



# Fiscal policy incidence with focus on energy subsidy in Tunisia: impact on poverty and inequality reduction



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# **Fiscal policy incidence with focus on energy subsidy in Tunisia: impact on poverty and inequality reduction**



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## Introduction

This paper analyzes fiscal incidence for Tunisia based on what people actually paid and received, notably for energy products, without assessing the behavioral responses that taxes and public spending may trigger from individuals or households.

The paper uses the Commitment to Equity Assessment (CEQ) methodology for fiscal incidence analysis for the Tunisian case. As this, the paper is structured on a basic description of the CEQ methodology as for the latest update on the CEQ methodology developed by Nora Lustig and her team, followed by some definitions of the Tunisian tax system. The objective is to introduce the specificities of the tax system in Tunisia as well as recent fiscal reforms notably, the personal income tax (PIT) reform and the subsidy reform.

The analysis of fiscal incidence in Tunisia intends to highlight the incidence of fiscal policy on inequality and poverty of households, for this end we tried as possible to use the last household survey (National Survey on Household Budget, Consumption and Standard of Living, EBCNV 2015) in addition to macroeconomic data provided by the Tunisian Ministry of Finance as well as the National Institute of Statistics.

Our focus on energy subsidy is motivated by the weight of subsidy in global budget, notably the energy subsidy products. There is a consensus that energy subsidies are among the most pervasive and controversial fiscal policy tools in Tunisia. Their reform continues to be difficult, from a political, economic and social perspective, due to the original objectives of these measures—such as the need to protect the most vulnerable households and to foster domestic industrial growth.

The *first* section of the paper presents the macroeconomic and poverty challenges facing the Tunisian economy. It reviews the fiscal situation in the country and the characteristics of the taxation system. The *second* section discusses the methodology of the Commitment to Equity Assessment (CEQ) for fiscal incidence analysis for the Tunisian case. The *third* section presents the data sources used for the analysis. The *fourth* section presents the main results of the CEQ approach, particularly the impact of fiscal policy on inequality and on poverty and the equity and efficiency of subsidies. The *final* section concludes the paper.

## I- Macroeconomic policy and poverty challenges

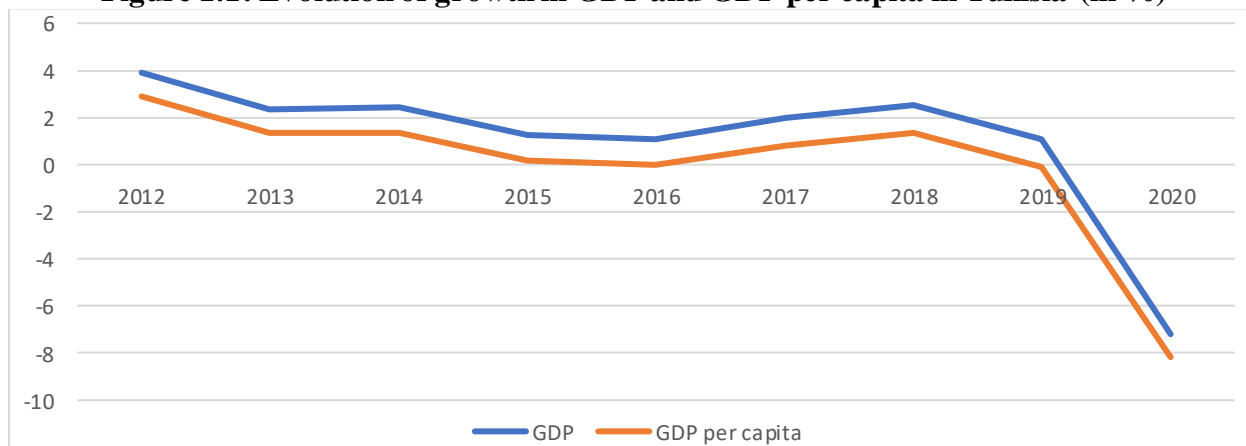
### 1.1 Economic growth and fiscal situation

Tunisia, which has been an economic model in Arab countries in terms of economic and social performance, was a rentier state and has entered a period of both economic and social instability since the dawn of the Arab Spring. Despite positive economic growth, Tunisia did neither enjoy any economic stability during the past ten years nor return to the sustainability of its economic growth that was achieved before 2010. GDP growth rate which was around 6 per cent before 2010, has fluctuated between 1.5 and 2.8 per cent over the past ten years (figure 1.1). According to the

projections of the International Monetary Fund (IMF), Tunisia has lost on average 3.86 growth points per year between 2011 and 2015 relative to the 2010 projections of the IMF.

Similarly, the wealth of the population represented by the GDP per capita followed the same trajectory. Growth in GDP per capita was even almost zero between 2015 and 2016. These results show that the standard of living of the population, at least in monetary terms, has seen huge deterioration over the past ten years.

**Figure 1.1: Evolution of growth in GDP and GDP per capita in Tunisia (in %)**



Source: United Nations WESP

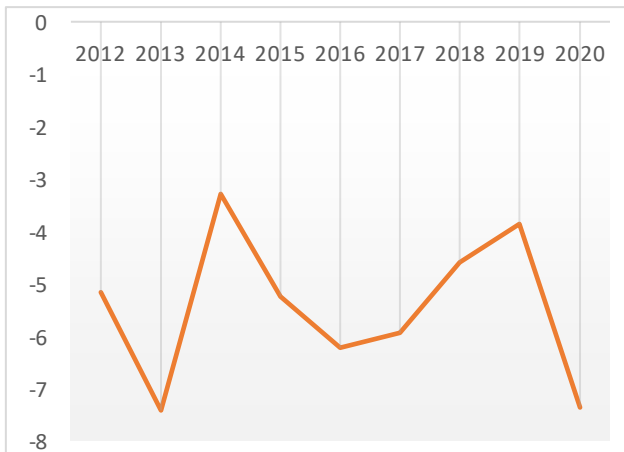
This situation has been partly impacted by the unstable regional situation, in particular the Libyan conflict and the influx of migrants. According to a recent study by the Economic and Social Commission for Western Asia (ESCWA, 2021). The accumulated losses during the 2011-2015 period are estimated at 0.9 growth points per year, which is equivalent to almost TND 9 billion in current prices. These losses are even higher when fiscal losses resulting from the expansion of informal trade and losses of more than TND 300 million in Tunisian investments in Libya are taken into account. The study mentions that the loss of tax receipts is enormous. At the fiscal level, income taxes have noticeably contracted. Value-added-tax (VAT) revenues fell by 6.3 per cent over the five years period (equivalent to TND 1.17 billion) from domestic products against 4.6 per cent (TND 522 million) from imported goods.

The young democracy has faced tremendous pressure in terms of employment and achieving social justice after long years of oppression and persecution of the people during the period before the revolution. The people revolted to achieve its objectives; however, the underperformance of the Tunisian economy did not provide what the population demanded, which widened the gap between the citizens and the new political power. In addition, the worsening of the public debt, which rose from around 42 per cent in 2010 to more than 55 per cent of GDP in 2015 and expected to reach more than 90 per cent of GDP in 2021, has further added additional challenges to the Tunisian economy.

