

# Tobacco Control and Public Health in Eastern Europe

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## Impact of cigarette taxation policy on excise revenues and cigarette consumption in Uzbekistan

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**BACKGROUND:** In 2012, Uzbekistan ratified the Framework Convention on Tobacco Control, which states that price and tax measures are an effective means of reducing tobacco consumption. We aimed to explore the effect of taxation policies on revenues and cigarette consumption.

**METHODS:** Data on tax rates, revenues, cigarette sales were taken from national reports. To forecast potential revenues, a scenario analysis was performed.

**RESULTS:** In 1991-2004, ad valorem excise system was in place in Uzbekistan, which was later replaced by the specific excise system. In 1997-2011, the nominal average excise has increased by a factor of twenty, but in real terms, after a sharp increase in 1999, average excise declined annually and increased only in 2010-2011. Annual cigarette sales per capita of adult population in 1999-2007 constituted 17-25 cigarette packs, while in 2008-2011 it increased to 30-37 packs. Four scenarios of excise tax increases in 2012 were developed: one actual scenario based on the

rates effective in Uzbekistan in 2012, and three hypothetical ones anticipating excise rates increase by 1.5, 2 and 3-fold. With actual excise increase in 2012, the inflation-adjusted budget revenues would grow by 5%, and with three hypothetical - by 17%, 35% and 66% respectively, despite the decline of tax-paid cigarette sales.

**CONCLUSION:** Stabilization or reduction in cigarette excises in Uzbekistan in 2002-2008 led to a decline in real excise revenues and the growth of cigarette sales. In 1999 and 2010-2011, excises were significantly increased and the real revenues have risen, despite the decline in cigarette sales. As cigarette prices are low, the illegal outflow of cigarettes from Uzbekistan apparently exceeds the illegal inflow. A significant increase in cigarette excise (1.5-3 fold) can both increase budget revenues and reduce cigarette consumption, with greater increase yielding more benefits.

**KEYWORDS:** Uzbekistan; tobacco; excise; cigarettes; revenue.

## Влияние политики налогообложения сигарет на бюджетные поступления и употребление сигарет в Узбекистане

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В 2012 году Узбекистан ратифицировал Рамочную конвенцию по борьбе против табака, которая гласит, что ценовые и налоговые меры являются эффективным средством сокращения потребления табака. Нашей целью было изучить влияние налоговой политики на поступления в бюджет и потребление сигарет в стране.

**МЕТОДЫ:** Данные о налоговых ставках, поступлениях в бюджет, продажах сигарет были взяты

из национальных отчетов. Для прогнозирования потенциальных поступлений в бюджет был проведен анализ нескольких вариантов повышения ставки акциза.

**РЕЗУЛЬТАТЫ:** В 1991-2004 годах в Узбекистане применялась адвалорная система акцизов, которая впоследствии была заменена специфической системой акцизов. В 1997-2011 годах номинальная средняя ставка акциза выросла в

двадцать раз, но в реальном выражении, после резкого увеличения в 1999 году, средняя ставка акциза ежегодно снижалась и возросла лишь в 2010-2011 годах. Годовой объем продаж сигарет на душу взрослого населения в 1999-2007 годах составлял 17-25 пачек сигарет, в то время как в 2008-2011 годах он вырос до 30-37 пачек. Были рассчитаны четыре сценария повышения акцизных налогов в 2012 году: один фактический сценарий, основанный на ставке, действовавшей в Узбекистане в 2012 году, и три гипотетических, которые предполагали рост ставки акциза в 1,5, 2 и 3 раза. При фактическом росте акцизных ставок в 2012 году, поступления в бюджет, с учетом инфляции, вырастут на 5%, а при трех гипотетических вариантах – на 17%, 35% и 66% соответственно, несмотря на снижение объема продаж облагаемых налогом сигарет.

## INTRODUCTION

Globally, about 6 million people die annually as a direct result of tobacco use and second-hand smoke exposure. By 2030, this number is expected to reach 7.5 million and to account for 10% of total deaths burden. It is estimated that smoking is responsible for about 71% of lung cancer cases, 42% of chronic respiratory diseases, and approximately 10% cases of cardiovascular disease (World Health Organization, 2011a). The proportion of deaths attributable to tobacco in Uzbekistan was 10% for men and 3% for women in 2004 (World Health Organization, 2012).

