

Poverty dynamics in Morocco, Tunisia and Egypt: What are the roles of growth and inequalities?

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Conflit d'intérêts :	Les auteurs ne signalent aucun conflit d'intérêts.
Citer cet article	EZZRARI, A., & OUDMANE, M. (2023). Poverty dynamics in Morocco, Tunisia and Egypt: What are the roles of growth and inequalities?. International Journal of Accounting, Finance, Auditing, Management and Economics, 4(2-2), 588-609. https://doi.org/10.5281/zenodo.7868017
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Received: March 14, 2023

Accepted: April 27, 2023

International Journal of Accounting, Finance, Auditing, Management and Economics - IJAFAME

ISSN: 2658-8455

Volume 4, Issue 2-2 (2023)

Poverty dynamics in Morocco, Tunisia and Egypt: What are the roles of growth and inequalities?

Abstract:

Poverty remains a persistent problem in many countries worldwide, including North Africa. Despite government efforts to implement policies to fight poverty and insecurity and despite growth rates reaching 4%, Morocco, Tunisia, and Egypt have experienced high levels of poverty over the past decades. This paper aims to analyze poverty dynamics in these three North African countries by examining the linkages between poverty, growth, and inequality.

Based on data from national household surveys, we estimated the poverty dynamics in these three countries by decomposing poverty variation into two components: growth and distribution. To compare the static and dynamic aspects of poverty, three main approaches were adopted: Kakwani's static approach, Datt and Ravallion's (1999) approach, and Shorrocks' (1992) dynamic approach. Finally, a pro-poor growth index was calculated to compare the reduction in poverty observed following an increase in income and the decrease in poverty observed if the growth gains were distributed equitably. The main results indicate that poverty has evolved differently in these countries. While poverty has decreased in Morocco and Tunisia, it has increased in Egypt during the period of 2008-2015. The analysis of poverty dynamics shows that the decline in poverty in Morocco and Tunisia was the result of the combined effect of economic growth and a reduction in inequalities, with economic growth having a dominant effect. On the other hand, in Egypt, the increase in poverty was the result of economic recession and inequality in most parts of the country.

Keywords: Poverty, Inequality, Economic growth, Pro-poor growth

JEL Classification: I32

Paper type: Empirical research

1. Introduction

During this century, reducing poverty has become a central goal for the whole international community. Since September 2001, the General Assembly of United Nations considers that the fight against poverty is one of the main goals in developing countries. Therefore, Millennium development and sustainable development goals (MDG) represent a very important qualitative and quantitative turning point in the effective try to reduce poverty. Within this framework, some developing countries including Morocco, Tunisia and Egypt have adopted a range of social development strategies that aim to fight against social exclusion and poverty in a purposeful way.

Morocco has created the Agency for social development (ASD) in 1999 and has launched the National initiative for human development (NIHD) in 2005. Egypt has set up a long run development strategy that mostly aims to reduce poverty and Tunisia has launched several social programs such as the national aid program for needing families (NHPNF), the national fund of solidarity (NFS) and occasional aid programs. However, in spite of the existence of all these programs and the achievement of some improvement, poverty remains a widespread phenomenon, notably in rural zones. The poverty rate in Morocco fell from 15.3% in 2001 to 4.8% in 2014 with a concentration in rural areas (9,5% in rural against 1,6% in urban areas). The Egyptian situation is more worrisome, 26.3% of the population are poor in comparison of a 21.6% in 2008 which constitutes an increase of 21.8% of the poverty rate during this period. Regional inequalities and gaps are also marked notably. The rural Upper-Egypt is the more deprived area: 51,9% of its inhabitants are considered poor today (CAPMAS¹, 2018).

Those three countries, since the beginning of the Millenary, have reached an approximate growth of 4%, nevertheless the evolution of poverty has been contrasted with all of them. In other words, poor people of Morocco and Tunisia have benefited from the economic growth of their countries whereas the Egyptian economic growth had not been sufficient to improve the living standards of poor population and, consequently, make them get out of poverty.

Besides the effects of growth, income distribution (inequality) plays an important role in the dynamic of monetary poverty, in the sense that it focuses the essence of the question on the analysis of the link between poverty, growth and inequalities. Some economists and development practitioners (Kuznets, 1955; Rostow, 1963) recognize the necessity to establish this link and focus on the “pro-poor growth”. Thus, developing countries must adopt economic policies that foster the achievement of a certain level of growth with benefits for poor people and the reduction of inequalities. At this level, some questions remain unsolved: is growth a sufficient condition to appropriately reduce poverty? Does inequality generate poverty? And what is the arbitrage between growth and inequality regarding the fight against poverty? This work aims to answer all these questions, by analyzing the Poverty dynamics in Morocco, Tunisia and Egypt and the link between economic growth, poverty and inequality. After giving an overview of the different approaches developed in the analysis of Poverty dynamics (poverty-growth-inequality triangle) in the first section, we will present a data used and comment the results of poverty dynamics in these three countries in the second and third section, to eventually draw a conclusion on economic policies.

2- Review of the literature

2.1 the poverty-growth-inequality triangle.

The literature linked to the relation between economic growth and incomes distribution is

¹ Central Agency for Public Mobilization and Statistics

plethoric. The first thesis, developed by **Kuznets (1955)**, indicates that the relation between the GDP per capita and inequality is represented in the shape of a reversed-U. Through the development of a model that permits the establishment of a link between inequality in income distribution and the degree of economic development of a country, Kuznets considers that the increase of income inequalities is temporary in the development process. Inequalities must decrease when a specific level of development is reached.

From such a perspective, by apprehending the nature of the links that poverty has with inequalities and growth, **Bourguignon (2003)** attempted to answer the following questions: how do growth and poverty interact and how much does growth, whether positive or negative in real terms, contribute to the reduction or increase of poverty? The same applies to the link between inequality and poverty. **Bourguignon (2003)** examined how poverty is related to inequalities and economic growth. He sought to understand how economic growth can have a positive or negative impact on poverty, as well as the link between inequalities and growth. **Bourguignon (2003)** explained that economic growth changes the distribution of incomes, which in turn affects growth itself, its structure, and its impact on poverty. Therefore, it is important to measure the interaction between economic growth and income distribution, as well as to identify the transmission mechanisms of the different effects on poverty. According to **Bigsten & Levin (2001)**, the variation in income distribution can be decomposed into two effects: the growth effect, which manifests itself as a proportional change in income with income distribution remaining unchanged, and the distributional effect, which results in a change in the relative income distribution, which is independent of the mean income. **Bourguignon (2003)** noted that these two effects can occur simultaneously. If inequality remains constant, the pure effect of economic growth contributes to a rapid reduction in poverty. The distributional effect leads to a change in the distribution of relative incomes, so that the relative share of the poorest in the national income distribution improves, leading to a faster reduction in extreme poverty.

2.2 Poverty Dynamics: Empirical studies

Following the development of new internationally scoped databases, empirical work has been dominated by two complementary approaches to analyzing the links between growth, inequality, and poverty. These are the microeconomic approach and the econometric approach. The former seeks to establish a decompositional accounting of the effect of the first two factors on poverty by evaluating their impacts on the ex post and ex ante changes in monetary poverty. As for the latter approach, it is based on panel data, integrating the spatial and temporal dimensions across different geographic units (countries, provinces, etc.) to explain and anticipate poverty trends.

