Fiscal Policy Incidence and Poverty Reduction: Evidence from Tunisia

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Introduction

With a Gini coefficient of 39.7, Tunisia is one of the most equal countries in the MENA region. It has long been cited as a success story supported by a sustained growth between 4-5 percent since 1990. In 2010, population was estimated at around 10.5 million and GNI per capita in current dollars at $4,160 in current dollar and $9,700 in PPP constant 2011 international dollar.. The World Bank classifies Tunisia among the upper middle income group. With primary spending at around 29.1percent of GDP in 2010, Tunisia's government size is medium when compared with other developing countries.

Since 2000, poverty (measured with the official poverty line of $4,3/day in PPP 2011) has decreased from 32.4 percent to 15.5 percent in 2010 according to the national poverty line. Rural poverty is almost twice as large as urban poverty. The poorest regions remain the West central and the West north of Tunisia followed by the south sub-regions highlighting the significance of regional disparities and inequality compared to the littoral and the north of Tunisia (AfDB-INS October 2012).

While the decline in poverty has been driven by economic growth, it is also due to increased government transfers and subsidies. In order to reduce poverty, Tunisia has an array of programs which started following the IMF-led structural adjustment program (SAP) in 1986. The current Tunisia's safety net system includes programs that were set up then. The most famous program is PNAFN (Programme national d'aide aux familles nécessiteuses), a cash transfer program covering a total of 520,337 beneficiaries in 2010 (compared to around 250,000 beneficiaries in 1986). Additional program includes a free health care "Aide médicale gratuite" (AMG) with full free health care (AMG1) which covered 183,012 in 2010. The "Aide médicale gratuite" also includes a partial free health care program which we will call AMG2 and which covered 505,440 households in 2010. Other programs include a national fund for employment "Fond National de l'Emploi" (FNE), micro credits of "Banque Tunisienne de Solidarité" (BTS) to reduce

[1] This report is part of a collaborative effort between the African Development Bank and the Commitment to Equity (CEQ) Institute. Based at Tulane University, the CEQ Institute hosts the Commitment to Equity initiative. Directed by Nora Lustig since 2008, the CEQ is a joint effort of CIPR and the Department of Economics at Tulane University, the Center for Global Development and the Inter-American Dialogue. The study was carried out under the guidance of CEQ advisors Jean-Yves Duclos and Nora Lustig. The authors are very grateful to Mustapha Nabli for his invaluable comments and insights, and Yassine Jmal from National Institute of statistics, Nidhal Bechikh from CRES and Imed Zair from DGELF for their outstanding help with statistical information. The authors also wish to thank Ali Enami and Sean Higgins for their excellent help in the preparation of the CEQ Assessment for Tunisia.

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unemployment and a public agency whose aim is to improve housing for vulnerable families in urban settings.

In 2011, Tunisia went through what has been called part of the "Arab Spring revolution." The country went through a fundamental political change which entailed a transition to democratization of its structures. This deep political reform coincided with the period of the Great Recession and its aftershocks. The combination of having to cope with the more adverse external environment and respond to heightened social demands, generated fiscal imbalances. The fiscal deficit rose from 1 percent of GDP in 2010 to 6.8 in 2013. Given the reduced fiscal space and the heightened demand growth, employment generation and a more equitable society, fiscal policy is at the heart of the reform agenda. Until now the government has had some difficulty to propose fiscal reforms and convince different stakeholders in Tunisia about the efficiency of these reforms to reduce inequality and poverty between the different regions and different population categories.

Any proposed fiscal reforms will be judged not only in terms of efficiency but their equity implications. In that context, it is essential to know who benefits and who bears the burden of the current fiscal compact. Existing studies have looked at the equity implications of specific fiscal interventions. One study, for example, just looked at cash transfers and subsidies (AfDB-INS-Cres, June 2013). This study found that cash transfers under PNAFN and "Aide médicale gratuite" (AMG2) reduce poverty from 16.5 percent to 15.5 percent and that 48.8 percent of poor are not included in these two programs. It also found that subsidies are not well targeted with the poor receiving only from 9.2 percent of the total allocated budget. The same study looked at the incidence of food subsidies only and found that only 12 percent of food subsidies benefit to poor (Poor represents 15.5 percent of the total population according to national poverty line). Finally, the World Bank with a study on energy subsidies found that 13 percent of energy subsidies are allocated to the first quintile while the last richest quintile receives 29 percent (World Bank, November 2013).

There are no studies, however, that analyze the incidence of fiscal policy contemplating both the spending and revenue sides. The purpose of our paper is to fill this gap. In particular, this paper seeks to address the following questions: (i) How equalizing and poverty reducing is the current tax and transfer system? (ii) Who benefits the most from public services (e.g., education, health, etc.)? To do this analysis, we apply the Commitment to Equity project's methodology that is described in detail in Lustig and Higgins (2013). In addition to being a state-of-the-art methodological framework, using this approach will allow us to compare the results for Tunisia with those of other middle income countries. The analysis uses the National Survey of Consumption and Household Living Standards for 2010 and the results refer to the Commitment to Equity Assessment Master Workbook of September 9, 2015, which is available upon request.