As it is mentioned in the third "WHO Report on the Global Tobacco Epidemic" (World Health Organization, 2011b), the prevalence of tobacco smoking among the population aged 15 years and adjusted for age and gender in Uzbekistan constitutes 13%, which is the lowest among all the countries of the WHO European Region with reported prevalence data. In the neighbouring Kazakhstan and Kyrgyzstan, smoking prevalence was measured as 24% and 23% respectively (World Health Organization, 2011b).

It should be noted though that Uzbekistan observes high prevalence of use of smokeless tobacco called nasway. According to the survey conducted in 2006, 19.6% of men smoked cigarettes, and 22.3% used nasway (Usmanova, Neumark, Baras, & McKee, 2012).

However, only 20% of smokers reported to consume nasway concurrently. Cigarette smoking is more common in better-educated urban population, but this behavioral pattern may be followed by the rural population. Therefore, greater public health potential is deemed pertinent to the reduction of cigarette smoking rather than nasway use.

The results of household surveys (Ministry of Health of the Republic of Uzbekistan, 2004; Usmanova, Mamatova, Shukurov, Yurekli, & Makhamova, 2007; Usmanova et al., 2012) show that prevalence rates of cigarette smoking among both men and women in 2002-2006 were fairly stable at about 20% for men and 1% for women.

Growing awareness of tobacco impact on the population health has prompted the Parliament of Uzbekistan to adopt the Law "On limiting the spread and consumption of alcohol and tobacco products" dated October 5, 2011. A logical conse-

quence was the adoption of the Republic of Uzbekistan Law "On the accession of the Uzbekistan Republic to the World Health Organization Framework Convention on Tobacco Control (Geneva, 21 May 2003)" dated April 24, 2012. According to Article 6 of the WHO Framework Convention on Tobacco Control, 'price and tax measures are an effective and important means of reducing tobacco consumption by various segments of the population, in particular young persons' (World Health Organization, 2005).

**КЛЮЧЕВЫЕ СЛОВА:** Узбекистан; табак; акциз; сигареты; поступления в бюджет.

In Uzbekistan, domestic (locally-produced) cigarettes are preponderant. The share of imported cigarettes in total sales in 2008-2011 constituted 4-5%. Moreover, the excise duty on imported cigarettes was several times higher than that for domestic cigarettes. In 2012, the rate was USD13 per 1000 cigarettes, which was 2.4 times higher than the excise rate for domestic filter cigarettes.

Therefore, the purpose of this study was to explore the effect of taxation policies in Uzbekistan applied to domestic cigarettes on budget revenues and cigarette consumption.

## METHODS

Data on excise tax and value-added tax (VAT) applied to domestic cigarettes derived from annual decrees issued by the President of the Republic of Uzbekistan and the Cabinet of Ministers. Data on gross domestic product and inflation (GDP deflator) was obtained from the Ministry of Economics. Deflator value was then used to calculate real prices and the excise portion of the price expressed in 2011 values. Values of the Consumer Price Index for all items was obtained from the webpage of the State Committee of the Republic of Uzbekistan on Statistics

<http://www.stat.uz/en/rows/>

Data on cigarette excise rates in nearby countries have been obtained by means of searching through the official websites of legal and tax bodies of respective countries. Currency exchange rates for December 2012 were taken from the site [www.xe.com](http://www.xe.com).

Information on the amount of cigarettes sold and tax revenue paid was collected from the "Joint Venture UzBAT" (British American Tobacco Uzbekistan) reports. UzBAT is the major producer of local cigarettes. This company operates on Uzbekistan market since 1994.

Average price of domestic cigarettes (wholesale price, including excise and VAT) was determined by dividing the amount of cigarette sales (in value terms) of each of three types – (1) filter cigarettes in hard packs; (2) filter cigarettes in soft packs; (3) non-filter cigarettes and papirosy – by the number of cigarettes sold. Further on, taking into account the percentage of each of the three types of cigarettes, average weighted price of cigarettes was estimated. Average excise component of the price was calculated as the total revenue from tobacco excise taxes divided by the number of taxable cigarettes.

Complementary to that, data on retail prices of different types of cigarettes in the 2000-2011 were collected through interviews with vendors.

Forecast of potential revenue was made based on the model that allowed calculating the possible revenue increase at different rates of excise tax and accounted for the fact that growing excise rates lead to higher retail prices. Prices increase, in turn, was considered a cause for reduced number of taxable cigarettes.

To adjust cigarette prices and government revenues for inflation, we used GDP deflator. We assumed that the deflator accounts for price

changes of all goods and services produces in economy, including government spending. On the other hand, as the consumer price index (CPI) measures changes in price of consumer goods and services purchased by households, when forecasting smokers' purchasing behaviors we used CPI.

