analysis

1. Why Carry out a Robustness Analysis?

Comparisons of poverty can be sensitive to the choice of poverty line and measurement. Given that these two choices are likely to be arbitrary, it could be the same for the poverty comparisons over time between the various regions or between the various socio-economic groups. We also noted that the will to reduce the incidence of poverty can lead to inequitable social policies, likely to create ethical problems.

Fortunately it is possible to reduce the degree of arbitrariness by inspecting the various poverty differences for a wide selection of poverty lines and indices. The acceptable or unacceptable nature of the poverty indices depends on whether or not they obey normative criteria corresponding to a given ethical order (or robustness). Each robustness order characterizes a class of poverty indices. As the order increases, the number of acceptable poverty measures decreases. This means that the dominance according to the order (s) systematically results in dominance according to all the orders greater than (s). The reverse is however, not automatically true.

To elucidate this approach, let us consider two consumption distributions y_A and y_B . A and B may refer to two different periods (for example 2005 and 2010), two different zones (communal and non-communal) or two different socio-professional categories (farm workers and farm operators). To simplify the exercise, we standardize each distribution of the period t (t = 2005 or 2010) by its specific absolute poverty line in order to obtain standardized distributions Y_t such as:

$$Y_j^t = 100 \frac{y_j^t}{z_j^t} \quad \text{pour } t = 2005, 2010 \text{ et } j = \text{cities, urban, rural}$$

This standardization therefore makes it possible to work with the same poverty line (absolute) for all periods and regions. Henceforth we shall refer to this poverty line as λ .

2. First-Order Robustness Analysis

For a poverty measure to belong to the first order class (s = 1), the latter must decrease as λ increases. A necessary and sufficient condition for poverty to reduce from distribution B to distribution A as measured by any index of the class of poverty measures defined by s = 1 is as follows:

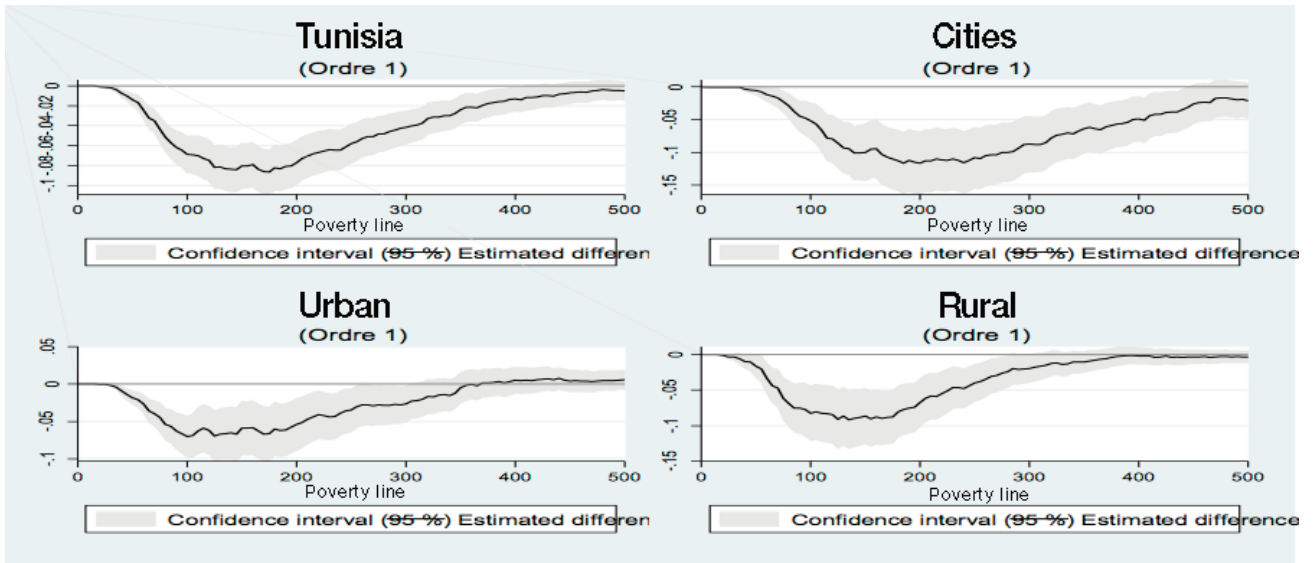
$$P_{0,B}(\lambda) - P_{0,A}(\lambda) \leq 0 \quad \forall \lambda \in [0, \lambda^+]$$