Our results show that Tunisia succeeded to make its public spending redistributive making stable the size of its middle class and the enrichment of the low income classes at the expense of high income classes. Compared to CEQ results from South American countries, Tunisia has a relative high burden of taxes and social contributions supported mainly by salaried, direct transfers programs are well targeted but have relatively small share in the budget. The level of poverty and inequality remain still high but not as Latin American countries. Redistribution is made mainly

through education and health but with small efficiency. However cash transfer programs are the most efficient but their share in the budget is small. Tertiary education, hospital spending and subsidies are not pro poor spending and need urgent reform. Direct taxes are equalizing and progressive while VAT is a bit regressive.

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 methodological clarifications. Section 4 includes the main assumptions we kept in this exercise. Section 4 presents the main results of our incidence analysis. The main conclusions are summarized in section 5.

1. Taxation and Social Spending in Tunisia:

After the revolution in 2011, the tax and transfer systems in Tunisia have not seen any structural changes through creation or suppression of new programs. This is due mainly to that political transition took almost five years and then any economic reforms has been delayed until the establishment of durable institutions. Nonetheless, in the meanwhile governments have responded to increased pressure on social demands by ad-hoc and transient cash transfer programs through distribution of exceptional bonus to local communities, more subsidies or massive recruitment within the administration (the burden of salaries has increased by 13 percent in 2011 and 10 percent in 2015).

With regards to fiscal spending components, the weight of in-kind transfers in the budget remains the same while subsidies has increased by almost 300 percent between 2010 and 2013 (due particularly to an increase of energy subsidies by five times) and cash transfers increased by 50 percent during the same period. In the revenue side, fiscal and non-fiscal revenues have maintained the same proportions given that no tax reform has been implemented.

1.1 Taxation:

The Tunisian Tax system is composed from two main categories namely direct taxes and indirect taxes. Direct taxes include 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 is about 20 percent in 2010 which is comparable to other middle income countries. Indirect tax is the main source of tax revenue compared to direct tax (almost 2/3 of total tax revenue) and the part of consumption tax is the same as VAT. However 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

	2010 (% of GDP)	Incidence analysis (% of GDP)
Total General Government Revenue	**24.3**	**10.29**
Tax Revenue	***20.9***	***10.29***
Direct taxes	*8.3*	*4.29*
Personal income tax	4.29	4.29
Corporate income tax	4.01	…
Indirect taxes	*12.6*	*6.1*
VAT	6.1	6.1
Customs taxes	1	…
Consumption duties	2.6	…
Others indirect taxes	2.9	…
Non-tax revenue*	3.1	…

Sources: 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.

Personal Income Tax

Personal Income Tax (PIT) is levied on different sources of income like labor, pension, interest and dividends. The tax rates imposed starts from 15 percent between 1500 and 5000 TND ($1044-$3480[3]) and rises to 35 percent for annual net income above 50,000 TND ($34800) as indicated in the following table. The personal income tax is paid mainly via source withholding tax on wages, and amounts greater than 1000 TND ($696) paid by the state and public authorities or greater than 5000 TND paid by corporations and individuals under the real Regime. Several deductions are permitted including employees earning the minimum wage, 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. The rates are shown on Table 2.

Table 2: Rate of individual income tax

Taxable income brackets (in Tunisian Dinar – TND, annual)	**In American dollars**	**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: Website of the ministry of finance: *http://www.finances.gov.tn/index.php?option=com_content&view=article&id=75&Itemid=258&lang=fr*

[3] The values in dollars were calculated using the market exchange rate for 2010.

Social Security Contributions

The Tunisian social security system is based only on a contributory system and is totally administrated by the government. Compulsory social security covers benefits relating to pensions, family benefits, coverage of risk, illness and accidents at work and occupational diseases. All benefits were provided either by National Social Security Fund CNSS (Caisse Nationale de Sécurité Sociale) or National pension and Social Security Fund CNRPS (Caisse Nationale de Retraite et de Prévoyance Sociale); 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 management of the health insurance component was assigned to the National Health Insurance Fund (CNAM). The rate varies on whether the worker belongs to an agriculture activity or non-agriculture activity. Self-employed workers are required to join the National Social Security Fund. They may voluntarily insure against risks of working accidents and illnesses. The contribution rate is not the same across all regimes and they do not pay for all the same social protection: for example, non-farm employees do not receive family allowances. Agricultural workers, independent operators and self-employed in agriculture benefit from different rates.

The main benefit for contributors is a retirement pension. The eligibility requirement for receiving a pension is to be at least 60 years of age[4] and contributed at least during 120 months. Below 120 months, the pension is a proportion of the base salary, which increases with the contributor's age and the number of years that the insured has made contributions. The pension is based on wages subject to contributions that insured has collected over the last 10 years before the age of retirement. For 120 months of contributions, the pension rate is 40 percent; beyond this level the pension is increased by 0.5 percent for each 3 months of additional contributions and may not exceed 80 percent of salary after 30 years of work. The resulting rate is multiplied by the average monthly salary for the last 10 years, updated and capped at 6 times the minimum wage. The annual minimum old age pension cannot be less than two thirds of the minimum wage corresponding to 2,400 hours. The maximum amount of the old age pension cannot exceed 80 percent of the average monthly wage of the insured capped at 6 minimum wages. The proportional pension cannot be less than half the minimum wage.