The model used the following assumptions:

1) The CPI (consumer price index) equals to 1.075, which corresponds to the average level of this indicator of inflation in 2005-2011.

2) The tobacco industry is assumed to increase its pre-tax price only by the CPI, that is, the average inflation-adjusted pre-tax price remains the same.

3) In developing countries the price elasticity of demand varies over the wide range between -0.2 and -1.0 (IARC, 2011). We assume that in Uzbekistan price (measured as inflation-adjusted retail price) elasticity of demand (measured as scope of taxable cigarette sales) is -0.5.

## RESULTS

### Level and structure of cigarette taxation

Cigarette taxation system in Uzbekistan has undergone several changes. In 1991-2004, ad valorem

**Table 1a. Ad valorem excise tax rates (% of wholesale price) on tobacco products manufactured in the Republic of Uzbekistan, in 1993-2004**

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Tobacco product												
cigarettes of 1 class	40%	40%	40%									
cigarettes of 2 and 3 class	25%	25%	40%									
cigarettes of 4 class	15%	15%	25%									
papirosy	20%	20%	25%									
Filter cigarettes:				40%	40%	40%	50%					
in soft pack								50%	52%	45%	45%	45%
in hard pack								55%	57%	38%	38%	38%
Non-filter cigarettes, papirosy				25%	25%	25%	30%	30%	32%	32%	32%	32%

**Table 1b. Specific excise tax rates (UZS (Uzbekistani soms) per 1000 pieces) of tobacco products manufactured in the Republic of Uzbekistan, in 2005-2013**

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Filter cigarettes:				5206	5727	7159	8949	10739	13424
in soft pack	4175	4175	4175						
in hard pack	5206	5206	5206						
Non-filter cigarettes, papirosy	1476	1476	1476	1476	1919	2879	4319	5183	6479

system was in place with differential taxation of different classes of cigarettes (Table 1a). In 1995, 1999, 2000, and 2001, the excise tax rates were increased.

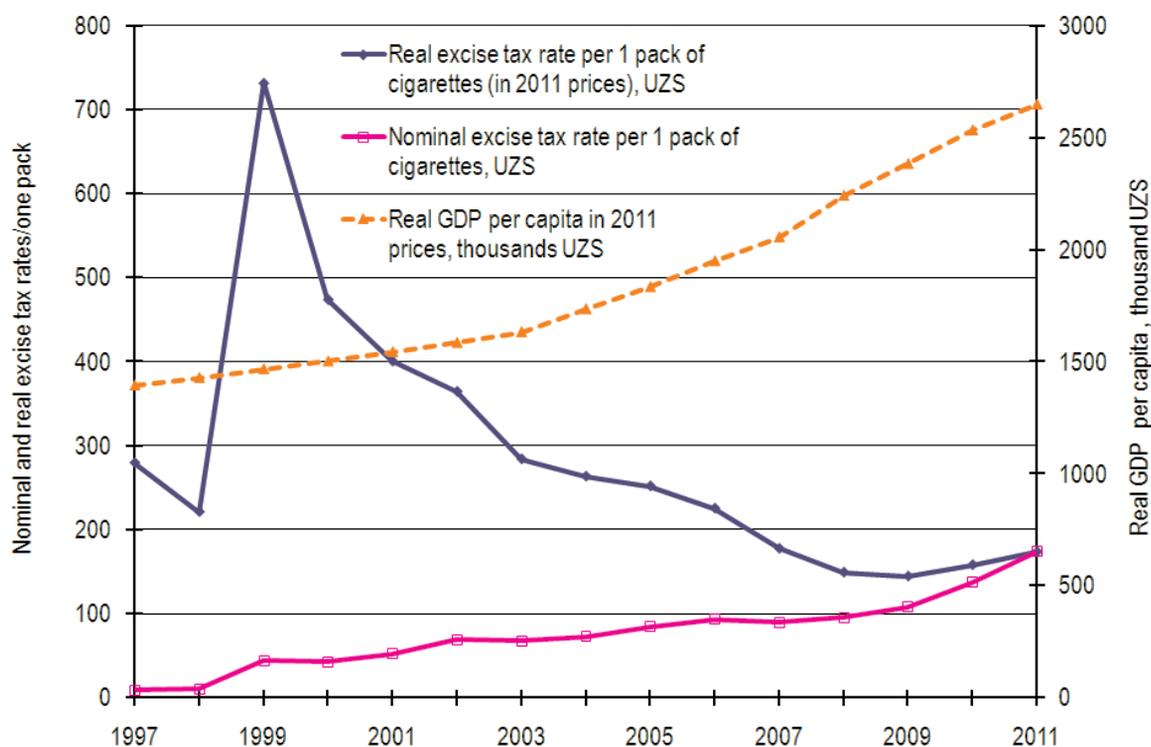
Though population income soared, excise rates levied on filter cigarettes were reduced in 2002 and remained low until 2005. Since 2005, the country applied specific taxation system with differential excise rates for different cigarettes – filter cigarettes in soft and hard packs, non-filter cigarettes, papirosy

