
HEALTH EXPENDITURE AND IMPOVERISHMENT OF HOUSEHOLDS IN TUNISIA

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Abstract

The objective of this work is to analyze the effect of private health spending impoverishment in Tunisia. Health expenditure, considered as a lack of resources, will be deducted from total expenditure before judging the poverty situation of households. In fact, we use Tunisian data from the 2010 national household budget, consumption and standard of living survey. The results obtained show the existence of a significant impoverishment effect, particularly in the rural area, the southern and central-western regions, as well as for households headed by a worker or a farmer. The elimination of private expenditure on health allows to better understand the situation of poverty. This also leads to correct the results of the monetary poverty while improving the population's access to public health services, especially in a global context where the health, social and economic risks are very serious.

Keywords: Poverty, health expenditure, impoverishment.

1. Introduction

It is commonly accepted that the state of health is one of the most essential dimensions of any individual well-being. From this perspective, the researches on poverty continues to call for the need to take this multidimensional character into account in the study of deprivation. Retaining the health dimension, in addition to its intrinsic aspect as an essential component of a fulfilling life, is of a particular importance in a state of poverty. While vulnerable, an individual in poor health also runs a significant risk of impoverishment.

The expenses related to health deficiencies represent a burden for individuals, which can increase depending on their financing method and the coverage by the public system. Xu *et al.* (2003) show, through a study carried out on individuals' data from 59 countries, the need to protect low-income individuals against private health expenditure. Similarly, Garg and Karan (2009) find a significant effect of private spending on the state of household poverty in India, especially in the least developed states of the country. This finding is consistent with the human capital theories results emphasizing the main role of education as well as health as an explanatory factor for economic growth (Barro, 1996).

Works on the effect of health spending have focused on two main effects: the impoverishment effect and the catastrophic effect. The latter is observed when health expenditure exceeds a certain fraction of the households' disposable income after deducting the amount of basic

necessities consumption. For example, Wagstaff and Van Doorslaer (2002) set catastrophic expenditure at the threshold of about 40% of income after deduction of food expenditure. The impoverishment effect is seen when health spending leads to the emergence or worsening of the poverty state. According to Whitehead *et al.* (2001), several empirical studies support the idea that health expenditure has negative consequences on the situation of households.

In the case of Tunisia, a significant proportion of citizens have access to health care (El-Saharty, 2006) through the health insurance scheme and under the medical assistance programs. In 2013, 3.244 million people were affiliated to the National Health Insurance Fund (Caisse Nationale d'Assurance Maladie, CNAM) and 250,000 people benefited from Free Medical Assistance (Assistance Médicale Gratuite, AMG). The CNAM, created in 2007, following the health insurance reform, is responsible for managing the health insurance scheme to provide coverage and access for members to public and private health services. However, the alarming increase, in global health spending now, threatens the financial sustainability of CNAM.

Ben Ammar and Hammami (2015) show that private health expenditure, borne by households, has reached "worrying" levels. This observation is shared in a study by the Ministry of Health, which considers it necessary to reduce direct payments, in particular by the number of services as well as the proportion of costs covered.

Likewise, the report on the right to health, published by the Tunisian right to health association in 2016, underlined the importance of regional disparities in both the supply of public health services and drugs. In rural areas, for example, basic health centers generally only offer one consultation per week. Problems of disparity also affect the availability of specialty services and heavy equipment, accentuated by the dominance of the private sector already concentrated in larger cities.

It is in this perspective that this work aims to study the impoverishment effect of private health spending. For this, Tunisian data taken from the 2010 national household budget, consumption and standard of living survey will be used. The paper is organized into three sections. The first section reviews the economic literature on the relationship between health status and economic status. The second section presents the data used. The results will be presented in the third section.

2. Health, Economic Conditions and Poverty

The economic literature has extensively studied the relationship between health and the standards of living. Firstly, good health enables a high rate of economic growth to be achieved as it provides the economy with a more intense and productive labor force. Conversely, economic growth helps to maintain human capital in its health component by setting up a developed health care system.

