Changing Duty Taxes in Saint Helena (SH)

DRAFT

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Introduction

Tobacco use is a global public health concern due to the deleterious effects of the product on human health. Each year, the product kills 7 million people globally, and 87% of these deaths are as a result of direct use of the product (WHO, 2017, 2018). In response, the World Health Organization's Framework Convention on Tobacco Control (WHO FCTC) was created and adopted in 2003 (WHO, 2003; Roemer et al., 2005). Ratifying countries are recommended to adopt policies to reduce both the demand for and supply of tobacco products (WHO, 2003). Article 6 of the FCTC specifically commits Parties to using tax and price policies to control tobacco consumption (WHO, 2003).

Saint Helena (SH) government applies tobacco taxation with a uniform, specific duty tax structure. Unlike the ad valorem duty tax, this tax structure insulates tobacco tax revenues against industry price manipulations, and are also easy and efficient to administer. However, if government does not keep pace with inflation the value of the tax gets eroded.

For 2018/2019 fiscal year, the government levies £22.37 for each kilo of unmanufactured tobacco and £73.91 per kilo for cigars, cheroots and cigarillos.[1] Each pack of cigarettes, irrespective of the brand, attracts £3.93 as tax/duty. These taxes represent 5.4% increase in their previous values. The annual increase in the duty tax is based on the level of inflation in SH, i.e., the current level of inflation plus 1%. For instance, if inflation rate is 1% then tobacco tax increases by 2%. There is no production plant in SH. All tobacco products consumed are imported. According to a Household Expenditure Survey (HES) conducted in 2017, the major brands of cigarettes are L&M, B&H, and 555s (and other brands) with market shares 50%, 39%, and 11% respectively.

In 2017/2018 fiscal year, 249,924 packs of cigarettes were sold in SH (SH Customs Data, 2018). The data from Customs and Finance Departments indicate, based on calculations,

[1] The fiscal year starts on 01 April to 31 March. Table A1 in the appendix provides definitions of the terminologies used in this report. Notes on other issues are also provided in the appendix.

L&M accounted for 50% of the sales. These cigarettes were sold at an average (weighted) price of £6.23 per pack (SH Government, 2018). A short informal survey of prices in retail shops (conducted by an Official) in October 2018 showed that the retail price of 20-pack of L&M (the popular brand) ranges from £5.30 to £6.95. In the case of B&H, the price is between £5.45 and £6.4, while 555s and other brands are sold between £5.45 and £6.27.[2] Comparing these prices and given the high level of under-reporting for tobacco and alcohol expenditures, as expounded in the HES report, we believe that tobacco/cigarette prices reported during the HES did not reflect the actual situation. For this reason, we use the retail prices displayed in shops for October 2018 for further analysis. In any case, the duty tax as proportion of the retail price is below the WHO's recommended target of 70% (reiterated in the FCTC Article 6 guidelines).

Price and average income levels are two major economic factors that influence tobacco consumption, and these factors jointly determine the affordability of tobacco products (IARC, 2011). A change in the tobacco tax level is often used to affect the price levels of tobacco products. However, many of these tax changes rarely account for the changing average income levels within the country. Tax increases become less effective if the increase in price is less than the average growth in income. This situation makes tobacco products more affordable to the people. In SH, our calculations from available data show that 6.33% of per capita income buys 2000 (i.e., 100 packs) cigarettes as of 2018. Comparing this to South Africa (4.26%) and Mauritius (3.83%) for 2016, one can say that cigarettes are relatively less affordable in SH than in South Africa and Mauritius (WHO, 2017). Also, compared to the average regional affordability level of 13.57% for 2016, cigarettes in SH are relatively more affordable (WHO, 2017).

[2] Dr. Angie Jackson-Morris of the Health Promotion and Social Marketing Department, SH Government provided October 2018 prices for cigarettes and some other data used in this report.

Cigarette Taxes and Revenue

Policy makers usually have two main goals when designing tobacco tax structure. Aside from being simple to administer, the tax should be able to 1) reduce tobacco consumption and smoking prevalence (especially among the youth), and 2) generate government revenue. SH has a strong tobacco tax system in that the application of the duty is simple. Duty tax has averaged £3.37 for a pack of 20 cigarettes since 2014 with an average rate of increase of 5.49% per year. Available data (see Table A2 in appendix) suggest that government stands to generate more revenue from tobacco taxes.

The Forecasting Model

The TetSim model is a tax simulation model designed by researchers at the Economics of Tobacco Control Project.[3] The model is used to illustrate what could happen to the average retail price of cigarettes, cigarette consumption, and government duty tax revenue if the government were to increase the duty tax on cigarette products (see van Walbeek, 2010 for details on the Tetsim model).

Model Assumptions and Parameters

The model is designed to reflect the specific circumstances and tax system in SH. This follows from consultation with officials and data collected. The baseline data and sources for parameters are given in Table A3 (see appendix).

1. A decrease in consumption is either driven by current smokers deciding to quit, current non-smokers deciding not to initiate or current smokers just smoking less. To calculate the effect on prevalence, we assume that 50% of the decrease in consumption is due to current smokers quitting.
2. The price elasticity of demand for cigarettes is estimated at about –0.4 for developed countries and between –0.4 and –0.8 for developing countries. This implies that a 10% increase in the real (inflation-adjusted) price of cigarettes decreases tobacco consumption by 4% in developed countries and by between 4 and 8% in developing countries.

[3] An online version of the simulation model is found at http://www.commerce.uct.ac.za/cwalbeek/TeTSim/index.html#/Home

Since there are no price elasticity estimates for SH, we use the range derived from developing country data. If the price in the mid-range or expensive priced cigarettes increases, individuals may switch to lower priced cigarettes. Hence, we assume that the price elasticity across price segments are varied. The price elasticity is higher for the cheapest brand as these consumers cannot switch to an even cheaper brand. They could also continue to smoke, but just decrease their smoking intensity.

3. We assume an income elasticity of 0.5, based on evidence from low- and middle-income countries (see van Walbeek, 2010).
4. The model assumes current economic growth rate to be 1.7% and stays constant over the simulation period. The same assumption is made about the level of inflation, 3.8% for 2019–2023.
5. We assume that the tobacco industry increases the net-of-tax price by 5% in response to any increase in the duty tax rate.
6. The model does not assume any effect of illicit trade, or substitutes of the product.
7. The model also assumes that SH's population grows at 1.28% annually and therefore expect the number of smokers to grow by 1.28% annually. We also assume that cigarette consumption increases by 0.5% when there is a 1% growth in population.

Sources are further described in the appendix.

A Tax Increase Scenario

The main policy goal of this simulation exercise is to achieve a duty tax incidence that that aligns with the WHO target of at least 70% of the retail price and decrease consumption and smoking prevalence/intensity while generating revenue. We propose changes to the tobacco tax level to account for affordability, income growth and expected growth in the number of smokers resulting from population growth.

Assuming economic growth (1.7%) and the growth rate of population (1.28%) remain constant while inflation stands at 3.8% (using 2010-2018 average) for the entire period then the real duty tax rate would be 3.98% inclusive of the 1% base rate/real tax that is currently charged. Given the low base rate, we propose the following a real tax structure.

Duty tax rate = α% + [Base rate + income growth rate + growth rate in population]

α% may be seen as some form of a minimum rate at which current duty tax may be increased. Various scenarios under different **α%** are presented in Table 1.

Table 1. Tax structure and policy options

Policy options	Proposed policy
	α% + [base rate + income growth rate + growth rate in population]
	i.e., α% +3.98%
1	Increase the tax with $\boldsymbol{\alpha}$ **= 20%**
2	Increase the tax with $\boldsymbol{\alpha}$ **= 10%**
3	Increase the tax with $\boldsymbol{\alpha}$ **= 5%**
4	Increase the tax with $\boldsymbol{\alpha}$ **= 2%**
5	No increase in tax; keep current rates

The simulation has been done for nominal and real tax increases.

Summary of Simulation Results

The simulation results are presented in the tables below. Total duty and industry revenues are in thousand SH£. See appendix for detailed results.