The description of social security contributions is summarized on 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	bandween 0,4 and 4 %	-	bandween 0,4 and 4 %
Welfare workers - Special State Fund	1,51%	0,38%	1,90%

[4] This age limit applies to both females and males and falls to 55 years for workers who perform heavy work.

TOTAL	bandween 16,97 and 20,57 %	9,18%	bandween 26,15 and 29,75 %
AGRICULTURE REGIME	**employee 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	**employee 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 (almost 50 percent), customs taxes (7.3 percent), and consumption taxes including excise taxes (20.3 percent). VAT is collected using the credit invoice method and the rate varies from 6 percent for fertilizer, handicrafts, medical activities, canned food, and compound feed for cattle; 12 percent for computers, computer services, hospitality, food, equipment not produced locally, and four horsepower cars; and 18 percent as the general rate applicable to products and services not subject to another rate. Exports are zero rated. There are a number of exempt goods of which the most important ones are: primary foods, nurseries, primary, secondary, tertiary and vocational schools, equipment destined to the agriculture sector, air transport and banking interest. 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 also include customs taxes and registration fees which are applied to sale of property (rate ranging between 2-5 percent of the value), professional training tax (1 percent of gross payroll for manufacturing industries) and tax on insurance contracts (5 percent for contracts in maritime and air transport and 10 percent for others)

Corporate taxes

Corporate income tax is imposed to companies established in Tunisia, for profit public companies and foreign companies with Tunisian source income. The tax rate amounts to 30 percent of profits net of professional expenses and charges except for small businesses and agriculture (10 percent) and firms dealing financial, telecommunications, insurance, oil production, refining, transport, and distribution sectors (35 percent). It is worth noting that 97

percent of companies are micro enterprises having between (0-5) employees. Most of these enterprises do not pay taxes and deal with 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 presented below) accounts for 10 percent of GDP. This amount includes direct cash transfers and in-kind spending on education and health. Direct transfers include cash transfers program PNAFN (Programme National des Familles Nécessiteuses) and scholarship assistance given to students. These two programs amounted to 0.3 percent of GDP in 2010. Other cash transfers represent 1 percent of GDP combined and include grants distributed to local communities (one third), youth activities and NGO-support (one third) and the remaining one third is distributed to companies to promote exports (50 percent) and special treasury funds (50 percent).

In-kind transfers are benefits received from the 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 percent of GDP; thus, if contributory pensions are included, total social spending equals 18.7 percent 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	*18.7*	*17.7*
Total Cash Transfers	1.3	0.3
PNAFN	0.15	0.15
Sholarships	0.15	0.15
Other cash transfers	1	---
Subsidies	2.4	2.4
In-kind transfers	6.2	6.2
Education	4.6	4.6
Health	1.6	1.6
Housing and urban	0.03	0.03
Contributory pensions	8.7	8.7

Source: Ministry of Finance, public finance report 2011.

Direct Transfers

Created in 1986, PNAFN (Programme National des Familles Nécessiteuses) is the main cash transfer program allowing for monthly cash assistance to low income households. This national program was designed to cover the whole territory in order to mitigate the adverse effects of the IMF-led structural adjustment program in particular where the number of poor families is

important. In 2010, this program covered 520,337 beneficiaries (i.e,, 135,000 households) for a total of TND 100 million compared to 250000 beneficiaries (74000 households) in 1986. The monthly amount paid to beneficiary is around TND 75 ($52.2) in 2010 per individual . Eligibility of households for PNAFN is based on social surveys conducted by the authorities. Eligibility criterions include the revenue not exceeding the poverty threshold; inability to work; bad standard life; absence of family head ; lack of family support; the presence of disabled and / or chronically ill persons among the members of the family. Although an absence of any evaluation of this program before the revolution, it is recognized after the revolution that this program suffers from identification of poor families problem as well as subjective criterions.

Direct social assistance includes also a scholarship program for tertiary education students. The number of beneficiaries' accounts to 98,533 in 2010 (report of ministry of high education 2010) and the total amount of grants is equivalent to TND 56 million ($38.9 million) per year. The revenue of the head of household is the main criterion that makes students eligible to receive the scholarship under the condition that this income does not exceed the official minimum wage.

Other cash transfers accounts to 1 percent of GDP and include grants distributed to local communities, NGOs, Nurseries and cultural activities in the local areas (50 percent) ; and special treasury funds and funds to promote exports of firms (50 percent).

Indirect Subsidies

The subsidy system in Tunisia has long been directed to basic consumption products, energy and transport. These subsidies were equal to 2.4 percent of GDP in 2010, lower than what they used to be: in 1988, subsidies[5] equaled 8.5 percent of GDP. Since the revolution, subsidies rose again to reach 6.9 percent of GDP in 2013. In 2010, the composition of subsidies were 1.2 percent for food, 1 percent for energy consumption and 0.3 percent for transport (World Bank, 2013). According to existing studies, there is a need to reform the subsidy system because subsidies are relatively regressive. (CRES, AfDB 2013; World Bank 2013) However, these subsidies play a key role to maintain purchasing power for vulnerable groups who spend almost their total revenue for 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 the increase of energy prices in the international market in order to promote the competitiveness of the private sector and support the purchasing power of the consumers.

