



Cigarette excise tax structure and cigarette prices in nine sub-Saharan African countries:

Evidence from the Global Adult Tobacco Survey

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BACKGROUND

While increases in excise taxes have been shown to be an effective policy for reducing cigarette smoking, the impact of a tax increase on consumption can be greatly reduced if it is easy for people who smoke to switch to cheaper brands when taxes and prices increase [1, 2].

The scope that people who smoke have to substitute to cheaper brands can be measured by the distribution of cigarette prices within a country. If the cigarette price variation is small, those who smoke are more likely to quit or to reduce consumption, instead of switching to a cheaper brand in response to a tax-led price increase.

Congruent with the predictions of economic theory, a growing body of empirical literature [3-5] shows that cigarette excise tax structures that deviate from those proposed in the Article 6 guidelines of the World Health Organization Framework Convention on Tobacco Control (WHO FCTC) are associated with a greater price gap between higher- and lower-priced products.

The greater price gap between higher- and lower-priced products, in turn, provides more opportunities for those who smoke to continue smoking by switching to cheaper products as the taxes increase. Absent from this growing body of evidence is any analysis of the distribution of cigarette prices under different excise tax structures in African countries.

Some more information about tobacco excise tax structures:

- There are two types of excise taxes that can be levied on tobacco products: specific excise taxes and *ad valorem* excise taxes.
- A specific excise tax is levied as a fixed monetary amount of tax per quantity, volume or weight of the tobacco products. The tax can be levied per piece, pack, carton or kilogram of tobacco.
- An *ad valorem* excise tax is levied as a percentage of some measure of value of the tobacco products, such as the manufacturer's price or the retail selling price.
- Specific excise taxes and *ad valorem* excise taxes can be combined to form a mixed excise tax structure.
- Any of these tobacco taxes can be implemented on cigarettes in a uniform manner, or in a tiered manner.
- A tax structure that applies different tax rates to different types, or brands of cigarettes is called a tiered tax structure.
- In a uniform tax structure, all cigarettes are taxed an identical amount or at an identical rate.

The FCTC Article 6 guidelines recommend that countries adopt a uniform specific excise tax structure, or a uniform mixed excise tax structure that includes a minimum specific tax floor.



STUDY OBJECTIVE

To provide a descriptive comparison of the distribution of cigarette prices, under different excise tax structures, in nine sub-Saharan African countries.



DATA

This study was based on the publicly available, individual-level data on cigarette expenditure from each of the eight sub-Saharan African countries where a Global Adult Tobacco Survey (GATS) has been completed, and comparable individual-level price data from the 2017 Gambia Tobacco Survey.

Total sample sizes in these nationally representative surveys varies across countries: Botswana (4,643), Cameroon (5,271), Ethiopia (10,150), Kenya (4,408), The Gambia (1,211), Nigeria (9,765), Senegal (4,347), Tanzania (4,797) and Uganda (8,508). Data on the tax structures in place at the time of each survey was obtained from the WHO Country Reports that inform the bi-annual *WHO Report on the Global Epidemic* and the WHO FCTC Convention Secretariat Implementation reports. The excise tax structures and tax rates of the nine countries in the year that their surveys were conducted are shown in the table below. The table also indicates whether the country is part of a regional trade bloc with a tobacco tax directive in place.

Tax structures in year of survey:

Country	Tax structure in year of survey	Tax rate levied	Trade bloc tax directive requirements in place at the time of the GATS survey
Botswana (2017)	Uniform mixed excise tax	11 Pula per pack of 20 cigarettes plus 30% of the manufacturing cost (for domestic production) or 30% of the cost, insurance and freight (CIF) value (for imported production)	Southern African Customs Union (SACU): uniform specific excise tax, which is adjusted annually by at least the inflation rate
Cameroon (2013)	Uniform <i>ad valorem</i> excise	25% of the sales value of cigarettes	Central African Economic and Monetary Community (CEMAC): <i>ad valorem</i> excise tax in the range of 0% to 25% of the sales value of cigarettes
Ethiopia (2016)	Uniform <i>ad valorem</i> excise	75% of the manufacturing cost (for domestic production) or 75% of the CIF value (for imported production)	None
The Gambia (2017)	Uniform specific	12 Dalasi per pack of 20 sticks	Economic Community of West African States (ECOWAS): <i>ad valorem</i> excise tax with a minimum rate of 15% and a maximum rate of 100% on the cost, insurance and freight (CIF) price for imported cigarettes, or the ex-factory price for domestically produced cigarettes

