



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



## MACROECONOMIC IMPACTS OF NON COMMUNICABLE DISEASES RELATED TO TOBACCO IN SENEGAL

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### INTRODUCTION

*Non-communicable diseases (NCDs), for which tobacco is one of the major risk factors, are the leading cause of death worldwide. They contributed to 68% of the 56 million deaths in 2012. These deaths are more concentrated in low- and middle-income countries. In Senegal, health statistics show that the proportion of deaths due to these diseases is rising relatively high. From 28% in 2000, this proportion rose to 47% in 2015. In doing so, 8 of the top 10 causes of death in hospitals are attributed to them. Apart from the suffering they cause, these diseases generate significant macroeconomic burden. The assessments generally made of these losses are limited to the determination of annual costs caused by NCDs. However, if these assessments are not supplemented by the one taking into account the opportunities in terms of economic production that these losses have not allowed to achieve, the full extent of the impact of smoking on the economy would not be actually known. CRES has completed its annual assessment of annual costs through research measuring economic losses in the long run. This policy brief presents the main results achieved and their implications.*

### METHODOLOGY

The macroeconomic impact of NCDs related to smoking was measured by the difference between Gross Domestic Product (GDP) in the absence of these diseases and GDP in presence of these diseases. An economic growth model that modifies the standard model developed by Solow (1956) by taking into account certain factors was used. The analysis is based on the assumption that tobacco-related NCDs influence GDP through four

main channels. (i) They make sick people less productive, (ii) reduce the supply of labor through premature death, (iii) reduce domestic savings for physical capital investment, and (iv) influence the net inflows through the net marginal product of capital. In the absence of disease scenario, all factors related to morbidity and mortality caused by the disease are ignored. Simulations are then carried out on the losses in the period 2015 - 2035. The

diseases taken into account are strokes, ischemic heart diseases, chronic obstructive pulmonary diseases (COPD), lung cancer and Upper aerodigestive tract cancers. The main source of data is the survey carried out by CRES in 2017 on the costs of tobacco-related diseases among 2001 patients and their caregivers in 14 public hospitals representative of the Senegal hospital map.