Based on household panel data from the National Socio-Economic Survey, **Purwono et al (2021)** examined the poverty dynamics in Indonesia by using three main approaches: the spell approach, the component approach, and the equally distributed equivalent (EDE) poverty gap approach. The analysis shows that the spell approach tends to underestimate chronic poverty (households remain poor in two consecutive periods of observations). It estimates that 6.7% of the total households experienced chronic poverty. Meanwhile, the conclusion of poverty dynamics under the component approach is sensitive to the choice of poverty parameter of the FGT index. Likewise, the EDE poverty gap approach also suggests that poverty in Indonesia is mainly chronic at 92% of the total component of poverty. The high percentage of chronic poverty is contributed by the significant cost of inequality.

By analyzing the case of Ecuador and Uruguay, **Obaco Alvarez et al (2022)** estimate the deprivation dynamics at the subnational level, introducing a Local Multidimensional Poverty Index (LMPI), and focusing on multidimensional poverty in these two countries between the last two available censuses, 1990–2010 and 1996–2011, respectively. The results indicate that

compared to Ecuador, Uruguay was initially in a better position in terms of the LMPI. However, Ecuador achieved a generalized reduction of the LMPI during the period of analysis, reaching levels close to that of Uruguay. Nevertheless, spatial persistence in the LMPI is observed.

Using data from the Household Income, Expenditure and Consumption Panel Survey conducted by Egypt's national statistical agency, **Marotta et al (2011)** present a detailed picture of how sustained growth in Egypt over 2005-2008 affected different groups both above and below the poverty line. the longitudinal analysis reveals that growth benefited the poor while the cross-sectional analysis shows that the rich benefitted even more. The paper also shows the importance of going beyond averages to look at the trajectories of individual households. Panel data analysis shows that the welfare of the average poor household increased by almost 10 percent per year between 2005 and 2008, enough to move out of poverty

In the context of turkey **Seker et Dayioğlu (2014)** examine poverty dynamics using a nationally representative panel data covering the 2005–08 period. The results show that almost a quarter of the poor are persistently poor. The conditional and unconditional exit rates estimated are within the range of values reported for developed countries in the literature. That the income events—but not transfers—dominate both poverty entries and exits is indicative of the major role labor markets play in the lives of the poor.

3. Research Methodology

3.1 Data:

To analyze the dynamics of poverty in Morocco, Tunisia and Egypt we use three sources of data. For Morocco, we use data from the Households Living Standards Survey (HLS) 2006 and the National Household Consumption and Expenditure Survey (NHCE) 2014, both conducted by the High Commission for Planning. The purpose of these surveys is to determine the socio-economic situation of the various social groups, measure inequalities in living standards among different social groups. For the HLS, the sampling methodology consists of a stratified two-stage survey of a sample of 7200 households, including 4320 urban and 2880 rural households. However, the NHCE, uses a “master sample,” updated on the basis of the General Population and Housing Census of 2004. The three-stage-stratified sample selected for this survey depicts consumption expenditure of 15 970 households residing in Morocco.

For Tunisia, we use data from the National Household Budget, Consumption and Household Survey (NHBCH) 2005 and 2010. This survey aims to provide an estimate of the levels of household expenditure, to identify the structure spending and analyze household demand. The survey is based on a theoretical sample of 13,392 households drawn using a stratified two-stage random survey.

For Egypt, we will use data from the Survey of Household Consumption, Expenditure and Household Income (HCEHI) of 2008 and 2012. This survey provides data to measure the living standards of households and individuals. The survey covers a sample of 24,863 households in urban and rural areas.

3.2 Methodology:

There are several methods in the literature for decomposing poverty variation. We present in the following a brief review of the main approaches used in this paper. They differ significantly in terms of their conceptual orientation and the time horizon considered (static or dynamic analysis).

3.2.1 Kawkani's static approach (1993):

This method consists of a decomposition of poverty into two components, that is a growth

component and a distribution component. To a given poverty line, Kawkani considers that poverty variation is the sum of two opposite effects: one effect of pure growth (negative effect on poverty rate when inequality remain unchanged) and one inequality effect (positive effect when the average income is invariant). This approach consists of the derivation of poverty elasticities with respect to the average income – or expense – and inequality. Those elasticities are measured from Lorenz curve and permit to estimate the variations of poverty caused by changes of income and Gini coefficient ones. Despite the simplicity of this approach, one of the cons of this method is that it does not permit to take into consideration, because of its static nature, the temporal aspect of poverty variation. To take account of this aspect, a dynamic decomposition is made thanks to Datt and Ravallion (1992) and Kawkani approaches.

3.2.2 The dynamic approach of Datt and Ravallion (1992) :

Datt and Ravallion (1992) have proposed a decomposition of the variations of the poverty allowing to evaluate the contribution of the growth and that of the redistribution. The variation of poverty is thus broken down into three components namely:

- 1- The growth component that assesses the change in poverty that would be obtained if the Lorenz curve was not modified.
- 2- The redistribution component that evaluates the poverty change attributable to a variation of the Lorenz curve when the average income is constant.
- 3- The "residual" component which measures the interaction between the growth effects and the redistribution effects, whatever the chosen reference dates.

The main disadvantage of this approach is the presence of the residue, the extent of which can sometimes be very important. This situation means that the effects of the variables / components not taken into account by this method can contribute to explaining a large part of the variation of the poverty whereas this variation should be translated either in effect of growth, or indeed of redistribution.

3.2.3 Kakwani's Dynamic Approach (1997):

The method developed by Kakwani in 1997 overcomes the disadvantages of the first two approaches. Kakwani proposes a decomposition of poverty according to the FGT poverty indices while eliminating the residual term $R(t, t+1, r)$, highlighted in the approach of Datt and Ravallion. Thus, this approach consider that the sum of the average effects of growth and inequality as corresponding to the total change in poverty. In other words, the variation of poverty between two dates could be formalized by a function dependent on the variation of the growth (G) and the variation of the inequality (I). Thus, if we denote by Θ_{ij} the variation of poverty between two dates i and j , G_{ij} the variation of growth and I_{ij} that of inequality, we can then express Θ_{ij} as follows:

$$\Theta_{ij} = f(G_{ij}, I_{ij}).$$

3.2.4 Shorrocks Dynamic Approach (1999):

The dynamic method of Shorrocks (1999) is based on the general problem of decomposition of Shapley (1953). This method consists of studying the contribution of growth G and redistribution R in the variation ΔP of poverty.

Thus, the variation of poverty can be formulated as follows:

$$\Delta P = C_G^S + C_R^S$$

with

$$C_G^S = \frac{1}{2} [P(\mu_2, L_2) - P(\mu_1, L_2) + P(\mu_2, L_1) - P(\mu_1, L_1)]$$

$$C_R^S = \frac{1}{2} [P(\mu_2, L_2) - P(\mu_2, L_1) + P(\mu_1, L_2) - P(\mu_1, L_1)].$$

Where μ_t is the average income, L_t , the Lorenz curve for periods $t = 1, 2$ and $P(\mu_t, L_t)$, the level

of poverty calculated from a fixed poverty line.

According to Shapley's rule, the contribution of the growth factor is the average of two elements:

- The variation in the measure of poverty if the inequality is fixed, equal to that of period 1
- The variation the measure of poverty if the inequality is fixed, equal to that of period 2.
- The contribution of the inequality factor is also the average of two elements:
- The variation in the measure of poverty if the average income is fixed, equal to that of period 1
- The variation of the poverty measure if the average income is fixed, equal to that of period 2.

Finally, it remains clear that the decomposition proposed by Shorrocks (1999) provides results similar to that of Kakwani (1997) which constitutes, in fact, a special case.

