Budget 2022-23

Revenue and Health Implications of Cigarette Tax Policy Options in Pakistan

Tobacco use continues to remain a major public health problem in Pakistan. The number of adults (age 15+) currently using tobacco in any form is estimated to be 31 million,[1] accounting for nearly one-fifth of the adult (age 15+) population. Worldwide, tobacco use is a leading cause of preventable deaths by non-communicable diseases, including cancer, chronic respiratory diseases, and cardiovascular disease.[2] According to a recent study, tobacco use killed an estimated 163,360 people in Pakistan in 2017.[3] Tobacco use has substantive economic implications as well. The total cost of all smoking-attributable diseases and deaths in Pakistan was estimated to be PKR 615 billion (US$ 3.85 billion) in 2019,[4] which includes direct health costs and costs due to lost productivity. Moreover, tobacco use has welfare implications as poor households in Pakistan spend a larger proportion of their budget on tobacco than rich households, resulting in less spending on basic needs.[5] As tobacco taxation is globally regarded as the most effective policy tool for curbing tobacco use, this policy note assesses the expected impact of excise tax and price increases on cigarette consumption, tax revenues, and health outcomes in the context of Pakistan, using predictive modelling techniques. The analysis particularly focuses on the recent changes in excise tax rates on cigarettes introduced in the Budget 2022-23 through the Finance Act 2022—effective July 1, 2022.

CIGARETTE TAXES AND PRICES

Domestically produced cigarettes in Pakistan are subject to two major indirect taxes—the Federal Excise Duty (FED) and the General Sales Tax (GST). The FED accounts for almost 80% of the revenue from the sector. At present, a system of specific FED on cigarettes is in place whereby the tax rate is applied to two price tiers: low-priced and high-priced. As per the latest changes in excise tax rates (Finance Act 2022), cigarettes are classified as low-priced if the on-pack printed retail price does not exceed PKR 6,660 per thousand sticks, and the applicable tax rate is PKR 1,850 per thousand sticks. On the other hand, high-priced cigarettes are taxed at the rate of PKR 5,900 per thousand sticks, resulting in a significant excise tax burden difference between the two tiers. Since the low-priced cigarettes represent the majority of the market (about 88 percent), the average excise tax share is estimated to be 40.9 percent of the retail price, which is significantly lower than the widely accepted benchmark of 70 percent of the retail price.[6]

The recent increase in FED on cigarettes has been brought about after a period of 3 years—the previous increase was made in July 2019. Changes have been made in tax rates as well as the thresholds of price tiers. The tax rate of low-priced brands increased from PKR 1,650 to PKR 1,850 per thousand sticks, while that of high-priced increased from PKR 5,200 to PKR 5,900. Accordingly, the price threshold was increased from PKR 5,960 to PKR 6,660. In percentage terms, the increase in FED is 12.1 percent and 13.5 percent for low-priced and high-priced brands, respectively, while the weighted average increase is 12.5 percent (Figure 1).

Figure 1 depicts the recent trend in the statutory and effective FED rate (weighted average) per stick —calculated by dividing domestic FED collection by total cigarette production. The effective FED rate fell

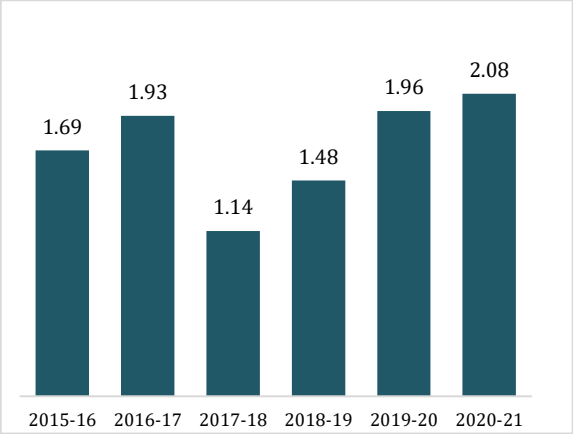
drastically in 2017-18 when a three-tier structure of the FED was announced, and tax rates were reduced. Despite removing the third tier in 2018-19, the duty rate remained low compared to 2016-17. After some increase in the statutory rate of the FED in July 2019, the effective rate bounced back to the same level as in 2016-17. Despite no change in the statutory rate of the FED, the effective tax rate increased from PKR 1.96 in 2019-20 per stick to PKR 2.08 per stick in 2020-21, which is likely due to an increase in the market share of high-priced brands.

