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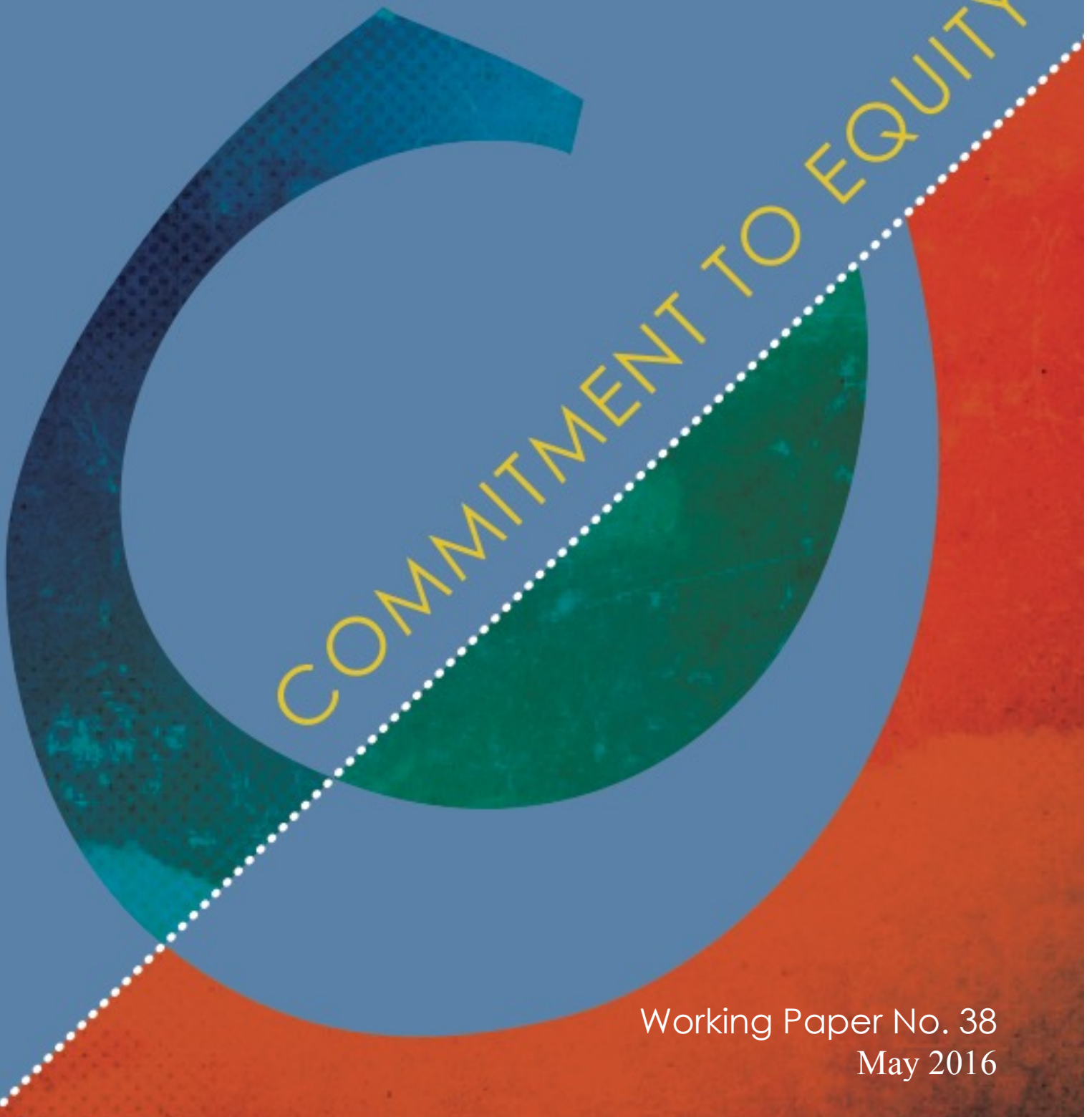

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FISCAL INCIDENCE AND POVERTY REDUCTION: EVIDENCE FROM TUNISIA*

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ABSTRACT

Using the National Survey of Consumption and Household Living Standards for 2010, this paper estimates the incidence of the government's taxation and spending in Tunisia. Taking into account the impact of direct taxes and transfers, indirect taxes and subsidies and the monetized value of in-kind transfers in education and health services, the Gini coefficient falls from 0.43 (before taxes and transfers) to 0.35 (after taxes and transfers), mainly due to taxes (30% of the decrease) and in-kind services (30% of the decrease). Most of the equalization is produced by personal income taxes and contributions to social security. Direct taxes are progressive and the VAT is regressive. Cash transfers contribute little to redistribution. While direct transfers are strongly progressive and equalizing, their share in the budget remains very limited (only 0.2%). Subsidies are equalizing, though much less so than cash transfers as benefits to the non-poor are higher than their population share (i.e., subsidies are progressive but only in relative terms). Primary and secondary education are strongly redistributive and equalizing while tertiary education is progressive only in relative terms since the poor still have limited access. Health spending is progressive.

JEL classification: H22, I38, D31
Keywords: fiscal policy, fiscal incidence, social spending, inequality, poverty, taxes, Tunisia

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Introduction

In 2011, Tunisia went through a profound political transformation involving the democratization of its institutions. This political reform coincided with the period of the global Great Recession and its aftershocks. Having to cope with an adverse external environment while simultaneously responding to heightened social demands generated fiscal imbalances: the fiscal deficit rose from 1% of GDP in 2010 to 6.8% in 2013. The combination of this reduced fiscal space and political demands for a more equitable society means that fiscal policy remains at the heart of the reform agenda. In this context, it is essential to know who benefits from transfers and subsidies and who bears the burden of taxation. This paper estimates the impact of Tunisia's tax and transfers system on inequality and poverty reduction and assesses who benefits from public spending on education and health. Using the National Survey of Consumption and Household Living Standards for 2010,[1] we apply standard fiscal incidence analysis as described in detail by Lustig and Higgins (2013). Because this methodological framework has been applied to other middle-income countries under the Commitment to Equity[2] project, we will be able to compare the results for Tunisia with those of other countries.[3]

Existing studies have looked at the equity implications of specific fiscal interventions in Tunisia. One study that examined cash transfers and subsidies, for example, found that they reduced poverty from 16.5% to 15.5%[4] and that 48.8% of the poor were not covered (AfDB-CRES, June 2013). It also found that subsidies were not well-targeted: the poor received only 9.2% of total subsidies and 12% of food subsidies in particular. A World Bank study on energy subsidies found that 13% were allocated to the poorest quintile while the richest quintile received 29% of these subsidies (World Bank, November 2013). Currently, however, no studies have analyzed the incidence of fiscal policy contemplating both the spending and revenue sides. The purpose of our paper is to fill this gap.