3.2.5 Construction of the pro-poor growth index

The construction of the pro-poor growth index refers to the comparison between the reduction in poverty observed following an increase in income and the decrease in poverty observed if the growth gains were equitably distributed. The aim is to correct the economic growth rate of the inequality bias in order to assess how this growth has benefited to the poor. In this type of approach, in addition to the growth rate of average income, the reduction of poverty also depends on the variation of the income distribution. To assess the impact of economic growth on poverty, we measure separately its impact on the average income (income factor) and its impact on distribution (inequality factor). From the weights of these two effects will depend the value of the pro-poor growth index. The variation of poverty ΔP observed following a variation of the GDP (Consumption) between two periods, can be decomposed so that:

$$\Delta P = FR + FI$$

- The income factor noted FR measures the share of the change in poverty attributable solely to the change in average income. This is the change in the poverty index between two periods if the income distribution had remained constant;
- The inequality factor noted FI measures the share of the variation in poverty attributable solely to the effect of the variation in the distribution of income between two periods. Average income has remained constant.

As for the income effect, it will be negative if the economy experiences an expansion phase and positive in the opposite case. In other words, there is a negative relationship between the income factor and the income growth rate.

The relationship between the inequality factor and the growth rate depends on how the change in GDP modifies the Lorenz curve. If total wealth is distributed equitably, then the inequality factor FI will be negative as it continues to reduce poverty. Conversely, if the increase in GDP changes the distribution of income to the detriment of the poor, then the FI inequality factor will be positive, that is, it increases poverty. Among the constructs of the most-used pro-poor growth index are Kakwani and Pernia (2000). The pro-poor growth index, according to the latter, is defined as follows: $\Omega \frac{\Delta p}{FR} = \frac{FR+FI}{FR}$

4. Results and discussion:

4.1. Poverty dynamics in Morocco

- **Indicators measuring standard of living in Morocco: The food budget coefficient and the Gini index**

The table 1 below shows the evolution of the budget coefficient by place of residence and

economic regions. In 2013/14, Moroccan households spent 37% of their budget on food. This share has declined compared to 2006 when it accounted for almost 41%. By the place of residence, the share of food has moved during the same period from 36.8% to 33.3% in urban areas and from 43% to 27.3% in rural areas. At the regional level, the highest budget coefficient is recorded in the "Marrakesh-safi" and "Beni Mellal-Khénifra" regions, with respective rates of 44.2% and 43.4% followed by the "Darâa-Tafilalet" region with a rate of 39.3%. These regions are the poorest ones in the country (see analysis below).

Table 1: Food budget coefficient by area and economic regions (in %)

	2006/07	2013/14
- Place of residence		
Urban	36,8	33,3
Rural	49,3	27,3
- Région		
Tanger-Tetouan-Al Hoceima	37,6	36,1
Oriental	43,7	36,0
Fes-Meknes	42,7	37,1
Rabat-Salé-Kenitra	36,7	33,9
Beni Mellal-Khenifra	44,7	43,4
Casablanca-Settat	40,0	34,5
Marrakech-Safi	41,7	44,2
Darâa-Tafilalet	46,7	39,3
Sous-Massa	39,8	37,0
South regions	44,5	36,1
National level : Morocco	40,6	37,0

Source: Authors based on HLS 2006/07 & NHCES 2013/14 – HCP

The analysis of the Gini index (Table2) indicates that inequality in Morocco has declined moderately between 2007 and 2014, as the index moved from 40.7% to 39.5% during the same period . Depending on the place of residence, inequalities are higher in urban areas than in rural areas, with respective indexes of around 38% compared with 31% in 2014. At the regional level, inequalities are much more pronounced in the southern regions and in the "Casablanca-Settat" region, with respective Gini indices of around 40.2% and 39.6%. These regions are the most urbanized regions of Morocco.

Table 2: Gini inequality index (in%)

	2006/07	2013/14
- Place of residence		
Urban	41,1	38,8
Rural	33,1	31,7
- Regions		
Tanger-Tetouan-Al Hoceima	45,8	37,0
Oriental	38,2	39,0
Fès-Meknès	37,9	38,9
Rabat-Salé-Kénitra	45,4	44,2
Béni Mellal-Khénifra	34,0	34,4
Casablanca-Settat	37,1	39,6
Marrakech-Safi	42,9	34,6
Darâa-Tafilalet	34,4	39,1
Sous-Massa	38,6	37,3
South regions	33,8	40,2
National level : Morocco	40,7	39,5

Source: Authors based on HLS 2006/07 & NHCES 2013/14 – HCP

• Evolution of poverty ²in Morocco

The analysis of poverty in Morocco shows that the various poverty indices have decreased between 2007 and 2014, regardless the place of residence. Thus, the poverty rate at the national level decreased from 8.9% in 2007 to 4.8% in 2014, the depth of poverty has declined from 1.9% to 0.94%, while the severity has decreased from 0.63% to 0.3% during the same period. The breakdown of poverty indices by place of residence shows that poverty is a more rural phenomenon. In fact, the poverty rate is more pronounced in rural areas than in urban areas, with rates of around 14.8% compared to 4.8% in 2007 and 9.5% against 1.6% in 2014. This is also true for the other indicators of poverty, namely the depth and severity of poverty. At the regional level, the incidence of the highest poverty is recorded in "Darâa Tafilalet" region, giving a rate of 14.6% in 2014 against 16% in 2007, followed by the "Béni Mellal-Khénifra" region with respective rates of 9.3% against 7.7% during the same period. The depth and severity of poverty are also very pronounced in these two regions, with respective rates in 2014 of around 4.26% and 1.86% for the Darâa Tafilalet region and 1.74% and 0.49% for the region. of "Beni Mellal-Khénifra". However, we note that the "Casablanca-Settat" region has the lowest poverty rate, giving a rate of 2% in 2013/14. This last result can be explained by the fact that this region is characterized by a very strong economic activity.

Table 3: Evolution of poverty indices by place of residence and economic regions (in%)

	2006/07			2013/14		
	FGT0	FGT1	FGT2	FGT0	FGT1	FGT2
- Place of residence						
Urban	4,8	0,8	0,2	1,6	0,32	0,10
Rural	14,4	3,3	1,2	9,5	1,87	0,60
- Regions						
Tanger-Tetouan-Al Hoceima	6,0	1,54	0,55	2,2	0,39	0,10
Oriental	9,5	3,33	1,49	5,3	1,11	0,39
Fès-Meknès	8,5	1,40	0,36	5,2	0,98	0,31
Rabat-Salé-Kénitra	10,6	2,07	0,67	3,8	0,57	0,14
Béni Mellal-Khénifra	7,7	1,22	0,31	9,3	1,74	0,49
Casablanca-Settat	4,1	0,80	0,25	2,0	0,27	0,07
Marrakech-Safi	15,5	3,45	1,14	5,4	0,97	0,25
Darâa-Tafilalet	16,0	3,68	1,32	14,6	4,26	1,84
Sous-Massa	9,3	1,55	0,39	5,1	1,03	0,33
South regions	4,7	0,84	0,25	3,3	0,60	0,13
National level : Morocco	8,9	1,90	0,63	4,8	0,94	0,30

Source : Authors based on HLS 2006/07 & NHCES 2013/14 – HCP. Note: FGT0: Poverty rate / FGT1: Depth of poverty / FGT2: Severity of poverty

• Analysis of the Poverty dynamics in Morocco

In this section, we first present the results of the static decomposition of poverty according to the Kakwani approach and, secondly, the results of the dynamic decomposition of poverty according to the Datt & Ravallion approaches and Shorrocks.