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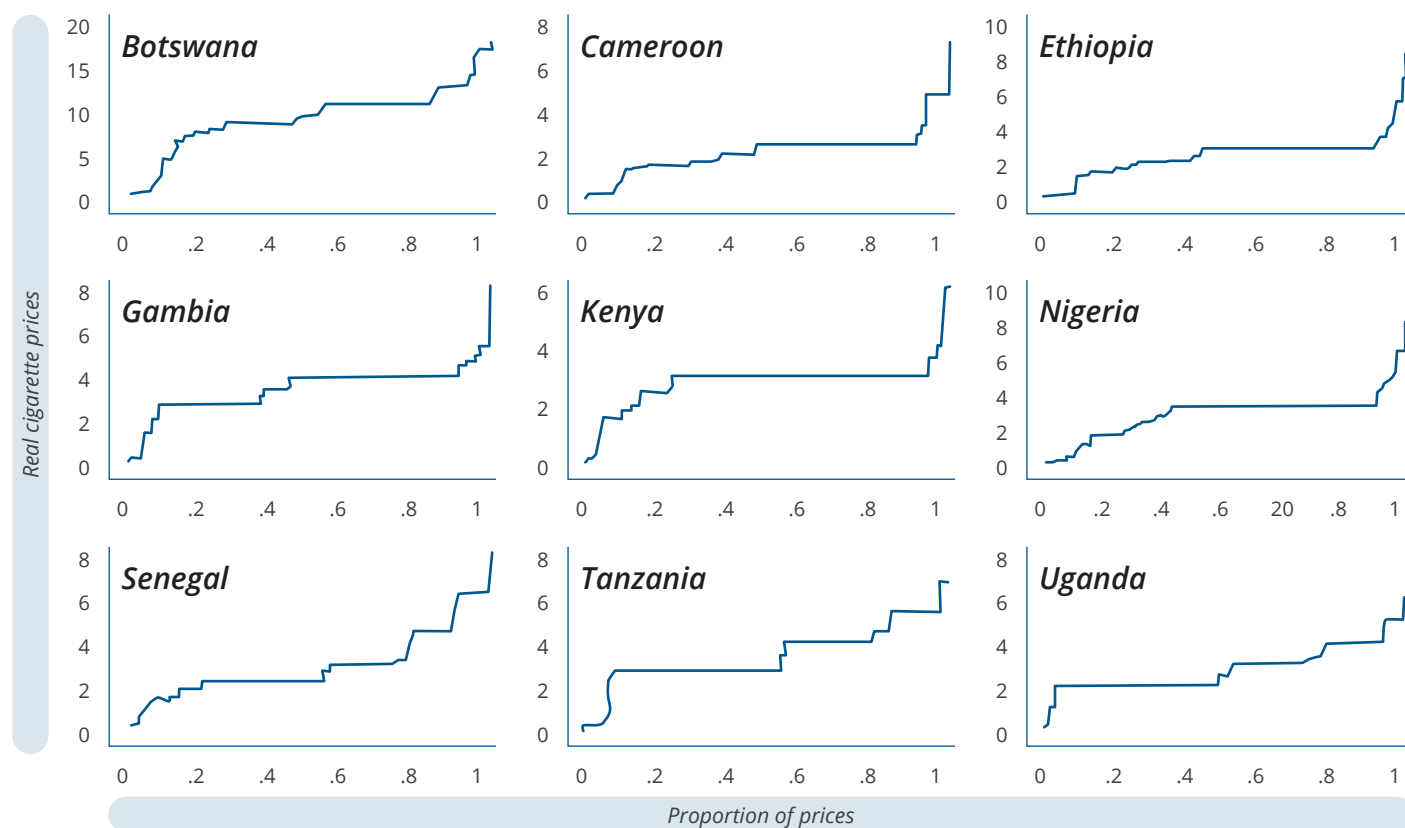
Country	Tax structure in year of survey	Tax rate levied	Trade bloc tax directive requirements in place at the time of the GATS survey
Kenya (2014)	Uniform <i>ad valorem</i> system with minimum specific floor	24 Shillings per pack of 20 cigarettes or 35% of the retail selling price, whichever is higher	None
Nigeria (2012)	Uniform <i>ad valorem</i>	20% of the CIF value for imported products, or 20% of the ex-works price for domestically produced cigarettes	ECOWAS: <i>ad valorem</i> excise tax with a minimum rate of 15% and a maximum rate of 100% on the CIF price for imported cigarettes, or the ex-factory price for domestically produced cigarettes
Senegal (2015)	Uniform <i>ad valorem</i> tax	45% on the CIF value for imported products, or 45% of the ex-factory price for domestically produced cigarettes	ECOWAS: <i>ad valorem</i> excise tax with a minimum rate of 15% and a maximum rate of 100% on the CIF price for imported cigarettes, or the ex-factory price for domestically produced cigarettes West African Economic and Monetary Union (WAEMU): <i>ad valorem</i> excise tax at a minimum rate of 15% and a maximum rate of 45% on the CIF or ex-factory price
Tanzania (2018)	Tiered specific excise tax	Filtered cigarettes: 588 shillings (Tsh) per 20 cigarettes Unfiltered cigarettes: 249 Tsh per 20 cigarettes “Other” category: 1065 Tsh per 20 cigarettes	None
Uganda (2013)	Tiered Specific tax system	Soft cap 1 cigarettes: 640 shillings (Ush) per 20 cigarettes Soft cap 2: 700 Ush per 20 cigarettes Hinge-lids: 1380 Ush per 20 cigarettes	None