Berthélemy (2007) addresses the theoretical and practical debate on the relationship between growth and health progress. The interplay between health on the one hand and economic development on the other will inevitably lead economies into "an underdevelopment trap or a virtuous spiral of economic take-off" (Berthélemy, 2007).

Economic theory suggests that human capital is an important factor in growth. Empirical evidence, for a large group of countries, confirms that health, a major component of human

capital, is closely linked to growth. Indeed, improved nutrition and health had contributed 30% of the growth in per capita income conventionally measured in Western Europe between 1790 and 1980, but with a lower proportion in the United States of America (Fogel, 1990).

Indeed, the economic growth which results from a better productivity of the workforce, obviously including other factors, offers opportunities to the private and public authorities to set up a developed health system allowing the improvement of the health status of the population. We can then admit that health can significantly affect economic growth and vice versa (Behrman, 1993). Pritchett and Summers (1996) confirm that national income growth leads to improved health status of populations.

Aghion *et al.* (2010) analyze the growth-health relationship by considering the level and accumulation effects of health as an element of human capital. They demonstrate the existence of a positive and significant effect (in terms of level and accumulation) of the health on growth state. This relationship is confirmed by other work, notably by Bloom *et al.* (2018) as well as Chakroun (2012). Bloom and Canning (2008) present the mechanisms for understanding the effect of health on economic conditions.

Secondly, no one can dispute that poverty often coincides with poor health, illiteracy, and low education. For Wagstaff (2002), the two phenomena are inseparable. De Saint Pol (2007), using French data, showed that low-income individuals, with lower health coverage compared to the rest of the population, perceive themselves to be in poorer health. In addition, they suffer from certain diseases more frequently.

Poverty affects the state of health through various channels (Sala-i-Martin, 2002; Alleyne and Cohen, 2002): the lack of resources which prevents access to care, malnutrition, the living conditions of the poor often characterized by the lack of basic services, mainly the access to drinking water and an adequate sanitation. In addition, poor people generally are less educated. This affects their awareness of the importance of prevention and consultation practices with physicians. It should also not be overlooked that, in some cases, the poor are concentrated in high density regions where there is a lack of specialized structures.

3. Data

3.1 Data used

The data used comes from the National Survey on the Budget, Consumption and Standard of Living of Households 2010. This survey carried out by the National Statistics Institute (INS), between June 2010 and May 2011 covered three components: household consumption expenditure, food consumption and household access to health and education services. The sample includes 13,400 households. The first part of the survey provides information on the various household expenses. This part is carried out with 11,281 households totaling 50,371 individuals. It also provides an identification of poor households according to the monetary approach.

The characteristics of the households are summarized in Table 1. Almost two thirds of the households live in the urban areas and more than 70% of the households consist of 3 to six people.

Table 1. Characteristics of the sample

Character	Frequency (in %)	Character	Frequency (in %)
<i>Region</i>		<i>Expense brackets*</i>	
Great Tunis	17.63	- 1000 TND	14.04
Northeast	13.68	[1000, 1500[TND	18.01
Northwest	13.77	[1500, 2000[TND	17.01
Center East	18.62	[2000, 3000[TND	22.87
Mid-West	15.16	[3000, 4500[TND	15.29
Southeast	10.67	+ 4500 TND	12.78
Southwest	10.47		
<i>Area of residence</i>		<i>Gender of household head</i>	
Urban (Communal)	64.36	Female	15.2
Rural (Non communal)	35.64	Male	84.8
<i>Socio-professional categories</i>		<i>Marital status of the head of household</i>	
Higher and Intermediate managerial and professional occupations	8,67	Celibate	1.98
Other employees	7,76	Married	84.88
Small employers	7,30	widower	11.72
Own account workers	2,78	Divorced(e)	1.43
Workers	27,38	<i>Age of the head of household</i>	
Farmers	11,61	- 30 years	1,29
Non employed	1,89	[30 ,40[13,85
Retired	15,65	[40, 50[26,08
Other inactive	12,14	[50, 60[24,58
Support outside the household	4,80	+ 60 years	34,20
<i>Household size</i>			
1 to 2	15.34		
3 to 4	37.23		
5 to 6	35.16		
+ 7	12.27		