➤ Results of the static decomposition of poverty: Kakwani's approach

The table 4 below presents the elasticities of the poverty indices in relation to growth (expenditure per capita) and inequality index (Gini) according to Kakwani's static approach and

² The poverty in Morocco is measured according to the absolute monetary approach advocated by the World Bank which consists first of all in estimating the food poverty line which corresponds to the cost of a food basket necessary to the population to satisfy a minimum energy need, and then estimate the non-food poverty line by adjusting a food demand model derived from the AIDS model. Thus, in Morocco, the poverty line in 2013/14 is 4667 DH per person per year in urban areas and 4313 DH per person per year in rural areas.

also breakdown the marginal rate of substitution which highlight the links between growth and inequality. These elasticities make it possible to identify the main features that mark the links between economic growth, poverty and inequality in Morocco.

Table 4: Elasticities of incidence of poverty in relation to growth and inequality and proportional marginal rate of substitution by place of residence and region

Période	Elasticity index of poverty (Pa) / Growth		Elasticity index de of poverty (Pa) / Gini Index		TMPS	
	2007	2014	2007	2014	2007	2014
-Place of residence						
Urban	-1,94	-1,89	4,51	5,64	2,32	2,99
Rural	-4,41	-6,44	8,57	16,10	1,95	2,50
- Regions						
Tanger-Tetouan-Al Hoceima	-2,40	-2,33	4,62	7,06	1,92	3,03
Oriental	-2,63	-3,44	5,25	8,45	2,00	2,46
Fès-Meknès	-3,37	-3,86	6,57	9,35	1,95	2,42
Rabat-Salé-Kénitra	-2,96	-3,65	5,12	8,04	1,73	2,20
Béni Mellal-Khénifra	-2,83	-6,17	6,64	13,99	2,34	2,27
Casablanca-Settat	-1,88	-2,21	4,84	6,50	2,58	2,94
Marrakech-Safi	-4,06	-3,71	6,39	10,25	1,57	2,76
Darâa-Tafilalet	-6,09	-6,22	9,21	11,76	1,51	1,89
Sous-Massa	-3,18	-4,63	5,93	10,84	1,86	2,34
South regions	-1,73	-2,63	4,90	7,53	2,83	2,87
National level : Morocco	-2,97	-3,58	5,93	8,86	2,00	2,47

Source: Authors based on HLS 2006/07 & NHCES 2013/14 – HCP.

The results of the table 4 show that the absolute value of the elasticities of poverty in relation to growth (expenditure per capita) is greater than unity, regardless of the place of residence or the economic regions. In other words, any increase in economic growth would lead to a more than proportional decline in the poverty index, provided that this growth does not generate an increase in inequality. However, if growth is negative, poverty may increase further, especially if this level of growth is not accompanied by a reduction in inequality.

The evolution of these elasticities between the period 2007-2014 shows that the sensitivity of poverty to economic growth has increased at the national level in absolute value as it has moved from -2.97 to -3.58. By the place of residence, it emerges that economic growth that is neutral to inequality is more reducing poverty in rural areas than in urban areas, with rates of -6.44% compared with -1.89% respectively. In other words, an increase in economic growth (per capita expenditure) of 1% would reduce poverty in rural areas more than in urban areas. Therefore, more economic growth is needed to reduce urban poverty.

Regarding the sensitivity of poverty to inequality, it should be noted that during the period 2007-2014, the elasticity of poverty with respect to inequality is greater in rural than in urban areas. This implies that there is a strong social sensitivity of rural areas regarding the variation of inequality. Thus, any poverty reduction policy focused on reducing inequality would have more impact in rural than in urban areas.

Similarly, excluding the incidence of urban poverty between 2007 and 2014, all of the inequality elasticities of poverty are much higher than the elasticities of economic growth (per capita spending). Thus, a 1% increase in the Gini index leads to an increase in the incidence of poverty at the national level of 8.86% in 2014 compared to a reduction of 3.58% following economic growth of 1%.

The high sensitivity of poverty to inequality in comparison with the sensitivity of poverty to growth can also be apprehended by the marginal proportional substitution rate (MSPS) which

calculate the percentages with which compensation is made between the effect of growth and the effect of inequality.

Apart from the incidence of urban poverty, more growth is needed as inequality increases so that poverty does not increase. In 2014, a 1% increase in inequality at the national level should be accompanied by economic growth of 2.47% to keep the incidence of poverty at its initial level.

At the regional level, the results show that the sensitivity of growth to poverty is greater in the Darâa Tafilalet and Beni Mellal-Khénifra regions, with respective elasticities of -6.22% and -6.17%. However, we note that sensitivity to inequality is even more pronounced in these two regions. Either respective elasticity of the order of 11.76% and 13.99%. Thus, an increase in the Gini index of 1% leads to an increase in the incidence of poverty in the "Darâa Tafilalet" region of 11.79% against a reduction of poverty of 6.22% following a growth of 1%.

➤ Results of the Dynamic Decomposition of Poverty: An Approach by Datt & Ravallion (1999) and Shorrocks (1992)

Table 5 shows the effects of growth and inequality, in absolute terms, on the change in poverty over a given period. These results, obtained according to the dynamic methods of Datt & Ravallion (1999) and Shorrocks (1992), make it possible to understand the effects of economic growth and inequality on the spatio-temporal evolution of poverty. It should be noted that the comparison can only be coherent when one reasons in real terms in order to neutralize the effect of inflation. In other words, it is about deflating consumer spending by the poverty lines.

Table 5: Decomposition of changes in the poverty rate between 2007-2014 by place of residence

Period	Variation de P	Effect of growth		Effect of inequality		Residu	
		Datt & Ravallion	Shorrocks	Datt & Ravallion	Shorrocks	Datt & Ravallion	Shorrocks
-	Place of residence						
Urban	-3,1	-2,4	-2,0	-1,5	-1,1	0,8	--
Rural	-4,9	-3,9	-3,8	-1,2	-1,1	0,3	--
-	Regions						
Tanger- Tetouan-Al Hoceïma	-3,9	-0,1	-0,2	-3,6	-3,7	-0,1	--
Oriental	-4,1	-2,8	-3,7	0,5	-0,4	-1,8	--
Fès-Meknès	-3,3	-5,2	-4,9	1,3	1,6	0,6	--
Rabat-Salé- Kénitra	-6,9	-4,9	-4,0	-3,7	-2,9	1,8	--
Béni Mellal- Khénifra	1,5	-0,0	0,02	1,49	1,51	0,04	--
Casablanca- Settat	-2,0	-2,6	-3,5	2,3	1,4	-1,7	--
Marrakech- Safi	-10,2	-4,1	-3,2	-7,8	-6,9	1,7	--
Darâa- Tafilalet	-1,4	-10,1	-10,0	8,4	8,6	0,3	--

Source : HLS 2006/07 & NHCES 2013/14 – HCP.

The results in the table above allow us to conclude that between 2007 and 2014, the reduction of poverty in Morocco at the national level was mainly due to the combined effects of economic growth and redistribution. During this period, the positive growth of consumer spending in real terms led to a reduction in the incidence of poverty in absolute terms of 2% in urban areas and 3.8% in rural areas according to the approach of Shorrocks. These percentages are respectively 2.4% and 3.9% according to the dynamic approach of Datt & Ravallion (1999).