In-kind Transfers

Education

At all levels of education there are two systems: a public education system and a private system. Tunisia's public education system includes mandatory basic education, secondary and tertiary. Mandatory basic education is composed of two cycles: 6 years of primary school and 3 years of lower secondary school or preparatory cycle. Secondary school is 4 years. Public primary and

[5] At that time almost half of the subsidy costs are related to hard and soft wheat.

secondary education is almost free (beneficiaries pay only $3 per year . Tertiary education is considered also free as students pay about $25 per year for undergrad and $50 for graduate cycle. . Primary and secondary education spending amounts to 5 percent of GDP in 2010 and tertiary education 1.7 percent.

Since 2002, primary school gross enrollment is almost universal, averaging 100 percent for both sexes. The net enrollment rate for individuals aged 6-16 years has increased by 3.3 points of percentage, reaching 93.4 percent. Access to basic and secondary education mainly benefited girls who have become, since 2005, the majority. In terms of net enrollment aged between 12-18 years, girls recorded 84.5 percent compared to 75.8 percent for boys. Greater coverage has not been accompanied by improvements in the quality of education. Program for International Students Assessment (PISA) scores in 2007 and 2011 show practically the same low rankings with fewer Tunisian students passing the low international baseline for 4th and 8th grade in mathematics and science than the international average.[6]

The enrollment rate in tertiary education for individuals aged between 20 and 24 years has increased from 25 percent to 37 percent between 2000 and 2010, an increase of about 139,876 students . The number of students in 2010 reached 346,876 students. This was the consequence of an effort made by the state to increase the number of enrolled students supported by a budget share increase from 3.7 percent of GDP to 6.1 percent of GDP. The total number of enrolled students in 2010 amounts to 346 thousands with a majority of 61 percent of girls. Despite of this quantitative surge in number of students, the quality did not display the same tendency which is reflected by the international rankings dealing with quality of higher education(the list of the 500 best universities in Shanghai ranking did not show any university from Tunisia) as well as limited prospects for finding employment for graduates.

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 Free Health Care (AMG1) program which consists of targeting poor families with a five-year based assistance program. The Decree number 98-1812 establishes conditions and modalities to allocate the "free health care card" to complying beneficiaries for a period of 5 years. The other regime 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 the minimum wage for families with 3 to 5 members 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 . The health care discount card is also issued for a period of 5 years. The card needs to be validated every year and the validation costs $10 TND ($7 dollars).

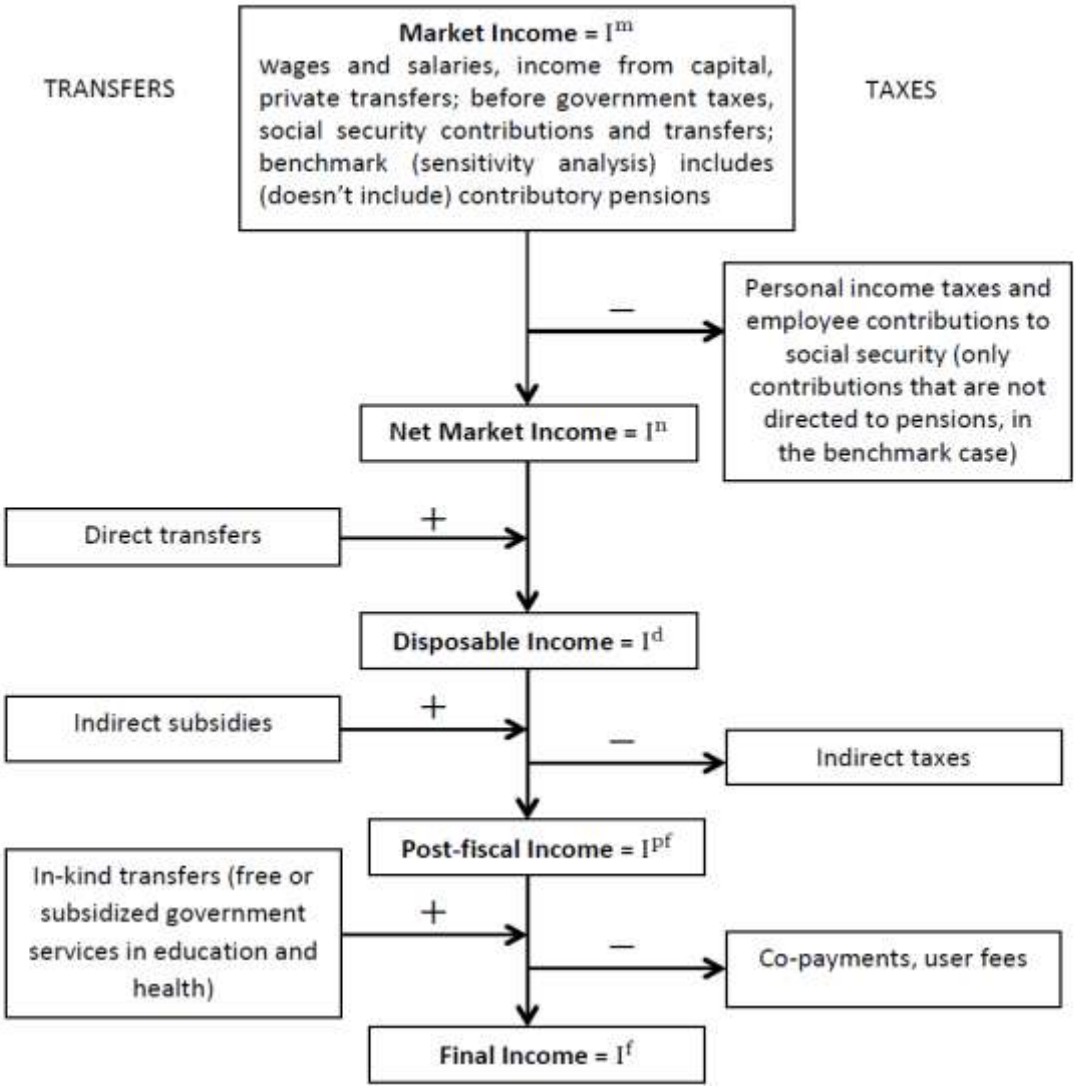
[6] Although enrollment has been going up, due to the demographic transition the number of students enrolled in primary and lower secondary school has been declining since 2002: from 1.8 million students in 2002 to 1.4 million students in 2012. Secondary education enrollment increased until 2005, but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