Table 2: Policy option 1 (tax rate: 23.98%)

	Outcome Results						
Year	Baseline	2019	2020	2021	2022	2023	Expected 5-Year
Percentage Increase in tax	**base**	**24.0**	**24.0**	**24.0**	**24.0**	**24.0**	
Total Duty Revenue (£ 000)	**931**	**1,082**	**1,255**	**1,448**	**1,672**	**1,928**	**997**
Percentage Change in Duty Revenue		16.2	16.0	15.4	15.5	15.3	107.1
Industry Revenue/NOT Rev. (£ 000)	534.3	526.4	517.4	506.1	495.6	484.5	-49.8
Percentage change in Industry Rev.		-1.5	-1.7	-2.2	-2.1	-2.2	-9.3
Smoking Prevalence (%), 15+	**24.2**	**23.4**	**22.6**	**21.8**	**21.0**	**20.3**	**-3.9**

Note: 5-Year column shows the expected change in outcomes from the baseline over the 5 year period. Revenues are in 2018 prices.

Table 3: Policy option 2 (tax rate: 13.98%)

	Outcome Results						
Year	Baseline	2019	2020	2021	2022	2023	5-Year**
Percentage Increase in tax	**base**	**14.0**	**14.0**	**14.0**	**14.0**	**14.0**	
Total Duty Revenue (£ 000)	**931**	**1,018**	**1,112**	**1,213**	**1,324**	**1,445**	**513**
Percentage change in Duty Revenue		9.3	9.3	9.1	9.2	9.1	55.1
Industry Revenue/NOT Rev. (£ 000)	534.3	538.4	542.2	545.2	548.5	551.6	17.3
Percentage change in Industry Rev.		0.8	0.7	0.5	0.6	0.6	3.2
Smoking Prevalence (%), 15+	**24.2**	**23.7**	**23.2**	**22.7**	**22.2**	**21.7**	**-2.5**

Note: 5-Year column shows the expected change in outcomes from the baseline over the 5 year period. Revenues are in 2018 prices.

Table 4: Policy Option 3 (tax rate: 8.98%)

	Outcome Results						
Year	Baseline	2019	2020	2021	2022	2023	5-Year**
Percentage Increase in tax	**base**	**9.0**	**9.0**	**9.0**	**9.0**	**9.0**	
Total Duty Revenue (£ 000)	**931**	**985**	**1,042**	**1,101**	**1,165**	**1,232**	**300**
Percentage change in Duty Revenue		5.8	5.8	5.7	5.8	5.7	32.2
Industry Revenue/NOT Rev. (£ 000)	534	545	555	566	577	588	54
Percentage change in Industry Rev.		2.0	1.9	1.9	1.9	1.9	10.0
Smoking Prevalence (%), 15+	**24.2**	**23.8**	**23.5**	**23.1**	**22.8**	**22.4**	**-1.8**

Note: 5-Year column shows the expected change in outcomes from the baseline over the 5 year period. Revenues are in 2018 prices.

Table 5: Policy Option 4 (tax rate: 5.98%)

	Outcome Results						
Year	Baseline	2019	2020	2021	2022	2023	5-Year**
Percentage Increase in tax	**base**	**6.0**	**6.0**	**6.0**	**6.0**	**6.0**	
Total Duty Revenue (£ 000)	**931**	**965**	**1,000**	**1,036**	**1,074**	**1,113**	**181**
Percentage change in Duty Revenue		3.6	3.6	3.6	3.6	3.6	19.5
Industry Revenue/NOT Rev. (£ 000)	534	549	564	579	594	610	76.1
Percentage change in Industry Rev.		2.7	2.7	2.7	2.7	2.7	14.2
Smoking Prevalence (%), 15+	**24.2**	**23.9**	**23.7**	**23.4**	**23.1**	**22.9**	**-1.3**

Note: 5-Year column shows the expected change in outcomes from the baseline over the 5 year period. Revenues are in 2018 prices.

Table 6: Policy Option 5 (no change in current tax)

	Outcome Results						
Year	Baseline	2019	2020	2021	2022	2023	5-Year**
Percentage Increase in tax	**base**	**0**	**0**	**0**	**0**	**0**	
Total Duty Revenue (£ 000)	**931**	**924**	**917**	**910**	**903**	**896**	**-35.6**
Percentage change in revenue		-0.7	-0.8	-0.8	-0.8	-0.8	-3.8
Industry Revenue/NOT Rev. (£ 000)	534	557	581	605	630	656	121.9
Percentage change in Industry Rev.		4.2	4.2	4.2	4.2	4.1	22.8
Smoking Prevalence (%), 15+	**24.2**	**24.1**	**24.0**	**23.9**	**23.8**	**23.7**	**-0.5**

Note: 5-Year column shows the expected change in outcomes from the baseline over the 5 year period. Revenues are in 2018 prices.

Conclusion

The main recommendation for SH is to increase the level of real duty tax on cigarettes in the coming years to make cigarettes less affordable. This should lead to both an increase in government revenue and a decrease in smoking prevalence or smoking intensity. SH's duty tax structure is ideal in that it is administratively simple, and would be efficient in increasing cigarette prices, for the ultimate goal of increased government revenue and reduced smoking prevalence. This is in line with the WHO recommendations and FCTC article 6 guidelines (WHO, 2011).

We simulated five policy options, each with a different impact on cigarette retail prices, cigarette consumption, smoking prevalence, government revenue and the duty tax burden. The ideal policy are options 1 (first best) and 2 (second best), as these options deliver the higher levels of government revenue and reduce smoking prevalence significantly (see Tables 2 and 3). If government decides to keep current rates (perhaps for some political reasons) or raise the real tax level by a small percentage (as in options

3 and 4) the impact of the tax increase on revenue and consumption would be substantially lower. In such a scenario, the duty tax burden will still be lower than FCTC target in 2023.

Smoking intensity remains high in SH, and possible reasons are single stick sales and underdeveloped cessation/tobacco control measures as well as cigarettes becoming more affordable over time. Cigarettes are affordable because real duty tax has remained constant for a long time aside from being low. Moreover, the current duty tax burden for cigarettes in SH is approximately 64%, which is below the recommended 70% target. Therefore, adjusting duty tax regularly to account for factors like inflation and growth in income and population is important. This is to ensure that tobacco products become less affordable over time, thereby curbing demand.

Taxing tobacco products other than cigarettes is also important. At the moment SH levies £22.37 for each kilo of unmanufactured tobacco and £73.91 per kilo for cigars, cheroots and cigarillos. The FCTC guidelines recommends all tobacco products to be taxed in a comparable manner. This is important to deter users of one tobacco product to substitute one tobacco product for another when the tax (and possibly the retail price) of one product increases. Should cigarette users switch to other tobacco products if the retail prices of cigarettes increase, this will lead to both lower revenue and reduced public health impact of cigarette taxation. In this respect, other tobacco products should be taxed using the same policy option for cigarettes (i.e., option 1). This would prevent substitution, particularly down-trading, in response to increased taxes.

Different scenarios were also used to conduct sensitivity analysis to check how tax revenue and smoking prevalence changes. This was done for policy options 1 by altering the figures for economic growth rate, population growth and industry response (see appendix for graphical presentation of the results). In all cases, the trends in revenue and smoking prevalence are similar to those in Tables 2, government increases revenue and simultaneously reduce the smoking prevalence.

We did not consider illicit trade in the model since it may not be a problem in SH. However, in the event that such activities happen they must be seen as crime and appropriate sanctions applied within the local laws. Also, the Illicit Trade Protocol of the FCTC provides guidance to countries on addressing illicit trade.

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Appendix

Notes

1. Policy option 1 means increasing current tax by 23.98% in real terms. This is the recommended rate to increase the current duty, and is shown in Table 2 with name **"percentage increase in tax**".

2. **Population Growth:** The population growth figure is based on historical census data of SH. We use data from 1851 to 2016 figures to obtain an estimate of population growth. The weighted average growth for each census is 12.76%. Since a census is conducted every ten years, we divide this decade weighted average by 10 to obtain annual growth rate of 1.28% in the population. We also use monthly population data from January 2010 to September 2018 for SH and obtained a monthly growth rate of 0.15%; this translates into 1.84% annual growth rate in population (link to the monthly data was provided by the Statistics Commissioner). We decided to use the lower annual growth rate (i.e., 1.28%). The datasets for are available on SH website (http://www.sainthelena.gov.sh/statistics-reports-and-publications/ and http://www.sainthelena.gov.sh/wp-content/uploads/2018/10/Population-October-20181019.xlsx)

3. **GDP Figures:** We use the figures reported for 2014/2015 to obtain an approximate value for 2018. GDP for 2014/2015 was 33,500,000 SH pounds; this is 38,311,272 SH pounds in 2018 prices using the CPI. Thus, GDP for 2018 was estimated to be 38,311,272. However, upon further discussions with officials, an estimate of 42,000,000 was used for analysis.