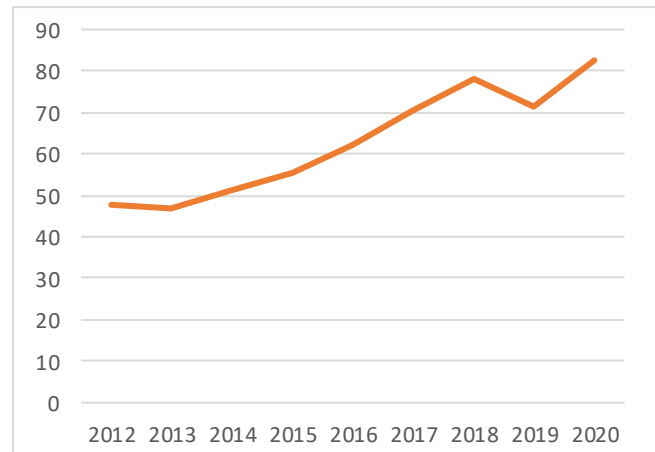


The public deficit in Tunisia increased sharply, in particular, during the past decade (figure 1.2). The fiscal deficit represented 5 % of GDP before to achieve to 7.4% of GDP in 2013 and still at 7.3 % of GDP in 2020. Many reasons could explain this situation, in addition of the energy subsidies, the low tax mobilization, the additional hiring in civil service and the increase of spending in social services,...

**Figure 1.2: Fiscal Deficit as Per centage of GDP**



**Figure 1.3: Public Debt as per centage of GDP**

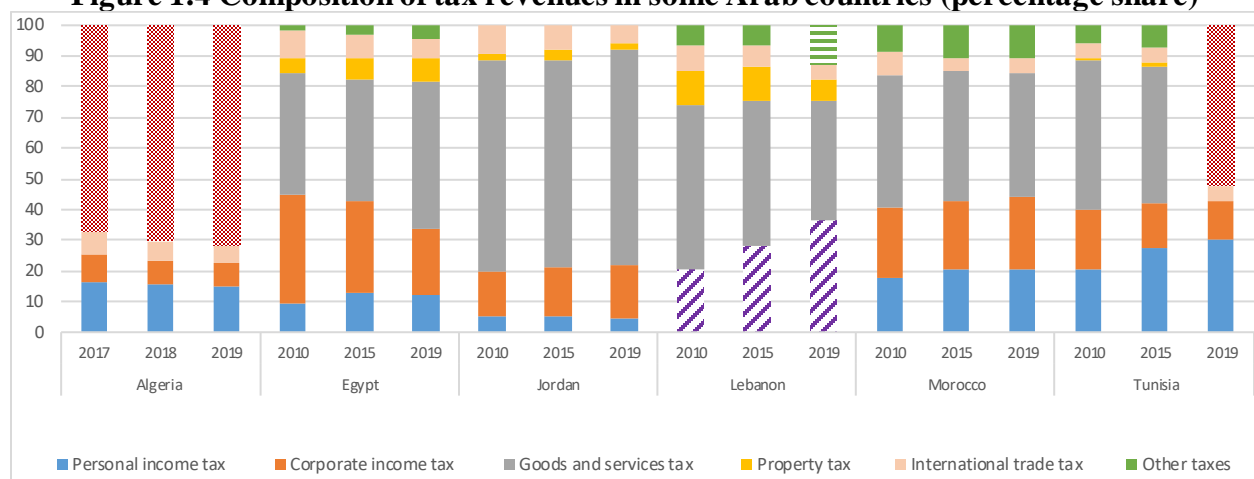


Source: INS, Tunisia

## 1.2 Taxation regimes in Tunisia compared to Arab Middle-Income Countries

The two major components of the Tunisian Tax system are direct taxes including particularly the Personal income Tax (PIT), and indirect taxes including the Value-Added-Tax (VAT) and consumption duties. This composition of taxes reveals that the taxation system in Tunisia is slightly different from the taxation systems of most of the Arab region. Taxes on goods and services – collected through VAT – constitute the major share of tax revenues of Arab Middle-Income Countries (MICs); the contribution of PIT as a share of total tax revenues is the highest in Tunisia compared to other MICs. PIT in Tunisia represented 27.8 per cent of total of tax revenues compared to only 5.1 per cent in Jordan in 2018 while in 2019, PIT in Tunisia represented around 30 per cent of total tax revenues compared to 11.9 per cent in Egypt.

**Figure 1.4 Composition of tax revenues in some Arab countries (percentage share)**



Source: National sources and IMF

Value added tax (VAT) is the other big component of the tax system in Tunisia. With the comparison with other Arab countries, VAT is equally represented in the region, with slight disparity in terms of rates thresholds and exemptions. The corporate income tax (CIT) category contribute with almost 35.2 per cent of total tax revenues in Egypt in 2010 compared to 8.8 per cent in Algeria.

### 1.3 Characteristics of the tax system in Tunisia

#### 1.3.1 Personal income Tax (PIT)

In general, planning income tax systems requires great complexity in anticipating the behavior of actors in response to certain rates and thresholds, thus information problems are a key constraint. Tax systems and administrators must account for ability to pay and reactions to rate and threshold changes, but this is not easy to measure (Mankiw et al 2009). Furthermore, even well-planned tax systems may face hindrances in state capacity to collect, implement and monitor, particularly in developing countries with limited resources or small tax administration systems.

PIT is levied on different sources of income like labour, pension, interests and dividends. In the case of Tunisia, before 2013, the tax rates imposed vary between 15 per cent for annual net income between TND 1,500 and TND 5,000 and 35 per cent for annual net income above TND 50,000 (\$34,800) as indicated in table 1.1. PIT is paid mainly via source withholding tax on wages, as well as amounts greater than TND 1000 (\$696) paid by the state and public authorities or greater than TND 5,000 paid by corporations and individuals under the real Regime. Several exemptions are put in place, including employees earning the minimum wage (SMIG), salaries of foreign consular, interest from deposit in foreign currency, interest of home or special saving accounts,

premiums of life insurance, deductions for marital status and dependents. This system allowed the collection of TND 3.6 billion (\$1.6 billion)<sup>1</sup>.

The CEQ Methodology will use PIT rates available before and after the tax reform of 2017. One of the main reforms is to reduce categories of thresholds in order to reduce inequality between income categories. The table below shows that marginal rates have been reduced from 5 to 3 categories.

**Table 1.1 Personal income Tax (PIT) in Tunisia**

Initial thresholds (in Tunisian Dinars)	Initial marginal rate (before reforms)	New rates (percentage) 2017	New effective rate 2017
1,500 - 5,000	15	0	0
5,001 – 20,000	20	26	19.5
20,001-30,000	25	28	22.3
30,001-50,000	30	32	26.2
>50,001	35	35	-----

Source: Ministry of Finance Tunisia

[http://www.finances.gov.tn/index.php?option=com\\_content&view=article&id=75&Itemid=258&lang=fr](http://www.finances.gov.tn/index.php?option=com_content&view=article&id=75&Itemid=258&lang=fr)

### 1.3.2 Value added tax

VAT in Tunisia is the most important tax. The general rate of 18 per cent was applied on all transactions, while some transactions are subject to the 12 per cent reduced rate or the 6 per cent lower rate. Moreover, other reduced rates have been added to the previous categories such as a reduced rate of 6 per cent was imposed on medical acts, hotel and restauration,<sup>2</sup> in addition to 12 per cent rates for petroleum and electricity products. For the current study, we will use rates of indirect and direct taxes as before and after the tax reforms.