Due to stagnant and low tobacco taxes, Pakistan is ranked among the worst-performing countries in the Tobacconomics Cigarette Tax Scorecard that evaluates the strength of tax systems—with an overall tax system score of less than one on a five-point scale.[7]

Figure 1: Structure of the FED on cigarettes and effective tax rates

Tier/Price	FED Rate
PKR per thousand sticks	
2016-17	
Tier 1: ≤ 4,000	1,536
Tier 2: > 4,000	3,436
2017-18	
Tier 1: ≤ 2,950	800
Tier 2: > 2,950 ≤ 4,500	1,670
Tier 3: > 4,500	3,740
2018-19	
Tier 1: ≤ 2,950	848
Tier 2: > 2,950 ≤ 4,500	1,770
Tier 3: > 4,500	3,964
2019-20	
Tier 1: ≤ 5,960	1,650
Tier 2: > 5,960	5,200
2022-23	
Tier 1: ≤ 6,660	1,850
Tier 2: > 6,660	5,900

Effective excise tax rate (PKR per stick)*



Increase in FED rate (Finance Act 2022)

* Effective excise tax rate is not estimated beyond 2020-21 due to unavailability of revenue collection data.

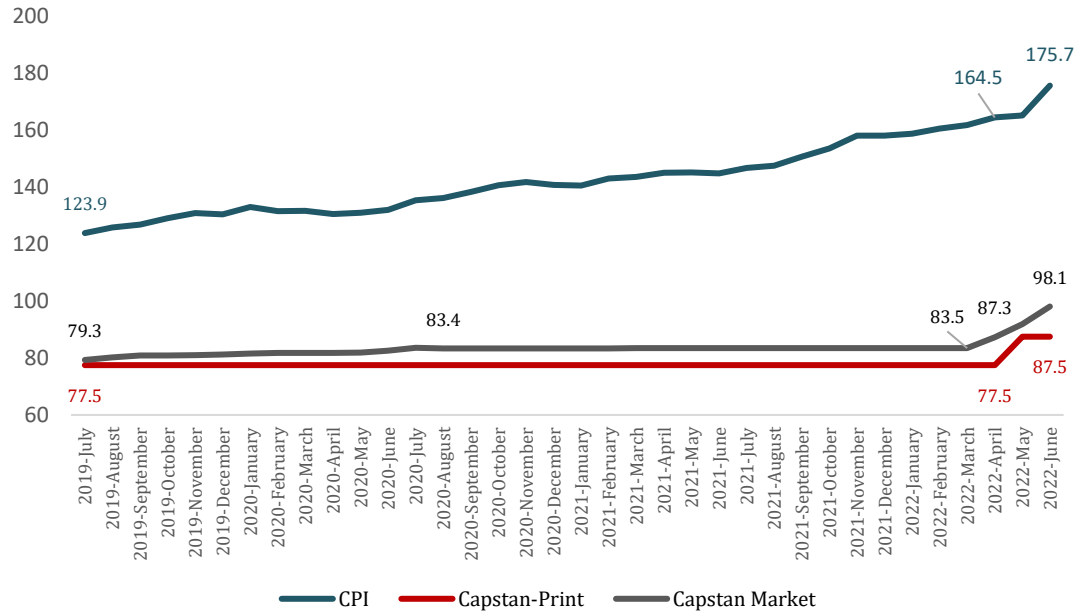
Sources: Federal Board of Revenue (FBR); SPDC estimates, based on Economic Survey of Pakistan 2021-22, and FBR Revenue Division Yearbook 2020-21

Figure 2 depicts the printed and market prices of a 20-cigarette pack of a low-cost brand, Capstan, as well as the consumer price index. Since July 2019, the printed price remained constant at PKR 77.50 until May 2022. Similarly, wholesale prices did not change during this period (not shown in the graph). However, the market price fluctuated slightly until July 2020, after which it remained unchanged until March 2022. It is worth noting that, a couple of months before the announcement of Budget 2022-23, the market price of Capstan began to rise in April 2022—it rose by 4.6 percent, 5.3 percent, and 6.7 percent in April, May, and June, respectively. On the other hand, printed price was increased only in May 2022, by 12.9 percent. Overall printed and market prices have increased by 12.9 percent and 23.7 percent, respectively, since July 2019. In comparison, general consumer prices increased by nearly 42 percent during the same period.

