POLICY BRIEF OF CRES

RESEARCH PROJECT ON TOBACCO TAXATION IN WEST AFRICA « FISCAL SOLUTIONS FOR OPTIMAL REDUCTION OF SMOKING IN WEST AFRICA »

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DETERMINANTS OF TOBACCO DEMAND AND DURATION : EVIDENCE FROM SENEGAL AND NIGERIA

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INTRODUCTION

Tobacco use has disastrous consequences on health, such as cancer and cardiovascular illnesses. Smoking causes 40% of deaths related to cancer and 9% of deaths related to other cardiovascular illnesses in ECOWAS region. According to the World Health Organisation, tobacco causes more than seven million deaths every year. The spending due to tobacco use represents 6% to 15% of health government spending in developed countries. For youth, its use is associated with a risk of other drug abuse. A general framework of tobacco control has been initiated by the WHO in order to combat the damages caused by tobacco use. In 2005, Senegal and Nigeria ratified that agreement. Different indicators have been introduced in order to monitor the progress made by each country. The acronym is MPOWER: Monitor, Protect, Offer, Warn, Enforce, Raise. The main points are the monitoring of tobacco use, the protection of individuals against second-hand smoke, to offer smokers the means to stop, the warning against the harmful effects of tobacco use, the enforcement of the ban on cigarettes advertising and the rise of the taxation of tobacco products.
In spite of the evidence of an effect of price's increase of tobacco products on the demand, there are few studies in Africa, particularly in West Africa. The lack of studies is more striking regarding the determinants of smoking duration. In the context of a rapidly growing population with 60% of youth, it is essential to have a better understanding of the factors that affect tobacco consumption. We aim to contribute to filling that gap. We study the determinants of the demand for tobacco and smoking duration in Senegal and Nigeria. We focus particularly on the effect of price on the demand for tobacco products. This policy brief reports on the key findings of this study.

DATA

We use the Global Adult Tobacco Survey (GATS), this survey is funded by the World Health Organization in Senegal and Nigeria. Based on a standardized methodology, this survey collects various information. The sample comprises individuals aged 15 or more. For Senegal (2015), the sample contains 4343 individuals and for Nigeria (2012), the sample includes 9705 individuals. The main categories of the survey are socio-economic characteristics of the individuals, tobacco consumption, smokeless tobacco use, smoking cessation, second-hand smoke, manufactured cigarettes, media, knowledge, attitudes and perceptions.
The socio-economic questions include the age, gender, ethnic group, level of education, matrimonial status, employment of the individuals and the different items owned by their household.
Additional information is collected about the type of tobacco used. For current consumers of tobacco, the age at which they started and their daily and weekly consumption are given. For past consumers, the age

at which they started and the age at which they stopped are provided.

The survey informs on tobacco exposure at home, at the workplace, at the governmental buildings, at public transport, at school and at other public places. When it comes to tobacco price, the information is only available for manufactured cigarettes. The questions asked are about the quantity of the last purchase, the money spent and the brand. The last part of the survey reports the exposure of individuals to advertising and their knowledge about the health consequences of cigarettes consumption thanks to the media. Despite a very extensive and well-documented survey, the GATS dataset have one major shortcoming. The dataset are cross-sectional which limits the possibility to observe the temporal variation of the tobacco consumption, useful for the price-elasticity estimation. The next section presents the descriptive analysis of the data.

The data reveal some diversity of the prevalence of tobacco use. Youth who are represented by the age group 15-24 have the lowest prevalence of tobacco use in Senegal and Nigeria (respectively 2.87% and 1.21%). As regards the gender, the prevalence of tobacco use indicates a huge difference between men and women. A low percentage of women reports smoking in Senegal and Nigeria (respectively 0.42% and 0.3%) compared to men (respectively 13.17% and 7.66%).

In both countries, individuals with the lowest socio-economic status manifest a higher prevalence compared to better off individuals. The prevalence of cigarettes consumption is higher among individuals without knowledge about the damaging effects of smoking compared to those with knowledge (7.64% against 6.89% in Senegal and 6.07% against 3.48% in Nigeria). Furthermore, individuals who have been exposed to any advertising of cigarettes the last 30 days exhibit a higher prevalence compared to those who have not been exposed. In both countries, we respectively have 9.46% against 5.36% in Senegal and 5.36% against 3.45% in Nigeria.