### 1.3.3 Social Security Contributions

The social security system in Tunisia is well developed compared to other Arab countries. However, it is based only on a contributory system and is totally administrated by the government. The largest one called National Social Security Fund (or CNSS) and the second one is the National Pension and Social Security Fund (CNRPS: Caisse Nationale de Retraite et de Prévoyance Sociale). The CNRPS covers all employees of the State and local public authorities and public institutions while CNSS covers workers from the private sector. Other compulsory social security covers benefits relating to pensions, accidents at work, family benefits and occupational diseases. Since 2007, the management of the health insurance component was assigned to the National Health Insurance Fund (CNAM). The rate of contributions depends on the workers' activities and notably varies from an agriculture activity to a non-agriculture activity. Self-employed workers

<sup>1</sup> Ministry of finance Tunisia 2017

<sup>2</sup> Budget Law 2017, Ministry of Finance, Republic of Tunisia

are required to join the National Social Security Fund and may voluntarily insure against risks of working accidents and illnesses. In terms of contribution rates, the rates are not the same across regimes and employees do not pay the same for social protection. Agricultural workers, independent operators and self-employed in agriculture could benefit from different rates. For the National Programme to Support Poor Families (Programme National d'Aide aux Familles Nécessiteuses: PNAFN), the total benefits came from Research Center for Social Studies<sup>3</sup> (CRES) while the total benefits of scholarships came from the Ministry of Higher Education.

### 1.3.4 Public Social spending

In Tunisia, social spending, excluding contributory pensions, include direct cash transfers and in-kind spending on education and health. Direct transfers component include two categories, all cash transfer programs for vulnerable households (PNAFN) and all categories of scholarship assistances for students. The In-kind transfers cover in particular benefits received from the universal free public education (primary and tertiary education) as well as public health systems. In-kind benefits in the form of public education and health services are not scaled up, since the benefits imputed to individuals were derived from spending figures from national accounts in the first place. Note that the spending figures used to impute in-kind health and education benefits should include administrative costs because these are part of the cost of providing the service and would be included in the price of obtaining the service in the private sector. This differs from cash transfers, where we exclude administrative costs when scaling up because we want to measure the amount of cash being received by the household<sup>4</sup>.

**Table 1.2 Distribution of the population according to the options of health coverage and the household's situation (Poor / Non Poor)- ECM (2015)**

	National			Rural			Urban		
	National level			average rural			average urban		
CNAS	Total	Poor	No Poor	Total	Poor	No Poor	Total	Poor	No Poor
<b>Aa a Beneficiary (via tutor)</b>	26.1%	10.9%	28.8%	15.4%	7.4%	18.2%	31.0%	14.9%	32.8%
<b>AMG1</b>	50.5%	59.8%	48.8%	55.6%	62.6%	53.2%	48.1%	56.5%	47.1%
<b>AMG2</b>	2.1%	3.4%	1.9%	3.3%	3.7%	3.2%	0.0%	3.0%	1.4%
<b>No covered</b>	3.6%	0.0%	3.0%	6.4%	8.4%	5.7%	0.0%	4.9%	2.0%
<b>Not declared</b>	17.6%	19.0%	17.4%	19.2%	17.8%	19.6%	16.9%	20.4%	16.5%
<b>Total</b>	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%
<b>CNAS</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: Ministry of Finance, Tunisia

#### 1.3.4.1 Subsidies

Tunisia is a generous in terms of energy and food subsidies. The policy of subsidy of basic food items as well as energy has been maintained despite difficult economic periods in the country, as a way to maintain a minimum of social justice and to reduce vulnerability of large categories of

<sup>3</sup> Centre de recherches des Etudes Sociales CRES, Tunis-2013

<sup>4</sup> (Nizar et al 2015).

the population. The General Compensation Fund (CGC: Caisse Générale de Compensation), established in May 1970, primarily intervenes to support some basic food stuffs in order to contain the increase in their prices and thereby preserve the purchasing power of the most vulnerable and deprived groups.

The subsidy system is directed mainly to support the consumption of basic products, energy and transport. The methodology followed later in this paper will use macroeconomic indicators as well as detailed subsidized food and energy products.

#### *1.3.4.2 In-kind Transfers*

##### Education:

There are two systems of education for all levels: a public education system and a private education system. Tunisia's public education system includes basic, secondary and tertiary education. The basic education in Tunisia is mandatory for youth population below 16 years old and is composed of two cycles: 6 mandatory years of primary school and 3 additional years of lower secondary school. Secondary school is 4 years. Public primary and secondary education is almost free (beneficiaries pay only \$3 per year). Tertiary education is considered also free as students pay about \$25 per year while they pay around \$50 for graduate studies per year.

##### Health:

Health care in Tunisia is provided through two systems: a contributory national health insurance for the non-poor and a free or subsidized system for the low-income individuals and households according to two public regimes. The public health system or The Free Health Care (AMG1) program consists of targeting poor families with a five-year based assistance program, while the Subsidized Health Care (AMG2) program grants target families based on level of income and family size. For example, the annual family income of two-member households cannot exceed an amount equal to the guaranteed minimum wage (SMIG) while the annual income of families with 3 to 5 members cannot exceed 1.5 time the minimum wage and cannot exceed twice the minimum wage for families with more than 5 members. Beneficiaries are subject to a lump sum payment whose amount is based on the costs of the service<sup>5</sup>.

## **1.4 Poverty and Inequality**

### **1.4.1 Poverty trend in Tunisia**

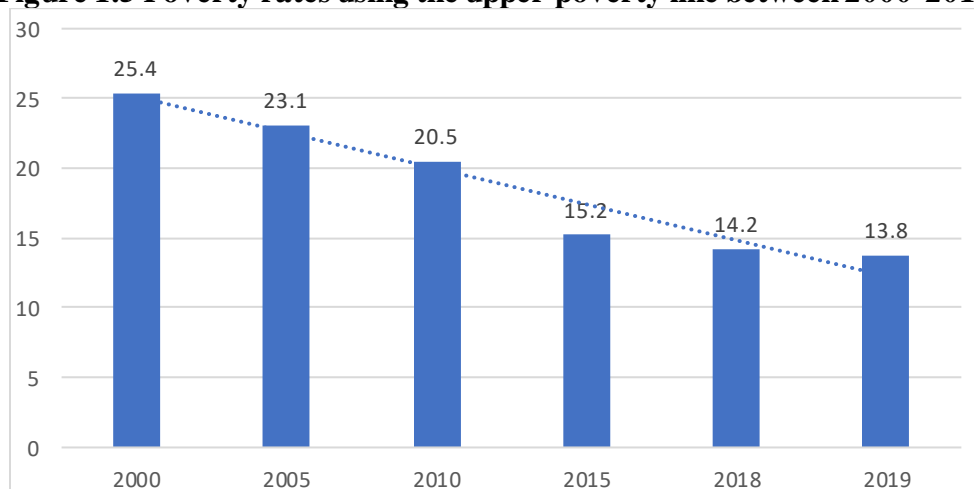
Poverty rate fell significantly in Tunisia during the past twenty years. The decline of the monetary poverty rates from 2000-2010 is certainly related to the high growth rates for this period and the implementation of a number of social programs targeting the poor. During the 2010-2015 period, and despite low average annual growth rate of 1.9 per cent, poverty fell sharply from 20.5 to 15.2 per cent, then further to 14.2 per cent in 2018 and 13.8 per cent in 2019. The post-revolutionary