(Table 1b). In 2007, the excise duty on cigarettes in soft packs was raised to that on cigarettes in hard packs, but further on excise rates were kept at the same level up to 2009. From 2009 on, the excise rates have been being gradually increased.

In 1997-2011, the nominal average excise rate has increased from UZS8 to UZS174 per cigarette pack, thus increased by the factor of twenty. In real terms, after a sharp increase in 1999, average ex-

cise burden declined annually, and only in 2009-2011, it increased by about 10% per year (Fig. 1).

Levels of cigarette excise tax in Uzbekistan in 2012 remain low compared with most neighboring countries. Given a pack of cigarettes priced UZS1700 (which corresponds to the price of Pall Mall – the most popular cigarette brand in Uzbekistan), in Kyrgyzstan, the total (specific + ad valorem) excise tax per 1,000 such filter cigarettes amounts to USD5.2, which is com-



**Figure 1. Changes in real GDP per capita, the nominal and real excise rates per pack of cigarettes in 1997-2011 (in prices of 2011).**

**Table 2. Filter cigarettes excise taxes in Uzbekistan and neighboring countries in 2012**

Countries	Minimum specific excise tax rate per 1000 filter cigarettes		Ad valorem excise tax rate, % of maximum retail price
	National currency	USD	
Uzbekistan	10739	5.2	0.0
Russia	510	16.5	7.5
Kazakhstan	1250	8.3	0.0
Kyrgyzstan	150	3.2	7.5
Tajikistan		1.0	0.0
Turkmenistan		25.0	30.0

parable to the tax levied in Uzbekistan. In Kazakhstan, the specific excise tax rate was 1.5 times higher than in Uzbekistan; in Russia it was 3 times higher; in Turkmenistan, it was 5 times higher (Table 2).

#### Revenues from tobacco excise taxes

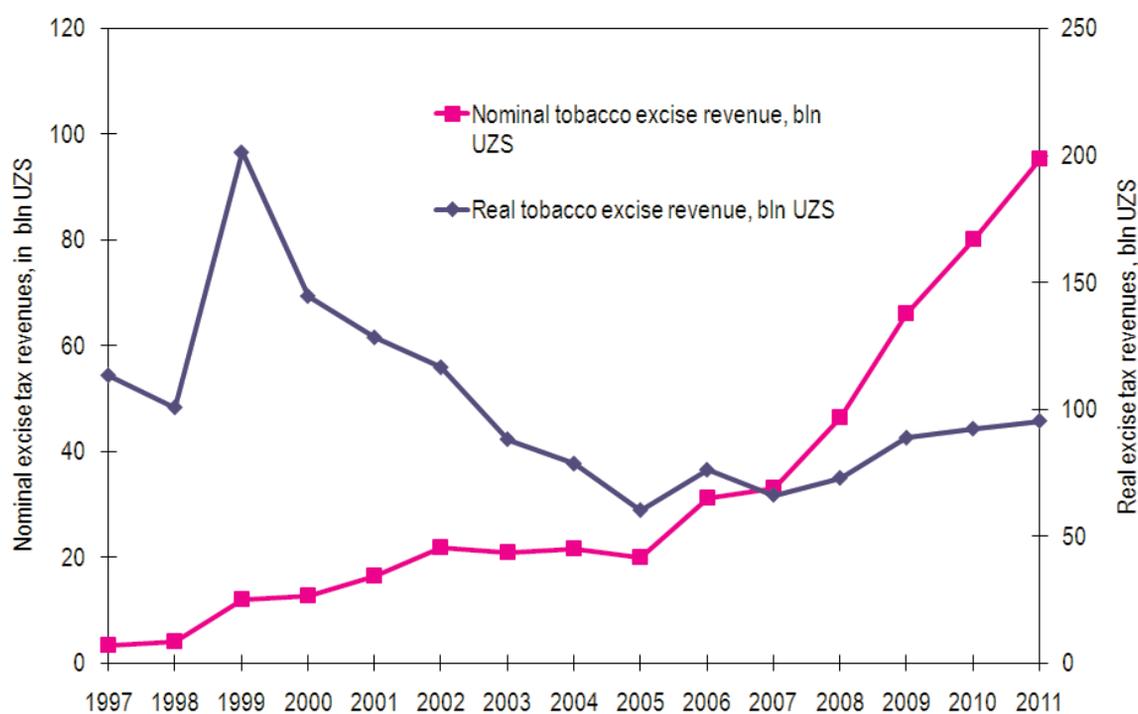
In 1997-2011, although the nominal revenues from excise tax in-