4. **GDP growth rate:** Using the compound interest formula the growth rate of GDP was estimated to be 1.7%. This is based on the CPI based GDP in 2018. Officials indicated, however, that GDP growth rate is negative in recent times. Therefore, the annual growth in GDP used for the analysis is more of assumption than a fact.

5. **Duty rates:** We use the duty per carton to conduct the analysis instead of the duty per kilo. The carton rate gives a better reflection of the actual revenue for 2017/2018 year than the kilo rate.

6. **Baseline:** Though carton rate for cigarettes is available for 2018/19, there is no revenue data for the same period to obtain an estimate for consumption. For this reason, we use 2017/18 data on duty and revenue for the baseline.

Table A1: Summary of definitions

No.	Item	Definition
1	Baseline	This is the situation before any change in the variable of interest (in this case the excise tax) occurs. The main variables of interest are (1) cigarette consumption, (2) retail price, (3) total duty tax revenue, and (4) duty tax burden
2	Duty tax burden	The proportion of the excise tax in the retail price of cigarettes.
3	Net-of-tax (NOT) price	This is the retail price, less the amount of Value-added Tax, the excise tax and all other taxes that may be imposed by the government. It is the amount that is shared by all parties involved in the manufacture and sale of the cigarette, i.e. the leaf producer, producers of other inputs, manufacturer, wholesalers and retailers.
4	Net-of-tax revenue	A catchall term from the revenue that accrues to all parties involved in the manufacture and sale of the cigarette, i.e. the leaf producer, producers of other inputs, manufacturer, wholesaler and retailer.
5	Retail price	The price of a cigarette at the point of sale. It is comprised of the net-of-tax price and all taxes collected on cigarettes (VAT, excise and import duties).

6	Total tax burden	The proportion of all taxes (excise, VAT, import duties) in the retail price cigarettes.
7	Duty	This is the tax levied on imported cigarettes and other tobacco products. For the purposes of this report, the duty is treated as a specific tax.

Note: The fiscal year begins in April and ends in March the following year. Therefore, 2018 indicated as baseline refer to data from 2017/2018 fiscal year. Similarly 2019 would relate to 2018/2019 fiscal year.

Table A2: Duty Tax Increases and Government Revenue

Year	No. of Cigarette Packs (20) sold	Cigarette Tax Per Pack-20 in SH £	Duty Revenue from Cigarettes in SH £
2011	158,142	2.346	371,000
2012	207,924	2.852	593,000
2013	226,855	3.046	691,000
2014	---	3.198	---
2015	---	3.358	---
2016	---	3.526	---
2017	**249,924**	**3.726**	**931,217**
2018	---	3.928	----

Source: Authors' compilation based on SH Government Data; --- indicates no data. Bold indicates data used for baseline analysis.

Table A3: Baseline Data and Sources

Input	**Value**	**Source**
Price, most popular brands (L&M, B&H, and 555s)	per pack	SH Officials
Market share, most popular brands	50% (L&M), 39% (B&H) and 11% (555s and other remaining brands)	Estimates based on SH Household Economic Survey 2017 provided by officials
Import Duty tax rate per pack of 20	3.726 per pack	SH Government Officials
Sales of cigarettes that duty tax was paid on, 2017/2018 (No. of packs) (all imported)	249,924	SH Customs
Total adult (15+) population	3902	Census, Statistical bulletin 10, SH Government
Total prevalence among adult population (percentage)	24.2%	Data from Officials, 2016 Census Data
Population growth rate	1.28	Estimate based on SH data
GDP (SH£)	42,000,000	Consultation with Officials
Percentage of decrease in cigarette consumption that is due to decrease in smoking prevalence	50%	Based on literature
Price elasticity	Between -0.5 and -0.3	Evidence from LMICs
Income elasticity	0.5	Evidence from LMICs
Population elasticity	0.5	Assumed
Average inflation rate (2019-2023)	3.8% (average inflation for 2010-2018)	Inflation rate come from SH Government website
Economic growth rate	1.7%	Estimate using compound interest formula. This may be treated as a guess estimate since officials indicated that recent growth rate is negative.
Industry response: Possible increase in net of tax price	5%	Industry will respond to an increase in duty tax by increasing their net-of-tax price by 5% and 5.4%

Note: There was no consumption and revenue data for April 2018 – March 2019 fiscal year. Though the analysis uses 2018 as the base year, all consumption and revenue data relate to April 2017 – March 2018 fiscal year.

Table 2: Policy option 1 (recommended tax rate: 23.98%)

	Absolute Values							Percentage Change in Indicators					
Year	Baseline	2019	2020	2021	2022	2023	Expected 5-Year change **	2019	2020	2021	2022	2023	5-Year
Total Duty Revenue (£ 000), 2018 prices	**931**	**1,082**	**1,255**	**1,448**	**1,672**	**1,928**	**997**	**16.2**	**16.0**	**15.4**	**15.5**	**15.3**	**107.1**
Total Duty Revenue (£ 000), nominal	931	1,123	1,352	1,619	1,941	2,324	1,393	20.6	20.4	19.8	19.9	19.7	149.5
Duty Tax Burden (%) 2018 prices	63.6	67.3	70.8	74.1	77.2	79.9	16.4	5.9	5.2	4.6	4.1	3.6	25.7
Duty Tax Burden (%) nominal	63.6	67.3	70.8	74.1	77.2	79.9	16.4	5.9	5.2	4.6	4.1	3.6	25.7
Duty Tax Per Pack (£), 2018 prices	3.7	4.6	5.7	7.1	8.8	10.9	7.2	24.0	24.0	24.0	24.0	24.0	192.9
Duty Tax Per Pack (£), nominal	3.7	4.8	6.2	7.9	10.2	13.2	9.4	28.7	28.7	28.7	28.7	28.7	253.0
Percentage Increase in tax, 2018 prices	**base**	**24.0**	**24.0**	**24.0**	**24.0**	**24.0**							
Percentage Increase in tax, nominal	base	28.7	28.7	28.7	28.7	28.7							
Retail Price per pack (£), 2018 prices	5.9	6.9	8.1	9.6	11.4	13.7	7.8	17.1	17.8	18.5	19.1	19.7	132.9
Retail Price per pack (£), nominal	5.9	7.1	8.7	10.7	13.2	16.5	10.6	21.5	22.3	23.0	23.6	24.2	180.6
Consumption in packs of 20	249,924	234,264	219,102	203,880	189,951	176,683	-73,241	-6.3	-6.5	-6.9	-6.8	-7.0	-29.3
Industry Revenue/NOT Rev. (£ 000)	534.3	526.4	517.4	506.1	495.6	484.5	-49.8	-1.5	-1.7	-2.2	-2.1	-2.2	-9.3
Smoking Prevalence (%), 15+	**24.2**	**23.4**	**22.6**	**21.8**	**21.0**	**20.3**	**-3.9**	**-3.2**	**-3.3**	**-3.6**	**-3.5**	**-3.6**	**-16.2**

** Note: 5-Year column shows the expected change in outcomes from the baseline over the 5 year period. The absolute change is expressed in percentage terms in the last column.