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<sup>5</sup> Jouini et al, Tunisia - 2015

period has the privilege to contribute to the reduction of the vulnerability of the population despite economic and social difficulties related to the huge political change not only for Tunisia but also for the entire Arab region (figure 1.5)

**Figure 1.5 Poverty rates using the upper poverty line between 2000-2019**



Source: Calculations using EBCNV 2000, EBCNV 2005, EBCNV 2010, EBCNV 2015

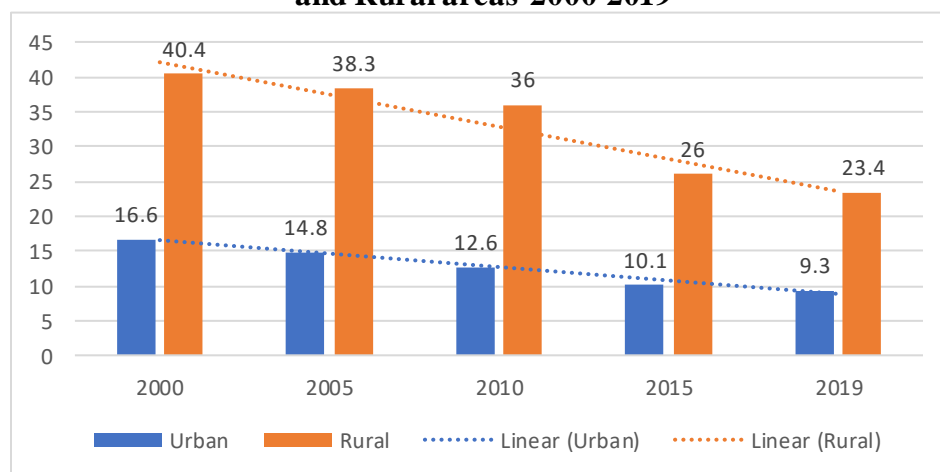
The poverty rates trend, at least before the revolution period, seems to be a function of the high level of growth rate. Consumption growth between 2000 and 2019 has been largely pro-poor.

Deeksha Kokas et al, Poverty and Inequality in Tunisia: Recent Trends, IZA institutes of labor Economics. IZA DP No. 14597. 2021

In terms of national distribution, poverty remains large in rural areas, displaying a poverty gap between rural and urban areas. In 2010, around 36 per cent of the rural population were poor while almost 13.6 per cent suffered from extreme poverty. Poverty rate in urban areas decreased less than poverty rates in rural areas, for example, poverty decreased by 10 percentage points in rural areas between 2010-2015 while it decreased by only 2 percentage point in urban areas. This implies that even though it is still significant, the poverty gap between urban and rural areas decreased. Poverty gap declined from 23.8 percentage points in 2010 to 14.1 percentage points in 2019 while extreme poverty gap declined from 11.5 to 3.5 percentage points respectively in 2019 (figure 1.6). In 2019, poverty and extreme poverty rates in rural areas reached 23.4 and 4.1 per cent respectively<sup>6</sup>.

<sup>6</sup> Poverty and Inequality in Tunisia: Recent Trends, Deeksha Kokas et al, World Bank 2020

**Figure 1.6 Evolution of Poverty rates in Tunisia using the upper poverty line for Urban and Rural areas-2000-2019**



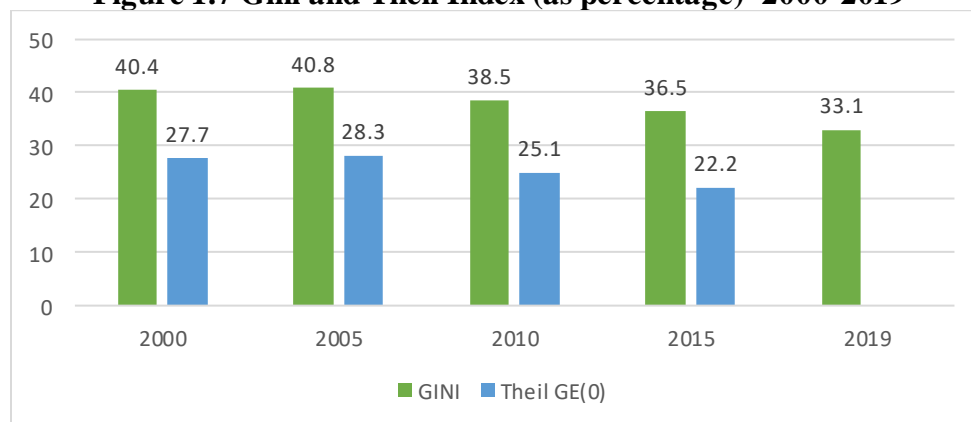
Source: Calculations using EBCNV 2000, EBCNV 2005, EBCNV 2010, EBCNV 2015, EBCNV 2019

#### 1.4.2 Inequality trend in Tunisia

Using Gini and Theil indices measure, inequality in Tunisia has decreased for almost 10 percentage points from 2005 to 2010. Gini index has decreased from 40.8 to 38.5 per cent, however, the political and social changes starting from 2010 do not seem to bring more equity and social justice in terms of distribution of wealth in the country. The Gini index has decreased slightly after 2015 by almost 3 percentage points (fig).

Overall, inequality rates in Tunisia is in the middle position compared to other Arab countries. According to the 2015 predictions of the World Bank, the Gini index in Tunisia is lower than other countries in the region, like Morocco, but higher than other countries such as Algeria and Egypt.

**Figure 1.7 Gini and Theil Index (as percentage)- 2000-2019**

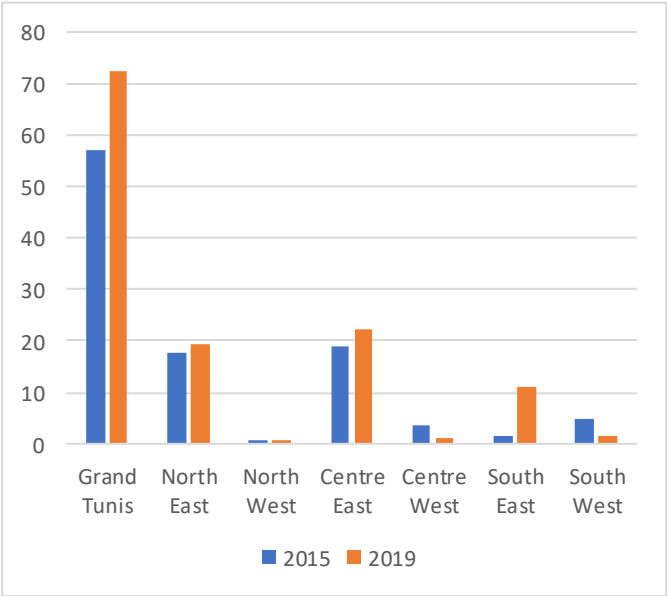
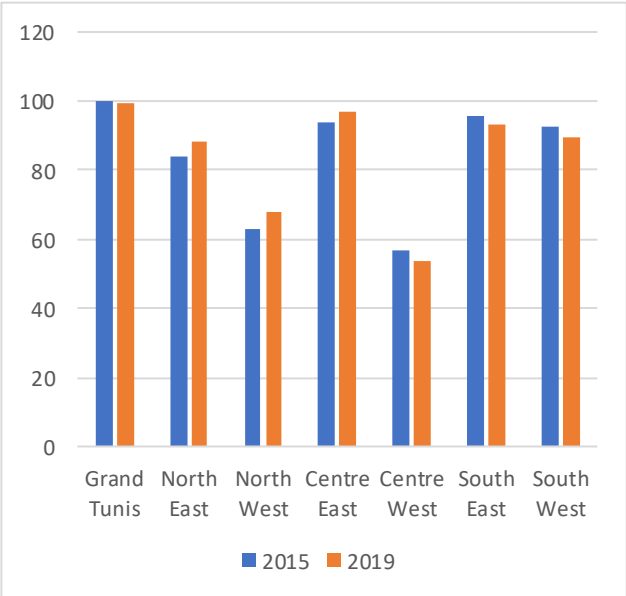