creased from UZS3.4 bln to 95.4 bln, or by a factor of 28, real revenues adjusted for inflation and GDP growth, on the contrary, decreased by 16% (Fig. 2).

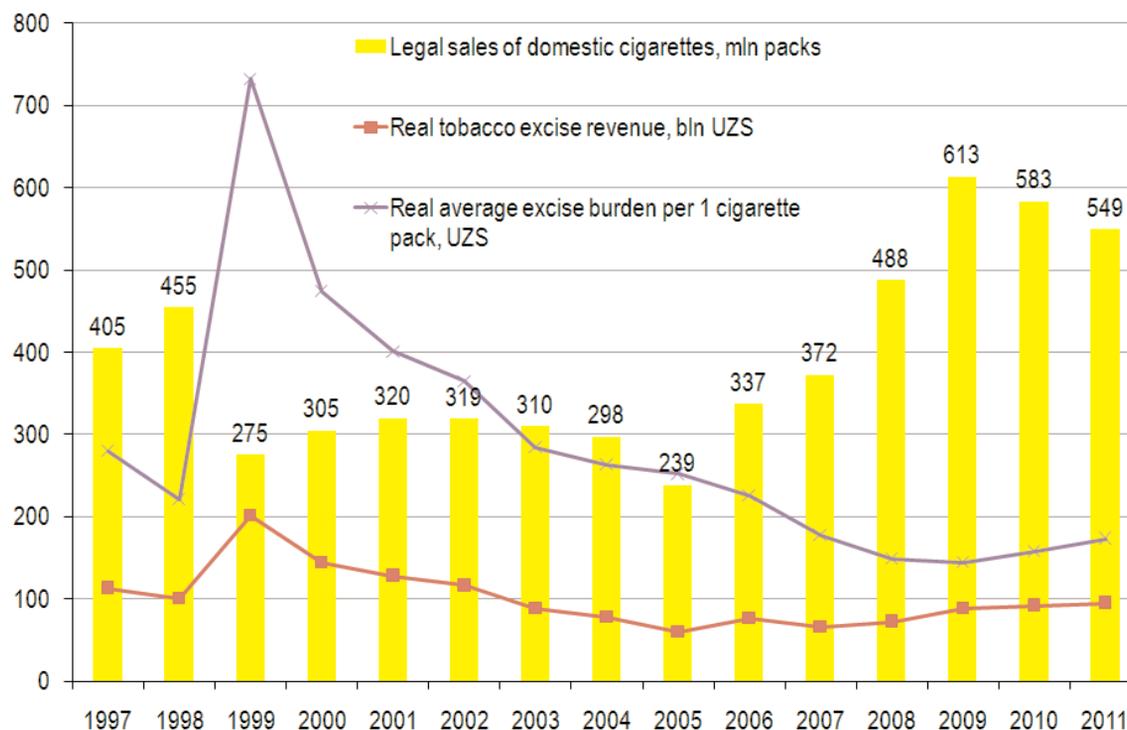
In 1999, the real excise revenues have doubled, which was due to a sharp increase in excise duty. Between 1999 and 2005, significant annual reduction in excise tax revenues in real terms was observed. Reduction of excise rates in 2002

and their retention on the same level in 2003-2004 did not yield any revenue increase; on the contrary, fiscal revenue fell more than three-fold compared to that in 1999. Substantial augmentation of revenue in real terms was only observed in 2006, 2008 and 2009, but this was due to a sharp expansion in cigarette sales (Fig. 3).

In 2010-2011, revenues increment was caused by the increase of the



**Figure 2. The dynamics of the nominal and real cigarette tax revenues in 1997-2011, (in prices of 2011).**



**Figure 3. Legal sales of domestic cigarettes; real cigarette excise tax burden and real tobacco excise revenues (in prices of 2011) in 1997-2011.**

real rate of excise duty by 9-10%, despite the decline in cigarette sales in those years.