Table 3: Policy option 2 (tax rate: 13.98%)

	Absolute Values							Percentage Change					
Year	Baseline	2019	2020	2021	2022	2023	5-Year**	2019	2020	2021	2022	2023	5-Year
Total Duty Revenue (£ 000), 2018 prices	**931**	**1,018**	**1,112**	**1,213**	**1,324**	**1,445**	**513**	**9.3**	**9.3**	**9.1**	**9.2**	**9.1**	**55.1**
Total Duty Revenue (£ 000), nominal	931	1,057	1,198	1,357	1,537	1,741	810	13.5	13.4	13.2	13.3	13.2	86.9
Duty Tax Burden (%) 2018 prices	63.6	65.4	67.3	69.0	70.7	72.4	8.8	2.9	2.8	2.6	2.5	2.3	13.9
Duty Tax Burden (%) nominal	63.6	65.4	67.3	69.0	70.7	72.4	8.8	2.9	2.8	2.6	2.5	2.3	13.9
Duty Tax Per Pack (£), 2018 prices	3.7	4.2	4.8	5.5	6.3	7.2	3.4	14.0	14.0	14.0	14.0	14.0	92.4
Duty Tax Per Pack (£), nominal	3.7	4.4	5.2	6.2	7.3	8.6	4.9	18.3	18.3	18.3	18.3	18.3	131.8
Percentage Increase in tax, 2018 prices	**base**	**14.0**	**14.0**	**14.0**	**14.0**	**14.0**							
Percentage Increase in tax, nominal	base	18.3	18.3	18.3	18.3	18.3							
Retail Price per pack (£), 2018 prices	5.9	6.5	7.2	8.0	8.9	9.9	4.0	10.7	10.9	11.1	11.2	11.4	68.9
Retail Price per pack (£), nominal	5.9	6.7	7.8	8.9	10.3	11.9	6.1	14.9	15.1	15.3	15.4	15.6	103.5
Consumption in packs of 20	249,924	239,690	229,756	219,870	210,553	201,539	-48,385	-4.1	-4.1	-4.3	-4.2	-4.3	-19.4
Industry Revenue/NOT Rev. (£ 000)	534.3	538.4	542.2	545.2	548.5	551.6	17.3	0.8	0.7	0.5	0.6	0.6	3.2
Smoking Prevalence (%), 15+	**24.2**	**23.7**	**23.2**	**22.7**	**22.2**	**21.7**	**-2.5**	**-2.1**	**-2.1**	**-2.2**	**-2.2**	**-2.2**	**-10.3**

Note: 5-Year column shows the expected change in outcomes from the baseline over the 5 year period. The absolute change is expressed in percentage terms in the last column.

Table 4: Policy Option 3 (tax rate: 8.98%)

	Absolute Values							Percentage Change					
Year	Baseline	2019	2020	2021	2022	2023	5-Year**	2019	2020	2021	2022	2023	5-Year
Total Duty Revenue (£ 000), 2018 prices	**931**	**985**	**1,042**	**1,101**	**1,165**	**1,232**	**300**	**5.8**	**5.8**	**5.7**	**5.8**	**5.7**	**32.2**
Total Duty Revenue (£ 000), nominal	931	1,022	1,123	1,232	1,352	1,484	553	9.8	9.8	9.7	9.8	9.8	59.4
Duty Tax Burden (%) 2018 prices	63.6	64.4	65.3	66.1	66.9	67.7	4.1	1.3	1.3	1.3	1.2	1.2	6.5
Duty Tax Burden (%) nominal	63.6	64.4	65.3	66.1	66.9	67.7	4.1	1.3	1.3	1.3	1.2	1.2	6.5
Duty Tax Per Pack (£), 2018 prices	3.7	4.1	4.4	4.8	5.3	5.7	2.0	9.0	9.0	9.0	9.0	9.0	53.7
Duty Tax Per Pack (£), nominal	3.7	4.2	4.8	5.4	6.1	6.9	3.2	13.1	13.1	13.1	13.1	13.1	85.2
Percentage Increase in tax, 2018 prices	**base**	**9.0**	**9.0**	**9.0**	**9.0**	**9.0**							
Percentage Increase in tax, nominal	base	13.1	13.1	13.1	13.1	13.1							
Retail Price per pack (£), 2018 prices	5.9	6.3	6.8	7.3	7.9	8.5	2.6	7.5	7.6	7.6	7.6	7.7	44.3
Retail Price per pack (£), nominal	5.9	6.5	7.3	8.2	9.1	10.2	4.3	11.6	11.7	11.7	11.7	11.8	73.9
Consumption in packs of 20	249,924	242,580	235,433	228,351	221,589	215,012	-34,912	-2.9	-2.9	-3.0	-3.0	-3.0	-14.0
Industry Revenue/NOT Rev. (£ 000)	534	545	555	566	577	588	54	2.0	1.9	1.9	1.9	1.9	10.0
Smoking Prevalence (%), 15+	**24.2**	**23.8**	**23.5**	**23.1**	**22.8**	**22.4**	**-1.8**	**-1.5**	**-1.5**	**-1.5**	**-1.5**	**-1.5**	**-7.3**

** Note: 5-Year column shows the expected change in outcomes from the baseline over the 5 year period. The absolute change is expressed in percentage terms in the last column.

Table 5: Policy Option 4 (tax rate: 5.98%)

	Absolute Values							Percentage Change					
Year	Baseline	2019	2020	2021	2022	2023	5-Year**	2019	2020	2021	2022	2023	5-Year
Total Duty Revenue (£ 000), 2018 prices	**931**	**965**	**1,000**	**1,036**	**1,074**	**1,113**	**181**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**19.5**
Total Duty Revenue (£ 000), nominal	931	1,002	1,077	1,159	1,246	1,341	410	7.6	7.6	7.5	7.6	7.6	44.0
Duty Tax Burden (%) 2018 prices	63.6	63.8	64.0	64.2	64.4	64.6	1.0	0.3	0.3	0.3	0.3	0.3	1.6
Duty Tax Burden (%) nominal	63.6	63.8	64.0	64.2	64.4	64.6	1.0	0.3	0.3	0.3	0.3	0.3	1.6
Duty Tax Per Pack (£), 2018 prices	3.7	3.9	4.2	4.4	4.7	5.0	1.3	6.0	6.0	6.0	6.0	6.0	33.7
Duty Tax Per Pack (£), nominal	3.7	4.1	4.5	5.0	5.5	6.0	2.3	10.0	10.0	10.0	10.0	10.0	61.1
Percentage Increase in tax, 2018 prices	**base**	**6.0**	**6.0**	**6.0**	**6.0**	**6.0**							
Percentage Increase in tax, nominal	base	10.0	10.0	10.0	10.0	10.0							
Retail Price per pack (£), 2018 prices	5.9	6.2	6.5	6.9	7.3	7.7	1.9	5.6	5.6	5.6	5.6	5.6	31.6
Retail Price per pack (£), nominal	5.9	6.4	7.1	7.7	8.5	9.3	3.4	9.6	9.7	9.7	9.7	9.7	58.5
Consumption in packs of 20	249,924	244,375	238,954	233,584	228,411	223,357	-26,567	-2.2	-2.2	-2.2	-2.2	-2.2	-10.6
Industry Revenue/NOT Rev. (£ 000)	534	549	564	579	594	610	76.1	2.7	2.7	2.7	2.7	2.7	14.2
Smoking Prevalence (%), 15+	**24.2**	**23.9**	**23.7**	**23.4**	**23.1**	**22.9**	**-1.3**	**-1.1**	**-1.1**	**-1.1**	**-1.1**	**-1.1**	**-5.5**

** Note: 5-Year column shows the expected change in outcomes from the baseline over the 5 year period. The absolute change is expressed in percentage terms in the last column.

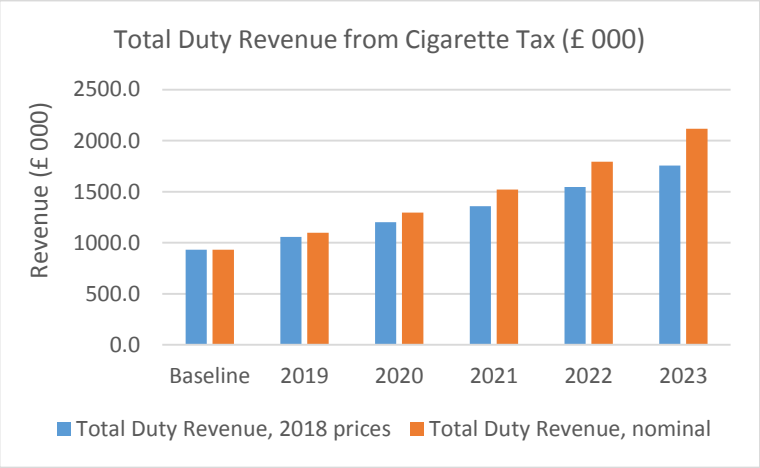
Table 6: Policy Option 5 (no change in current tax)