In 2010, the number of affiliates in the contributory system were 2202447 and in the free and subsidized system 197411 and 448810, respectively. Public expenditure on health care is equivalent to 1.66 percent of GDP for 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. The five basic concepts include: market income, net market income, the disposal income, the post fiscal income and the final income. Then it assesses the impact on different concepts of inequality and poverty reduction. The following diagram shows the composition of each income concept :

Diagram 1 – Definitions of Income Concepts: A Stylized Presentation



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 (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.

3. Data

This study is data intensive and requires many categories of macro and micro data. An effort was provided to use as maximum as possible official data in order to minimize judgment and ad-hoc estimation. In the case of Tunisia, surveys on income are not available and the only existing file on income data is completely disconnected from the consumption survey. For this reason, we use the consumption survey to estimate income by including expenditures on non-durables goods plus auto consumption plus the imputed rent for owner's occupied housing. We used the National Survey of Consumption and Household Living Standards of 2010 from the National Institute of Statistics which includes three components: expenditures, living standards and food. In our analysis, we only included individuals who simultaneously appear in the three components. The final sample is of national coverage and statistically representative, including large cities, medium-sized and small towns and 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 were taken from the DGELF[7] of the Ministry of Finance. Data on direct taxes includes only income tax and were imputed according to the tax rate of each level of income. Here we assume that formal workers defined as those who contribute to the social security do not evade taxes. Information on which individual contribute to the social security system is reported in the survey and contributions were imputed depending whether the household head is a salaried or non-salaried and works in agriculture or in the non-agricultural sector. The number of beneficiaries for the PNAFN program[8] (for poor families) and the scholarship program for students were obtained from the surveys. The amount transferred to each individual or household was imputed. For PNAFN, the total benefits came from CRES[9] (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 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 amount include current and capital expenditures for 2010.

4. Main Assumptions

Since the survey used in the incidence analysis reports expenditures but not income, in order to obtain the different revenue concepts, we followed the recommendation in Lustig and Higgins (op. cit.). In other words, we start by assuming that consumption equals disposable income and work backwards to obtain net market income and market income. Given that our consumption

[7] La Direction Générale des Etudes et de la Législation Fiscales.
[8] Programme national pour les familles nécessiteuses.
[9] Centre de recherche des Etudes Sociales

survey did not include the imputed rent for owner's occupied housing, we used an estimation of the latter by INS-ADB-WB (2012).[10] "Measuring poverty inequality and polarization in Tunisia". 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 evaluated at TND 211 ($147) in cities, TND 129 ($90) in small and medium-sized towns and TND 119 ($83) in non-communal cities.

On taxation, given that the consumption survey in Tunisia does not include information on personal income tax then the tax burden has to be simulated. As stipulated by the Tunisia tax law, we adopted two different tax rates depending on whether the individual is salaried (regular regime) or independent (flat regime). Under both regimes, we assume that tax payers include individuals who reported in the survey they are regularly affiliated in 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 admin 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 percent and the percentage of tax revenue paid by salaried workers reached the level of 73 percent. These ratios are comparable to the data reported from national accounts for salaried (75 percent of total PIT) and for the informal sector (40 percent according to some studies). However, the simulation of VAT is straightforward by using detailed consumption data on consumption products, energy products, transport and health. The VAT rates vary between 6, 12 and 18 percent plus special rates on imported products.

The number of affiliates in social security is directly reported in the survey which inquires whether the worker contributes to SS and according to which regime. The imputed contributions to social security are simulated as a percentage of market income and includes pension contributions, health contributions and death benefit. It includes both employee and employers contributions and the rate depend on whether the worker is the public sector (CNRPS[11]) or the private sector (CNSS[12]) and under the salaried regime or non-salaried regime and finally agriculture or non-agriculture sector.