This equation shows that whereas the incidence of poverty in distribution B is never greater than the incidence of poverty in A, all the poverty indices of the class of measures described by s = 1 (which practically includes all the poverty measures proposed in the literature) also indicate a weaker poverty in B. This condition is known in literature as first-order stochastic dominance (restricted to $\lambda \in [\lambda^-, \lambda^+]$). If the condition is not met, it would necessary to test second-order dominance, which mainly means exclusion of the incidence of poverty from the class of indices defined by s = 1.

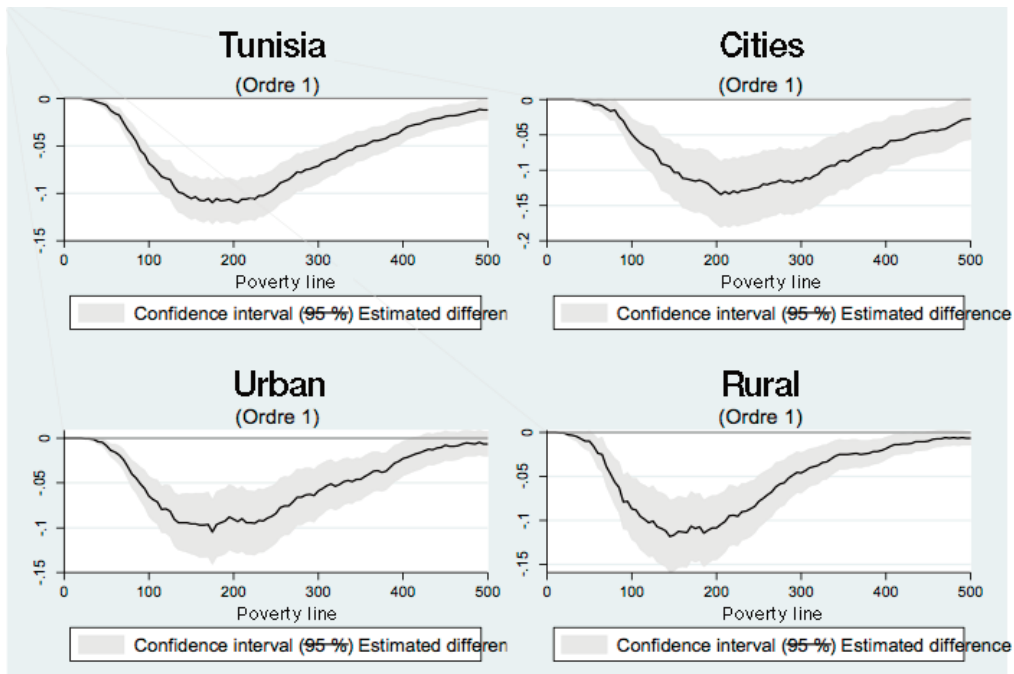
One of the ways of examining the first-order dominance is simply to graphically reproduce the values described by through the poverty line variation interval, i.e. for any possible value of λ . Given that $P_{0,B}(\lambda) - P_{0,A}(\lambda)$ is negative and does not change signs, it is possible to conclude that distribution B dominates distribution A. In other words, the poverty in B is unequivocally weaker than the poverty in A as measured by all the indices of the class of poverty indices described by s = 1.

The following graphs have been produced for poverty lines (λ) ranging from 0 to 500 per cent of the 2005 and 2010 upper poverty lines. They provide, respectively, the curves of the difference in the incidence of poverty between 2010 and 2005 in Tunisia, in and by metropolitan, urban and rural area. They also illustrate, using a grey zone, the 95% confidence interval in which these curves can be statistically situated.