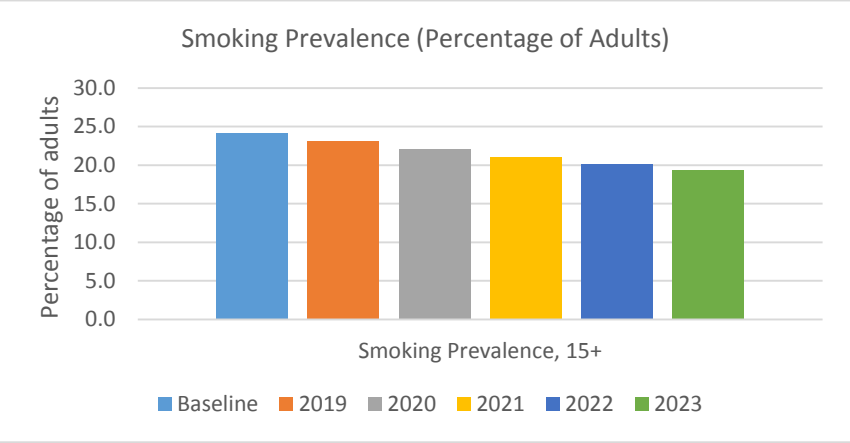
	Absolute Values							Percentage Change					
Year	Baseline	2019	2020	2021	2022	2023	5-Year**	2019	2020	2021	2022	2023	5-Year
Total Duty Revenue (£ 000), 2018 prices	**931**	**924**	**917**	**910**	**903**	**896**	**-35.6**	**-0.7**	**-0.8**	**-0.8**	**-0.8**	**-0.8**	**-3.8**
Total Duty Revenue (£ 000), nominal	931	960	989	1,018	1,048	1,079	148.0	3.0	3.0	3.0	3.0	2.9	15.9
Duty Tax Burden (%) 2018 prices	63.6	62.4	61.3	60.1	58.9	57.8	-5.8	-1.8	-1.8	-1.9	-2.0	-2.0	-9.2
Duty Tax Burden (%) nominal	63.6	62.4	61.3	60.1	58.9	57.8	-5.8	-1.8	-1.8	-1.9	-2.0	-2.0	-9.2
Duty Tax Per Pack (£), 2018 prices	3.7	3.7	3.7	3.7	3.7	3.7	-	0.0	0.0	0.0	0.0	0.0	0.0
Duty Tax Per Pack (£), nominal	3.7	3.9	4.0	4.2	4.3	4.5	0.8	3.8	3.8	3.8	3.8	3.8	20.5
Percentage Increase in tax, 2018 prices	**base**	**0**	**0**	**0**	**0**	**0**							
Percentage Increase in tax, nominal	base	3.8	3.8	3.8	3.8	3.8							
Retail Price per pack (£), 2018 prices	5.9	6.0	6.1	6.2	6.3	6.5	0.6	1.8	1.9	1.9	2.0	2.1	10.1
Retail Price per pack (£), nominal	5.9	6.2	6.6	6.9	7.3	7.8	1.9	5.7	5.8	5.8	5.9	5.9	32.7
Consumption in packs of 20	249,924	248,098	246,230	244,312	242,361	240,370	-9,554	-0.7	-0.8	-0.8	-0.8	-0.8	-3.8
Industry Revenue/NOT Rev. (£ 000)	534	557	581	605	630	656	121.9	4.2	4.2	4.2	4.2	4.1	22.8
Smoking Prevalence (%), 15+	**24.2**	**24.1**	**24.0**	**23.9**	**23.8**	**23.7**	**-0.5**	**-0.4**	**-0.4**	**-0.4**	**-0.4**	**-0.4**	**-1.9**

** Note: 5-Year column shows the expected change in outcomes from the baseline over the 5 year period. The absolute change is expressed in percentage terms in the last column.

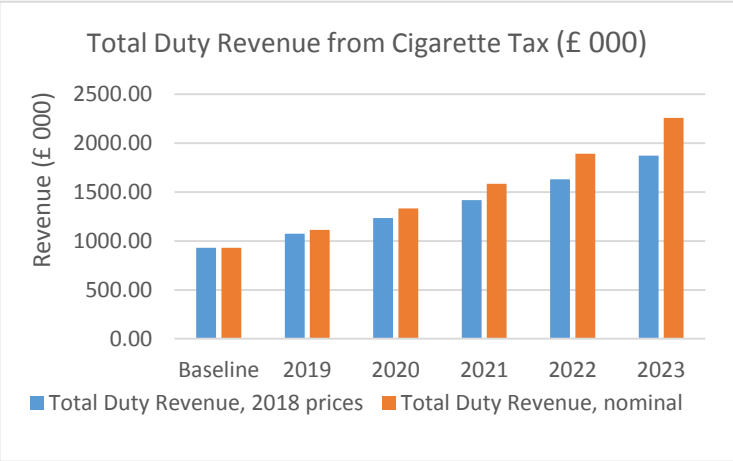
Appendix A4: Sensitivity Analysis (for policy option 1)

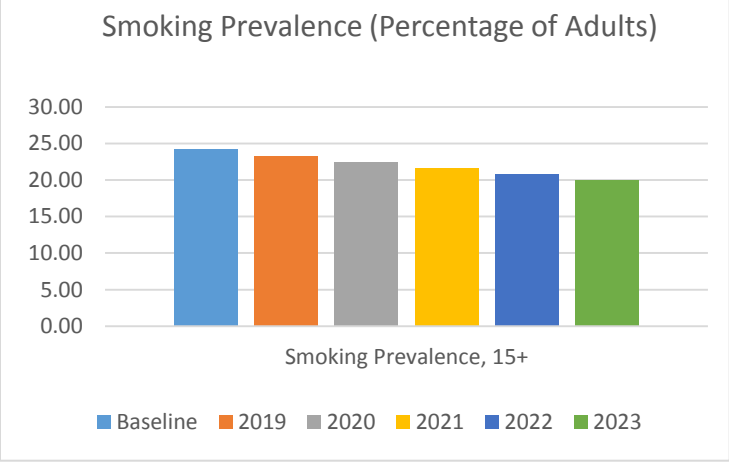
Policy option 1
case 1
100% tax pass through
1.7% growth
No population growth



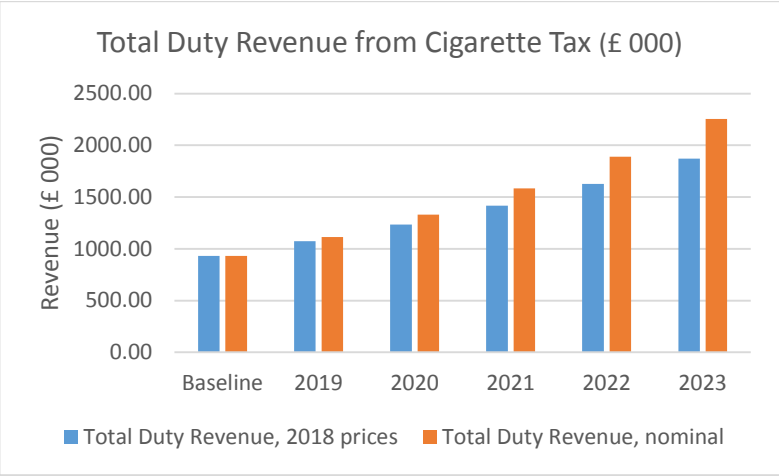


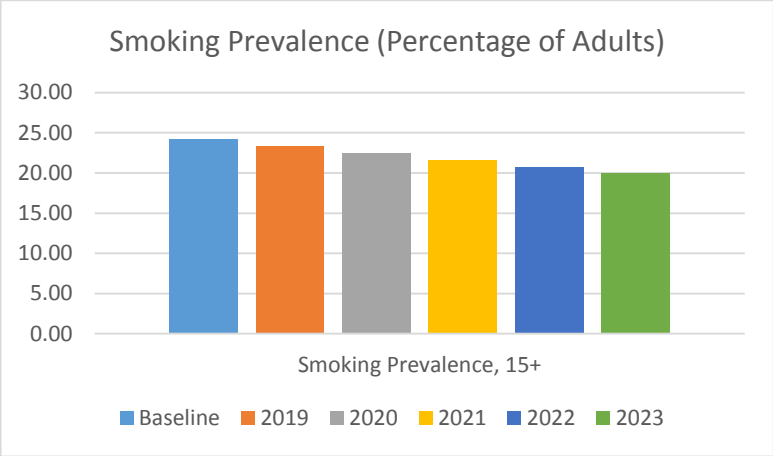
case 2
50% tax pass through
1.7% growth
no population growth