Our results show that when taxes and transfers (including the monetized value of education and health services) are taken together, Tunisia's fiscal policy reduces the Gini coefficient from 0.43 to 0.35. Comparisons to other middle-income countries indicate that the redistributive effect is somewhat lower than in Brazil and Chile but higher than in Mexico and much higher than in Indonesia and Peru.[5] When in-kind transfers in public education and health are excluded, the Gini declines by 0.05 points, which means that two-thirds of the inequality reduction is accounted for by the combined effect of taxes, cash transfers, and subsidies. This redistributive effect is higher than in any of the countries mentioned above and only lower than in South Africa. Thus, fiscal policy is quite redistributive in Tunisia.

The impact of fiscal policy on rates of poverty depends on the poverty line. For the lower poverty lines of US$1.25 and US$2.50 per day (in 2005 PPP), the combined effect of taxes, transfers, and

[1] This is the latest survey available for the case of Tunisia.
[2] For details, visit www.commitmentoequity.org.
[3] The results are based on the Commitment to Equity Assessment Master Workbook from September 9, 2015, which is available upon request.
[4] Poverty measured with the national poverty line.
[5] Lustig, Nora. 2015a.

subsidies reduces poverty. However, this is not true when one uses Tunisia's national poverty line (TND5.02 per day, equivalent to US$3.40 in 2005 PPP) or the middle-income international poverty line of US$4 per day (in 2005 PPP). Using Tunisia's national poverty line, the rate of poverty increases from 12.3% to 13% after taking into account all taxes, direct cash transfers, and indirect subsidies. This is due particularly to the high burden of direct taxes and social contributions on those at relatively low income levels.

Spending on primary and secondary education is progressive in absolute terms (i.e., "pro-poor"): the concentration coefficient is negative. Spending on tertiary education, however, is progressive in relative terms only and not pro-poor, but since its concentration coefficient is much lower than market income Gini, it is equalizing. Health spending is progressive in absolute terms, except for hospitalization.

We think that our results remain relevant even during the period post-revolution, given that the structure of social programs remains the same while some of these programs benefited from additional resources. Subsidies, for example, were increased by almost 300% between 2010 and 2013 (energy subsidies in particular experienced an increase of five times) and cash transfers increased by 50% during the same period.

The paper is structured as follows. In section 1, we briefly describe the Tunisian tax system and social programs. Section 2 presents the data and section 3 outlines our methodology. Section 4 includes our main assumptions in this analysis. Section 5 presents the main results of our incidence analysis. The main conclusions are summarized in section 6.

1. Taxation and Social Spending in Tunisia

With a Gini coefficient of 0.397, Tunisia is one of the most equal countries in the MENA region. Many consider Tunisia a success story based on its sustained rate of growth between 4-5% since 1990. In 2010–the year of the survey used in this study—the population was estimated at around 10.5 million and GNI per capita in current dollars was US$4,160 (US$9,700 in 2011 PPP international dollars). The World Bank classifies Tunisia in the upper-middle income group. With primary spending at around 29.1% of its GDP in 2010, Tunisia's government spending is above the average of other developing countries (Lustig, 2015b). Poverty measured with the official poverty line of US$4.30 per day in 2011 PPP decreased from 32.4% in 2000 to 15.5% in 2010. Within the country, disparities exist regionally and by population density: rural poverty is almost twice as high as urban poverty, and the poorest regions are the West Central and the North West followed by the southern sub-regions, compared to the wealthier littoral and the north (INS-AfDB-WB, October 2012). While the decline in poverty has been driven by economic growth, it is also due to increased government transfers and subsidies. Tunisia created an array of programs following the IMF-led structural adjustment program (SAP) in 1986. The current Tunisian safety net system includes programs that have been initiated since then.

1.1 Taxation

The Tunisian Tax system is composed of two main categories: direct taxes and indirect taxes. Direct taxes include the Personal Income Tax and Corporate Tax while indirect taxes include VAT and consumption duties. As reported in Table 1, the ratio of total tax revenue to GDP was about 20% in 2010, which is comparable to other middle-income countries. Indirect taxes are the main source of tax revenue (almost two-thirds of total tax revenue) and the share of other consumption taxes to GDP is the same as VAT. Even so, direct taxes represent a high burden on labor in particular if we add social contribution to PIT. Despite this high burden, the amount of tax collected remains below the standards of developed and emerging countries.

Table 1: Tunisian General Government Revenue Collections, 2010
Personal Income Tax

	2010 (% of GDP)	Incidence analysis (% of GDP)
Total General Government Revenue	**23.4**	**10.03**
Tax Revenue	*20.9*	*10.03*
Direct taxes	*8.00*	*4.13*
Personal income tax	4.13	4.13
Corporate income tax	3.87	…
Indirect taxes	*12.2*	*5.9*
VAT	5.9	5.9
Customs taxes	0.9	…
Consumption duties	2.5	…
Other indirect taxes	2.9	…
*Non-tax revenue**	3.29	…

Source: Calculation based on data from the website of the Ministry of Finance: http://www.finances.gov.tn/index.php?option=com_content&view=article&id=121&Itemid=302&lang=fr

(*) Non-tax revenue includes oil and gas revenue and revenue from privatization and participation

The Personal Income Tax (PIT) is levied on different sources of income such as labor, pensions, interest, and dividends. The tax rates imposed start at 15% and rise to 35% as indicated in Table 2. PIT is paid primarily via a source withholding tax on wages on amounts greater than TND1,000 (US$696) paid by the state and public authorities or greater than TND5,000 paid by corporations and individuals. Several deductions are permitted, including for employees earning the minimum wage, salaries of foreign consulars, interest from deposits in foreign currency, interest on housing savings

or special saving accounts, premiums on life insurance, and for marital status and dependents. The rates are shown in Table 2.

