



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



PUBLIC FINANCES AND TOBACCO TAXATION WITH PRODUCT VARIETY : THEORY AND APPLICATION TO SENEGAL AND NIGERIA

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INTRODUCTION

The use of excise taxes – ad valorem and specific – as a means to control cigarettes consumption is a relatively new toolkit in many developing countries. There is a long and documented history throughout the world of governments implementing such tax schemes to generate revenues. In many instances, tobacco taxation has also been highlighted as an efficient means of mobilizing domestic resources to finance health and other important development programmes. The recent settings of the Addis Ababa Action Agenda and the 2030 United Nations' Agenda for Sustainable Development have further heightened the ever growing interest in tobacco taxation. More specifically, the latest Agenda intends to strengthen the country-level implementation of the World Health Organization's (WHO's) Framework Convention on Tobacco Control (FCTC). Article 6 of the FCTC recognizes price and tax measures as effective means to reduce the demand for tobacco, and the guidelines for Article 6's implementation encourage the use of taxation in comprehensive strategies for tobacco control.

Tobacco taxation could also be used as an effective and important evidence-based vehicle to help many countries achieve their long-term development objectives (?). As tobacco tax rates in many low- and middle-income countries are currently low and demand for tobacco products is relatively inelastic, many countries could increase government revenues substantially through tobacco taxation. By creating the fiscal space to finance development programmes while, at the same time, reducing tobacco use, tobacco taxation could indeed be a win-win policy for governments throughout the world.

Relying primarily on the World Health Organization's Global Adult Tobacco Survey (GATS) and other additional sources of data as well as on the results derived from a previous study, this research intends to: (i) determine which category of excise taxes is more appropriate to the market of cigarettes in Senegal and in Nigeria; (ii) analyze the impact on prices, demand and fiscal revenues, of an increase of excise taxes for the two aforementioned countries. To do so, we first propose a theoretical model of taxation followed by an empirical analysis of the cigarette market in Senegal and in Nigeria in order to understand which category of excise taxes – ad valorem or specific – fits best to the local context. This policy brief reports on the key findings of this study.

METHODOLOGY

We develop a model of unique good with different varieties, which perfectly corresponds to the case of cigarettes.

RESULTS

Analysis of market concentration

Because the GATS surveys reports only three important tobacco brands for Senegal, we could only compute the concentration index for the two biggest brands. A simple analysis of the market concentration ratio in Senegal shows a rather strong market concentration of cigarette in the country.

In fact, the two most purchased brands in 2014 – Excellence and Marlboro – represent together nearly 70% of the market shares. This resembles a duopoly, either by design or by accident. Looking at the data inherent to Nigeria almost brings similar observations: the market of cigarette in Nigeria is an oligopoly, where the four biggest brands share almost 80% of the market. Because it does not internalize the market shares of all the firms within a given industry, the concentration ratio therefore does not provide a clear idea of the firms' size distribution. It also does not provide further details on the competitiveness of the industry. To curtail some of these imperfections and shortcomings, we will evaluate the Herfindahl Index of the tobacco industry in Senegal and in Nigeria. This index (also referred to as the Herfindahl-Hirschman Index, or simply HHI) is a measure of the relative size of the firms in relation with the relevant industry

and is a reliable indicator of the degree of competition among them.

Using the market shares provided by the GATS surveys, the computed Herfindahl index amounts to 31.64% for Senegal and to 25.62% for Nigeria. These numbers confirm the conclusions induced originally by the market concentration ratio indices, with perhaps a greater clarity: (a) the market of cigarette is highly concentrated both in Senegal and in Nigeria; (b) this concentration is more emphasized in Senegal than in Nigeria. The main objective of all these calculations is to provide a rather reasonable approximation of the mark-up already exposed in this section, which in turn would help inform on the important choice of the appropriate excise tax – ad valorem or specific – for Senegal and Nigeria. Consequently, the specific excise taxes appear better suited than the ad valorem excise taxes both in Senegal and in Nigeria. It is absolutely possible to envisage a situation where the two forms of excise taxes coexist in a more developed fashion than it is currently in Senegal and in Nigeria. This all the more given that the excise taxes on the sold cigarettes in both countries are exclusively of the ad valorem nature at the moment.

Relative variations of prices tax revenues

Our model markedly differs from those by the introduction of product variety, with a direct application to the tobacco market. The results of the theoretical model show that in the context of excise taxation, the number of brands directly affects the degree of market concentration and the marginal effects of ad valorem and specific excise taxes on the price of tobacco. In addition, the ratio of the marginal effects of the ad valorem and specific excise taxes depends on the marginal costs of production of the different varieties weighted by the tax rates and the number of product varieties. The model shows that specific excise taxes are more appropriate to Senegal and Nigeria, given the very oligopolistic nature

of their tobacco markets. This result matters for policy given the fact that excise taxes are exclusively ad valorem by design in Senegal and in Nigeria.