On spending, the third part of the survey called quality of life reports information on cash transfer recipients by inquiring whether the individual received a free health care and therefore benefit automatically from PNAFN monthly allocation for poor families. The survey reports also information on recipients of the scholarship program for students belonging to low income families. The amount of cash transfer allocation for each beneficiary equals to 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 exercise do not take in account of all programs executed by the government because information related to these programs are missing in the survey. The programs that were included in the survey are PNAFN and scholarships allocated to students. The survey, however, does not report the amount of transfers but only those who received them.

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[10] 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).
[11] Caisse Nationale de retraite et de prévoyance sociale.
[12] Caisse Nationale de sécurité sociale.

The total number of beneficiaries in the surveys for the analyzed programs is very similar to those reported by administrative data. The size of the benefits were imputed by taking the values from the administrative accounts for each of the programs. In order to keep the transfers in scale with respect to the income reported in the surveys, they were scaled down so that the ratio of transfers to disposable income in the survey matches that of national accounts.

The approach followed to estimate in-kind benefits derived from government spending on education and health is to impute the average cost of the service taken from the budget of each ministry. This cost includes administrative and capital expenditures divided by the number of beneficiaries. For education we separate cost on primary and secondary education from average cost on tertiary education as we have two independent ministries with independent budgets. In a 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 the level of education. It includes also if the individual attends public or private school. 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.

Health benefit is equal to capital and current expenditures incurred in public hospitals and health centers obtained from the data included in the budget of the ministry of health. By dividing the total budget by the number of beneficiaries from the survey, the average spending per individual will be determined. As indicated in the survey, 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 taken here as 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 function of type of care the patient perceived and the number of times this individual received care services. The average cost unit is calculated by dividing the budget of ministry of health divided by the total multiplier coefficient of all patients reported in the survey.

Subsidies in this exercise 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.

1. RESULTS

As stated in Lustig (forthcoming),

> "From theory one knows that a tax or expenditure instrument could be progressive but not have large impacts on equity if it is too small.[13] One also knows that a tax could be regressive but still equalizing if analyzed in conjunction with other taxes and, especially, transfers.[14] Furthermore, taxes and transfers could be equalizing and yet poverty increasing because inequality depends on relative incomes while poverty is affected by absolute income levels: that is, a tax system could be

[13] See Duclos and Tabi (1996).

[14] As soon as there is more than one intervention, assessing the progressivity of fiscal interventions individually is not sufficient to determine whether they are equalizing or not (see, for example, Lambert (2002) pp. 277-278).

progressive and equalizing but hurt the poor if the level of taxes paid by them exceeds the transfers received by the poor. Finally, taxes and transfers could introduce horizontal inequity. One typical form of horizontal inequity occurs when the ranking of individuals (i.e., the ordering of individuals in the before taxes and transfers income distribution) gets changed (some individuals swap positions) by the fiscal system.[15]"

5.1 The Impact of Fiscal Policy on Inequality

Under the scenario in which contributory pensions are treated as deferred income (benchmark scenario), 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 8 Gini points (Table 5). When in-kind transfers in public education and health are excluded, the Gini declines by 5 points, which means that more than one third of inequality reduction is accounted for by the monetized value of in-kind transfers in education and health. 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 Colombia, Indonesia and Peru.[16] However, the redistributive effect of taxes, cash transfers and subsidies is higher than any of the countries just mentioned and lower only than for South Africa. Thus, fiscal policy is quite redistributive in Tunisia since the lower redistributive effect when transfers in kind are incorporated may have resulted from the fact that wages of workers in the education and health sector are lower in Tunisia than in Brazil and Chile.

Table 5: Tunisia: Inequality and poverty indicators for each income concept

	Market income (1)	Disposable income (3)	Post-fiscal income (4)	Final income (5)
		(3)=(2)+Cash transfers	*(4)= (3)--Indirect taxes*	*5=4 + In-kind transfers*
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[17]	12.9%	13.14%	13%	–
US $1.25 per day at 2005 PPP	0.52%	0.34%	0.24%	–

[15] For details on these see the chapter by Lustig, Nora, Rodrigo Aranda and Ali Enami, in Lustig, forthcoming.
[16] Lustig, Nora. 2015. *Inequality and Fiscal Redistribution in Middle Income Countries: Brazil, Chile, Colombia, Indonesia, Mexico, Peru and South Africa. Evidence from the Commitment to Equity Project (CEQ).* CEQ Working Paper No. 31, Center for Inter-American Policy and Research and Department of Economics, Tulane University and Inter-American Dialogue.
[17] TND 5.026 per day equivalent to $3.4 in 2005 ppp

US $2.50 PPP per day at 2005 PPP	5.03%	4.6%	3.76%	–
US $4.0 PPP per day at 2005 PPP	14.27%	14.89%	15%	–

Source: own estimates based on consumption survey 2010. 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 for market income to post fiscal income the extent of horizontal inequity is evaluated at 0.0069 which represents 12 percent of the Vertical equity (Table 6).