Table 2: Rates of Personal Income Tax

Taxable income brackets (in Tunisian Dinar – TND, annual)	**US$**	**Rate (%)**
0 - 1,500	0 - 1,044	0
1,500 - 5,000	1,044 - 3,480	15
5,000 - 10,000	3,480 - 6,960	20
10,000 - 20,000	6,960 - 13,920	25
20,000 - 50,000	13,920 - 34,800	30
More than 50,000	More than 34,800	35

Source: Ministry of Finance website:
http://www.finances.gov.tn/index.php?option=com_content&view=article&id=75&Itemid=258&lang=fr

Social Security Contributions

The Tunisian social security system is based on a contributory system and is administrated completely by the government. Compulsory social security covers benefits related to pensions, family benefits, coverage of risk such as illness, accidents at work, and occupational diseases. All benefits were provided either by National Social Security Fund (Caisse Nationale de Sécurité Sociale, CNSS) or the National Pension and Social Security Fund (Caisse Nationale de Retraite et de Prévoyance Sociale, CNRPS); CNSS covers workers from the private sector while the CNRPS covers all employees of the state and local public authorities and public institutions. Since 2007, the National Health Insurance Fund (CNAM) has administered the health insurance component. Social security contributions vary depending on whether the worker belongs to an agricultural or non-agricultural sector. Self-employed workers are required to join the National Social Security Fund. They may voluntarily insure against work accidents and illnesses. The contribution rate is not the same across all regimes and social protections vary: for example, non-agricultural employees do not receive family allowances. Agricultural workers, independent operators, and self-employed workers in agriculture benefit from different rates.

Under CNSS and CNRPS, the main benefit for contributors is a retirement pension. The pension is based on wages, subject to contributions that the insured has made during the ten years prior to reaching retirement age. For 120 months of contributions, the pension rate is 40% of salary; beyond this level, the pension is increased by 0.5% for every three months of additional contributions and may not exceed 80% of salary after 30 years of work. The description of social security contributions is summarized in Table 3.

Table 3: Social Security Contributions by Regime

NON AGRICULTURE REGIME	**Employer contribution (%)**	**Employee contribution (%)**	**Total (%)**
Pension	7.76	4.73	12.50
Sickness, Maternity	4.61	2.90	7.60
Family Allowances	2.21	0.88	3.10
Accidents / Occupational Diseases	0.40 – 4.0	-	0.40 – 4.0
Welfare workers - Special State Fund	1.51	0.38	1.90
TOTAL	16.97 – 20.57	9.18	26.15-29.75
AGRICULTURE REGIME	**Employer Contribution (%)**	**Employee Contribution (%)**	**Total (%)**
Pension	3.50	1.75	5.25
Sickness, Maternity	4.18	2.80	6.98
Accidents / Occupational Diseases	0.04	0.01	0.05
TOTAL	7.72	4.56	12.28
INDEPENDENT REGIME	**Self Employed Contribution (%)**		
Pension	7.00		
Sickness, Maternity	7.26		
Accidents / Occupational Diseases	0.45		
TOTAL	14.71		

Source : Centre des Recherches et des études Sociales (CRES).

Indirect Taxes

Indirect taxes are collected mainly through the VAT, which represents almost 50% of total indirect tax revenues. Other taxes include customs taxes (7.3%) and consumption taxes, including excise taxes (20.3%). VAT is collected using the credit invoice method and the rate varies from 6% for fertilizer, handicrafts, medical activities, canned food, and compound feed for cattle, to 12% for computers, computer services, hospitality, food, equipment not produced locally, and four horsepower cars, to an 18% general rate for products and services not subject to another rate. Exports are zero rated. There are a number of exempt goods, the most important ones being primary foods, nurseries, schooling (primary, secondary, tertiary, vocational), equipment for the

agriculture sector, air transport, and interest from banks. Consumption taxes are also applied to alcoholic beverages, wine and tobacco, personal vehicles, and fuels. Rates are applied as ad valorem rates or as specific taxes, in particular for alcoholic beverages and tobacco.

Other indirect taxes include customs taxes and registration fees, which are applied to the sale of property (rates range from 2-5% of the value), professional training tax (1% of gross payroll for manufacturing industries), and tax on insurance contracts (5% for contracts in maritime and air transport and 10% for others).

In our incidence Analysis, we include VAT, Excise taxes on Alcohol, cigarettes, coffee, tea, Coke, Gas oil, jewelries and some transport services and import duties on dried fruits, Bananas, air condition and perfume.

Corporate Taxes

Corporate income tax is imposed on companies established in Tunisia. The tax rate amounts to 30% of profits except for small businesses and agriculture (10%) and firms dealing with the financial, telecommunications, insurance, oil production, refining, transport, and distribution sectors (35%). It is worth noting that 97% of companies are micro enterprises with between zero and five employees. Most of these enterprises do not pay taxes and are part of the informal sector, which highlights the problem of tax evasion.

1.2 Social Spending

Social spending excluding contributory pensions (our benchmark scenario in the fiscal incidence analysis is presented below) accounts for 10% of GDP. This amount includes direct cash transfers and in-kind spending on education and health. Direct transfers include the cash transfer program PNAFN (Programme National des Familles Nécessiteuses) and scholarship assistance given to students. These two programs amounted to 0.3% of GDP in 2010. Other cash transfers represent 0.5% of GDP combined and include grants distributed to local communities, youth activities, NGOs, and special treasury funds.

In-kind transfers are benefits received from universal free public education and health systems. The main programs are described below, and their budget sizes are given in Table 4. Contributory pensions amount to 8.7% of GDP; thus, if contributory pensions are included, total social spending equals 18.7% of GDP.

Table 4: Tunisia: General Government Expenditure, 2010

	2010 (% of GDP)	Incidence analysis (% of GDP)
Total General Government Expenditure	**29**	
Primary government spending	**23**	
Social spending	*19.9*	*19.39*
Total Cash Transfers	0.83	0.31
PNAFN	0.16	0.16
Scholarships	0.15	0.15
Other cash transfers	0.52	---
Subsidies	2.38	2.38
In-kind Transfers	7.92	7.92
Education	6.32	6.32
Health	1.6	1.6
Housing and Urban	0.02	0.02
Contributory Pensions	8.78	8.78

Source: Ministry of Finance 2011 public finance report.