In other words, the decomposition of poverty (according to the Datt & Ravallion approach) indicates that 77.4% of the decline in urban poverty is due to economic growth during this period. This contribution amounts to 79.5% in rural areas. Inequality has also contributed to the decline in the incidence of poverty, however its impact remains slightly less important than that of economic growth, a relative contribution of the decline of around 48.3% in urban areas against 24.4% in rural areas, according to the Datt & Ravallion approach and 35.4% in urban areas versus 22.4% in rural areas according to the Sharroks approach.

At the regional level, it is the region of "Marrakesh -Safi" that has benefited much more from the effects of growth and redistribution. According to the Datt & Ravallion method, 40.5% of the decline in poverty is attributable to economic growth, while 76.4% of this decrease is due to the decrease of inequalities in this region. However we find that the region of "Drâa - Tafilalet" has not benefited enough from the effect of growth to the extent that inequality has dampened its effect. Thus, the decrease in poverty would have been 10.1 percentage points (Datt & Ravallion approach) if income inequality remained neutral. This means that inequality reduces the impact of the effect of growth on poverty reduction by almost 86.1%

➤ Results of the pro-poor growth analysis:

The measure of pro-poor growth can be adapted for any indicator of well-being, monetary or non-monetary. Most of the empirical work on pro-poor growth uses it for the monetary dimension, but some recently published studies extend the analysis to the non-monetary dimension using CIC as a measure (Gunther et al, 2006 and El Khider A et al., 2008).

The pro-poor growth index is calculated from the decomposition of the variation in poverty indices presented in the tables on the dynamic decomposition of poverty of Shorrocks (previous section). The results of this index are presented in the table 6 below.

Table 6: Pro-poor growth index of Pernia and Kakwani 2007-2014

	Rate of growth	Growth rate equivalent to poverty	Pro-poor growth
Place of residence			
Urbain	15,3	19,7	1,29
Rural	10,9	13,7	1,25
-regions			
Tanger-Tetouan-Al Hoceima	21,5	70,0	3,25
Oriental	21,7	31,6	1,46
Fès-Meknès	21,3	13,6	0,64
Rabat-Salé-Kénitra	15,2	21,2	1,40
Béni Mellal-Khénifra	-1,5	2,0	-1,33
Casablanca-Settat	29,4	22,8	0,77
Marrakech-Safi	12,3	30,7	2,50
Darâa-Tafilalet	31,2	4,2	0,14
Sous-Massa	3,2	13,1	4,0
South regions	24,3	13,9	0,57
National level :Morocco	16,0	18,1	1,13

Source : HLS 2006/07 & NHCES 2013/14 – HCP.

The analysis in the table above shows that between 2007 and 2014, the growth process can be qualified as pro-poor since the pro-poor growth index is greater than unity (1.13). The analysis of this index shows that during this period growth in Morocco has benefited the poor much more than the rich. By the place of residence, this index is higher in urban areas than in rural areas, representing an index of (1.29 against 1.24).

According to the economic regions, we note that growth was much more profitable for the poor than for the rich in the region of "Tangier-Tetouan-Al Houceima", "Sous-Massa", "Marrakesh-safi" and "Rabat-Salé". Kenitra ". Either respective growth indices in the order of 3.25, 4.0;

2.50 and 1.40. In addition, we note that growth was not pro-poor in some regions as this index is less than unity. This is the case of the regions of Sud (0.57), "Draa Tafilalet" (0.14), "Casablanca-Settat" (0.77) and "Fez-Méknes" (0.64).

4.2. Analysis of the Poverty dynamics in Egypt:

• Analysis of the standard of living

The analysis of the food budget coefficient in Egypt reveals that Egyptian households have spent 39.9% of their budgets on food in 2015 (Table 7). This share has decreased over time as it represented 46.4% in 2009 and 41.9% in 2012. By the place of residence, we note that the share of food is very important for rural households than for urban ones. The respective rates are 44.2% against 35.7%. The analysis by economic region of the country reveals that this share is higher in the Assaiad regions as it represents 43.2%. This share is only 33.6% in urban areas.

Table 7: Food budget coefficient by place of residence and regions (in %)

	2008/09	2012	2014/15
- Milieu de résidence			
Urban	41,4	38,6	35,7
Rural	51,0	44,8	44,2
- Région			
Urban regions	39,7	38,4	33,6
Coastal regions	48,2	41,5	41,2
Assaiad Regions	48,6	44,3	43,2
Border regions	50,2	45,2	41,8
Total Egypte	46,4	41,9	39,9

Source: Data from the Household Consumption, Expenditure and Income Surveys 2008/39, 2012 and 2014/15 – OAMD

The analysis of the Gini index in table 8 shows that inequalities at the national level has increased between 2012 and 2015 as this index has moved from 28.6% to 31.2% between the two periods. This increase was preceded by a decrease between 2009 and 2012 in the sense that the gini index fell by more than two percentage points during this period, namely indices of 31.0% and 28.6% respectively. At the regional level, urban areas are characterized by a very high level of inequality in that they display a Gini index of about 38.7%.

Table 8: Gini inequality index (in%)

	2008/09	2012	2014/15
- Place of residence			
Urban	34,1	31,9	34,3
Rural	22,6	23,4	25,0
- Regions			
Urban regions	36,2	34,8	38,7
Coastal regions	23,7	23,2	24,9
Assaiad Regions	29,3	27,1	27,4
Border regions	28,9	23,9	27,4
Nationa level : Egypte	31,0	28,6	31,2

Source: Data from the HCEHI 2008/09, 2012 and 2014/15 – OAMD

Regarding the evolution of poverty indices, the table 9 shows that the level of poverty in Egypt has increased between 2008 and 2014. This increase affects all indicators of poverty. Thus, the incidence of poverty has increased from 25.1% in 2008 to 27.1% in 2015, the depth of poverty has increased from 5.1% to 5.7% while the severity dropped from 1.6% to 1.8% during this same period. At the regional level, the Assaiad regions have recorded the highest poverty indices. In fact, the incidence of poverty in this region is 47.7%, followed by border regions with a rate of 21.2%

Table 9: Evolution of the poverty indices (in%)

	2008/09			2012			2014/15		
	FGT0	FGT1	FGT2	FGT0	FGT1	FGT2	FGT0	FGT1	FGT2
- Place of residence									
Urban	13,8	2,6	0,8	18,7	3,4	1,0	16,9	3,0	0,9
Rural	32,9	6,9	2,2	31,9	6,7	2,1	35,9	7,8	2,5
- Regions									
Urban regions	9,2	1,6	0,5	17,6	3,3	1,0	15,1	2,5	0,7
Coastal regions	17,3	2,6	0,6	14,7	1,9	0,4	16,9	2,4	0,5
Assaiiad Regions	41,5	9,7	3,3	43,4	9,9	3,3	47,7	11,6	3,9
Border regions	13,1	2,4	0,6	24,1	5,2	1,4	21,2	4,8	1,7
National level :Egypte	25,1	5,1	1,6	26,4	5,3	1,6	27,7	5,7	1,8

Source: Data from the HCEHI 2008/09, 2012 and 2014/15 – OAMD. Note: FGT0: Poverty rate / FGT1: Depth of poverty / FGT2: Severity of poverty

- **Analysis of the Dynamic Poverty in Egypt:**

- **Results of the Static Decomposition of Poverty: Kakwani's Approach**

The analysis of the static decomposition of poverty in table 10, shows that the sensitivity of poverty to economic growth fell in absolute terms between 2008 and 2015 as it has decreased from -3.12 to -2.88. This downward trend is mainly due to the decline in the sensitivity of poverty in urban areas.