Table 6. Taxes, Transfer 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[1]		0.077	0.000	0.033	0.003
Vertical Equity (VE)[2]	0.05	0.083	0.003	0.048	0.006
Reranking Effect (RR)[3]	0.006	0.006	0.003	0.014	0.003
RR/VE	0.12	0.075	1.000	0.300	0.451

Source: Tunisia: Own calculations based on National Survey of budget consumption and household living standards of 2010; other countries see Inchauste et al. (2015).

5.2 The Impact of Fiscal Policy on Poverty

As seen on Table 5 above, 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 (TND 5.026 per day equivalent to $3.4 in 2005 ppp) or the middle-income international poverty line of US$4 per day (in 2005 ppp). For the national poverty line, the rate of poverty has increased from 12.3 percent to 13 percent after taking in account all taxes and direct cash transfers and indirect subsidies. This is due particularly to the high burden of direct taxes and social contributions at relatively low income levels as shown in Table 7, which amount to roughly 4 percent of market income for people in the bottom forty percent, which cannot be compensated by the direct transfers, except for 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. Given the large reliance on indirect subsidies as a redistributive instrument, the net payers after indirect taxes net of subsidies start at higher income levels: the third decile. Nevertheless, in spite of the large amount of subsidies, due indirect taxes, the headcount ratio for post-fiscal income is still a bit higher than for market income with the national poverty line.

Table 7 - Fiscal Incidence by Decile

Market Income Deciles	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
1	-0.8%	-0.9%	-1.7%	-1.7%	3.3%	2.9%	6.2%	4.5%	23.6%	-15.3%	8.3%	12.8%	55.6%	18.4%	0.3%	87.2%
2	-1.5%	-2.0%	-3.6%	-3.6%	1.4%	1.6%	3.0%	-0.5%	17.8%	-14.6%	3.2%	2.7%	39.7%	6.4%	0.2%	49.0%
3	-1.7%	-2.3%	-4.0%	-4.0%	0.8%	1.1%	2.0%	-2.0%	15.8%	-15.6%	0.2%	-1.8%	25.1%	5.0%	0.0%	28.4%
4	-3.4%	-3.8%	-7.2%	-7.2%	0.6%	1.0%	1.6%	-5.5%	13.8%	-15.1%	-1.3%	-6.8%	20.6%	5.2%	0.1%	19.1%
5	-4.2%	-4.7%	-8.9%	-8.9%	0.5%	0.7%	1.2%	-7.7%	12.0%	-15.4%	-3.4%	-11.1%	16.5%	5.8%	0.1%	11.3%
6	-5.0%	-5.6%	-10.6%	-10.6%	0.4%	0.6%	0.9%	-9.6%	10.6%	-15.1%	-4.5%	-14.1%	15.4%	3.8%	0.0%	5.1%
7	-6.1%	-6.5%	-12.6%	-12.6%	0.3%	0.5%	0.8%	-11.8%	10.1%	-13.6%	-3.5%	-15.4%	13.5%	3.7%	0.1%	1.8%
8	-7.7%	-7.4%	-15.2%	-15.2%	0.2%	0.3%	0.4%	-14.7%	8.7%	-13.8%	-5.1%	-19.8%	10.2%	1.7%	0.0%	-7.9%
9	-9.2%	-7.6%	-16.8%	-16.8%	0.1%	0.1%	0.3%	-16.5%	7.4%	-13.2%	-5.8%	-22.4%	6.8%	2.0%	0.0%	-13.5%
10	-11.8%	-8.4%	-20.2%	-20.2%	0.1%	0.1%	0.2%	-20.0%	5.1%	-11.8%	-6.7%	-26.6%	3.5%	1.0%	0.0%	-22.2%
Total poor	-7.8%	-6.6%	-14.5%	-14.5%	0.3%	0.4%	0.8%	-13.7%	9.0%	-13.5%	-4.4%	-18.1%	11.7%	3.0%	0.0%	-3.4%

Source: Own calculations based on National Survey of budget consumption and household living standards of 2010, CEQ of Tunisia Sept 2015.

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

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. There are several results that stand out. The share of benefits of PNAFN and Other Transfers accruing to the poorest 20 percent is 32.5 and 24.7 percent, respectively. In other words, spending on these direct transfers appears to be pro-poor. However, the richest ten percent also benefit from these transfers to the tune of 8.2 and 6.6 percent, respectively. Most importantly, indirect subsidies, which account to 2.3 percent of government spending as shown above, are not pro-poor at all. The bottom 20 percent of the population receive 11.7 percent of indirect subsidies while the richest 10 percent receive 18.3 percent.