Source: Calculations using EBCNV 2000, EBCNV 2005, EBCNV 2010, EBCNV 2015

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Access to basic services, such as education, sanitation and public transport, contributed to reducing deprivation across geographic regions in Tunisia between 2015 and 2019, but significant disparities among regions persist. Access to basic services by Tunisian households in richer regions of the country such as the city of Grand Tunis is better than other regions of the country. As a matter of example, 72 per cent of households have access to natural gas in Grand Tunis in 2019 compared to merely 0.6 per cent in the North West region and 1.2 per cent in the Center West regions. Similarly, almost 100 per cent of households of the Grand Tunis area have easy access to drinking water facilities compared to only 53 per cent in the Center West regions and around 68 per cent in the North West. (Fig1.8 and 1.9)

**Figure 1.7 Access to drinking water (SONEDE)      Figure 1.8 Access to Natural Gas (STEG)**



Source: Calculations using EBCNV 2000, EBCNV 2005, EBCNV 2010, EBCNV 2015

Deeksha Kokas et al, Poverty and Inequality in Tunisia: Recent Trends, IZA institutes of labor Economics. IZA DP No. 14597. 2021



## II- Methodology

### 2.1 The CEQ approach

The Commitment to Equity Assessment (CEQ) methodology<sup>7</sup> uses standard incidence analysis<sup>8</sup> to address issues related to government spending and ways that revenue is being distributed in a country. In particular, the methodology addresses the following:

- How social spending, subsidies and taxes are contributing to equal distribution of wealth and reducing poverty in a country?
- Are revenue collection and public spending progressive?
- What could be the optimal limits of fiscal space to reduce poverty and inequality?
- How does the CEQ methodology assess the efficiency of the taxation system, including indirect subsidies and other in-kind transfers in education and health systems among countries<sup>9</sup>?

This methodology only considers first order effects and does not account for behavioral or general equilibrium effects. It includes two scenarios (benchmark and sensitivity analysis) depending on whether contributory social security pensions are considered as part of the market income (i.e., deferred income) or as a government transfer.

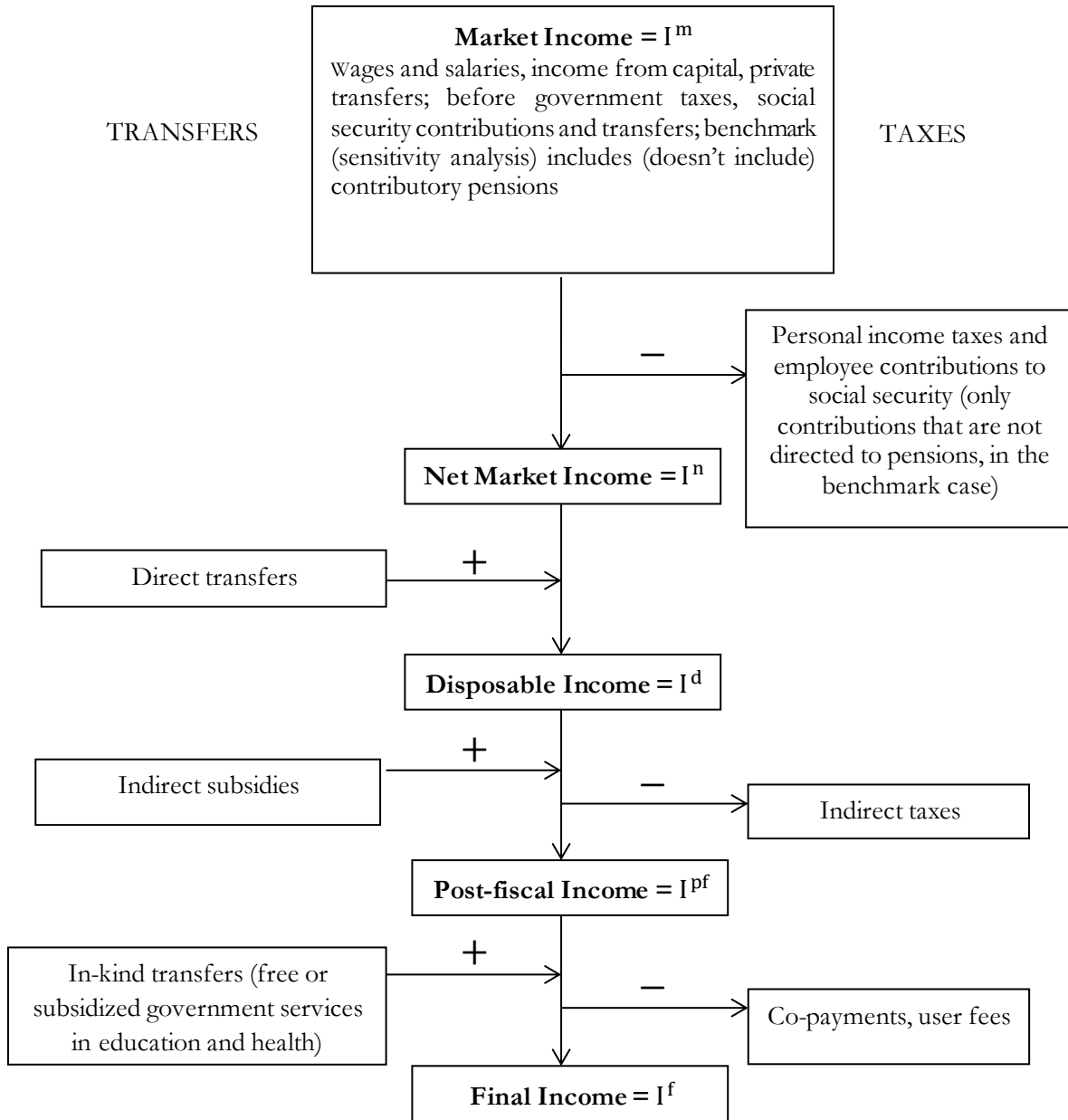
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<sup>7</sup> Nora Lustig (Tulane University) and Peter Hakim (Inter-American Dialogue), the *Commitment to Equity* (CEQ) methodology is designed to analyze the impact of taxes and social spending on inequality and poverty, and to provide a roadmap for governments, multilateral institutions, and nongovernmental organizations in their efforts to build more equitable societies.