These price changes have three major implications. First, price changes have no impact on FED revenue because the tax rate has remained constant during this period (even after the printed price was increased). Second, due to a change in the printed price, the impact on GST revenue would be realized after April 2022. Finally, despite these price movements, a relatively higher growth in the consumer price index has made cigarettes relatively inexpensive in comparison to other items in the consumer basket.

Against this background, the next section presents the methodology of estimating the impact of increase in the FED rate on cigarettes prices, consumption, revenues, and public health outcomes.

Figure 2: Trends in the Consumer Price Index (percent) and prices (PKR per pack of 20-cigarettes) of a low-priced brand



Source: Pakistan Burau of Statistics monthly price review (various issues)

METHODOLOGY

A five-step modelling approach is used to simulate the impact of an FED rate increase on consumption and tax revenues, along with health implications.

Step-1: Market Share

The latest data on brand-wise or FED tier-wise is not readily available. Therefore, the starting point of the predictive component of the assessment is the estimation of tier-wise market share. Given the two-tier FED system, the effective tax rate is used to compute the market share by using the following equation.

Market Share: $S_{1t} + S_{2t} = 1$ ……(1)

Effective Tax Rate: $ETR_t = TR_t / Q_t = S_{1t}*R_{1t} + S_{2t}*R_{2t}$ …… (2)

Where, ETR = Effective tax rate

TR = Total domestic revenue from FED

Q = Total domestic production of cigarettes

S = Market share of respective tier

R = Tier-wise duty rate

Subscript 1 and 2 indicate low-priced high-priced brand cigarettes, respectively, while subscript t indicates year. Equation 1 states that the sum of market share of both tiers is one. Equation 2 states that the effective tax rate

per stick is the ratio of tax revenues from FED and total domestic production, which is equal to weighted average sum of the product of statutory rates and market share.

Substituting the value of S_2 in equation (2) and solving for S_1 yields the following equation.

$$S_{1t} = (ETR_t - R_{2t})/(R_{1t} - R_{2t}) \quad \ldots\ldots\ldots \quad (3)$$

$$S_{2t} = 1 - S_{1t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4)$$

Equation 3 and 4 are used to compute the tier-wise market share. These shares are used as weights in calculating the weighted average retail prices.

Step 2: Tax Rates and Retail Prices

FED and General Sales Tax (GST) are the two major taxes on cigarettes. FED is a fixed amount per cigarette tax, while GST is an ad valorem tax levied on printed price inclusive of FED. Based on these, the weighted average retail price (RP) of a pack of 20 cigarettes in each tier (i) can be deconstructed into the following components:

$$RP_{it} = PP_{it} + TE_{it} + \{PP_{it} + TE_{it}\} \times V_t \quad \ldots\ldots\ldots (5)$$

where, PP is the producer price of a pack of 20 cigarettes inclusive of trade margin and transportation costs, TE is the FED rate per pack of 20 sticks, and V is the rate of GST.

Given that the printed retail prices of cigarettes remain unchanged, while the CPI is expected to exceed the 9.2% target for the current fiscal year, the inflation-adjusted tier-wise price of cigarettes is calculated and used in the modeling exercise. The following equation is used to calculate inflation-adjusted prices (CRP) for the 2022-23 baseline and simulating the impact of the proposed change in the FED rate (δ).

$$CRP^P_{itj} = [PP_{it} + TE_{it-1}\,(1+ \delta_j) + \{PP_{it} + TE_{it-1}\,(1+ \delta_j)\} \times V_t] \,/\, (1+ \pi_{t-1}) \quad \ldots\ldots\ldots (6)$$

CRP^P denotes the final predicted consumer prices computed for each tier, whereas j denotes the number of policy scenarios having value of 0, 1, and 2, indicating, respectively, the baseline, a 30-percent increase in the FED rate, and a 21.06-percent increase in the FED rate to keep affordability unchanged.

When predicting the prices after increase in FED rate, an ex-ante full tax pass-through, and no increase in producer price of licit cigarettes is assumed.