Graph 1: First-order robustness analysis by total expenditure and by standardizing each distribution by the upper poverty line



Graph 2: First-order robustness analysis by consumption and by standardizing each distribution by the upper poverty line



The range of households that actually managed to improve their consumption levels (Graph 2) between 2005 and 2010 narrows in the rural areas (between 0 and 300% of the poverty line) compared with the cities where the range is between 0 and 450% of the poverty line.

Improvement in the standard of living is less significant if capital expenditures are not considered (total expenditures) given that such expenditures decreased steadily between 2000 and 2010. Thus, considering expenditures instead of consumption (Graph 1), the range of households that were able to improve their standard of living between 2005 and 2010 is limited to the interval situated between 0 and 250% of the poverty line.

In conclusion, Graphs 1 and 2 show that there is first-order dominance in Tunisia for any poverty line ranging from 0 to at least 250 per cent of the reference upper poverty lines. Furthermore, the change in the incidence of poverty between 2005 and 2010 is never positive, which precludes any possibility of an increase in poverty during the period. This result is therefore valid for any possible choice of poverty lines and measures.

For the 3 strata (urban, rural and metropolitan), poverty also decreased in a robust manner. It can therefore be concluded that there was less absolute poverty in 2010 compared with 2005 based on the first-order criteria. In this case, it would be unnecessary to undertake a second or higher order robustness analysis.

Annex V: Methodology of National Survey on Households' Budget, Consumption and Standard of Living

1. Survey Objectives

The 2010 survey on households' budget, consumption and standard of living comprises three main parts:

1.1 Budget and Expenditure Survey:

The budgetary survey had the following major objectives:

- a - Providing an estimation of the level of household expenditures: total household expenditure constitutes not only an indicator of the household's income, but also a quantitative index for assessing its standard of living.
- b - Providing an assessment of the expenditure distribution: in the absence of data on income distribution, distribution of the expenditure mass between the various population categories constitutes an initial representation of income distribution in the country.
- c - Defining the expenditure structure: detailed information gathered on expenditure by product to establish the household expenditure structure. Furthermore, it is used in deducing the budgetary coefficients according to the various classification levels of the products in the list of goods and services.

These coefficients are particularly useful for revising and weighting consumer price indices.

- d - Analysing household demand: the behaviour of households in the demand for products is summarized in the income-elasticity coefficient. Depending on the consumption model used and under assumptions of increased income and population, the estimated income-elasticity helps to project future household demand.

- e - Analysing the significance of consumption subsidies: analysis of the consumption of subsidized products by expenditure deciles helps to determine the incidence of direct subsidies to consumption. It also helps to assess the effectiveness of public policies on subsidies.

1.2 Food and Nutritional Survey:

The main objectives of this survey were as follows:

- a - Providing the level of food consumption by the population based on its demographic and socioeconomic characteristics: weighing of food items helps to assess the quantities of each product consumed by the various household groups.
- b - Estimating own consumption of food: food products weighed are recorded according to their origin, i.e., purchased or consumed on the farm. Thus, it is possible to determine the quantities of each product consumed on the farm.
- c - Providing the population's nutritional status according to its demographic, geographic and socioeconomic characteristics: comparison of food intakes helps to define the nutritional status of the population, i.e., deficit in calories, proteins, vitamins etc.
- d - Estimating the calorie intakes and energy needs of the Tunisian population: this is indispensable for calculating the food component of the poverty line and, consequently, overall poverty.

1.3 Survey on Access to Community Services:

This survey aimed to provide an overview of the morbidity status of the country's population and access by households to various public health and education services.

2. Survey Design

The 2010 survey on households' budget, consumption and standard of living was based on a theoretical sample of 13392 households drawn by random sampling stratified at two levels of each governorate. The sampling was based on the data file of the 2004 general population and housing census updated during the 2009 national population and employment survey.