### Legal sales of domestic cigarettes

Over the past 15 years, legal sales of domestic cigarettes ranged between 238.5-613.4 million packs per year (15.5-35.1 cigarette packs per capita of population over 18 years old). Fig. 3 shows the inverse relationship between the real excise burden and the amount of legally sold cigarettes. In 1999, a sharp enlargement of excise rate led to a significant reduction in the number of sold cigarettes; nevertheless, the real revenues have soared. In 2000-2009, the opposite was true: a shrinkage of real excise burden led to extended sales, but the real revenue barely grew.

In 2011, 549.4 million cigarette packs were sold, and tobacco excise revenues were UZS95.4 bln. In 1999, respective indicators were 275.0 million packs and UZS201.4 bln (in 2011 prices). Therefore, along with doubling of legal tobacco sales by 2011, budget revenues from excise taxes diminished more than twice.

Analysis of the structure of legally sold cigarettes in 2002-2011 shows that the share of filter cigarettes in hard packs increased from 16% to 86%. The sales share of filter cigarettes in soft packs decreased from 41% to 8%, while the share of non-filter cigarettes and papirosy fell from 43% to 6% (Fig. 4). Similar trends were observed in other post-Soviet countries.

An expansion of legal sales occurred in the second half of the 2000s: in 1999-2005, on average,

approximately 300 million cigarette packs were sold annually; in 2008-2011, an average of more than 500 million packs was sold.

Though no data on the prevalence and intensity of smoking in Uzbekistan in the late 2000s is available, commonsense does not allow assuming that cigarette consumption could rise so sharply in quite a short time as no abrupt changes of cultural, social or economic conditions were observed in the country.

Cigarette consumption in Uzbekistan could broaden along with the real income rise and partly because of the population growth. Overall, cigarette affordability has changed insignificantly in 2005-2011. During this period, the population over 18 years old grew on the average by 3% annually, but annual cigarette sales per capita of population aged 18 years and over in 1999-

2007 amounted 17-25 cigarette packs (domestic and imported) a year, whereas in 2008-2011 this number increased to 30-37 packs.

Sharp changes in legal cigarette sales could also be caused by changes of illicit cigarette sales so we tried to estimate illicit cigarette market in Uzbekistan.

### Illicit import and illicit export of cigarettes

In 2006, legal sales comprised 337 million packs of domestic and 33 million packs of imported cigarettes thus amounting to 370 million packs.

According to a study conducted in 2006 by the Ministry of Health and supported by the World Bank (Usmanova et al., 2007), the total number of cigarette use in Uzbekistan was estimated as 309 million packs, which is 61 million packs fewer than the total legal sale of

cigarettes. A recent review of international research has shown that when cigarette consumption is estimated based on survey data, these results are generally lower than the number of cigarette sold, with difference ranging from 1% in Japan to 35% in Italy (Gallus et al., 2011).

This is at least partially explained by the fact that smoking is becoming socially unacceptable behavior and cigarette consumers feel societal pressure. Thus, smokers indicate they consume smaller number of cigarettes than they actually do. We apply the correction of 20% assuming that smoking in Uzbekistan is of middle social acceptability, and smokers do not experience much pressure to hide their actual level of cigarette consumption. After taking into account a possible 20%-under-reporting of the scope of consumption in population surveys, 309 million packs plus 20% amounts to 370 million packs,

which is the number of cigarettes legally sold in 2006. If any illicit cigarette trafficking occurred, from the above data it can be assumed that in 2006 the numbers of cigarettes smuggled into and out of the country were about the same.

However, in 2009, the total amount of cigarette sales augmented to 638 million packs including local and imported cigarettes. It can be hypothesized that efforts undertaken by the customs authorities might lead to a sharp decrease in the illegal cigarette inflow, forcing smokers to switch to legal products. However, there is no evidence of high cigarette inflow into Uzbekistan in 2000s. Reports of the State Customs Committee of the Republic of Uzbekistan show that in 2009 the total number of confiscated cigarettes was 270,000 packs (State Customs Committee of the Republic of Uzbekistan, 2010), which represents less than 0.05% of the legal sales.