Direct Transfers

Created in 1986, the PNAFN (Programme National des Familles Nécessiteuses) is the main cash transfer program for monthly cash assistance to low-income households. This national program was designed to mitigate the adverse effects of the IMF-led structural adjustment program, particularly in areas with high numbers of poor families. In 2010, this program covered 520,337 beneficiaries (i.e. 135,000 households) for a total of around TND100 million, compared to 1986 when it covered 250,000 beneficiaries (74,000 households). The monthly amount paid per beneficiary was around TND70 (US$48.80) per household in 2010. Household eligibility for PNAFN is based on social surveys conducted by the Ministry of social affairs and criteria include income revenue not exceeding the poverty threshold, inability to work, absence of head of household, lack of family support, or the presence of disabled and/or chronically ill family members. Although there was no evaluation of the program before the revolution, it has now been recognized as suffering both from poor identification of families in need and from subjective criteria.

Direct social assistance also includes a scholarship program for students in tertiary education. The number of beneficiaries was 98,533 in 2010 (according to a 2010 report from the Ministry of Higher Education) and the total amount of grants is equivalent to TND56 million (US$38.9 million) per year. The head of household's total income cannot exceed the official minimum wage for a student to be eligible to receive the scholarship.

Other cash transfers account for 0.5% of GDP and include grants distributed to local communities, NGOs, nurseries, and cultural activities in the local areas.[6]

Indirect Subsidies

The subsidy system in Tunisia has long been directed at basic consumption products, energy, and transport. These subsidies were equal to 2.38% of the GDP in 2010, lower than what they were in 1988, when subsidies equaled 8.5% of GDP.[7] Since the Tunisian revolution, subsidies have risen again to reach 6.9% of GDP in 2013. In 2010, the composition of subsidies was 1.2% for food, 1% for energy consumption, and 0.3% for transport (World Bank, 2013). Existing studies point to the need for reform of the subsidy system because subsidies are relatively regressive (CRES, AfDB 2013; World Bank 2013). However, these subsidies play a key role in maintaining purchasing power for vulnerable groups who spend almost all their revenue on food consumption.

The composition and the weight of each product or group of products in the subsidized basket witnessed many changes between the 1990s and 2010. While subsidies on primary products and transport were established in the 1990s, the energy subsidy was introduced for the first time in 2003, following increases in energy prices in the international market, in order to promote the competitiveness of the private sector and support the purchasing power of the middle class.

In-kind Transfers

Education

At all levels of education, there are two systems: a public education system and a private education system. Tunisia's public education system includes mandatory basic, secondary, and tertiary education. Mandatory basic education is composed of two cycles: six years of primary school and three years of lower secondary school or a preparatory cycle. Secondary school is four years. Public primary and secondary education is almost free (beneficiaries pay only US$3 per year). Tertiary education is also considered free as students pay about US$25 per year for undergraduate education and US$50 for graduate education. Primary and secondary education spending amounted to 5% of GDP in 2010 and tertiary education accounted for 1.7%.

Since 2002, primary school gross enrollment has been almost universal, averaging 100% for both sexes. The net enrollment rate for individuals aged 6 to16 years has increased by 3.3%, reaching 93.4%. Access to basic and secondary education mainly benefited girls, who since 2005 have made up the majority of enrollment. In terms of net enrollment of youth between 12 and18 years, girls represented 84.5% compared to 75.8% for boys. Greater enrollment, however, has not been accompanied by improvements in the quality of education. Scores from the Program for International Student Assessment (PISA) in 2007 and 2011 show almost no change in rankings, with

[6] Other programs such as the national fund for employment "Fond National de l'Emploi" (FNE), micro credits of "Banque Tunisienne de Solidarité" (BTS) to reduce unemployment and a public agency whose aim is to improve housing for vulnerable families in urban settings are not considered social spending and their incidence was not analyzed here.
[7] At that time, almost half of the subsidy costs were related to hard and soft wheat.

fewer Tunisian students passing the low international baseline for 4th and 8th grade in mathematics and science than the international average.[8]

The enrollment rate in tertiary education for individuals between 20 and 24 years has increased from 25% to 37% between 2000 and 2010, an increase of about 139,876 students. The number of students in 2010 reached 346,876 as the result of a state effort to increase the number of enrolled students with a budget share increase from 3.7% of GDP to 6.1%. The number of enrolled students in 2010 totaled 346,000, a majority (61%) of which were girls. Despite this quantitative surge in the number of students, the quality did improve at the same rate, which is reflected in international rankings (for example, not a single Tunisian university was included in the Shanghai ranking of the 500 best universities in the world). Tunisian students also had limited prospects for finding employment after graduation.

Health

Healthcare in Tunisia is provided through two systems: a contributory national health insurance program for the non-poor and a free or subsidized system for low-income individuals and households. The first of the two low-income programs, the Free Health Care (AMG1) program, targets poor families and provides a five-year assistance program. Decree number 98-1812 establishes the conditions and modalities to allocate the "free healthcare card" to complying beneficiaries for a period of five years. The second program is the Subsidized Health Care (AMG2) program, which grants "health care discount cards" to families based on income and family size. For two-member households, annual family income cannot exceed an amount equal to the guaranteed minimum wage (SMIC). Annual income cannot exceed 1.5 times the minimum wage for families with three to five members, or twice the minimum wage for families with more than five members. Beneficiaries receive a lump-sum payment based on the costs of the service. The healthcare discount card is also issued for a period of five years and needs to be validated every year at a cost of TND10 (US$7).