Finally, the weighted average predicted prices is calculated using the equation below.

$$WRP^P_{tj} = S_{1t} \times CRP^P_{1tj} + S_{2t} \times CRP^P_{2tj} \quad \ldots\ldots\ldots\ldots\ldots (7)$$

Step 3: Impact of Price Change on Consumption

The key economic parameter in modeling the price response to cigarette consumption is the price elasticity of demand (ε), which measures the extent to which an increase in the price of cigarettes reduces cigarette consumption. For each policy scenario, the total taxable sale of cigarettes (TTS) in packs of 20 sticks was calculated in response to an inflation-adjusted weighted average price increase.

$$TTS_{tj} = TTS_{(t-1)\,)}\,(1 + \Delta WRP_{tj \times} \varepsilon_p) \quad \ldots\ldots\ldots\ldots\ldots (8)$$

where ΔWRP is the percentage change in the weighted average retail price of taxable cigarettes and ε_p is the short-term price elasticity of demand based on time series data of production.[8] However, Pakistan's cigarette market contains some degree of illicit trade. To incorporate illicit cigarette trade into the model, total sale (TS) of cigarettes is estimated using cross-section price elasticity (ε_c).[9]

$$TS_{it} = TS_{i(t-1)} (1 + \Delta WRP_{it} \times \varepsilon_c) \text{ .....(9)}$$

In the current fiscal year, 2021-22, a 15-percent share of illicit trade and 85-percent share of taxable sales is assumed. In order to calculate illicit trade in a simulated year, taxable sales are subtracted from total sales.

$$\text{Illicit Sale}_{tj} = TS_{tj} - TTS_{tj} \text{ .....(10)}$$

Step 4: Revenue Implications

After simulating total taxable sales, total FED revenues are simply a product of total taxable sales and the simulated FED rate.

$$TR_j = TTS_j \times TE_i (1+ \delta_j) \text{ .....(11)}$$

To calculate per capita and FED-to-GDP ratios, the simulated FED revenue (TR_j) is divided by population and nominal GDP, respectively.

Step 5: Public Health Outcomes

Following the methodology adopted by Goodchild et al. (2016),[10] a single cohort approach is used to estimate the impact of tobacco taxation on the expected number of smoking-attributable deaths among adults who were alive in 2022.

The modeling for health outcomes employs several steps. For instance, adult (age 15+) smokers are estimated by using the Global Adult Tobacco Survey (GATS) 2014 cohort-wise prevalence rate for males and females separately multiplied by the respective population for the current year. The average stick per smoker is also estimated by dividing total sales by the number of adult smokers.

The number of smoking-related deaths is calculated by assuming that tobacco eventually kills half of all people who use it on a regular basis.[11] It is also assumed that any drop in the consumption of cigarettes is equally attributed to a fall in the number of smokers and a reduction in the number of sticks per smoker. Like Goodchild et al. (2016), the positive impact of tobacco taxation on health is estimated as the expected decrease in the number of smoking-attributable deaths—after accounting for those current smokers who will cease smoking before they die. Like other national studies, a mortality adjustment factor of 70 percent is used, indicating that 70 percent of smoking-attributable deaths could be avoided if current smokers quit smoking.

The prevalence of smoking among future smokers is estimated based on the population under 15 years of age. It is assumed that future smokers and present youth are more responsive to the changes in cigarette prices as compared to adult smokers. Therefore, a youth elasticity factor of 2 is used along with a mortality adjustment factor of 70 percent for future smokers who quit. These assumptions are in line with the literature on low- and middle-income countries.[12] The basic parameters of the health model are presented in Table 1.

Table 1: Basic parameters of the public health model

Heads	Values
Prevalence share in elasticity	50%
Prevalence elasticity	-0.22
Percentage of smokers who die prematurely	50%
Percentage of smokers who survive if quit smoking	70%
Youth elasticity factor	2