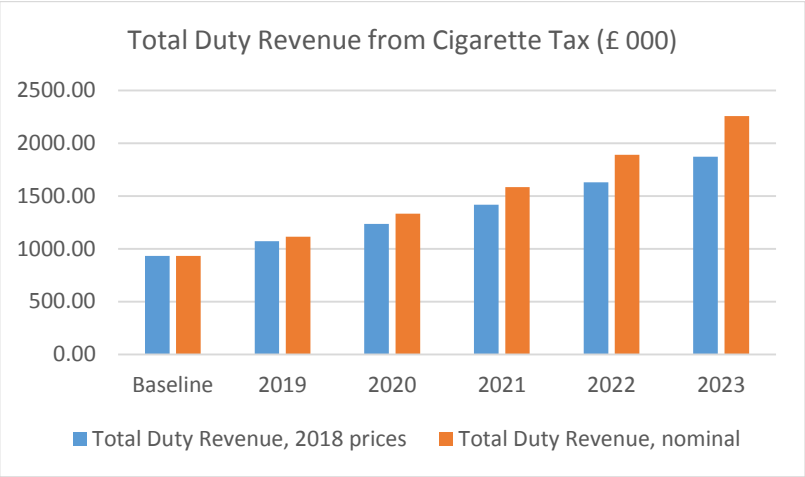


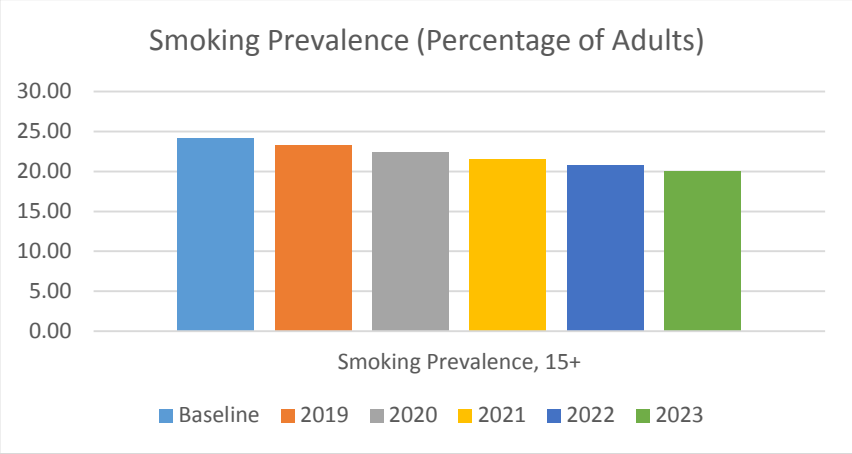
Case 3
50% tax pass through
4% economic growth
no population growth



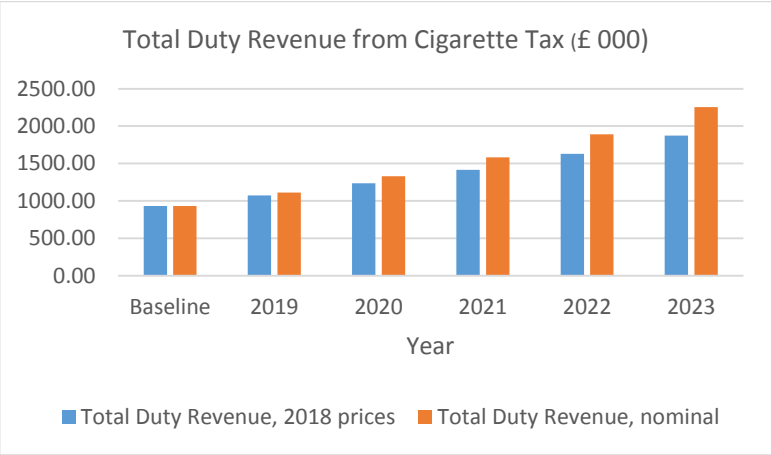


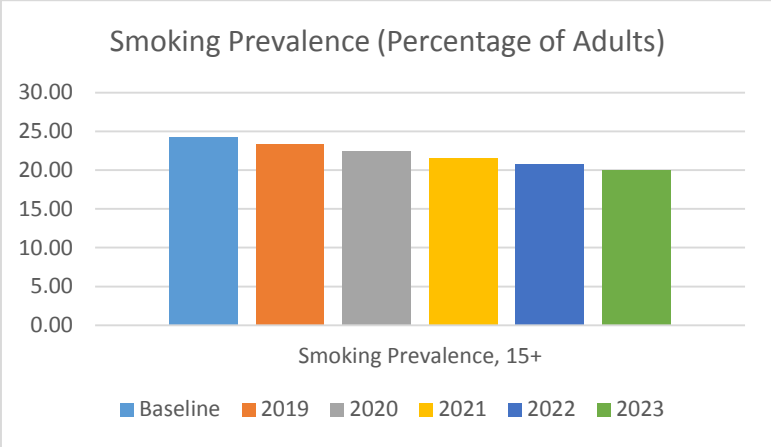
Case 4
50% tax pass through
(-4%) economic growth
No population growth



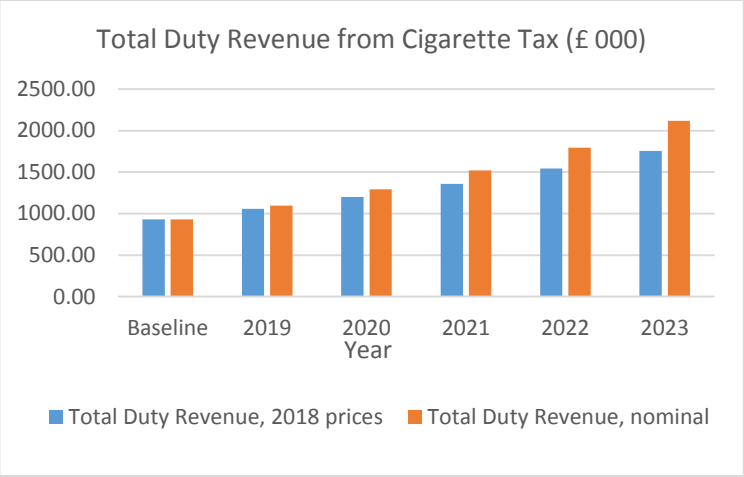


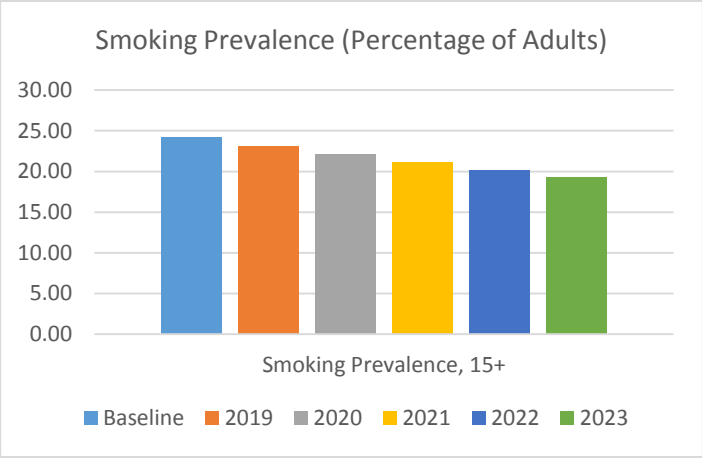
Case 5
50% tax pass through
(-1.7%) economic growth
No population growth