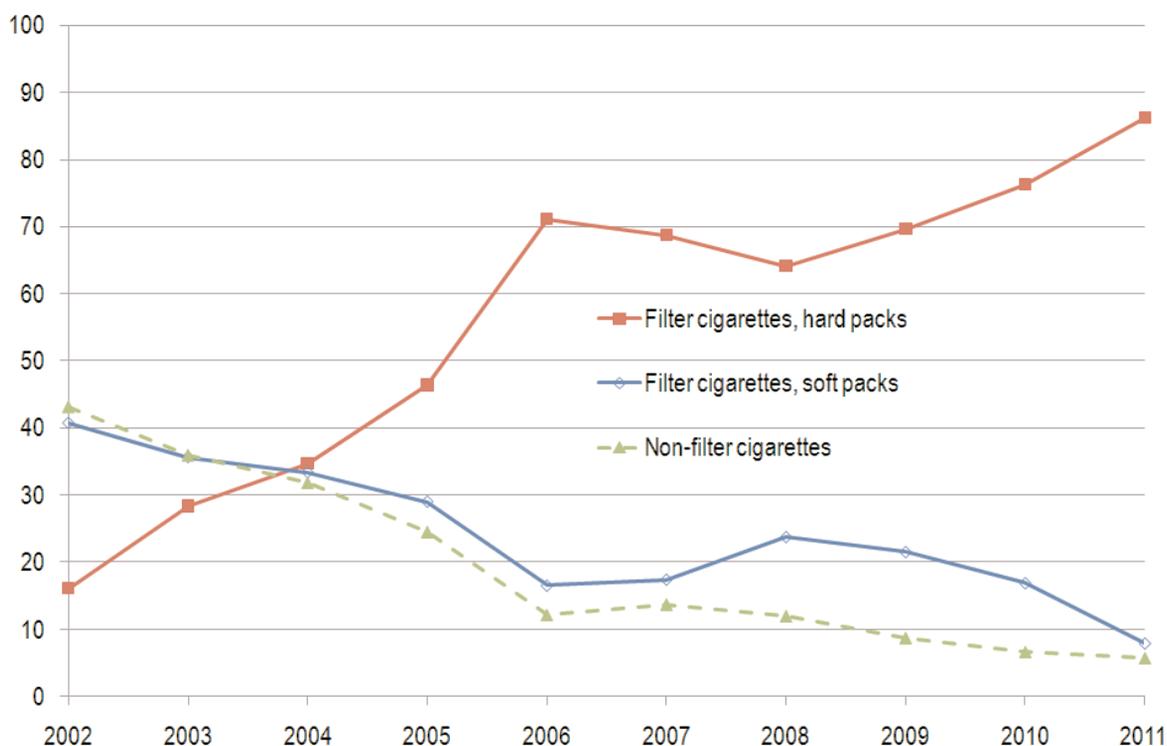


Figure 4. Percentage structure of domestic cigarette sales in 2002-2011.

Thus, we have to conclude that in 2009, more than 200 million packs of cigarettes were sold in Uzbekistan, for which no consumers were present within the country.

**Cigarette prices**

Level of nominal wholesale price of cigarettes of all kinds gradually increased, even in 2006-2008 (Fig. 5), when the nominal excise tax rate was maintained stable. This shows that the pre-tax price (price minus excise minus VAT) was on the rise. The share of excise in the average wholesale price of cigarettes decreased in 2005-2011 from 26.6% to 15.6%.

Data on the retail cigarette prices collected through polling vendors indicate that these retail prices increased in parallel with wholesale prices (Figure 5). The share of excise in the average retail price in 2004-2009 went down from 16.4%

to 10.4%, and then rose to 12.6% in 2011, which is probably linked to the corresponding fluctuations in the real excise burden (Figure 1).

The average weighted real wholesale price decreased in 2008, and then began to rise. In 2010, it increased by 10% and in 2011 – by 12%. In 2010, legal sales decreased from 613 to 583 million packs, or by 5%, and in 2011 - to 549 million packs, or by 6%. Thus, wholesale-price elasticity of demand in 2010-2011 was -0.5 (-5% / 10% in 2010, and - 6% / 12% in 2011).