Data Sources

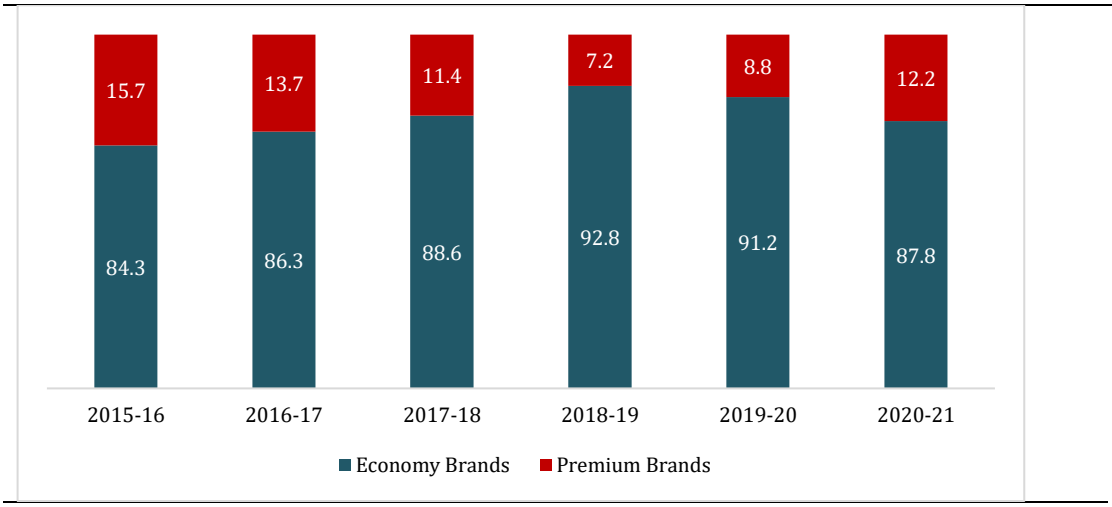
This modelling exercise uses several data sources to develop a baseline of Pakistan's cigarette market for 2021-22, including the age-specific rate of smoking among adults from GATS Pakistan 2014. It relies on published documents from the Federal Board of Revenue (FBR), including the Finance Act 2022 and the Federal Excise Act 2005, for the tax rate on cigarettes and revenue collection. The production of cigarettes and consumer prices of leading brands, including tobacco inflation, is taken from the Pakistan Bureau of Statistics (PBS). SPDC staff also collected the printed price on leading brands from retailers. Macroeconomic variables, such as Pakistan's Gross Domestic Product (GDP) and the inflation rate are taken from the International Monetary Fund's (IMF) World Economic Outlook and the Annual Plan 2022-23, Ministry of Planning, Development and Reforms, Government of Pakistan. The population estimates are obtained from the United States Census Bureau.[13]

RESULTS

Market Share

Figure 3 shows the trend in tier-wise market share based on equations 3 and 4. The cigarette market in Pakistan is overwhelmingly dominated by low-priced brands, with a share of at least 84 percent since 2015-16, while in 2020-21, the share was about 88 percent.

Figure 3: Market share of low-priced and high-priced bands (%)



Source: Source: SPDC estimates based on data from the Economic Survey of Pakistan and FBR Year Book

Impact of Change in FED Rates on Prices of Cigarettes

Before conducting the tax simulations, a baseline for 2022-23 is estimated to isolate the impact of tax rate changes. In addition to the baseline, two tax policy scenarios are estimated. For each scenario, the price and its components are shown in Annexure-Table A1. For the baseline, it is assumed that the FED rate of PKR 41.66 per 20-cigarette pack does not change. However, due to changes in producer prices, the weighted average price of a pack of 20 cigarettes increased from PKR 90.69 to PKR 105.94 in 2021-22. Due to inflation, the relative price has fallen to PKR 93.50, or by 11.7 percent. The first simulation is based on the 12.5-percent increase in the FED rate introduced in the Finance Act 2022. This increase in the FED rate would result in an increase of 15.9 percent in total taxes (including GST) and an increase of 8.2 percent in the average consumer price of cigarettes.

In the second simulation, a 30-percent increase in the FED rate is assumed. This increase in the FED rate would have an impact of a 31.4 percent increase in total taxes (including GST) and 16.2 percent increase in the average consumer price of cigarettes.

Macroeconomic Outlook and Cigarette Affordability

The IMF projected that Pakistan's nominal per capita income would rise by 11.1 percent in 2021-22. (Table 2). Concurrently, inflation was projected to be 9.2 percent in 2021-22. However, the macroeconomic estimates of the Government of Pakistan (GoP) for the fiscal year 2021-22 differed significantly from the IMF projections. For example, GDP growth, inflation, and per capita GDP growth are estimated to be around 6 percent, 13.3 percent, and 17.2 percent, respectively. All the GoP estimates are higher than the IMF projections. The GoP estimates were used in the analysis presented in this policy note.