<sup>8</sup> Atkinson (1983, Bourguignon and Pereira da Silva (2003), Birdsall et al. (2008), Breceda et al. (2008),.

<sup>9</sup> Applications of CEQ can be found in, for example, Bucheli et al. (2012) and Lustig et al. (2012).

**Figure 2.1 Income Concepts: A Stylized Presentation**



Source: Lustig and Higgins (2013)

Note: in some cases we also present results for “final income” which is defined as disposable income plus in-kind transfers minus co-payments and user fees.

### *Definitions*

To build the income concepts, we use micro-data from the 2015 Tunisian household survey with data on income or consumption. Microeconomic data will be combined with other sources of data from different Tunisian official institutions, on taxes and transfer programs from public sector accounts. When constructing the income definitions, we make the following methodological assumptions:

#### *The Market income*

In the case of Tunisia, national surveys on income are not available. However, we used the available household consumption survey to estimate income. To this end, we included expenditures on nondurables goods in addition to the auto consumption and the imputed rent for owners' leased properties. According to this methodology<sup>10</sup>, consumption is assumed to equal disposable income. Given that the household consumption survey did not include the imputed rent for owners' leased properties, we used this alternative estimation method included in the INS-AfDB-WB study (2012).<sup>11</sup>

### **III- Sources of data**

This study used both macro and micro data. An effort was provided to use as much as possible official data in order to minimize judgment and ad-hoc estimation. The National Survey of Consumption and Household Living Standards of 2015 is used to estimate households' consumption (income) at different stages of the methodology. However, we could not access some macroeconomic data to use some indicators on Government revenues and ventilations for example and to expand this study to other aspects raised in the Manual of the CEQ approach.

In order to estimate the incidence of taxes and transfers, we used macroeconomic data from the Ministry of Finance. Data on indirect taxes and subsidies for primary products and energy were taken as well, from the Ministry of Finance. Other data on subsidies have been provided by the Ministry of Commerce as well as other national institutions and research centers such as CRES, ITCEQ and others.

#### *The Consumption and Household Living Standards*

We used the 2015 National Survey of Consumption and Household Living Standards from the National Institute of Statistics (INS) which includes three components: expenditures, living standards and food. The final sample is of national coverage and statistically representative, including large cities, medium-sized and small towns and rural areas. The sample has 23,764 individuals and 4,500 households.

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<sup>10</sup> Lustig and Higgins (2013, 2015).

<sup>11</sup> INS-ADB-WB (2012 "Measuring poverty inequality and polarization in Tunisia". This publication is produced by the National Institute of statistics (INS), the African Development Bank (ADB) and the World Bank (WB).

## Macroeconomic Data

The methodology of fiscal incidence uses intensive data from different sources in particular the Ministry of Finance and the Ministry of Commerce. These include data on direct and indirect taxes. Direct taxes include only income tax and were imputed according to the tax rate of each income level.

## IV- Main results

Fiscal incidence study will examine the direct impact of reduction of energy subsidies on poverty and inequality. The variation of prices of hydrocarbons (oil, LPG Gasoil, Gasoil50 and others) has been evaluated notably since the Tunisian fiscal reforms started in 2013.

### 4.1 The Impact of fiscal Policy on Inequality

In the case of Tunisia, it appears that the fiscal policy could contribute to reduce market income inequality quite significantly: the simulation shows that Gini coefficient for disposable income per capita declines from near 0.33 to 0.31 post-fiscal income, which represents a decline of 2 Gini points.

**Table 4.1 Inequality for disposal and post-fiscal income**

<i>Inequality Index</i>	Disposable Income	Post-fiscal Income
Gini	0.3282	0.3124
Percentage change wrt market income	0.3281	0.3122
Significance (p-value)	0	0

Source: Author's simulation

### 4.2 The Impact of Fiscal Policy on Poverty

The impact of fiscal policy on poverty varies with the change of the poverty line. For the lower poverty lines of \$1.25 as well as the level of \$2.50 per day, the combined effect of taxes, transfers and subsidies indicates a reduction in poverty. For the national poverty line, the poverty rate has decreased significantly from 20.1 per cent in 2010 to about 15.2 per cent in 2018. After taking into account all taxes and direct cash transfers and indirect subsidies, the rate of poverty decreases by almost 4 points to 11.6 per cent. This significant decrease of poverty implies that subsidy is a pro-poor instrument for distribution of income.

**Table 4.2 Poverty rates for disposable and post-fiscal incomes**

Headcount index	Disposable Income	Post-fiscal Income
P0	15.2%	11.6%
Percentage change wrt market income	-0.849	-0.884
Significance (p-value)	0	0

Source: Author's estimation

The structure of prices and consumption across reviewed socioeconomic groups show substantive inequalities in the per capita consumption and expenditures on energy among Tunisian households (table 4.3). The average consumer from the richest quintiles has higher consumption of energy than the poorest quintiles. The largest consumption differences are observed for gasoline, followed by diesel then electricity. This could be explained by the quality of life and the possession of the richest quintile of durable goods as well as other housing equipments. On average, an individual from quintile 5 consumes 200 times more gasoline than someone from the poorest quintile. That ratio is still a whopping 38 to 1 in the case of diesel. The picture is a little bit narrowed when we observe consumption for electricity and LPG: a richer individual consumes 4.5 times more electricity and 1.4 times more LPG than an individual from the poorest household<sup>12</sup>.

**Table 4.3 Per Capita Consumption (quantity) of energy in Tunisia**

Quintile	Gasoline (liter)	LPG (kg)	Diesel (Liter)	Electricity (kwh)
1 poorest	0.46	36.5	2.45	37.41
2	2.3	45.35	1.95	49.59
3	8.45	49.08	3.7	61.23
4	25.02	55.99	5.58	86.58
5 richest	97.74	52.39	17.07	167.21
Total	26.79	47.86	5.75	80.4

Source: World Bank calculations using SUBSIM

Large differences also become evident when spending is compared across quintiles of the consumption distribution. Households in the richest quintile spend more than six times the amount spent on residential energy by the average household in the poorest quintile. For gasoline and diesel, socioeconomic differences in terms of per capita spending are striking. For LPG and electricity, differences are less acute<sup>13</sup>.

**Table 4.4 Per Capita expenditure of energy in Tunisia (TND)**

Quintile	Gasoline	LPG	Diesel	Electricity
1 poorest	0.77	20.81	0.56	36.70
2	3.83	25.85	2.44	56.36
3	14.11	27.98	4.62	67.63
4	41.78	31.91	6.97	88.35
5 richest	163.22	29.86	21.34	150.53
Total	44.73	27.28	7.19	79.91

Source: World Bank calculations using SUBSIM

<sup>12</sup> Tunisia Poverty Assessment 2015, World Bank 2016

<sup>13</sup> Ibid

### 4.3 Who Benefits (and not) from Direct Transfers and Subsidies?

Which category of population will benefit from direct transfers as subsidies is an important issue that fiscal incidence methodology tries to answer. For Tunisia, the results of the transition matrix below show that the average loss of those who have disposable income is higher than post-fiscal income. The average loss of the disposable income for group 4 has an average of 144.4 per cent than the poorest of the post-fiscal group and about 77 per cent and 47.2 per cent against respectively the second and the third post-fiscal income groups.