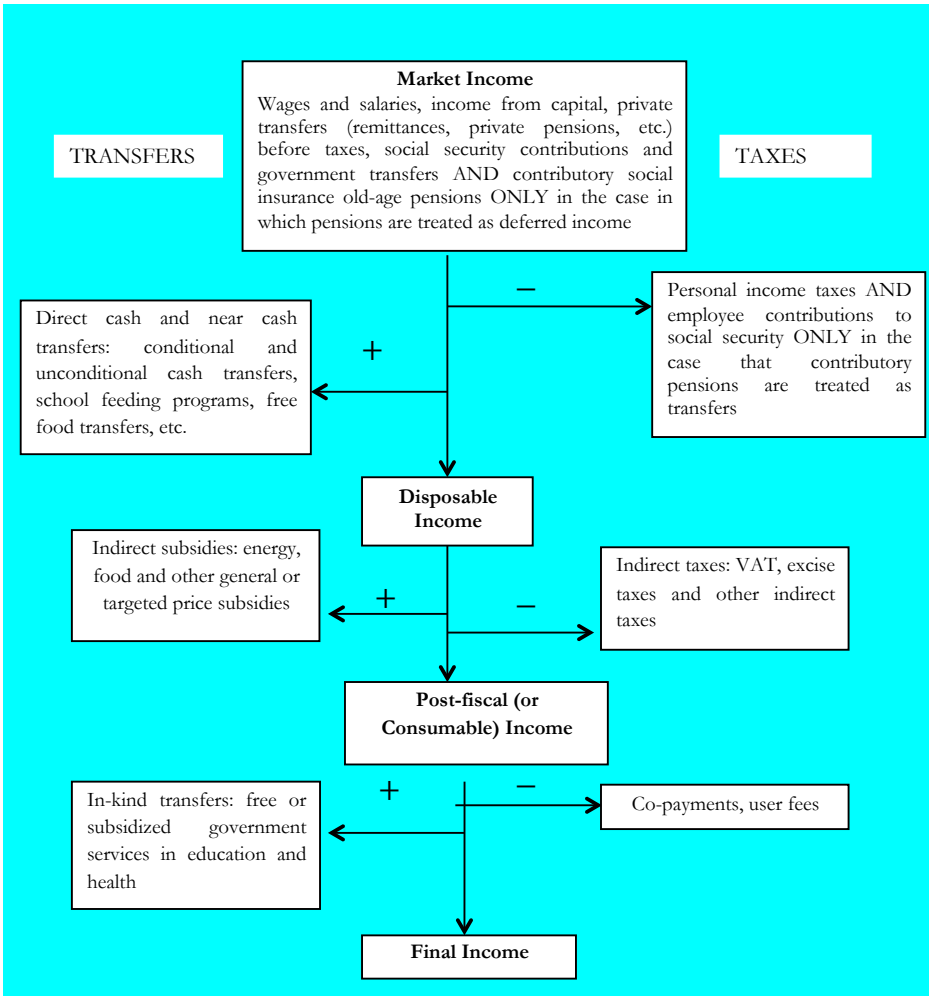
In 2010, the contributory system had 2,202,447 affiliates, and the free and subsidized systems had 197,411 and 448,810, respectively. Public expenditure on healthcare was equivalent to 1.66% of GDP in 2010.

2. Methodology

This study uses the methodology of the Commitment to Equity project (CEQ) as presented in Lustig and Higgins (2013). Essentially, the method consists of allocating taxes and transfers to derive five income concepts, including market income, net market income, disposal income, post-fiscal income, and final income. It then assesses the impact on different concepts of inequality and poverty reduction. The following diagram shows the composition of each income concept:

[8] Although enrollment has been going up, due to demographic transition, the number of students enrolled in primary and lower secondary school has been declining since 2002, from 1.8 million students in 2002 to 1.4 million students in 2012. Secondary education enrollment increased until 2005, but has been falling since, from 508,790 in 2005 to 453,090 in 2012.

Diagram 1- CEQ Income Concepts



Source: Lustig and Higgins (2013).

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

3. Data

This study is data intensive and requires many categories of macro and micro data. We focused specifically on using as much official data as possible to minimize judgment and ad-hoc estimation. In the case of Tunisia, surveys on income are not available and the only existing module on income data is not related to the consumption survey (i.e., surveyed households are not the same). For this reason, we use the consumption survey to estimate the income concepts in the incidence analysis. As recommended by Lustig and Higgins (2013), we assume that consumption is equivalent to disposable income and work backwards to construct market income. The consumption variable includes

expenditures on non-durable goods, consumption of own production and imputed rent for owner-occupied housing. We used the National Survey of Consumption and Household Living Standards of 2010 from the National Institute of Statistics. It includes three components: expenditures, living standards, and food. In our analysis, we only included individuals who simultaneously appear in all three components. The final sample is national in scope and is statistically representative for large cities, medium-sized cities, and small towns/rural areas. This sample has 23,764 individuals and 5,456 households, which represents about half of the households in the full expenditure component.

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 was taken from the DGELF[9] of the Ministry of Finance. Data on direct taxes includes only income tax and was imputed according to the tax rate of each income level. Here we assume that formal workers are defined as those who contribute to social security and do not evade taxes. Information on which individuals contribute to the social security system is reported in the survey and contributions were imputed according to whether the household head is salaried or non-salaried and works in the agricultural or non-agricultural sector. The number of beneficiaries for the PNAFN program[10] (for poor families) and the scholarship program for students was obtained from the surveys. The amount transferred to each individual or household was imputed. For PNAFN, the total benefits came from CRES[11] (Research Center for Social Studies), and for scholarships, the total benefits came from the Ministry of Higher Education.

In-kind transfers were calculated from data included in the budget of the Ministry of Higher Education for tertiary education, the Ministry of Education for primary and secondary education, and the Ministry of Health for health expenditures. Imputed spending amounts include current and capital expenditures for 2010.

4. Main Assumptions

Since the survey used in the incidence analysis reported expenditures but not income, we followed the recommendation in Lustig and Higgins (2013) to obtain the different revenue concepts. Following their recommendation, we started by assuming that consumption equals disposable income and worked backwards to obtain net market income and market income. Given that our consumption survey did not include the imputed rent for owner-occupied housing, we used an estimation from "Measuring poverty inequality and polarization in Tunisia" (INS-AfDB-WB, 2012).[12] In this paper, the imputed rent was estimated through a log linear regression model including variables controlling for the characteristics of the housing and geographic locations. According to these estimations, the housing rent is valued at TND211 (US$147) per month per household in

[9] La Direction Générale des Etudes et de la Législation Fiscales.
[10] Programme national pour les familles nécessiteuses.
[11] Centre de recherche des Etudes Sociales.
[12] This publication is produced by the National Institute of Statistics (INS), the African Development Bank (ADB) and the World Bank (WB).

cities, TND129 (US$90) in small- and medium-sized towns, and TND119 (US$83) in non-communal cities.

Regarding taxation, given that the consumption survey in Tunisia does not include information on personal income tax, the tax burden had to be simulated. We adopted two different tax rates following Tunisian tax law: a regular regime for salaried workers and a flat regime for independent workers. Under both regimes, we assume that taxpayers include only those individuals who reported that they are affiliated with the social security system. In order to have similar proportions, we adjusted the level of direct taxes downward to match their ratio to private consumption in administrative accounts and the household survey. The rate of tax evasion, calculated from the survey as the percentage of workers who do not pay income tax, is found to be 40% and the percentage of tax revenue paid by salaried workers reached 73%. These ratios are comparable to the data reported in national accounts for salaried workers (75% of total PIT) and for the informal sector (40% according to some studies). The simulation of VAT is more straightforward and uses detailed consumption data on consumption products, energy products, transport, and health. The VAT rates vary between 6, 12, and 18%, plus special rates on imported products.