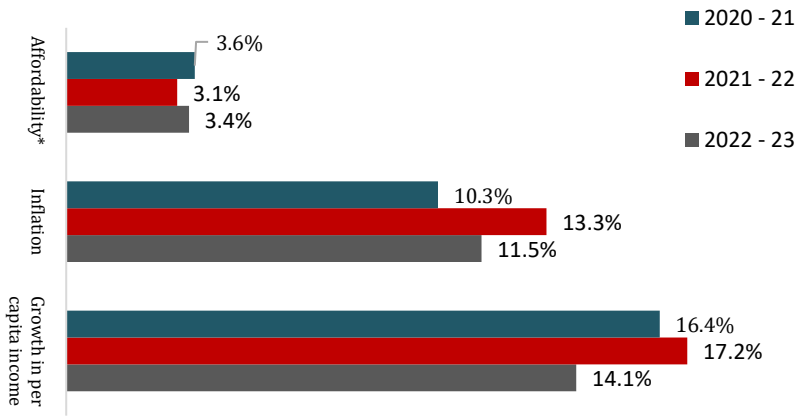
Table 2: Macroeconomic Growth Rate Projections and Estimates (%)

Indicators	2021-22		2022-23
	IMF Projections	GoP Estimates	GoP Estimates
Real GDP Growth	3.96	5.97	5.01
Nominal GDP Growth	13.15	19.99	16.62
Growth in per capita income	11.10	17.20	14.13
Inflation	9.24	13.30	11.50

Source: IMF World Economic, Outlook October 2021 Edition and Annual Plan 2022-23, GoP

The estimates of macroeconomic indicators have implications for the affordability and relative prices of cigarettes. Cigarette affordability, also known as the relative income price ratio, is defined as the percentage of per capita GDP required to purchase 2000 cigarettes. This indicates that affordability is determined by per capita income (GDP per capita), general price level, and cigarette prices. According to estimates, approximately 3.6 percent of per capita income was required to purchase 2000 cigarettes in 2020–21, which was reduced to 3.1 percent in 2021-22 and would bounce back to 3.4 percent in 2022–23 due to the increases in FED rate and producer prices. However, cigarettes would still be more affordable in 2022-23 compared to 2020-21 (Figure 4).

Figure 4: Pakistan's macroeconomic outlook and cigarette affordability



* Relative income price ratio, defined as the percentage of per capita GDP required to purchase 2000 sticks of cigarettes.

Source: IMF World Economic, Outlook October 2021 Edition and Annual Plan 2022-23, GoP

Taxable Sale and Consumption of Cigarettes

Annexure-Table A2 displays the baseline and simulated taxable sales and total consumption. These calculations are based on equations 6 and 7. It demonstrates that taxable sales are more price-sensitive than total consumption. The estimated baseline taxable sale was 2,990 million 20-cigarette packs, with a total consumption

of 3,534 million packs. In 2021-22, the share of illicit cigarettes is assumed to be 15 percent. The results show that total taxable sales would fall from 2,990 million packs to 2,840 million packs due to an increase of 12.5 percent in the FED rate. Illicit cigarette sales, on the other hand, would rise from 544 million packs to 581 million packs.[14] Overall, total consumption would fall by 4.5 percent. In contrast, a 30-percent increase in FED would result in a 7.6-percent decrease in total consumption.

Revenue Implications

Annexure-Table A3 shows the revenue implications of the simulated increase in the FED rate. According to the analysis, a 12.5-percent increase in FED would generate additional revenue of more than PKR13.5 billion, including FED (PKR 6.3 billion) and GST (PKR 7.2 billion). The additional revenue from a 30-percent increase is estimated to be PKR 27.2 billion. It is worth noting that despite a decrease in total consumption, tax revenue would increase in both scenarios due to higher tax rates. Both simulation results show an increase in per capita cigarette tax revenues in simulation 2, the increase in per capita tax revenues is relatively greater.

Public Health Implications

The estimates of simulated health implications of both simulations indicate several public health benefits. For instance, a 30-percent increase in the FED rate would likely encourage more than 641,000 smokers to quit smoking (Annexure-Table A4). As the youth population is more sensitive to prices, the same increase in the FED would discourage 696,000 future smokers. Simultaneously, it would reduce smoking intensity among adult smokers by more than 1.2 percent. Due to a reduction in the number of smokers, the increase in the FED would save 72,000 adult lives from smoking-attributable deaths. On the other hand, a 12.5-percent increase in the FED has relatively lower public health benefits in terms of reduction in the number of smokers, smoking intensity, and smoking-attributable deaths.