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	0,2%	0,3%	19,2%	13,2%	5,2%	2,2%	9,4%	12,2%	21,4%
	2	0,6%	1,0%	13,3%	12,2%	6,5%	3,5%	11,1%	7,0%	17,6%
	3	0,9%	1,5%	10,6%	11,1%	7,6%	5,0%	9,3%	7,3%	6,3%
	4	2,3%	3,1%	9,7%	12,3%	8,3%	6,0%	9,5%	9,5%	14,9%
	5	3,5%	4,7%	9,5%	10,8%	8,7%	7,5%	9,3%	12,9%	13,2%
	6	5,1%	6,6%	8,6%	10,4%	9,3%	8,8%	10,4%	10,2%	5,6%
	7	7,5%	9,4%	7,1%	11,9%	10,7%	9,7%	11,1%	11,8%	20,1%
	8	12,0%	13,8%	6,6%	7,2%	11,8%	12,5%	10,6%	7,1%	0,0%
	9	19,7%	19,2%	7,2%	4,4%	13,7%	16,5%	9,8%	11,5%	0,0%
	10	48,2%	40,4%	8,2%	6,6%	18,3%	28,1%	9,6%	10,4%	0,9%
Total Population		100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Source : Own estimation

Spending on education is pretty much the same across deciles. Our results show that spending primary and secondary education is progressive in absolute terms: the concentration coefficient is negative (Table 9). This result is expected because enrollment rate is becoming almost universal in Tunisia including vulnerable categories. However, spending on tertiary education is not pro-poor: it is progressive in relative terms only but its concentration coefficient is quite lower from the market income Gini so, even though not pro-poor, it is equalizing. Still, the number of students in tertiary education from the poorest decile was roughly 0.1 percent of the total compared to 0.8 percent for primary and secondary school[18].

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

Table 9 – Concentration Coefficients by Specific Category

[18] 0.1 percent represents the proportion of pupils from the first decile as a percentage of the total number of pupils in primary and secondary ; 0.8 percent represents the number of students from the first decile as percentage of the total number of students in the survey

Program	Concentration Coefficient with respect to BENCHMARK CASE market income
Conditional Cash Transfer	-0,17
Prim&second-Education Spending	-0,08
Subsidy 1	0,21
Other Scholarships	-0,18
Tertiary Education Spending	0,21
Health Spending	0,04
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**

The observed distribution of benefits from direct transfers and subsidies appears to indicate that there is room for improving the situation of the poorest and the vulnerable groups (those with incomes from US$4 to US$10, 2005 ppp per day) through better targeting. Furthermore, once one takes into account the burden of taxation, the combination of direct and indirect taxes are quite burdensome on the vulnerable. The vulnerable (those from 4 to 10) represent 37 percent of the population and are net payers into the fiscal system at the tune of 8 percent of their market income, when only the cash components of fiscal policy are taken into account. In fact they receive 34.6 percent of total subsidies and 46.7 of total direct transfers. If one adds the in-kind benefits, they are net gainers: final income is 17.3 percent higher than market income for the vulnerable, on average.

2. Conclusion

This paper estimated the incidence of the general government taxation and spending in Tunisia. Fiscal components have been applied to the consumption survey 2010 with its three subcomponents: spending, food and quality of life. On the tax side, the analysis includes direct tax, only for personal income and indirect tax only for its component VAT on consumed goods and services. On the expenditure side, the paper has analyzed the incidence of 43 percent of general government expenditures, including subsidies, direct cash transfers (PNAFN and sholarships), contributory pension and free basic services, health and education spending.

Overall, fiscal policy in Tunisia seems to be redistributive. Taking in account net cash transfers, only the two bottom deciles receive more in transfers than they pay in taxes. When basic services are included this proportion increases to the 7 bottom deciles and the 3 richest top deciles bear the brunt of redistribution of income. In fact this redistribution go from the richest to the poorest as 43 percent of the top two deciles joined a lower income class and 40 percent of the

three bottom deciles joined an upper income class. The middle income class with an income ranging between $4 and $10 has maintained the same class for 95 percent. Inequality goes from a situation where per capita income of an individual from the top decile is 18 times higher than from the poorest decile to a situation where it is about only 6 times. The Gini falls from 0.43 before taxes and transfers to 0.35 after taxes and transfers thanks mainly to taxes (30 percent of the fall) and basic services (30 percent of the fall) .

Taxation is overall equalizing with progressive direct tax and regressive VAT. Only direct tax and social contribution is responsible for dropping the GINI by one third. Half of this burden is bear by the last decile and 90 percent by salaried. For VAT Only 2 percent is paid by the poorest decile but this burden represents 15 percent in the income market of this category.

On the spending side, redistribution is mainly executed through basic services which are responsible for one third of the Gini depreciation. Direct transfers are strongly progressive and equalizing but their share in the budget remains very limited (only 0.2 percent). Subsidies are strongly regressive with high concentration rate. Primary and secondary education is strongly redistributive and equalizing while tertiary education is regressive with relative limited access to the poor. Health spending is progressive and equalizing for health care and delivery while hospitalization services are regressive with low concentration rate

In terms of policy recommendation, fiscal policy in Tunisia needs improvements in the following areas:

1. Reinforce direct transfer programs to target segment of population that does not benefit from basic services of education and health. These programs must relate in particular tertiary education (eg expanding the scholarship program for the poor) and hospitalization.
2. Strengthen and improve the existing cash transfer PNAFN program through the revision of the allocation criteria.
3. Suppress compensation through subsidies of consumption and energy and replace it by another more targeted program for poor. The less vulnerable categories can acquire against the removal of the subsidy a decrease in the tax burden.

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