The survey directly reports the number of workers who contribute to each social security regime. The imputed contributions to social security are simulated as a percentage of market income and include pension contributions, health contributions, and death benefits. The contributions include both employee and employer contributions and the rate depends on three factors: whether the worker is in the public sector (CNRPS[13]) or the private sector (CNSS[14]), under the salaried regime or non-salaried regime, and whether the worker is in the agricultural or non-agricultural sector.

Regarding spending, the third part of the survey, called Quality of Life, reports information on cash transfer recipients by inquiring whether the individual received free healthcare and therefore benefited automatically from the PNAFN monthly allocation for poor families. The survey also reports information on recipients of the scholarship program for students from low-income families. The amount of cash transfer for each beneficiary equals the mean of the total annual amount paid divided by the number of beneficiaries in the survey (the number of beneficiaries in the survey is almost equal to the number reported by the ministry).

Direct transfers in this study do not take into account all programs executed by the government because information related to these programs is missing in the survey. The programs that were included in the survey are PNAFN and scholarships allocated to students. The survey, however, only reports the number of recipients and not the amount of the transfers. The total number of beneficiaries in the surveys for the analyzed programs is very similar to that in the administrative data. The amount of the benefits was imputed by taking the values from the administrative accounts for each of the programs. In order to keep the transfers in scale with the income reported in the surveys, they were scaled down so that the ratio of transfers to disposable income in the survey matched that of the national accounts.

[13] Caisse Nationale de retraite et de prévoyance sociale.
[14] Caisse Nationale de sécurité sociale.

To estimate the in-kind benefits derived from government spending on education and health, we impute the average cost of the service from the budget of each ministry. This cost includes administrative and capital expenditures divided by the number of beneficiaries. For education, we separate the cost of primary and secondary education from the average cost of tertiary education since those services are administered by two different ministries with independent budgets. In the second stage, we scale down spending for the different levels of education so the ratio of total spending by level divided by disposable income in the survey is the same as administrative accounts. The survey reports whether the individual attends school (and if so, whether public or private school) and their level of education. The number of beneficiaries is aggregated from the household survey. The annual cost per capita is the ratio between the annual budget and the number of beneficiaries.

The health benefit is equal to Ministry of Health budget data on capital and current expenditures incurred in public hospitals and health centers. By dividing the total budget by the number of beneficiaries from the survey, we determined the average spending per individual. Following survey categorizations, we split health expenditures into normal care spending, expenditures related to maternity care, and hospital spending. Hospital spending represents five times the average cost of normal care or maternity care, which is taken here as a metric unit. Each category of spending is a multiplier of the unit average cost of normal care. The total multiplier coefficient for each individual is a function of the type of care the patient received and the number of times this individual received services. The average cost unit is calculated by dividing the Ministry of Health's budget by the total multiplier coefficient of all patients reported in the survey.

Subsidies in this study are calculated based on information reported on food and non-food consumption. They include subsidies on primary consumption products, energy subsidies, and transport subsidies. The amount of subsidies is adjusted downward to match their ratio to disposable income in administrative accounts and the household survey.

5. Results

5.1 The Impact of Fiscal Policy on Inequality

Under the benchmark scenario in which contributory pensions are treated as deferred income, fiscal policy in Tunisia reduces market income inequality quite significantly: the Gini coefficient for market income per capita declines from 0.43 to a final income Gini of 0.35, a decline of 0.08 Gini points (Table 5). When in-kind transfers to public education and health are excluded, the Gini declines by 0.05 points, which means that two-thirds of inequality reduction is accounted for by taxes, cash transfers and subsidies. Compared to other middle-income countries, the redistributive effect of taxes, cash transfers, subsidies and in-kind transfers (from market to final income) is somewhat lower than for Brazil and Chile but higher than in Mexico and much higher than in Indonesia and Peru (Lustig, 2015a). However, the redistributive effect of taxes, cash transfers, and subsidies is higher than for any of the countries mentioned above and lower only than in South Africa. Thus, fiscal policy is quite redistributive in Tunisia.

Table 5: Tunisia: Inequality and Poverty Indicators for Each Income Concept

	Market income	Disposable income	Post-fiscal income	Final income
Inequality indicators				
Gini coefficient	0.43	0.39	0.38	0.35
Theil index	0.33	0.28	0.25	0.21
90/10	7.78	6.34	5.64	4.74
Headcount poverty indicators (%)				
National poverty line[15]	12.90	13.14	13.00	–
US$1.25 per day at 2005 PPP	0.52	0.34	0.24	–
US$2.50 per day at 2005 PPP	5.03	4.60	3.76	–
US$4.00 per day at 2005 PPP	14.27	14.89	15.00	–

Source: Own estimates based on 2010 consumption survey. CEQ Tunisia Master Workbook September 2015.

The redistributive effect generates a low rate of horizontal inequality in the sense of re-ranking. For example, considering the redistributive effect of market income to post-fiscal income, the extent of horizontal inequity is evaluated at 0.0069, which represents 12% of the vertical equity (Table 6).

Table 6: Taxes, Transfers and Subsidies: Overall Redistributive Effect: Bolivia, Brazil, Indonesia, South Africa, and Tunisia (Decline shown as positive)

	Tunisia (2010)	South Africa (2010)	Bolivia (2009)	Brazil (2009)	Indonesia (2012)
Gini (Market income)	0.43	0.771	0.503	0.579	0.394
Gini (Post-fiscal income)	0.38	0.695	0.503	0.546	0.391
Redistributive Effect		0.077	0.000	0.033	0.003
Vertical Equity (VE)	0.05	0.083	0.003	0.048	0.006
Reranking Effect (RR)	0.006	0.006	0.003	0.014	0.003
RR/VE	0.12	0.075	1.000	0.300	0.451

Source: Tunisian figures are our own calculations based on the 2010 National Survey of Consumption and Household Living Standards; CEQ Tunisia Master Workbook September 2015. Figures for Bolivia: Paz Arauco et al. (2014); Brazil: Higgins and Pereira (2014); Indonesia: Afkar et al. (forthcoming) and South Africa: Inchauste et al. (2015).

[15] TND5.026 per day equivalent to $3.40 in 2005 PPP.