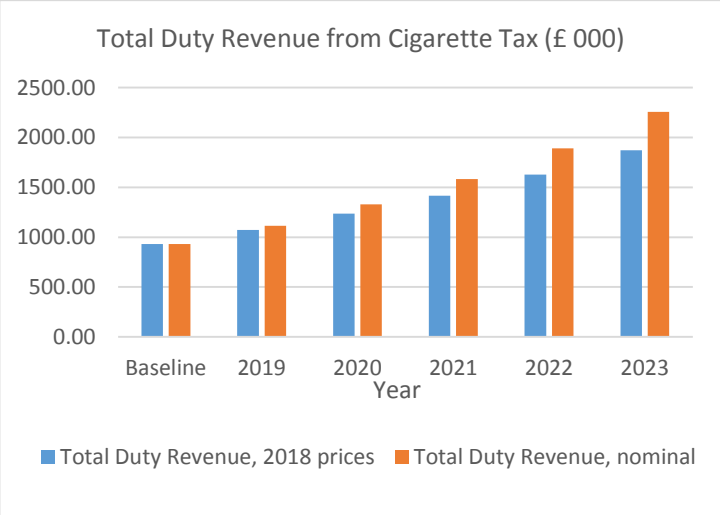


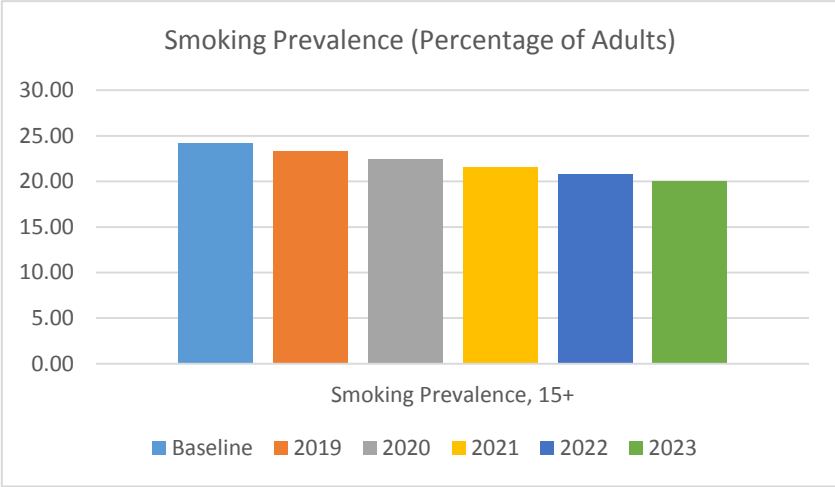
Case 6
100% tax pass through
4% economic growth
1.28% population growth





Case 7
50% tax pass through
4% economic growth
(-1.28%) population growth

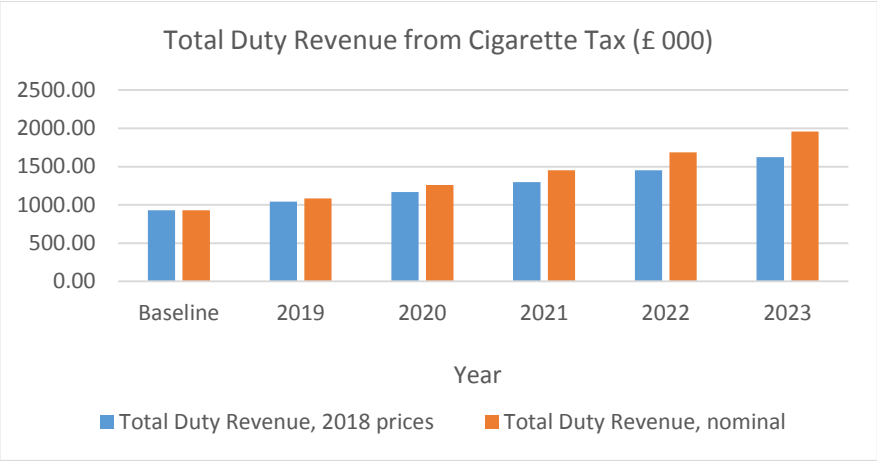


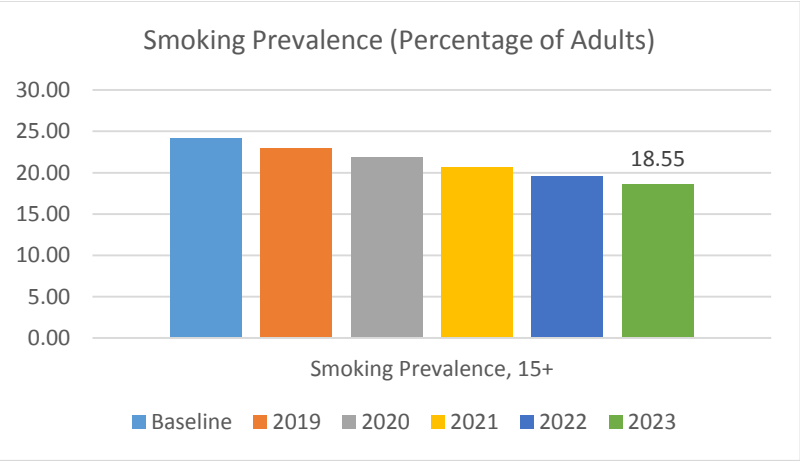


OVERSHIFTING OF THE TAX

Policy option 1

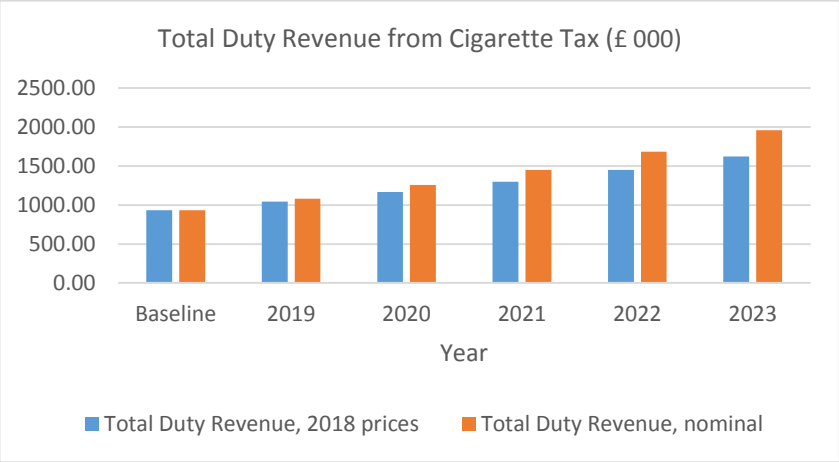
Case 1
150% tax pass-through
1.7% growth
No population growth

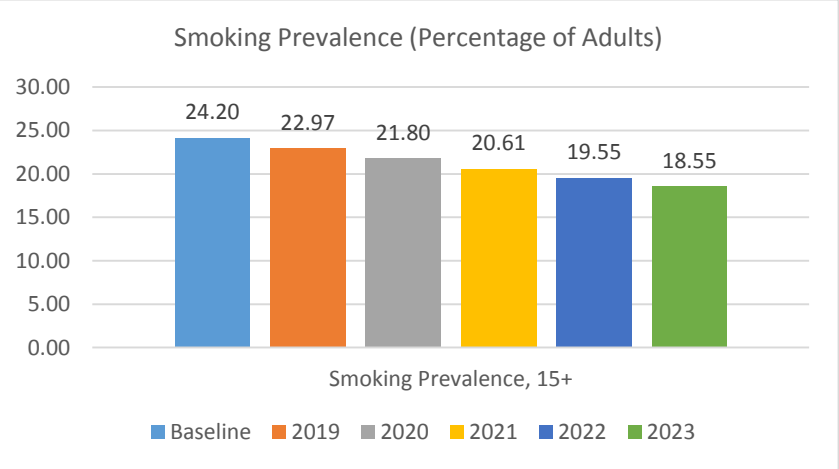




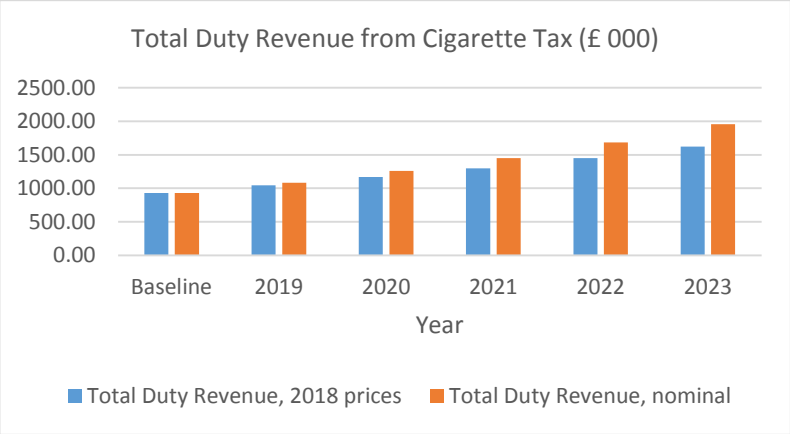
Case 2

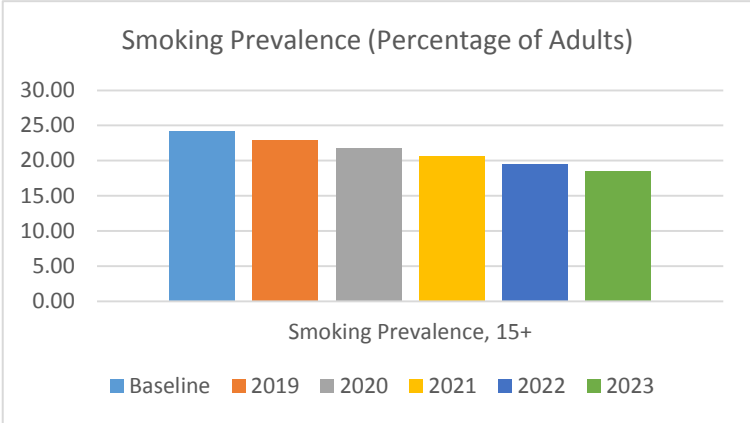
150% tax pass-through
4% growth
No population growth