* Expenses per person per year in TND

3.2 Poverty

The data provided by the survey show that poverty affects 12.26% of households. The poverty rate is 15.49% when the unit is the individual. The poverty line calculated in absolute terms of the consumption expenditure, is the sum of two components, food and non-food. The national statistics institute retains three thresholds for the rural areas, the urban areas, and large towns with more than 100,000 inhabitants.

Monetary poverty in Tunisia appears to be a rural phenomenon with a strong regional disparity. In fact, the incidence of poverty reaches 6.81% in the center-east against a rate of 27.84% in the Midwest and 20.86% in the north-west.

The incidence of poverty is even higher for:

- i. large households (30.88% of households made up of 7 people or more);
- ii. Households where the head is unemployed (40.26%), an agricultural worker (28.91%) or a non-agricultural worker (24.23%).

3.3 Health expenditure

Food expenditure is the main expenditure item for Tunisian households. Health expenditure is the fourth largest expenditure item with 8.7% of the average household budget. The average annual amount devoted to this heading is 228 dinars per person. However, there is a significant difference between households according to location and demographic as well as socioeconomic characteristics (Figures 1 to 3).

Thus, a household residing in urban areas spends 271 dinars while a household residing in rural areas spends only 145 dinars. The difference is statistically significant as shown by the results of the mean difference test. However, these two amounts represent 8.7% and 8.8% of total household expenses respectively.

This difference is also observed at regional level but also according to the socio-professional category of the household head. Health spending appears to be lower in the northwest and center-west regions. The statistical tests carried out confirm the significance of this difference.