5.2 The Impact of Fiscal Policy on Poverty

As seen in Table 5, the impact of fiscal policy on poverty depends on the poverty line. For the lower poverty lines of US$1.25 and US$2.50 per day (in 2005 PPP), the combined effect of taxes, transfers, and subsidies reduces poverty. However, this is not true when one uses Tunisia's national poverty line (TND5.02 per day, equivalent to US$3.40 in 2005 PPP) or the middle-income international poverty line of US$4 per day (in 2005 PPP). In relation to the national poverty line, the rate of poverty increases from 12.3% to 13% after taking into account all taxes, direct cash transfers, and indirect subsidies. This is due particularly to the high burden of direct taxes and social contributions on relatively low income levels, as shown in Table 7. For people in the bottom forty percent, direct taxes and social contributions amount to roughly 4% of market income, which cannot be compensated by the direct transfers, except for those in the poorest decile. In fact, an unusual result for the case of Tunisia is that individuals become net payers to the fiscal system after direct taxes and transfers from the *second* decile onwards. After considering the impact of indirect taxes net of indirect subsidies (on which Tunisia relies heavily as a redistributive instrument), net payers in cash terms start at higher income levels: the third decile. Nevertheless, in spite of the large amount of subsidies, the headcount ratio based on post-fiscal income is still a bit higher than the one for market income with the national poverty line due to indirect taxes.

Table 7: Fiscal Incidence by Decile

Direct Taxes (%)	Contributions (%)	Direct Taxes and Contributions to SS (%)	Net Market Income (%)	Flagship CCT (%)	Other Direct Transfers (%)	All Direct Transfers (%)	Disposable Income (%)	Indirect Subsidies (%)	Indirect Taxes (%)	Net Indirect Taxes (%)	Post-fiscal income (%)	In-kind Education (%)	In-kind Health (%)	Housing and Urban (%)	Final Income (%)
-0.80	-0.90	-1.70	-1.70	3.30	2.90	6.20	4.50	23.60	-15.30	8.30	12.80	55.60	18.40	0.30	87.20
-1.50	-2.00	-3.60	-3.60	1.40	1.60	3.00	-0.05	17.80	-14.60	3.20	2.70	39.70	6.40	0.20	49.00
-1.70	-2.30	-4.00	-4.00	0.80	1.10	2.00	-2.00	15.80	-15.60	0.20	-1.80	25.10	5.00	0.00	28.40
-3.40	-3.80	-7.20	-7.20	0.60	1.00	1.60	-5.50	13.80	-15.10	-1.30	-6.80	20.60	5.20	0.10	19.10
-4.20	-4.70	-8.90	-8.90	0.50	0.70	1.20	-7.70	12.00	-15.40	-3.40	-11.10	16.50	5.80	0.10	11.30
-5.00	-5.60	-10.60	-10.60	0.40	0.60	0.90	-9.60	10.60	-15.10	-4.50	-14.10	15.40	3.80	0.00	5.10
-6.10	-6.50	-12.60	-12.60	0.30	0.50	0.80	-11.80	10.10	-13.60	-3.50	-15.40	13.50	3.70	0.10	1.80
-7.70	-7.40	-15.20	-15.20	0.20	0.30	0.40	-14.70	8.70	-13.80	-5.10	-19.80	10.20	1.70	0.00	-7.90
-9.20	-7.60	-16.80	-16.80	0.10	0.10	0.30	-16.50	7.40	-13.20	-5.80	-22.40	6.80	2.00	0.00	-13.50
-11.80	-8.40	-20.20	-20.20	0.10	0.10	0.20	-20.00	5.10	-11.80	-6.70	-26.60	3.50	1.00	0.00	-22.20
-7.80	-6.60	-14.50	-14.50	0.30	0.40	0.80	-13.70	9.00	-13.50	-4.40	-18.10	11.70	3.00	0.00	-3.40

Source: Own calculations based on the 2010 National Survey of Consumption and Household Living Standards, CEQ of Tunisia Sept 2015. CEQ Tunisia Master Workbook September 2015.

In sum, the poorest decile is the only decile that does relatively well. The poorest decile receives transfers equivalent to its market income (104%), including in-kind transfers, mainly imputed to education (55%) and indirect subsidies (23%), and to a lesser extent, health (19%) and cash transfers (6.1%). Moreover, this category is supported by a low burden of direct taxes which stands at 2% of its market income, although indirect taxes amount to 15% of market income. Overall, the poorest decile's market income is increased by 87%.

5.3 Who Benefits from Direct Transfers and Subsidies and Who Bears the Burden of Taxes?

In Table 8, we show the concentration shares of each component of fiscal policy analyzed here. Several results stand out. The share of benefits of PNAFN and Other Transfers received by the poorest twenty percent of is 32.5% and 24.7%, respectively. In other words, spending on these direct transfers appears to be pro-poor. However, the richest ten percent also benefit from these transfers: they receive 8.2% and 6.6%, respectively. Most importantly, indirect subsidies, which account for 2.3% of government spending as shown above, are not pro-poor at all. The bottom twenty percent of the population receives 11.7% of indirect subsidies, while the richest ten percent receives 18.3%.

Table 8: Tunisia: Concentration Shares of Taxes and Transfers by Decile

	Direct Taxes (%)	Contributions (%)	Flagship CCT (%)	Other Direct Transfers (Targeted or Not) (%)	Indirect Subsidies (%)	Indirect Taxes (%)	In-kind Education (%)	In-kind Health (%)	Housing and Urban (%)
Deciles 1	0.20	0.30	19.20	13.20	5.20	2.20	9.40	12.20	21.40
2	0.60	1.00	13.30	12.20	6.50	3.50	11.10	7.00	17.60
3	0.90	1.50	10.60	11.10	7.60	5.00	9.30	7.30	6.30
4	2.30	3.10	9.70	12.30	8.30	6.00	9.50	9.50	14.90
5	3.50	4.70	9.50	10.80	8.70	7.50	9.30	12.90	13.20
6	5.10	6.60	8.60	10.40	9.30	8.80	10.40	10.20	5.60
7	7.50	9.40	7.10	11.90	10.70	9.70	11.10	11.80	20.10
8	12.00	13.80	6.60	7.20	11.80	12.50	10.60	7.10	0.00
9	19.70	19.20	7.20	4.40	13.70	16.50	9.80	11.50	0.00
10	48.20	40.40	8.20	6.60	18.30	28.10	9.60	10.40	0.90
Total Population	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Own calculations based on the 2010 National Survey of Consumption and Household Living Standards, CEQ of Tunisia Sept 2015. CEQ Tunisia Master Workbook September 2015.