2.1 Stratification criteria:

The sample frame is stratified according to two geographic criteria: governorate and dwelling area. The latter is stratified as follows: cities, medium and small towns and non-communal (rural) areas.

These stratification criteria (governorate, area and size of communes), show differences in the lifestyles of households. Thus, the strata used are as follows:

2.1.1 Cities' stratum: This stratum comprises major urban centres corresponding to municipalities of over 100,000 inhabitants and neighbouring communes.

2.1.2 Stratum of other communes: this includes all the communes of the country other than those classified in the cities stratum.

2.1.3 Non-communal stratum: these are rural built-up areas classified as major towns during the 2004 general population and housing census and the 2009 national population and employment survey, as well as territories situated outside the communes and major towns. The households of these areas live in dispersed or collective dwellings in small towns.

2.2 Type of sampling

The sampling frame is divided in each governorate according to the previously defined strata. It was decided that for each stratum a random two-tier sample should be drawn for the households in

the survey. This procedure made it possible to distribute the sample into clusters of 12 households. Members of the same cluster are relatively close to each other and this has two advantages: it facilitates conduct of the survey during field data collection.

- First tier: a sample of 1,116 primary units (clusters) is drawn proportionally to the numerical size of the households as surveyed and updated during the 2009 population and employment survey. It should be recalled that primary units correspond to the districts defined in the 2004 population census and are geographic areas covering an average of 70 households.
- Second tier: in each primary unit (cluster), twelve households are drawn through a simple random selection.

Furthermore, 12 additional households were drawn in each primary unit. Indeed, given the mobility of households as well as the lead time separating the sampling date and the date of implementation of the survey spread over 12 months, this supplementary list of substitute households helped to make up for the absence of unidentified households.

2.3 Sample size

The size of the first-tier sample is 1,116 primary units (PU) corresponding to 13,392 second-tier households (namely 12 households per PU). In order to optimize the use of logistical and material resources available, a minimum of 36 PU samples were drawn in the least populated Governorates, namely 3 PUs per survey month. This corresponds to the monthly work of a team permanently made up of 3 interviewers headed by a controller and assigned a vehicle. Furthermore, as the number of households varies from one governorate to another, it was agreed that different sample ratios be adopted for the Governorates.

The following table presents a regional distribution of the sampling and the corresponding sampling ratio.

Table A19: Regional Distribution of Survey

Region	Total Number		Sample Size		2 nd -tier Sampling Ratio
	Districts	Household	Number of Districts	Number of Households	In % of Household
District of Tunis	7863	268113	240	2880	0.45
North-East	4446	370812	156	1872	0.50
North-West	3821	296466	144	1728	0.58
Centre- East	7379	606287	216	1728	0.29
Centre-West	3871	300223	144	2592	0.86
South-East	2711	213471	108	1296	0.61
South-West	1644	130371	108	1296	0.99
Total	31735	2553157	1116	13392	0.52

However, it is worth noting that out of the 13,392 sample households drawn, 11,281 households were effectively surveyed, namely 84.2 per cent of initial sample of the draw. The non-surveyed households were those that did not provide responses or could not do so due the exceptional events that occurred in Tunisia during the survey period (revolution of 14 January 2011).

It is worth noting that the nutritional survey and the standard of living survey covered half of the sample in order not to unduly inconvenience the households surveyed.

3. Organization of Data Collection

The survey techniques and sample drawing method were designed such that data collection from 12 households selected from a primary unit could be entrusted to an interview agent for one month. The 12 households of a primary unit were broken down into three sets comprising four households each. Each set was covered by the survey on budget, expenditure and access by households to health and education services. However, for each set, only two out of four households were concerned by the food survey.

The main goal of the survey was to estimate annual household expenditure. The household observation period was four weeks

(7 daily surveys + 2 ten-day surveys). Thus, goods and services were classified into categories of products each of which was included in one or several types of survey. The frequency of the surveys and the baseline periods varied according to the nature and regularity of the various household expenditures.