Figure 1. Average health expenditure by region

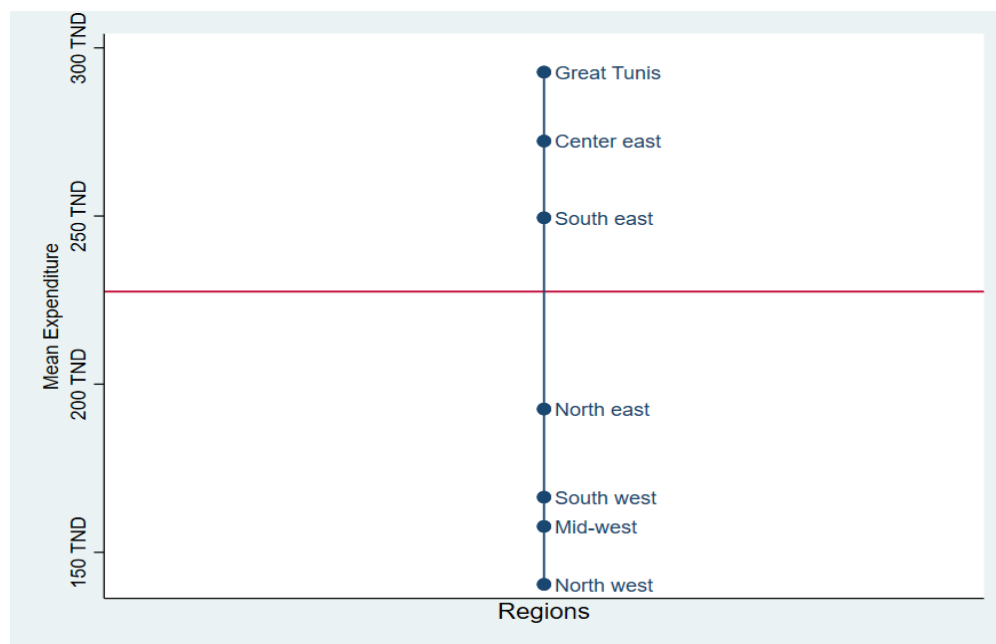
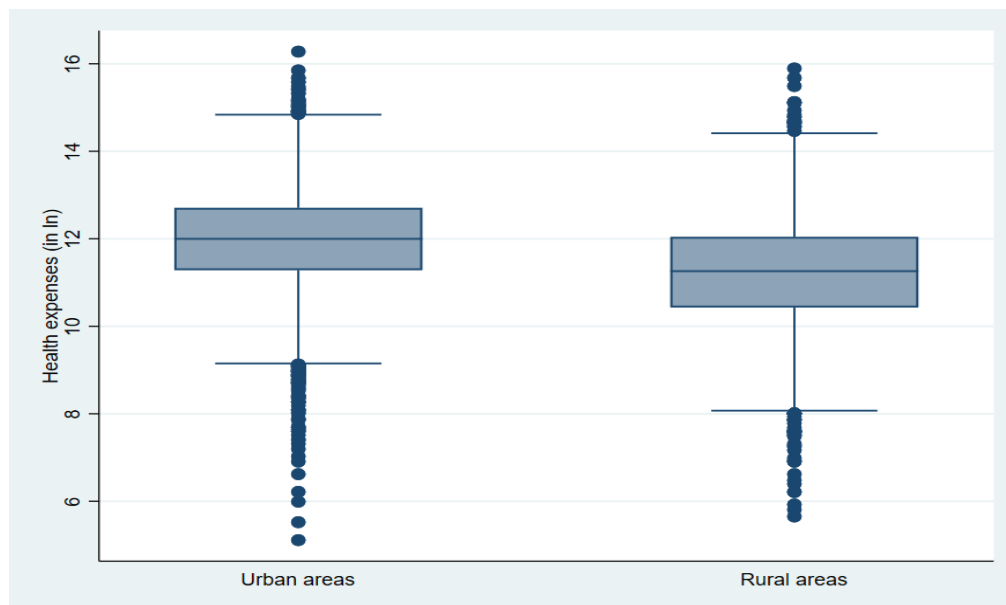


Figure 2. Distribution of health expenditure by residence area



Considering the state of poverty of households, a significant difference in health expenditure is observed. Indeed, as Table 2 shows, while the non-poor spends an average of nearly 300 dinars, the poor spends only nearly 50 dinars. These expenditure amounts represent budget coefficients of 8.58% and 5.87% respectively.