CONCLUSION AND POLICY RECOMMENDATIONS

The tobacco tax policy simulations highlight various revenue and health implications of two scenarios—a 12.5-percent increase in the FED rate (Simulation 1) and a 30-percent increase in the FED rate (Simulation 2). It demonstrates that tax increases under Simulations 1 and 2 would generate additional revenue and reduce smoking-related deaths, but the benefits are more pronounced in Simulation 2.

In summary, the 12.5-percent increase in tax rate is a welcome policy measure but falls short of increasing the share of excise tax in the retail price of cigarettes. In the long run, to fulfil its long-term commitment of using tax and price measures to reduce tobacco consumption, the government must continue reforming the tobacco tax system by:

- Implementing large excise tax increases to make cigarettes progressively more expensive and less affordable;
- Incorporating an automatic inflation and income growth adjustment mechanism in the tax policy;
- Moving to a uniform federal excise duty for all cigarette brands to simplify the tax system; and
- Harmonizing excise taxation across all tobacco products.

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[11] ibid.

[12] ibid

[13] https://www.census.gov/data-tools/demo/idb/#/country?YR_ANIM=2021&FIPS_SINGLE =PK&dashPages=BY AGE last accessed: January 04, 2021 (mid-year population)

[14] For 2021-22, a 15-percent share of illicit trade and 85-percent share of taxable sales is assumed. For the subsequent simulated year, illicit trade is calculated by subtracting taxable sales from total sales, while elasticity of -0.58 and -0.44 is used for the estimation of taxable sales and total sales/consumption, respectively. Sources for price elasticities: Burki, S. J. et al. (2013) and Sabir M. et al. (2021).

ANNEXURE
DETAILED SIMULATION RESULTS

Table A1: Baseline and Simulated Taxes and Prices of Cigarettes

	2021-22	2022-23		
		Baseline	Simulation - 1	Simulation - 2
Exogenous/Policy Shock				
Change in FED Rate (%)		**0.0**	**12.5**	**30.0**
Weighted Average Price and Tax Components (PKR per a pack of 20 sticks)				
Producer Price including transportation and retail margin	**35.86**	**51.10**	**51.10**	**51.10**
FED Rate	41.66	41.66	46.88	54.16
GST (VAT)	13.18	13.18	16.66	17.89
Total Taxes	**54.84**	**54.84**	**63.54**	**72.05**
Consumer price per pack	**90.69**	**105.94**	**114.63**	**123.15**
Tax as percent of price				
FED (% of price)	45.94	39.33	40.90	43.98
VAT (% of price)	14.53	12.44	14.53	14.53
Total Taxes (% of price)	**60.47%**	**51.77**	**55.43**	**58.51**
Percentage Change in Nominal Price and Tax Components				
Percentage Change in Producer Price (%)		**0.00**	**0.00**	**0.00**
Percentage Change in Weighted Average FED (%)		0.00	12.53	30.00
Percentage Change in Weighted Average VAT (%)		0.00	26.40	35.79
Percentage Change in Total Taxes (%)		**0.00**	**15.86**	**31.39**
Percentage Change in Nominal Consumer price per pack		**0.00**	**8.21**	**16.25**
Inflation Adjusted Consumer price per pack		**93.50**	**101.18**	**108.69**
Percentage Change in Final Price of Licit Cigarettes (%)		-11.74	-4.49	2.60
Percentage Change in Final Price of Illicit Cigarettes (%)		3.09	3.09	3.09
Percentage Change in Weighted Average Price		**3.09**	**10.29**	**17.33**

Sources: IMF World Economic, Outlook October 2021 Edition; Annual Plan 2022-23, GoP; Economic Survey of Pakistan 2021-22; FBR Revenue Division Yearbook 2020-21; Pakistan Bureau of Statistics monthly price review (various issues)

Table A2: Baseline and Simulated Consumption of Cigarettes, 2022-23

	Baseline	Simulation - 1	Simulation - 2
Price Elasticity - Taxable Sale	**-0.58**	**-0.58**	**-0.58**
Change in Consumption (%)	-1.79	-6.70	-11.51
Estimated Volume of Taxable Sales (million packs)	**2,990**	**2,840**	**2,694**
Price Elasticity - Total Consumption	**-0.44**	**-0.44**	**-0.44**
Change in Consumption (%)	-1.35	-4.48	-7.56
Total consumed including illicit sale (million packs)	**3,534**	**3,421**	**3,311**
Estimated Volume of Illicit Sales (million packs)	**544**	**581**	**617**
Proportion of Illicit Trade (%)	15.4	17.0	18.6

Source: Base year taxable sales based on 9 months production taken from Quantum Index Numbers of Large-Scale Manufacturing Industries, Pakistan Bureau of Statistics.