METHODOLOGY

We adopt two estimation strategies. In the first part, we estimate the price-elasticity and the other determinants of the demand for tobacco products. In the GATS data, the quantity of smoked cigarettes per day is not reported for no smokers. These missing observations correspond to a potential variable of response. In case the observations of these individuals are not observed but potential, a selection model is more appropriate. We thus adopt such model for the estimation of the price-elasticity of the demand.

RESULTS

In Senegal, the demand for cigarettes is quite elastic with a price-elasticity of -1.12. An increase of 10% of the prices induces a decrease of 11.2% of the demand for cigarettes. An increase in the price decreases as well the prevalence of tobacco use. Although the price-elasticity is lower in Nigeria, an increase of 10% of the price leads to a decrease of 2.3% of the demand for cigarettes. These results support the idea of a significant effect of a price's augmentation on cigarettes' demand.The price-elasticity of the demand is heterogeneous for different groups of the population. Youth are particularly sensitive to any price variation in Nigeria and Senegal. The estimated price-elasticity for that group is higher compared to the price-elasticity of the whole population. Others sensitive groups to any price variation are those with a low socio-economic status and low educational level. This study also sheds light on the importance of other aspects in the fight against tobacco use. On one hand, the exposure to cigarettes advertising increases the demand for cigarettes and the probability of tobacco use. The ban on advertising or promotion of tobacco products is important for the reduction of tobacco demand. On the other hand, the knowledge of the harmful effects of tobacco on health considerably reduces the demand for tobacco products and tobacco use. It is therefore important to warn individuals, particularly youth and poor, against the harmful effects of smoking.

Second, we conduct a duration analysis of ci-

garettes' consumption. We have adopted three different duration models: parametric, semi-parametric and non-parametric. We estimate the determinants of the hazard rate which is the probability to stop smoking. Many results ensue from that empirical analysis. The probability to stop smoking increases with the duration of smoking. The consequences of long tobacco use on health induce smokers to quit. Individuals with low educational level have a lower probability to quit compared to those with a higher level of education. Likewise, the exposure to cigarettes advertising decreases the likelihood of cigarettes cessation. Knowledge about the harmful effects of tobacco use on health and warnings by media about these effects lower the smoking duration.

RECOMMENDATIONS

The main recommendations are as follow:
(i) A rise in prices significantly decreases the demand for cigarettes and lower the probability to smoke. In Senegal, the average price elasticity is -1.12 and in Nigeria, it is -0.23. Accordingly, any prices increase induces a drop in the number of smoked cigarettes. The effectiveness of an increase of tobacco's prices on cigarettes' demand depends on the different strategies used by the tobacco industry. According to ?, the tobacco industry thanks to aggressive advertising campaigns succeed in mitigating the effect of an increase in taxes on prices. The main targets of these campaigns are often youth and women (?) who are potential smokers or more sensitive to prices variation. It is therefore important to create and enforce laws banning advertising or promotion of tobacco products. That is particularly relevant in Africa where the projection of the increase of tobacco use is 39% by 2030. There is a strong disparity between countries in Africa in the application the WHO recommendations in order to fight against tobacco use. The rates of application go from 9% in Sierra Leone to 78% in Kenya. It is thus important to harmonize the different instruments for a significant decrease of tobacco demand. (ii) The campaigns to warn people against the damaging effects of smoking on health reduce tobacco consumption, tobacco use and smoking duration. It is thus important in the fight against smoking. According to the anti-tobacco law guidelines, warning messages and images on cigarettes' packages will be next introduced in Senegal. Such operation has the advantage to reach a bigger audience particularly those without literacy who represent a large share of the population. It is important to ensure the application of the law for an effective decrease of the demand of tobacco.
(iii) Another important result for policy makers is that media and social networks are powerful tools in the fight against tobacco use. The warning against the harmful effects of tobacco by media reduces the smoking duration. Such tools are able to reach individuals living in the most remote areas. The adoption of such tools could help Senegal and Nigeria to reach their objectives in terms of tobacco use reduction.
(iv) Regarding inequality, individuals with low educational level and low socio-economic-status are more vulnerable to tobacco use and longer smoking duration. The fight against inequalities in terms of education and wealth might have a leverage effect in the reduction of tobacco use.

Le Centre de Recherche pour le Développement International (CRDI) a subventionné le Consortium pour la Recherche Economique et Sociale (CRES) pour la seconde phase de son projet de recherche sur la fiscalité des produits du tabac. Cette phase est intitulée « Des solutions fiscales pour une réduction optimale du tabagisme en Afrique de l'Ouest ». L'un des axes de cette phase avait pour objectif de faire le diagnostic de système fiscal que les pays de la CEDEAO appliquent aux produits du tabac.

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