Regarding to the sensitivity of poverty to inequality, we note that during the period 2008-2015, the elasticity of poverty in relation to inequality is greater in urban than in rural, either respective elasticity of 1.77% against 1.52% in 2015.

According to the economic regions, the sensitivity of poverty to economic growth is higher in the Assaid regions, either an elasticity of around 3.54% in 2015. Sensitivity to inequalities is less important than that of growth in this region, either a rate of 1.04%. This implies that any policy of poverty reduction in this region must be more focused on the effect of economic growth.

Table 10: Elasticities of incidence of poverty in relation to growth and inequality and proportional marginal rate of substitution by place of residence and region

Période	Elasticity indice of poverty (Pa) / Growth			Elasticity indice of porverty (Pa) / Gini Index			TMPS		
	2008	2012	2015	2008	2012	2015	2008	2012	2015
- Place of residence									
Urban	-3,99	-3,79	-2,27	2,09	1,70	1,77	0,52	0,45	0,78
Rural	-1,95	-2,45	-3,32	1,76	1,63	1,52	0,90	0,67	0,47
- Regions									
Urban regions	-1,40	-2,06	-2,09	1,54	1,42	1,64	1,10	0,69	0,79
Coastal regions	-3,12	-3,07	-2,68	2,69	2,43	2,34	0,86	0,79	0,88
Assaid regions	-4,04	-4,03	-3,54	1,52	1,21	1,04	0,38	0,30	0,29
Border regions	-2,03	-1,80	-2,09	1,81	1,38	1,57	0,89	0,77	0,75
National Level Egypte	-3,12	-3,23	-2,88	1,97	1,70	1,69	0,63	0,53	0,59

Source: Data from the HCEHI 2008/09, 2012 and 2014/15 – OAMD

- **Results of the dynamic decomposition of poverty: Approach of Datt & Ravallion (1999) and Shorrocks (1992)**

The results of the dynamic decomposition of poverty according to the Datt & Ravallion (1999) and Shorrocks (1992) approach in table 11, reveal that the increase in the poverty rate during 2008-12 and 2008-15 was mainly due to the growth to the extent that negative growth in consumer spending in real terms has led to an increase in the incidence of poverty of 5.4% and

2.1% according to the Shorroks approach. These percentages amount to 5.6% set 2.2 according to the approach of Datt & Ravallion. At zero growth rate in real terms, the decline in inequality could have led to a fall in poverty during the period 2008-12 of about 4% according to the methodology of Datt & Ravallion and 4.1% according to the Sharroks approach.

Between 2012-15, Sharroks's poverty decomposition indicates that 253.8% of the decline in poverty during this period is attributable to economic growth, while the change due to the increase in inequality occurs for 354 %. This implies that the increase in poverty during this period was mainly due to the increase in inequality.

In urban areas, we note that during the period 2008-15, the rise in poverty was rather attributable to negative economic growth rather than a decrease in inequalities, ie relative contributions of around 160%. and 60% according to Shorroks' approach. In rural areas, we note that 63.3% of the decline in poverty is due to economic growth, while the change due to the increase in inequalities occurs for 160. This means that the increase in poverty during this period is much more attributable to rising inequality.

Table 11: Decomposition of the evolution of the poverty rate by place of residence

Period	Variation de P	Effect of growth		Effect of inequality		residu	
		Datt & Ravallion	Shorrocks	Datt & Ravallion	Shorrocks	Datt & Ravallion	Shorrocks
National level :Egypte							
2008-12	1,4	5,6	5,4	-4,0	-4,1	-0,3	--
2012-15	1,3	-3,2	-3,3	4,7	4,6	-0,2	--
2008-15	2,6	2,2	2,1	0,6	0,5	-0,2	--
Urban							
2008-12	4,9	8,7	8,6	-3,7	-3,7	-0,1	--
2012-15	-1,9	-4,4	-4,4	2,5	2,5	-0,1	--
2008-15	3,0	4,6	4,8	-1,9	-1,8	0,4	--
Rural							
2008-12	-1,1	-1,8	-2,0	1,1	0,9	-0,3	--
2012-15	4,0	0,1		4,0		-0,1	--
2008-15	3,0	-1,7	-1,9	5,0	4,8	-0,3	--

Source: Data from the HCEHI 2008/09, 2012 and 2014/15 – OAMD

At the regional level (table 12), we note that over the 2008-15 period, the growth effect has contributed to 137.03% of the increase in the incidence of poverty in the border regions. However, at zero growth rate, inequality could have contributed to reducing the incidence of poverty by 22.22% in this region. This observation is also valid for the Assaiad regions in the sense that the decrease in inequality should have decrease the incidence of poverty by 24.1% if growth has remained unchanged

Table 12: Decomposition of changes in poverty rates by region

Period	Variation de P	Effect of growth		Effect of inequality		Residu	
		Datt & Ravallion	Shorrocks	Datt & Ravallion	Shorrocks	Datt & Ravallion	Shorrocks
Urban areas							
2008-12	8,4	9,3	9,6	-1,6	-1,2	0,7	--
2012-15	-2,5	-5,4	-5,7	3,6	3,2	-0,7	--
2008-15	5,9	4,5	5,3	-0,2	0,6	1,6	--
Coastal Regions							
2008-12	-2,6	-0,7	-1,0	-1,4	-2,6	-0,5	--
2012-15	2,3	-1,6	-1,6	3,9	-0,0	3,9	--
2008-15	-0,3	-2,6	-2,5	2,2	2,2	0,1	--
Assaiad Regions							
2008-12	1,8	5,5	5,4	-3,5	-3,6	-0,1	--
2012-15	4,4	3,5	3,1	1,5	1,2	-0,6	--

Period	Variation de P	Effect of growth		Effect of inequality		Residu	
		Datt & Ravallion	Shorrocks	Datt & Ravallion	Shorrocks	Datt & Ravallion	Shorrocks
2008-15	6,2	9,0	8,3	-1,5	-2,1	-1,3	--
Border regions							
2008-12	11,0	16,5	13,8	-0,2	-2,8	-5,3	--
2012-15	-2,9	-2,9	-3,8	1,8	0,9	-1,8	--
2008-15	8,1	11,1	10,5	-1,8	-2,4	-1,1	--

Source: Data from the HCEHI 2008/09, 2012 and 2014/15 – OAMD

• Analysis of pro-poor growth in Egypt

According to the results below, the process of economic recession in Egypt during the period 2008-2015 has penalized the poor much more than the rich as we find a pro-poor growth index of around 1.2% at the national level combined with negative economic growth (recession). By the place of residence, the economic recession observed in urban areas was weakly pro-poor since the pro-poor growth index is 0.78, while growth in rural areas was anti-poor and therefore has more benefited to the better off. The pro-poor growth index is estimated at -1.7 in rural areas between 2008-2015.

The analysis by economic region shows that the growth / recession process was weakly pro-poor or even anti-poor in the different regions of Egypt. In urban areas, the economic recession observed during the period 2008-2015 is qualified as pro-poor in that the pro-poor growth index is 1.3 showing that the living standards of the poor population in these regions have deteriorated much more than those of the total population.