Four categories of products were identified:

- a - Regular expenditures: These entailed regular and periodic expenditures. For such expenditures, the annual extrapolation was based on the amount of the last invoice paid by the household and frequency of the expenditure.
- b - Common weekly purchases: These are mainly food and often perishable products. The latter are observed on each of the 7 days of the week namely the week of daily surveys.
- c - Monthly goods and services: These are primarily large quantities of food products that can be stored. They also include regular non-food goods and services. All these products were observed and monitored during the survey month at each sample household (exactly 4 weeks).
- d - Annual goods and services: This category includes major expenditures, goods and services purchased less frequently. For such items, the period of observation is one year.

4. Data Entry and Processing

Computer key-in of the survey questionnaires was also carried out in the regional offices. This was done with the CsPro software.

It is also worth noting that the field work, codification and computer entry were conducted simultaneously. The sample units were distributed uniformly over the 12 months of the survey year. A constant volume of work was thus assured at every stage of the survey.

Processing of the data, computation and production of results were conducted with the STATA software at the central level. The data were used to prepare the final survey results.

Annex VI: Consumption Pattern

The purpose of this annex is to describe the household expenditure structure for 2010. The aim is to calculate the average level of expenditure for each consumption function as well as the contribution of each category of products in the household consumption basket.

Based on the classification adopted, the products were broken down into 12 major consumption functions in line with the Classification of Individual Consumption by Purpose (COICOP).

Furthermore, the spending structure helped to provide budgetary coefficients that were indispensable for assessing family consumer price index.

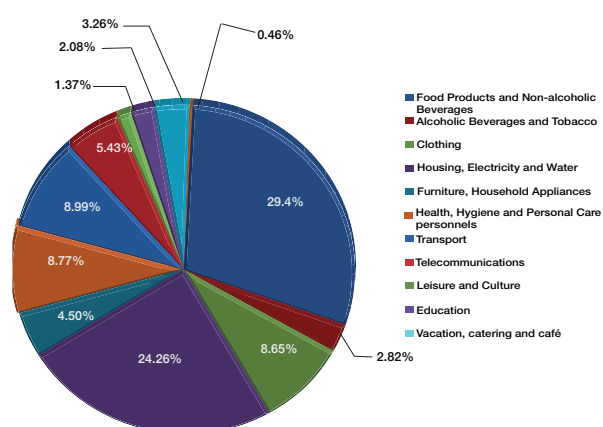
Table A20: Average Annual Expenditure Pattern Per Capita in 2010 (in Dinars)

Expenditure Category	Aggregate Consumption	Total Expenditure
Food Products and Non-alcoholic Beverages	763	748
Alcoholic Beverages and Tobacco	73	73
Clothing	224	221
Housing, Electricity and Water	635	524
Furniture, Household Appliances	117	84
Health, Hygiene and Personal Care	228	224
Transport	233	184
Telecommunications	141	141
Leisure and Culture	36	15
Education	54	54
Vacation, catering and café	84	84
Other expenditures	12	7
Total	2601	2360

Table A2: Average Annual Budgetary Coefficient by Category of in 2010 (in %)

Expenditure Category	Aggregate Consumption	Total Expenditure
Food Products and Non-alcoholic Beverages	29.3%	31.7%
Alcoholic Beverages and Tobacco	2.8%	3.1%
Clothing	8.6%	9.4%
Housing, Electricity and Water	24.4%	22.2%
Furniture, Household Appliances	4.5%	3.6%
Health, Hygiene and Personal Care	8.8%	9.5%
Transport	9.0%	7.8%
Telecommunications	5.4%	6.0%
Leisure and Culture	1.4%	0.6%
Education	2.1%	2.3%
Vacation, catering and café	3.2%	3.6%
Other expenditures	0.5%	0.3%
Total	100.0%	100.0%

Graph3: Average Annual Spending Pattern Per Capita in 2010 (in %)



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