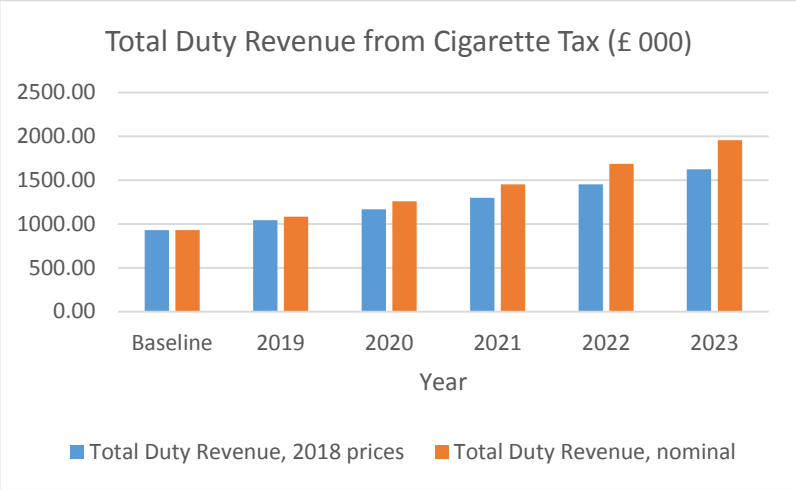


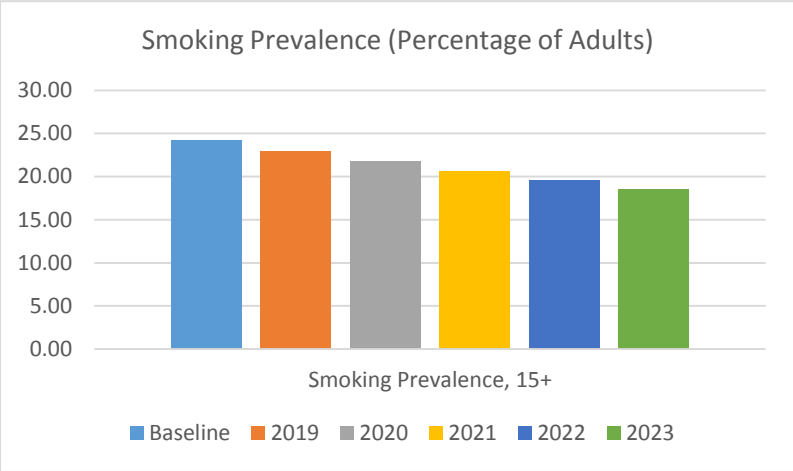
Case 3
150% tax pass-through
4% growth
1.28% population growth



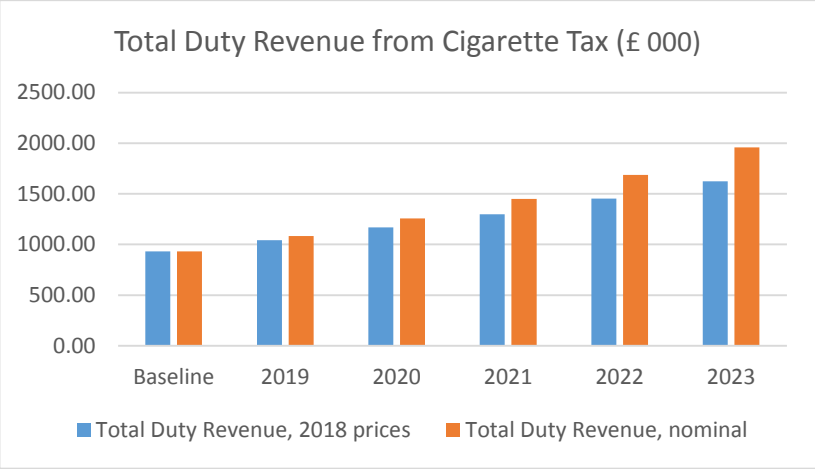


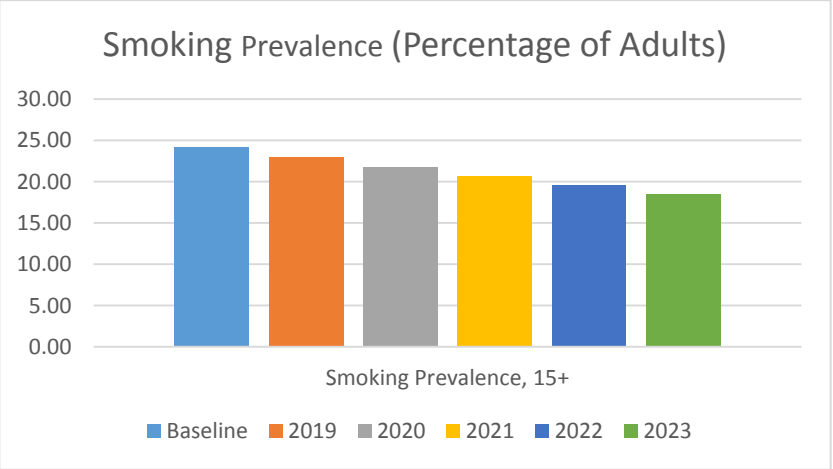
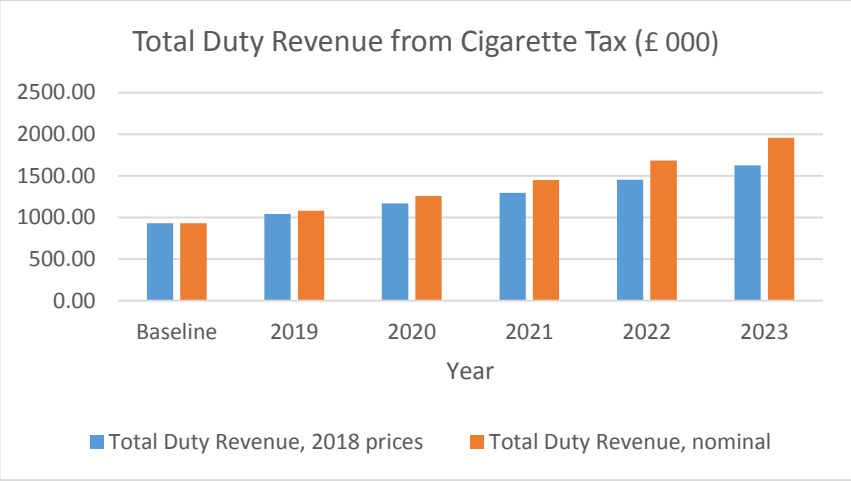
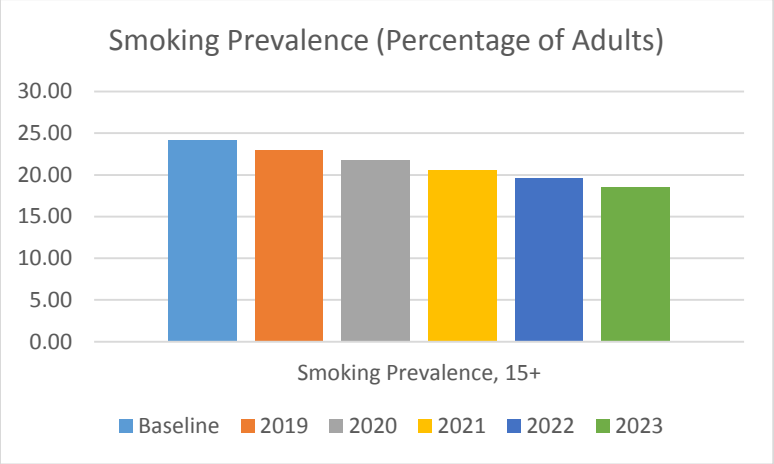
Case 4
150% tax pass-through
(-4%) economic growth
no population growth





Case 5
150% tax pass-through
(-1.7%) economic growth
no population growth





Case 6
150% tax pass-through
(4%) economic growth
(-1.28%) population growth