**Table 4.5 Average loss of losers as per cent of disposable income**

Disposable Income groups	Post-fiscal income groups						Average loss for losers by market income group
	$y < 1.25$	$1.25 \leq y < 2.50$	$2.50 \leq y < 4.00$	$4.00 \leq y < 10.00$	$10.00 \leq y < 50.00$	$50.00 \leq y$	
$y < 1.25$							
$1.25 \leq y < 2.50$		-1.0%					-0.00998
$2.50 \leq y < 4.00$	-66.7%		-6.1%				-0.16933
$4.00 \leq y < 10.00$	-144.4%	-77.0% 8.51	-47.2% 6.59	-11.4% 8.02			-0.2779741
$10.00 \leq y < 50.00$	-125.6%	-86.0%	-77.0%	-42.5%	-17.6%		-0.2875098
$50.00 \leq y$	-116.4%				-27.1%	-12.5%	-0.2028344

Source: Author's simulation

The average loss of the disposable income for group 5 has an average of 125.8 per cent than the poorest of the post-fiscal group and about 86.9 per cent, 78.2 per cent and 43.4 per cent compared to the second, third and fourth post-fiscal income groups respectively. These results show that average loss is significant for the higher disposable income groups. The table shows that there also other gainers of the direct transfers and subsidies mechanism in Tunisia. The average gains of the disposable income for group 2 is respectively 27.5 per cent and 98.7 per cent (corresponding to post-fiscal income for groups 3 and 4). The average gain of the disposable income for group 3 is more important, in average 42.3 per cent and 254.2 per cent for the corresponding post-fiscal incomes 4 and 5 respectively.

**Table 4.6 Average gain of winners as per cent of disposable income**

Disposable Income groups	Post-fiscal income groups						Average loss for losers by market income group
	y < 1.25	1.25 <= y < 2.50	2.50 <= y < 4.00	4.00 <= y < 10.00	10.00 <= y < 50.00	50.00 <= y	
y < 1.25	12.6%						0.12 1.06
1.25 <= y < 2.50		24.6%	27.5%	98.7%			0.41 2.17
2.50 <= y < 4.00			16.0%	42.3%	254.2%		0.35 3.39
4.00 <= y < 10.00				16.2%	57.3%		0.27 7.04
10.00 <= y < 50.00					18.3%	41.6%	0.18 15.08
50.00 <= y						4.2%	0.04

Source: Author's simulation

#### 4.4 Incidence by Decile and Socioeconomic Groups

The fiscal incidence results by decile categories show that the poorest groups benefit from energy subsidies relatively more than the richest groups, however, this should be clarified on which category of energy. Table 4.7 below shows that the incidence for decile 1 represents 16.5 per cent against 3.4 per cent for the richest decile. This result shows the large reliance on subsidies as an instrument for income redistribution.

One interesting result is obtained and shows that net payers after indirect taxes net of subsidies start at higher income levels, at the 8<sup>th</sup> decile. In sum, the poorest decile is the only decile that does relatively well. However, the impact on consumable income is still problematic as the impact on the income of the poorest is still high, about 30 per cent for the poorest decile and 50 per cent for the fourth one.

**Table 4.7 Fiscal incidence by deciles (Percentage)**

		Indirect Subsidies	Indirect Taxes	Net Indirect Taxes	Consumable Income
Deciles	1	16.47%	-2.60%	13.88%	-29.05%
	2	13.23%	-2.55%	10.68%	-38.45%
	3	11.22%	-3.00%	8.22%	-44.56%
	4	10.26%	-3.60%	6.66%	-49.11%
	5	9.22%	-3.80%	5.42%	-52.31%
	6	7.97%	-4.16%	3.81%	-55.49%
	7	7.30%	-5.07%	2.22%	-58.55%
	8	6.33%	-6.02%	0.31%	-62.77%
	9	5.37%	-6.54%	-1.17%	-67.24%
	10	3.42%	-6.46%	-3.04%	-71.89%
Total Population		6.50%	-5.42%	1.08%	-61.79%

Source: Author's simulation

#### 4.5 Concentration shares by socioeconomic groups

The concentration shares by socioeconomic groups shows that richest categories (deciles 8-10) receive a share of 54 per cent of indirect subsidies while the poorest categories (deciles 1-3) receive only 13 per cent. These results show that redistribution of subsidies are not pro-poor at all. The level of the consumable income for the poorest category is still problematic as it is supposed to reduce inequality of redistribution of wealth. Indeed, the consumable income of the richest decile category (decile 10) represents 8 times more than the poorest decile. This a proof of the huge gap of wealth distribution between categories of population

**Table 4.8 Concentration shares by socioeconomic groups (percentage)**

		Disposable Income	Indirect Subsidies	Indirect Taxes	Net Indirect Taxes	Consumable Income
Deciles	1	3.03%	5.00%	0.94%	3.15%	3.66%
	2	4.47%	6.64%	1.53%	4.32%	5.26%
	3	5.49%	7.45%	2.39%	5.15%	6.26%
	4	6.42%	8.51%	3.58%	6.26%	7.18%
	5	7.47%	9.32%	4.60%	7.17%	8.19%
	6	8.66%	9.68%	6.05%	8.03%	9.20%
	7	10.15%	10.79%	8.99%	9.97%	10.42%
	8	12.16%	11.91%	13.58%	12.67%	11.92%
	9	15.29%	13.83%	20.19%	16.73%	14.35%
	10	26.86%	16.87%	38.14%	26.54%	23.56%
Total Population		100.00%	100.00%	100.00%	100.00%	100.00%

Source: Author's simulation



## 4.6 Equity and efficiency of subsidies

The CEQ methodology measures the incidence on subsidies. For Tunisia, energy subsidies are the most important in addition to food subsidies. The table 4.9 shows that incidence of subsidy net of tax is more pronounced for LPG in bottle, in consequence removing subsidies on LPG on bottle will have a huge impact on the poorest category.