Spending on education is fairly even across deciles. Our results show that spending on primary and secondary education is progressive in absolute terms: the concentration coefficient is negative (Table 9). This result is expected because enrollment rates are becoming almost universal in Tunisia, including among people in vulnerable categories. Spending on tertiary education is progressive in relative terms only, however, but since its concentration coefficient is much lower than the market income Gini, it is equalizing, if not pro-poor. The number of students in tertiary education from the

poorest decile was low, roughly 0.1% of the total, compared to 0.8% for primary and secondary school.[16]

Health spending is progressive in absolute terms, except for hospitalization. The monetized value of health spending is distributed fairly equally across all deciles, increasing market income for poorest decile by 18% compared to 1% for the richest decile (Table 7).

Table 9: Concentration Coefficients by Specific Category

Program	**Concentration Coefficient with respect to BENCHMARK CASE Market Income**
Conditional Cash Transfer	-0.17
Prim. & Second. Education Spending	-0.08
Subsidy	0.21
Other Scholarships	-0.18
Tertiary Education Spending	0.21
Health Spending	0.04
Hospitalization	0.07
Contributory Pensions	0.56
Direct Cash Transfers	-0.17
Total Contributory Pensions	0.56
Total Education Spending	-0.01
Total Health Spending	0.04
Total CEQ Social Spending	**0.00**
Total CEQ Social Spending plus Contrib Pensions	**0.20**

Source: Own calculations based on the 2010 National Survey of Consumption and Household Living Standards, CEQ of Tunisia Sept 2015. CEQ Tunisia Master Workbook September 2015.

The observed distribution of benefits from direct transfers and subsidies indicates that there is room for improving the situation of the poorest and most vulnerable groups (those with incomes from US$4 to US$10, 2005 PPP per day) through better targeting. Furthermore, once the burden of taxation is taken into account, the combination of direct and indirect taxes puts a significant burden on the vulnerable, who represent 37% of the population and are net payers into the fiscal system. On average, this income group pays 8% of their market income when only the cash components of fiscal policy are taken into account (i.e., without considering the imputed value of in-kind transfers in education and health). This group receives 34.6% of total subsidies and 46.7% of total direct

[16] The figure 0.1% represents the proportion of pupils from the first decile as a percentage of the total number of pupils in primary and secondary; 0.8% represents the number of students from the first decile as a percentage of the total number of students in the survey.

transfers, however. Adding the in-kind benefits, they are net gainers: final income is on average 17.3% higher than market income for the vulnerable.

6. Conclusion

This paper estimates the incidence of the government's taxation and spending in Tunisia. Fiscal analysis has been applied to three subcomponents of the 2010 consumption survey: spending, food, and quality of life. On the tax side, the analysis includes direct tax (only for personal income) and indirect tax (VAT on consumption goods and services). On the expenditure side, the paper has analyzed the incidence of 43% of general government expenditures, including direct cash transfers (PNAFN and scholarships), contributory pensions, subsidies, and health and education spending.

Taking into account net cash transfers, only the bottom two deciles receive more in transfers than they pay in (direct and indirect) taxes. When basic services are included, this proportion increases to the bottom seven deciles while the three richest top deciles bear the brunt of redistribution of income. In fact, this redistribution goes from the richest to the poorest, with 43% of the top two deciles joining a lower income class and 40% of the three bottom deciles joining a higher income class. Ninety-five percent of the vulnerable, with an income ranging between US$4 and US$10 a day, maintain the same class. When all transfers and taxes are taken into account, the distance between the average per capita income between the top decile and the poorest decile decreases from 18 to 6 times.

The Gini coefficient falls from 0.43 (before taxes and transfers) to 0.35 (after taxes and transfers), mainly due to taxes (30% of the decrease) and in-kind services (30% of the decrease). Most of the equalization is produced by personal income taxes and contributions to social security. Direct taxes are progressive and the VAT is regressive. Cash transfers contribute little to redistribution. While direct transfers are strongly progressive and equalizing, their share in the budget remains very limited (only 0.2%). Subsidies are equalizing, though much less so than cash transfers as benefits to the non-poor are higher than their population share (i.e., subsidies are progressive but only in relative terms). Primary and secondary education are strongly redistributive and equalizing while tertiary education is progressive only in relative terms since the poor still have limited access. Health spending is progressive and equalizing for primary healthcare while hospitalization services are progressive in relative terms.

In light of the areas of Tunisian fiscal policy in need of improvement, we make the following policy recommendations:

1. Reinforce direct transfer programs to target the segments of the population that do not benefit from the basic services of education and health, especially programs related to tertiary education (e.g. expand the scholarship program for the poor) and hospitalization.
2. Strengthen and improve the existing PNAFN cash transfer program through revision of the allocation criteria.
3. Reduce energy subsidies and replace them with more targeted programs for the poor. The less vulnerable groups could receive a decrease in tax burden against the removal of the subsidy.

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WHAT IS CEQ?

Led by Nora Lustig since 2008, the Commitment to Equity (CEQ) project is an initiative of the Center for Inter-American Policy and Research (CIPR) and the Department of Economics, Tulane University, the Center for Global Development and the Inter-American Dialogue. The project's main output is the CEQ Assessment, a methodological framework designed to analyze the impact of taxation and social spending on inequality and poverty in individual countries. The main objective of the CEQ is to provide a roadmap for governments, multilateral institutions, and nongovernmental organizations in their efforts to build more equitable societies.

Since its inception, the CEQ has received financial support from Tulane University's Center for Inter-American Policy and Research, the School of Liberal Arts and the Stone Center for Latin American Studies as well as the Bill & Melinda Gates Foundation, the Inter-American Development Bank (IADB), the World Bank, the United Nations Development Programme's Regional Bureau for Latin America and the Caribbean (UNDP/RBLAC), the Development Bank of Latin America (CAF), the African Development Bank, the International Fund for Agricultural Development (IFAD), the Canadian International Development Agency (CIDA), the Norwegian Ministry of Foreign Affairs, and the General Electric Foundation.
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COMMITMENT TO EQUITY

The CEQ logo is a stylized graphical representation of a Lorenz curve for a fairly unequal distribution of income (the bottom part of the C, below the diagonal) and a concentration curve for a very progressive transfer (the top part of the C).