Table A3: Revenue Impact			
	2022 - 23		
	Baseline	Simulation - 1	Simulation - 2
Total and Additional Tax Revenues			
Excise Tax Revenue (Million PKR)	124,565	133,165	145,913
VAT Revenue (Million PKR)	39,401	47,311	48,208
Total Revenue (Million PKR)	**163,966**	**180,476**	**194,121**
Additional Excise Tax Revenue (million PKR)	-2,276	6,323	19,072
Additional VAT Revenue (million PKR)	-720	7,191	8,087
Additional Total Tax Revenue (million PKR)	**-2,996**	**13,514**	**27,159**
%increase FED Revenue (nominal)	-1.8	5.0	15.0
%increase VAT Revenue (nominal)	-1.8	17.9	20.2
%increase Total Tax Revenue (nominal)	**-1.79**	**8.09**	**16.27**
Tax Revenues (%age of GDP)			
Excise Tax Revenue (% of GDP)	0.16	0.17	0.19
VAT Revenue (% of GDP)	0.05	0.06	0.06
Total Tax Revenue (% of GDP)	**0.21**	**0.23**	**0.25**
% Change in FED Revenue (real-GDP)	-15.8	-10.0	-1.4
% Change in VAT Revenue (real-GDP)	-15.8	1.1	3.0
*% Change in T**otal Tax Revenue (real-GDP)***	**-15.8**	**-7.3**	**-0.3**
Per Capita Tax Revenues (PKR per capita)			
Per capita Excise Tax Revenue (PKR per capita)	503.0	537.7	589.2
Per capita VAT Revenue (PKR per capita)	159.1	191.0	194.7
Total Per Capita Tax Revenue (PKR per capita)	**662.1**	**728.7**	**783.8**
% Change in Per Capita FED Revenue	-3.7	3.0	12.8
% Change in Per Capita VAT Revenue	-3.7	15.7	17.9
% Change in Per Capita Total Tax Revenue	**-3.7**	**6.0**	**14.0**
Source: Tax revenues are based on tax rate from Table A1 and taxable sales from Table A2.			

Table A4: Public Health Impacts			
	2022-23		
	Baseline	Simulation - 1	Simulation - 2
Prevalence and Number of Adult Smokers			
% Change in Adult Prevalence	-0.67	-2.24	-3.78
Change in Prevalence Rate (percentage points)	-0.07	-0.24	-0.41
Prevalence Rate (%)	**10.71**	**10.54**	**10.37**
Number of Adult Smokers (in thousands)	**16,855**	**16,589**	**16,328**
Change in Number of Adult Smokers (in thousands)	-114.4	-380.5	-641.1
Prevalence and Number of Future Smokers			
% Change in Youth Prevalence	-1.35	-4.48	-7.56
Change in Future Smokers (in thousands)	-124.3	-413.4	-696.4
Future Smokers (in thousands)	**9,092**	**8,803**	**8,520**
Smoking-attributable Deaths (in thousands)			
Adult Smoking-attributable Deaths	**8,445**	**8,351**	**8,260**
Change in Adult Deaths	-40	-133	-224
Youth Smoking-attributable Deaths	**4,546**	**4,402**	**4,260**
Change in Youth Deaths	-62	-207	-348
Total Smoking-attributable Deaths	**12,991**	**12,753**	**12,520**
Change in Total Deaths	**-102**	**-340**	**-573**
% Reduction in Adult Deaths	-0.47	-1.57	-2.64
% Reduction in Youth Deaths	-1.35	-4.48	-7.56
% Reduction in Total Deaths	**-0.78**	**-2.60**	**-4.37**
Number of Sticks per smoker			
Average Sticks per smokers	4,193	4,125	4,056
Change in average sticks per adult smoker per year	-29	-97	-166
Reduction in Smoking Intensity (%)	-0.68	-2.29	-3.93

Source: Estimates based on gender and age cohort-wise prevalence rate from GATS 2014, and population estimates from https://www.census.gov/data-tools/demo/idb/#/country?YR_ANIM=2021&FIPS_SINGLE =PK&dashPages=BY AGE last accessed: June 15, 2022 (mid-year population)

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