Figure 3. Health expenditure by Socio-professional categories

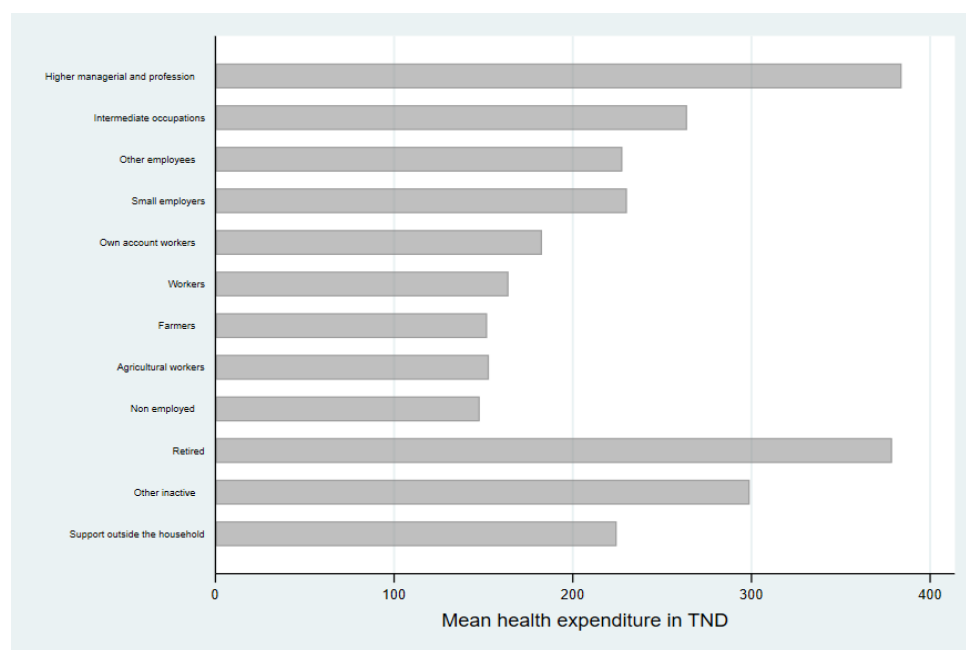


Table 2. Health expenditure according to the state of poverty of the household

Health expenditure	Not			Total
	Poor	Poor	Poor	
Mean	298.9	48.9	26.8	267.5
Median	165.7	32.1	15.1	140.6

* Expenses per person per year in TND

Table 3. Budgetary coefficients of health expenditure according to the state of poverty of the household

Budgetary coefficients (in %)	Not			Total
	Poor	Poor	Poor	
Mean	8.58	5.87	5.02	8.46
Median	6.32	4.09	2.91	6.21

4. Methodology and Results

4.1 Methodology

The study of the impoverishment effect of private health expenditure is based on the comparison of the households' situation before and after health expenditure. The idea is that health spending deprives households of additional resources to meet certain basic needs. In other words, the inclusion of health expenditure in total expenditure is an overestimation of household resources (situation before). For this reason, it is necessary to consider the resources available, after payment of health expenses (situation after). The judgment of the household's poverty state will differ between the two situations.

4.2 Results

The results of this work show that poverty increases significantly when considering health spending. The impoverishment effect of this spending is estimated at more than 2%. The incidence of poverty after deducting health expenditure increased from 12.26% to 14.52%. The effect is more pronounced in the rural areas with an increase in incidence of 2.72% while the increases in the urban areas and metropolitan areas are respectively 2.5% and 1.64% (Table 4). In this way, more than a fifth (21.12%) of households in rural areas are identified as poor.

Table 4 also reproduces the influence of the impoverishment effect on other poverty measures. The poverty deficit (intensity) *I* indicates the extent of the gap between the poverty line and the average standard of poor living, approximated by the median consumption expenditure for the three areas of residence selected. The deficit increased by 1.4%, reflecting deterioration in the average standard of the poor living following health spending. The results obtained indicate that on average poor households face a cash shortfall of 20.07% of the poverty line (after deduction of health expenses). As indicated before, the effect is higher for households residing in the rural areas.

Table 4. Poverty Measures and Impoverishment Effect

Measures	Rural	Urban	Metropolis	Total
Incidence (%)				
H^{before}	18.4	11.46	6.9	12.26
H^{after}	21.12	13.96	8.54	14.52
$H^{after} - H^{before}$	2.72	2.5	1.64	2.26
Intensity (%)				
I^{before}	22.7	18.94	14.31	18.67
I^{after}	24.75	20.02	15.42	20.07
$I^{after} - I^{before}$	2.05	1.08	1.11	1.4
Poverty gap (%)				
P_1^{before}	4.4	1.97	1.17	2.5
P_1^{after}	5.6	3.14	1.71	3.48
$P_1^{after} - P_1^{before}$	1.2	1.17	0.54	0.98

The poverty gap P_1 , defining the extent of poverty, measures the average proportional deviation of the living standard indicator from the poverty line. This indicator considers the average distance separating the poor from the poverty line and therefore, gives a better idea about the intensity of the latter (Ravallion 1995).

The results also show that the impoverishment effect differs significantly depending on the socioeconomic characteristics of households. Thus, according to the region of residence (Table 5), the poverty rate increases more noticeably in the southwest region (4.13%), the Midwest (3.78%) and the southeast (3.59%). The poverty gap is also more pronounced in these regions as well as in the northwest region.