The analysis in table 14, also reveals that growth was weakly pro-poor in the coastal regions and the recession was weakly pro-poor in the Assaid and Border regions, with respective indices of around 0.13, and 0,7. These results show that the growth of the living standards was higher for the total population (3.5%) than for the poor population (0.5%) in the coastal regions and in the opposite, the decrease in the living standards was higher for the total population than for the poor population in the Assaiid regions (-7.9% and -5.5%, respectively) and in the Border regions (-15.9% and -11, 7% respectively).

Table 13: Pro-poor growth index of Pernia and Kakwani 2008-2015

	Growth rate	Growth rate equivalent to poverty (IGRT)	Pro-poor growth
- Place of residence			
Urban	-8,0	-5,3	0,78
Rural	1,9	-3,3	-1,7
- Regions			
Urban areas	-10,5	-13,8	1,3
coastal regions	3,5	0,5	0,13
Assaiid regions	-7,9	-5,5	0,7
Border regions	-15,9	-11,7	0,7
National level : Egypte	-2,6	-3,1	1,2

Source: Data from the HCEHI 2008/09, 2012 and 2014/15 – OAMD

4.3. Analysis of the Poverty dynamics in Tunisia:

• -Analysis of the standard of living:

The analysis of the table 14 shows that in 2010 Tunisian households have allocated about 31% of their budget to food. This rate has decreased compared to 2005 as it represented 35.3%. By the place of residence, this share is higher in rural areas compared to urban areas (large cities), with respective rates of around 35.9% compared to 26.6%. Analyzing by region, the share of food is higher in the North West region, either a rate of 35.5% followed by the center-west

region with a rate of 34.5%. However, this share has the lowest rate in the Greater Tunis region, either a rate of 27.3%.

Tableau 14: Food budget coefficient by place of residence and regions (in %)

	2005	2010
- Place of residence		
Big cities	31,7	26,6
Averages and small towns	34,1	30,3
Total Urban	32,9	28,4
Rural	42,2	35,9
- Regions		
Greater Tunis	32,7	27,3
Northeast	36,5	33,0
North West	40,8	35,5
Central East	33,5	28,0
Midwest	41,5	34,5
South East	33,8	30,5
South West	36,6	35,8
National level : Tunisia	35,3	30,2

Source: Data from NHBC 2005 and 2010 - OAMDI.

The analysis of the Gini index in table 15, shows that inequality at the national level has decreased between 2005 and 2010. This index has moved from 38.9% in 2005 to 35.5% in 2010. By the place of residence, inequalities are relatively more pronounced in urban areas compared to rural areas, with a respective indexes of 35.4% against 34.4%. At the regional level inequalities are much more prevalent in the Greater Tunis and Center-West regions with respective indices of around 36.5% and 35.9%.

Table 15: Gini inequality index (in%)

	2005	2010
- Place of residence		
Big cities	39,9	36,5
Averages and small towns	38,2	33,3
Total Urban	38,5	35,4
Rural	36,9	34,3
Regions		
Greater Tunis	40,6	36,7
Northeast	35,8	27,9
North West	33,8	33,9
Central East	36,6	34,0
Midwest	39,8	35,9
South East	40,4	34,3
South West	36,6	35,0
National level : Tunisia	38,9	35,5

Source: Data from NHBC 2005 and 2010 - OAMDI.

Table 16, shows that the analysis of the level of poverty at the national level reveals that poverty in Tunisia has decreased between 2005-2010. As a result, the incidence of poverty fell from 24.8% to 15.8%, the depth of poverty has decreased from 6.7% to 3.8%, while the severity dropped from 2.7% to 1.4%. By the place of residence, the poverty rate is higher in rural areas than in urban areas, either a poverty incidence rates of 20.9% compared to 11.6% in 2010. At the regional level, it emerges that the higher poverty rate is observed in the west-central region, either a rate of 31.9%. This rate has considerably decreased compared to 2005, as it has stood at 46.5%. which represent a decrease of more than 12 percentage points.

Table 16: Evolution of the poverty indices (in%)

	2005			2010		
	FGT0	FGT1	FGT2	FGT0	FGT1	FGT2
- Place of residence						
Big cities	18,7	4,5	1,6	9,1	1,9	0,6
Averages and small towns	22,9	6,2	2,5	13,7	3,2	1,1
Total Urban	20,9	6,7	2,7	11,6	2,6	0,9
Rural	32,1	9,2	3,8	22,5	6,1	2,4
- Regions						
Greater Tunis	18,7	4,4	1,6	9,2	1,9	0,6
Northeast	24,8	6,1	2,2	10,6	2,1	0,6
North West	25,8	6,4	2,3	25,6	6,6	2,4
Central East	15,1	3,5	1,2	8,1	1,6	0,5
Midwest	46,5	15,5	6,9	31,9	9,4	4,0
South East	26,4	7,6	3,1	16,3	3,9	1,5
South West	31,4	9,2	3,8	20,9	5,6	2,1
Total Tunisie	24,8	6,7	2,7	15,3	3,8	1,4

Data from NHCH 2005 and 2010 - OAMDI. Note: FGT0: Poverty rate/ FGT1: Depth of poverty/ FGT2: Severity of poverty

- **Analysis of the dynamics of poverty in Tunisia:**
 - **Results of the static decomposition of poverty: Kakwani's approach**

The analysis of the decomposition of poverty according to the Kakwani approach shows that the sensitivity of poverty to growth has increased in absolute terms, from -2.03% in 2005 to -2.55% in 2010 (table 17). This sensitivity has increased respectively in the same period from -1.91% to -2.30% in urban areas and -2.26% to -3.04% in rural areas. The sensitivity of poverty to inequality has also increased during the same period, from 2.10% in 2005 to 3.31% in 2010. This sensitivity is much higher in rural areas than in urban areas with respective elasticities in 2010 of 3.40% against 3.22%.

The TMPS analysis shows that any increase in inequality at the national level of 1% should be accompanied by economic growth of 1.3% in order to reduce the incidence of poverty. At the regional level the sensitivity to growth is greater in the Central-West region. This sensitivity has increased between 2005-2010 as it has moved from -2.44% to -3.97%. The analysis of inequality elasticities in this region shows that a 1% increase in the Gini index leads to an increase in the incidence of poverty nationally of 3.27% in 2010 compared to a reduction of 3.97% due to an economic growth of 1%.

Table 17: Elasticities of incidence of poverty in relation to growth and inequality and proportional marginal rate of substitution by place of residence and region

Period	Elasticity poverty index (Pa) / growth		Elasticity poverty index (Pa) / Gini index		TMPS	
	2005	2010	2005	2010	2005	2010
- Place of residence						
Urban	-1,91	-2,30	2,14	3,22	1,12	1,40
Rural	-2,26	-3,04	1,97	3,40	0,87	1,12
- regions						
Greater Tunis	-1,83	-1,96	2,08	2,82	1,13	1,44
Northeast	-2,30	-2,33	2,34	3,99	1,02	1,71
North West	-2,22	-3,60	2,33	3,69	1,05	1,03
Central East	-1,67	-1,71	2,19	2,79	1,31	1,63
Midwest	-2,44	-3,97	1,37	3,27	0,56	0,82
South East	-1,84	-2,90	1,82	3,34	0,99	1,15
South West	-2,52	-3,42	2,07	3,54	0,82	1,03
National level : Total Tunisia	-2,03	-2,55	2,10	3,31	1,03	1,30

Source: Data from NHCH 2005 and 2010 - OAMDI.