METHODS

We calculated cigarette prices in each country from the following questions in GATS: ‘The last time you bought cigarettes for yourself, how many cigarettes did you buy?’, from which we obtained the unit of purchase (individual cigarettes, packs, or cartons) and the number of cigarettes in each unit. From the question ‘How much did you pay for this purchase?’ we obtained the overall purchase amount in local currency. For each adult who smoked cigarettes, we then calculated the price per stick by dividing the reported purchase cost by the number of cigarettes in the purchase. We then multiplied the single-stick price by 20 to estimate the price per 20 sticks. We ran an identical process for The Gambia based on identical questions given in the 2017 Gambia Tobacco Survey data.

To compare prices and their distributions across countries, we converted the derived prices in local currencies into constant 2019 international dollars using the purchasing power parity (PPP) conversion factors and consumer price index of the country. We calculated the coefficients of variation (CoV) and skewness of the price distribution and compared these statistics in the context of each country’s cigarette excise tax structure.

Distribution of cigarette prices in constant 2019 international PPP dollars by country



Cigarette Prices in real 2019 international PPP dollars: Descriptive statistics

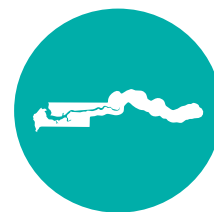
Tax structure	Specific			Mixed		Ad valorem			
	Uniform	Tiered		Uniform		Uniform			
Country	The Gambia	Uganda	Tanzania	Botswana (specific plus <i>ad valorem</i>)	Kenya (minimum specific floor)	Cameroon	Ethiopia	Nigeria	Senegal
N	712	322	221	302	326	275	405	288	165
Mean	3.50	2.92	3.38	8.94	2.84	2.01	2.32	2.80	2.93
Median	4.14	2.76	2.67	9.37	3.06	2.34	2.72	3.21	2.23
SD	1.14	1.27	1.34	3.58	0.82	0.99	1.16	1.34	1.57
Coefficient of variation	0.32	0.39	0.40	0.40	0.29	0.49	0.49	0.48	0.53
Skewness	-0.84	1.05	-0.12	-0.54	-0.22	0.69	1.14	0.48	1.08

RESULTS

- The price variation in countries that have a pure *ad valorem* excise tax structure is larger than that in countries that have a specific tax component in their tax structure.
- The least price variation is observed in The Gambia (CoV=0.32) and Kenya (CoV=0.29). At the time of their surveys, these were the only two countries in the sample that implemented best-practice excise tax structures.
- Skewness statistics show that in countries with uniform *ad valorem* taxes, cigarette prices are positively skewed, which means that prices tend to be clustered at lower levels, while there are relatively fewer high prices in the distribution.
- Prices are negatively skewed in most countries with a specific component in their excise tax structure (Botswana, Kenya, Tanzania and The Gambia) which means that, in these countries, cigarette prices are clustered at the higher levels, with a small number of low prices.



Least price variation observed
Kenya (CoV=0.29)



Least price variation observed
The Gambia (CoV=0.32)

POLICY IMPLICATIONS

- This study provides Africa-specific evidence for governments on the continent to improve their tobacco excise tax structures.
- Results suggest that the sampled countries could minimize the distribution of cigarette prices by implementing the recommendations on excise tax structures given in the WHO FCTC Article 6 guidelines.
- In this regard, the 2017 (ECOWAS) Directive that requires member states to implement a specific component of 0.40 USD equivalent, is a major step forward.
- Regional tax directives that require the adoption of uniform specific excise taxes, or minimum specific floors, preferably set at a high level, could be an efficient way to get multiple countries to adopt an FCTC-compliant excise tax structure.

The full paper:



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