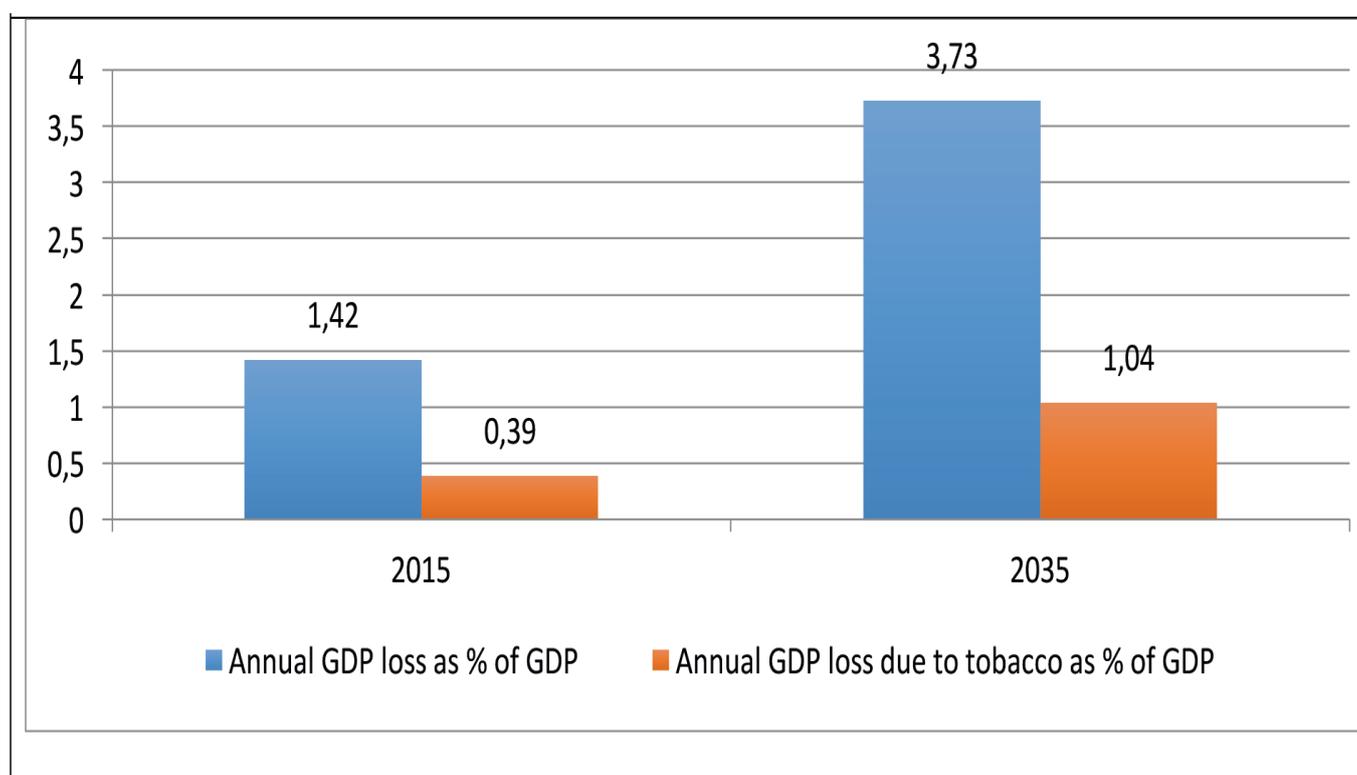
## RESULTS

### *Very high losses on GDP in the period 2015-2035*

If the losses are evaluated in terms of lost GDP points, we can see that the six diseases taken into account in this research prevent Senegal's economy from achieving 1.42 percentage points of GDP in 2015. By considering the percentage of these diseases attributable on tobacco, consumption of this product is causing the economy to lose 0.39 percentage points of GDP in the same year. In the long run, these six groups of diseases will lose to the Senegalese economy

4 points of GDP in 2035. The loss of GDP returning to the consumption of tobacco products will then be 1.04 points. The unreported results in the graph below show that the loss of 1.42 GDP points in 2015 equals \$ 246 million, or 135 billion CFA francs. Smoking contributes \$ 68 million, equivalent to 37 billion FCFA. For the year 2035, the overall loss for the economy will amount \$ 2,242 million, or 1233 billion FCFA.

Graph : Losses of point of GDP due to smoking related NCDs in 2015 and 2035 in the economy of Senegal



### *A higher savings rate without tobacco-related illnesses*

If we look at the channels through which tobacco-related diseases impact GDP, we can see from the table below that the savings rate is higher when diseases are eradicated in the economy. Indeed, in 2015, Senegal's economy has a savings rate of 10% whereas it would have been

10.09% if the six groups of diseases did not exist there. For the year 2035, the loss of savings rate is smaller than in 2015 with 10.06%. Increases in the savings rate when diseases are eradicated are explained by the fact that resources devoted to treatment will be available in the economy.

## ***More capital flowing into the economy when tobacco-related diseases are eradicated***

Capital flowing into the economy also varies between the situation of the disease-free economy and that with NCD. We can notice that in 2015, in the situation where the six groups of diseases are present in the economy, 15% of the capital used in Senegal come from an external contribution. But if the diseases considered were eradicated, these flows would be 15.42%. This

difference in capital inflows is smaller for the year 2035. Differences in net capital inflows are explained by the difference in productivity at work between the two situations. When there is NCD, capital flows less into the economy because the productivity that pays them is reduced by morbidity.

**Table : Savings and net capital inflows in the presence and absence of tobacco-related diseases in Senegal in 2015 and 2035**

Years	Determinants of GDP	Presence of the six groups of NCD in the economy	Absence of the six groups of NCD in the economy
2015	Savings rate	10 %	10,09%
	Net inflows-to-gap ratio	15%	15,4%
2035	Savings rate	10%	10,06%
	Net inflows-to-gap ratio	15%	15,3%

## **MAIN LESSONS LEARNT AND RECOMMENDATIONS**

### ***Main lessons***

Three main lessons are worthy of mention.

- 1) The Senegalese economy suffers significant losses in terms of GDP points due to the presence of NCDs related to tobacco.
- 2) Financial resources devoted to the treatment of these tobacco-related diseases crowd out investment by reducing domestic savings.
- 3) Net capital flows are reduced by lower productivity due to disease-related morbidity. Thus, the investment is ousted a second time.

### ***Recommendations***

The results of this research and the main lessons that emerge show the urgency of taking effective measures to reduce the consumption of tobacco products in order to reduce the prevalence of diseases linked to it. Also, the State of Senegal must:

- 1) Use taxation which is considered the most effective way to reduce this consumption. It must increase taxes on tobacco products to make them less accessible to the public.
- 2) Ensure compliance with non-tax measures, particularly the ban on smoking in public spaces and the ban on advertising and the promotion of tobacco products.

The International Development Research Center (IDRC) has funded the Consortium for Economic and Social Research (CRES) for the second phase of its research program on the taxation of tobacco products. One of the objectives of the project was to evaluate the costs of tobacco-related diseases in Senegal.

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