Furthermore, we build on a simulation model of cigarettes taxation. More specifically, we estimate the relative variations of demand and tax revenues as well as the critical taxation thresholds stemming from a continuous increase of excise taxes. The very low levels of taxation in Senegal and Nigeria indicate important fiscal margins for their respective governments. For instance, the rate of excise taxes for the most consumed brand of cigarettes in Senegal and Nigeria in 2014 was 25 and 15.87% respectively. The overall levels

of taxation for the most popular brand of cigarettes in Senegal and in Nigeria was 40.25 and 20.63% respectively. Throughout the simulation, we borrow extensively from another study on the estimations of the price-elasticities of demand in Senegal and in Nigeria. It also appears that tax development does not have the same overriding implications for the two countries. Increasing excise taxes on tobacco in Senegal and in Nigeria drastically reduces its demand, but also implies a sharp decline in the tobacco excise revenues

for the former and a rise of fiscal revenues for the latter. This stark difference stems from the fact that the price-elasticity of tobacco demand is very high in Senegal (-1.124) while it is very low in Nigeria (-0.235). Finally, it is important to notice that there exists a certain threshold beyond which tax increases cease to have a positive effect on tax revenues in Nigeria. This simulation model constitutes an additional contribution to the literature of addictive goods in developing countries in general and in Africa in particular.

RECOMMENDATIONS

(i) First, the specific excise taxes seem more appropriate for each one of these countries, given the oligopolistic nature of their tobacco markets. In an oligopolistic market of cigarettes, specific excise taxes have a higher effect on the price. Given that price represents the major determinant of demand, it is important for Senegal and Nigeria to give more importance to specific excise taxes. The idea is not to entirely substitute the ad valorem excise taxes by the specific ones. It is entirely possible to build a situation where both forms of excise taxes coexist, which is not entirely the case at the moment. In 2014 for example, the rates of ad valorem excise taxes in Senegal and Nigeria were respectively 25 and 15.87%, while there was nearly no specific excise tax on retailed cigarettes in both of these countries.

(ii) While the double objective of simultaneously developing public excise tax revenues and reducing tobacco demand is perfectly doable in Nigeria, such policy is not possible in Senegal given all the current circumstances. This mostly stems from the fact that the price-elasticity of tobacco demand is quite high in the latter country (-1.124). Therefore, the Senegalese government should consent to give up on a certain fraction of its current excise tax revenues if it intends to further lower the consumption of cigarettes. A tax increase for all the tobacco users – and therefore of the prices, all things being equal – of 45% in Senegal would

lead a decline by half of the tobacco demand in the country. This move however could imply a

28.36% decline of the excise tax revenues.

(iii) Given the very low value of the price-elasticity of cigarettes demand in Nigeria (-0.235), the authorities in this country seem to have a higher flexibility, contrary to their counterparts in Senegal. In Nigeria, the objective of the tobacco demand reduction is not compatible with that of further mobilization of additional excise tax revenues. The country could therefore pursue an aggressive taxation policy in order to control the demand of cigarettes. More specifically, the Nigerian authorities could increase the current excise taxes by up to 162.44% before reaching a threshold beyond which fiscal revenues cease to increase with respect to their previous values. Such development could lead to a 62.11% of tax revenues. Beyond that threshold, the tax revenues begin to decline steadily. An aggressive taxation policy consisting of increasing the excise taxes by 324.89% in Nigeria could help reduce the cigarettes demand by 76.46%, while keeping unchanged the current level of tax revenues.

(iv) Finally, it is possible for each one of these two countries to put in place a differentiated taxation scheme: based on the geographical location in Senegal and based on the age category in Nigeria. A 45% tax increase in the rural areas in Senegal could reduce the demand by 74.44%, while a similar increase “only” reduces

the demand for all smokers by 51%. It could therefore be possible to tax the consumers living in rural areas differently from the rest of the population and reaching the same outcomes. Equally, smokers aged between 25 and 44 in Nigeria tend to be less sensitive to taxes, compared to the rest of the population. However, setting up a differentiated taxation scheme could face two major stumbling blocks: the incompatibility with the legislative frameworks in place and the problem of smuggling. Taxing differently many groups of tobacco users could be at variance with Senegalese and Nigerian legislations. In addition, differentiated prices by geographical regions could exacerbate the

problem of illegal cigarettes smuggling. All these recommendations stem from our early simulations, of which the key ingredient is the price-elasticity of cigarettes demand in Senegal and in Nigeria. The very low value of the price-elasticity in Nigeria, no matter which category of consumers is considered, testifies for a strong inelasticity of tobacco demand as a result of changes in price in this country. On the contrary, the very high price-elasticity of demand in Senegal could suggest that taxation might have reached its critical threshold, given the local circumstances, or simply that consumers in Senegal are more exposed to various substitutes to tobacco.

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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