➤ **Results of the dynamic decomposition of poverty: Approach of Datt & Ravallion (1999) and Shorrocks (1992)**

The results in the table 18 show that at the national level, poverty reduction is due to the combined effects of economic growth and redistribution. Datt & Ravallion's decomposition of poverty indicates that 64.21% of the decline in poverty is attributable to the effects of economic growth, while the change due to inequality accounts for 37.8%.

In urban areas, the increase in economic growth has led to a decrease in the incidence of poverty of around 5.4% according to the Datt & Ravallion approach and 5.5% according to the Shorrocks approach, ie contributions about 58%. The contribution of inequality to the decline in poverty is 40% according to both approaches. The observation remains valid in the rural environment in the sense that 75% of the decline in poverty is due to the effect of growth and 36.4% of this decline is due to the reduction of inequalities (Approach datt & Ravallion).

At the regional level, the analysis shows that the Center-West and North-East regions have benefited much more from the combined effects of growth and redistribution. Indeed, according to Datt & Ravallion's approach, economic growth has contributed to a 65.75% reduction in poverty in the Central-West region and 47.71% in the North-East region. The decline in inequality has contributed 32.19% and 64.7% respectively to the reduction of the incidence of poverty in these two regions.

Table 18: Decomposition of the evolution of the poverty rate between 2005-2010 according to the residential environment

Période	Variation de P	Growth effect		Inequality effect		residu	
		Datt & Ravallion	Shorrocks	Datt & Ravallion	Shorrocks	Datt & Ravallion	Shorrocks
-	Place of residence						
Big cities	-9,6	-7,8	-7,2	-2,9	-2,4	1,1	--
Averages and small towns	-9,2	-2,8	-3,1	-5,9	-6,2	-0,5	--
Total Urban	-9,3	-5,4	-5,5	-3,7	-3,8	-1,7	--
Rural	-9,6	-7,2	-6,6	-3,5	3,0	1,1	--
-	Regions						
Greater Tunis	-9,5	-6,7	-6,4	-3,4	-3,1	0,6	--
Northeast	-14,2	-6,7	-5,8	-9,2	-8,3	1,7	--
North West	-0,3	0,8	0,9	-1,3	-1,2	0,2	--
Central East	-7,0	-5,6	-5,0	-2,6	-2,0	-1,2	--
Midwest	-14,6	-9,6	-9,7	-4,7	-4,9	-0,3	--
South East	-10,1	-2,6	-3,0	-6,6	-7,1	-0,9	--
South West	-10,5	-6,3	-7,8	-1,2	-2,7	-3,0	--
National level : Tunisia	-9,5	-6,1	-5,9	-3,6	-3,5	0,2	--

Source: Data from NHBC 2005 and 2010 - OAMDI.

• **Analysis of pro-poor growth in Tunisia**

The analysis of the pro-poor growth index in table 19, shows that at the national level the growth process can be described as pro-poor since the pro-poor growth index is greater than unity (1.56). Analyzing by the place of residence, it should be noted that in urban areas, the growth achieved during the periods 2005-2010, did not aggravate the inequalities, it means that the growth process during these periods was pro -poor. In other words, the fruits of growth have benefited more to than poor the wealthy classes, leading not only to poverty reduction but also to lower inequality. The pro-poor growth indexes recorded during this period in urban areas exceed the value 1, respectively 1.23 in large cities and 3.25 and in medium and small towns. The same conclusion could be made for the pro-poor growth index in rural areas, since growth

was also pro-poor, thus displaying an index of 1.34. According to the economic regions, the growth process was pro-poor in all regions of the country except for the North-West region, as we note a pro-poor growth index of less than unity (-0.31) this means that the region has experienced a pro-poor recession. This result can be explained by the fact that this region has experienced a negative growth of around 1.8% during the period 2005-2010.

Table 19: Pro-poor growth index of Pernia and Kakwani 2005-2010

	Growth rate	Growth rate equivalent to poverty (TEGR)	Pro-poor growth
- Place of residence			
Big cities	19,9	24,6	1,23
Averages and small towns	6,8	22,1	3,25
Total Urban	12,8	22,0	1,71
Rural	12 ,7	17,0	1,34
- regions			
Greater Tunis	15,6	22,2	1,42
Northeast	12,1	25,7	2,13
North West	-1,8	0,6	-0,31
Central East	15,9	19,8	1,24
Midwest	15,9	24,3	1,53
South East	6,7	25,9	3,88
South West	13,8	23,0	1,67
National level : Tunisia	12,9	20,2	1,56

Data from NHBCH 2005 and 2010 - OAMDI.

5. Discussion:

Poverty is a complex and multifaceted issue that affects millions of people in Morocco, Tunisia, and Egypt. Despite efforts by governments and international organizations to reduce poverty, progress has been slow and uneven, with persistent inequalities and structural barriers hindering poverty reduction efforts. The analysis of the poverty dynamics in this three North African countries (Morocco, Egypt and Tunisia) shows that poverty has evolved differently. While in Morocco and Tunisia, poverty has decreased considerably during the periods studied, in Egypt, poverty continues to increase during the period 2009-2015. The Analysis of the Poverty dynamics also shows that the decline in poverty was the result of the combined effect of economic growth and the reduction of inequalities in Morocco and Tunisia, with a dominance of the economic growth effect. This dynamic has given rise to qualified pro-poor growth in both countries. In other words, during the periods studied, economic growth benefited to the the poor more than the wealthier populations in both countries. In Egypt, the increase in poverty over the period 2008-2015 was the result of the economic recession and inequality in most parts of the country. Living standards of Egyptian households have deteriorated during this period and are worse for poor households as the analysis of the pro-poor growth index in Egypt shows that, in general, there is an anti-poverty recession. - poor in some areas (urban areas) and pro-poor recession in other parts of the country. We note that the analysis of the dynamics of poverty in Tunisia was based on data from before 2010 and that do not take into account the political and economic changes after the Arab Spring and which could certainly draw other conclusions on the Poverty dynamics in this country.

6. Conclusion:

The persistence of poverty and resistance to reducing inequality are two major challenges currently facing developing countries. This situation is all the more worrying given the irregular and limited economic growth, especially in developing countries. This paper aims to study the dynamics of poverty by focusing on three developing countries: Morocco, Tunisia, and Egypt. Although recent theoretical and empirical work from around the world on the nature of the

growth-inequality-poverty linkages is more ambiguous than illuminating, insofar as they remain unsystematic and vary across contexts, the crowding-out effect of high inequality on growth is well observed, making poverty reduction less effective (Deininger & Squire, 1998; Bigsten & Levin, 2001; Bourguignon, 2003). As inequality evolves, its relationship with growth varies from one context to another without being linked. Based on household surveys data, we estimate the poverty decomposition using the static approach of Kakwani, and the dynamic approaches of Datt & Ravallion (1999) and Shorrocks (1992). The results indicate that poverty in these countries has evolved differently. While poverty has decreased in Morocco and Tunisia, it has increased in Egypt during the period of 2008-2015. The analysis of poverty dynamics shows that the decline in poverty in Morocco and Tunisia is the result of the combined effect of economic growth and reduced inequality, with the effect of economic growth dominating, while in Egypt, the increase in poverty is the result of the economic recession and inequality in most parts of the country. However, it is important to note that due to the lack of panel data, the analyses carried out in this study are microeconomic in nature, and the dynamics of poverty are analyzed essentially through the dynamics of growth and inequality. This indicates that it is growth in the microeconomic sense, i.e., the average household income calculated from survey data. Thus, to explain and anticipate the evolution of poverty dynamics, it is important to take into consideration growth in the macroeconomic sense, referring to the GDP of the national accounts

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