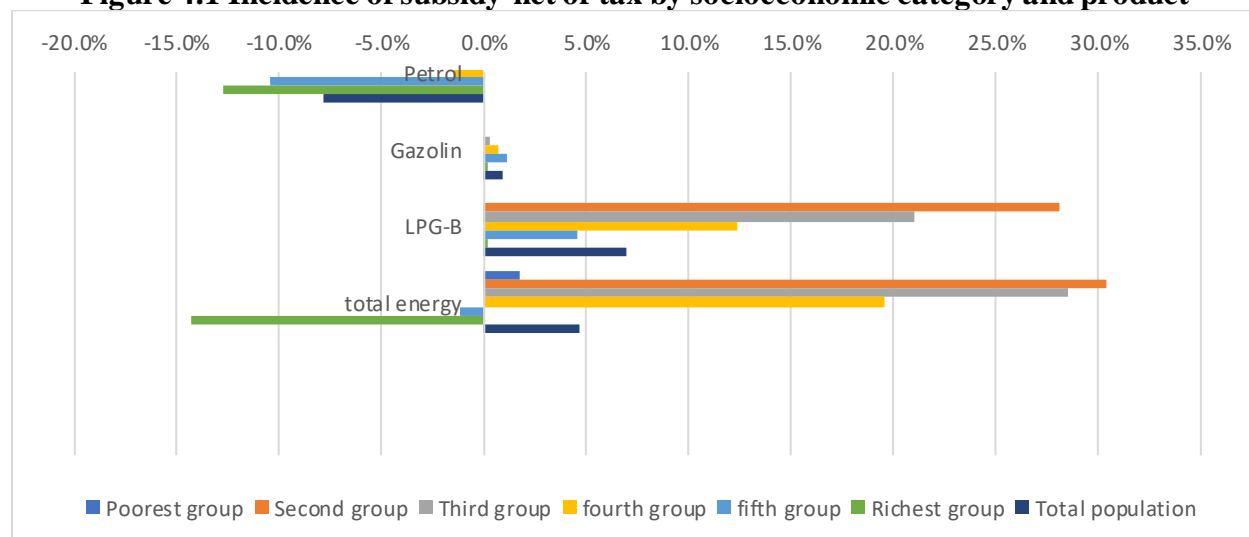
**Table 4.9 Incidence of subsidy net of tax in per cent of disposable income**

	Petrol	Gasoline	LPG-B	LPG-vrac	Total energy
$y < 1.25$	1.71%	0.00%	0.00%	0.00%	1.71%
$1.25 \leq y < 2.50$	0.52%	0.00%	28.13%	0.00%	30.44%
$2.50 \leq y < 4.00$	0.65%	0.26%	21.01%	0.00%	28.47%
$4.00 \leq y < 10.00$	-1.52%	0.69%	12.39%	0.01%	19.51%
$10.00 \leq y < 50.00$	-10.47%	1.07%	4.57%	0.04%	-1.22%
$50.00 \leq y$	-12.78%	0.21%	0.22%	0.00%	-14.32%
Total Population	-7.84%	0.93%	6.91%	0.03%	4.69%

Source: Author's simulation

The figure 4.1 below shows that for the poorest group 2 for example, 90 per cent for the total energy used by this category is LPG in bottle. In sum, the incidence of subsidy net for total energy represents almost 30.4 per cent and 28.5 per cent respectively for the second and the third group which represent the poorest population

**Figure 4.1 Incidence of subsidy net of tax by socioeconomic category and product**



Source: Author's simulation

In sum, it is appear that the distributive impact of the system of energy subsidy is heterogeneous, in particular with LPG and electricity the most influential among poor population and no poor population as well. This situation could be related to the subsidy structure but not only, the consumption patterns across socio economic groups of the population as another important factor

## V. Conclusion

Fiscal incidence study for Tunisia is a privileged tool to estimate the general government taxation and public spending. Overall, fiscal policy seems to be redistributive and contributes efficiently to reduce poverty. For the national poverty line, results showed that the poverty rate has decreased significantly from 20.1 per cent in 2010 to about 15.2 per cent in 2018. Fiscal policy could contribute to reduce market income inequality quite significantly by almost 2 points of Gini index. In terms of which category of households benefited from direct transfers, the study shows that, in general, the average loss is significant for the higher disposable income groups rather than other middle and lower groups and the current redistribution of subsidies, notably energy subsidy policies, are not pro-poor.

Overall, energy subsidies represent a significant share of total household spending in Tunisia estimated to 8.8 per cent of total household expenditures. LPG and electricity subsidies seem to be the largest share of household expenditures, followed by gasoline and diesel expenditures, these results join the conclusions of the world bank on energy subsidies<sup>14</sup>. In consequences, any tentative of energy subsidy reform should take into account this results, to really optimize the process of reform and target which type of energy take first and who will benefit more and finally estimate fiscal savings to be generate by this energy subsidy reform.

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<sup>14</sup> World Bank 2015, Tunisia Poverty Assessment 2015, March 2016, Poverty Global Practice, Middle East and North Africa Region

## Annex

### The fiscal incidence methodology

This methodology defines five types of incomes: market income, net market income, disposable income, post-fiscal and final income, described in detail below:

*The Market income* is defined as:

$$I^m = W + IC + AC + IROH + PT + SSP \text{ (benchmark case)}$$

$$I^{ms} = W + IC + AC + IROH + PT \text{ (sensitivity analysis)}$$

Where,  $I^m$  and  $I^{ms}$  are market income<sup>15</sup> in benchmark and sensitivity analysis, respectively.

W is gross (pre-tax) wages and salaries in formal and informal sector; also known as earned income.

IC is the income from capital (which gathers interest and dividend as well as profits and rents)

AC is the auto-consumption.

IROH is the rent imputed for owners' leased properties.

PT is private transfers.

SP is the retirement pensions from contributory social security system.

*Net Market income* is defined as:

$$I^n = I^m - DT - SSC \text{ (benchmark)}$$

$$I^{ns} = I^{ms} - DT - SSC^s \text{ (sensitivity analysis)}$$

Where,  $I^n$  and  $I^{ns}$  are the net market income in benchmark and sensitivity analysis, respectively.

DT is the direct taxes on all income sources (included in market income) that are subject to taxation.

SSC,  $SSC^s$  are respectively, all contributions to social security except the portion going towards pensions<sup>16</sup> and all contributions to social security without exceptions.

*The Disposable income* is defined as:

$$I^d = I^n + GT \text{ (benchmark)}$$

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<sup>15</sup> Market income is sometimes called primary income.

<sup>16</sup> Since here we are treating contributory pensions as part of market income, the portion of the contributions to social security going towards pensions are treated as 'saving.'

$$I^{ds} = I^{ns} + GT + SSP \text{ (sensitivity analysis)}$$

Where,  $I^d$  and  $I^{ds}$  are disposable income in benchmark and sensitivity analysis, respectively.

GT is the direct government transfers; mainly cash but can include transfers in kind such as food.

SSP is the retirement pensions from contributory social security system.

*Post-fiscal income* is defined as:

$$I^{pf} = I^d + IndS - IndT \text{ (benchmark)}$$

$$I^{pfs} = I^{ds} + IndS - IndT \text{ (sensitivity analysis)}$$

Where,  $I^{pf}$  and  $I^{pfs}$  are post-fiscal income in benchmark and sensitivity analysis, respectively.

IndS is indirect subsidies (e.g., lower electricity rates for small-scale consumers).

IndT is the indirect taxes (e.g., value added tax or VAT, sales tax, etc.).

*Final income* is defined as:

$$I^f = I^{pf} + InkindT - CoPaym \text{ (benchmark)}$$

$$I^{fs} = I^{pfs} + InkindT - CoPaym \text{ (sensitivity)}$$

Where,  $I^f$ ,  $I^{fs}$  are final income in benchmark and sensitivity analysis, respectively.

InkindT is government transfers in the form of free or subsidized services in education and health; urban and housing.

CoPaym is the co-payments, user fees, etc., for government services in education and health.<sup>17</sup>

In addition, as some countries do not have data on indirect subsidies and taxes, we also defined *Final income*\* =  $I^{f*} = I^d + InkindT - CoPaym$ .

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<sup>17</sup> One may also include participation costs, such as transportation costs or foregone incomes because of use of time in obtaining benefits. In our study, they were not included.

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