Table 5. Poverty Measures and Impoverishment Effect by the region of residence

	Great Tunis	North east	North west	Center east	Mid-west	South east	South west
Incidence (%)							
H^{before}	6.71	8.24	21.21	6.43	27.03	13.80	17.15
H^{after}	8.30	10.48	23.81	7.60	30.81	17.38	21.28
$H^{after} - H^{before}$	1.58	2.24	2.60	1.17	3.78	3.59	4.13
Poverty gap (%)							
P_1^{before}	1.20	1.43	4.71	0.85	6.97	2.08	3.90
P_1^{after}	1.65	2.11	6.09	1.51	8.86	3.89	5.23
$P_1^{after} - P_1^{before}$	0.45	0.69	1.39	0.67	1.89	1.81	1.33

These regions are characterized by a greater proportion of young people (under the age of 20) according to the 2011 health map, published by the Tunisian health ministry. However, the percentage of the population over 60 years old is higher in the Northwest region. In addition, there is a lack of university hospitals in these regions, which means that the population must make long distances for consultation. The 2011 health map also indicates that for consultation the average distance of a Tozeur governorate inhabitant (in the southwest) to a university hospital establishment is 333 km. The number of public sector doctors (and even more so specialists) is also lower in the southern and western regions. All of these factors explain the regional difference in the impoverishment effect.

According to the socio-professional category of the household head, the incidence of poverty increases by 3.512% for farmers, 3.186% for the unemployed, and 3% for workers. The poverty gap is also higher for these categories, especially for households where the head is unemployed (Table 6).

Table 6. Poverty Measures and Impoverishment Effect by Socio-professional categories

Measures	Higher manag. and prof. Occupations	Intermediate occupations	Other employees	Small employers	Own account Workers	Workers
Incidence (%)						
H^{before}	0,515	3,02	6,696	6,078	10,232	20,297
H^{after}	0,881	3,318	8,545	7,869	12,126	23,298
$H^{after} - H^{before}$	0,366	0,298	1,849	1,791	1,894	3,001
Poverty gap (%)						
P_1^{before}	0,062	0,272	0,827	0,988	2,067	4,06
P_1^{after}	0,107	0,425	1,58	1,392	2,817	5,713
$P_1^{after} - P_1^{before}$	0,044	0,153	0,752	0,404	0,75	1,653
	Farmers	Agricultural workers	Non employed	Retired	Other inactive	Support outside the household
Incidence (%)						
H^{before}	16,491	24,817	33,271	3,996	11,355	22,172
H^{after}	20,003	27,498	36,457	5,413	14,417	24,485
$H^{after} - H^{before}$	3,512	2,681	3,186	1,416	3,062	2,313
Poverty gap (%)						
P_1^{before}	2,968	6,564	10,131	0,678	2,475	5,771
P_1^{after}	4,398	8,148	12,343	1,051	3,466	6,955
$P_1^{after} - P_1^{before}$	1,429	1,584	2,212	0,373	0,99	1,184

Conclusion

This work has shown the existence of a household impoverishment effect in Tunisia. To reach this result, microeconomic data from the national survey on the Budget, Consumption and Household Standard of Living, 2010, were used.

Indeed, health spending deprives households of resources that they can exploit to meet other needs. The elimination of these expenses from the household budget makes it possible to obtain the available economic resources, after payment of health expenses, which should be compared to the poverty line.

The impoverishment effect of this spending is significant. The incidence of poverty after deducting health spending has increased by more than 2%. The effect is more pronounced in the rural areas with an increase in poverty measures.

Impoverishment is also more noticeable in the south and Midwest regions as well as for the heads of workers, farmers, or unemployed households. These results call on decision-makers to pay particular attention to target populations through access to public health services and health coverage to avoid private expenditure.

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