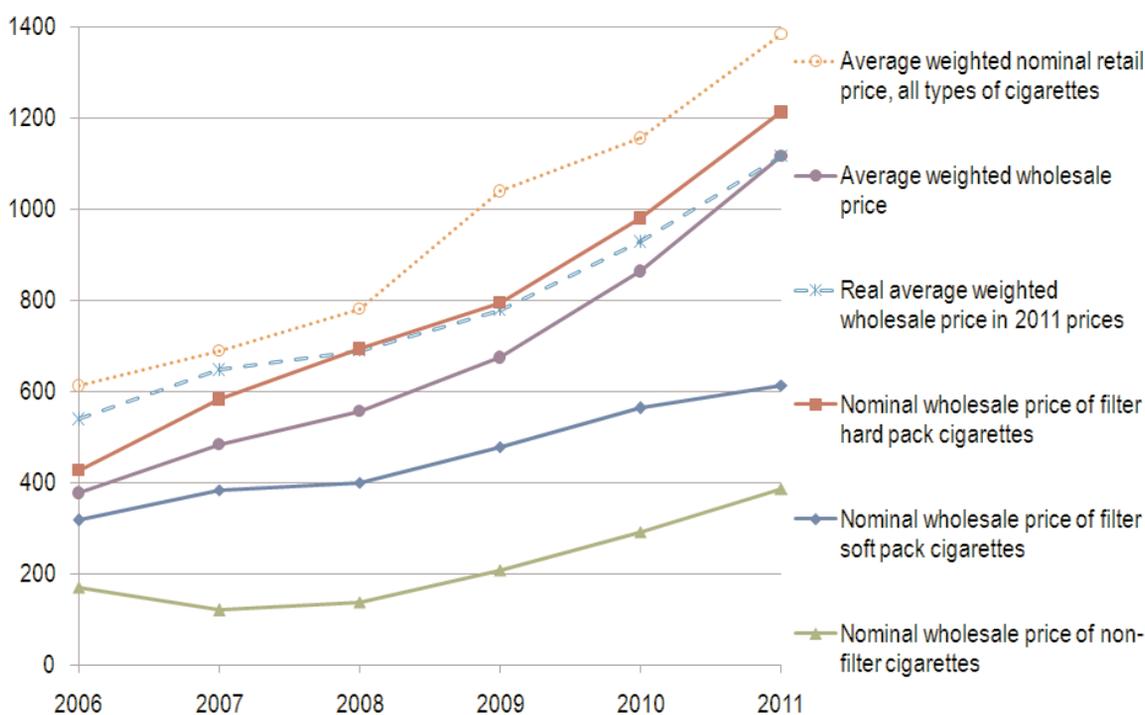
The share of excise in the average filter-cigarettes wholesale price in 2008-2011 remained very low and stable: 14.5-15.0%. Thus, price increase in 2010-2011 was mainly determined not by excise tax increase but by pricing policies of the tobacco industry.

**Revenue forecast**

The forecast is based on the assumptions presented in the Methods section.

Indicators of 2011 were considered as model baseline. Four scenarios of excise tax increases in 2012 were entered in the model: one actual scenario based on the rates effective in Uzbekistan in 2012, and three hypothetical: (1) excise tax rates increased by a factor of 1.5 (up to the level of excise tax rates in Kazakhstan); (2) excise tax rates increased twice (increase of excise tax rates on domestic cigarettes to the level of excise taxes on imported cigarettes), and (3) excise tax rates increase 3 times (up to the level of excise tax rates in the Russian Federation).

With actual growth of excise in 2012, according to the model, almost no growth occurs in the inflation-adjusted retail price, and, con-



**Figure 5. Cigarette prices in 2006-2011 (UZS per pack).**

**Table 3. Revenue forecast of different scenarios of excise tax increase in Uzbekistan**

Indicator	Formulas	Baseline:	2012	Hypothetical excise tax increase		
		2011		2	3	
A Excise tax increase coefficient	A		1,2	1,5	2	3
B Average excise component of the price, UZS per pack	$B = B_{2011} \times A$	175	210	262,5	350	525
C Consumer Price Index	C		1,075	1,075	1,075	1,075
D Average pre-tax retail price per pack, UZS	$D = D_{2011}^* \times C$	978	1051	1051	1051	1051
E VAT, %	E	20%	20%	20%	20%	20%
F Average retail price per pack, UZS	$F = (B + D) \times (100\% + E)$	1383	1513	1576	1681	1891
G Zero-scenario inflation-adjusted retail price per pack, UZS	$G = F_{2011} \times C$		1487	1487	1487	1487
H Percentage increase or inflation-adjusted retail price over zero-scenario price, %	$H = (F - G) / G \times 100$		1,8	6,0	13,0	27,2
I Price elasticity of demand	I		0,5	0,5	0,5	0,5
J Percentage of sales decline, %	$J = H \times I$		0,9	3,0	6,5	13,6
K Taxable cigarette sales decline, mln packs	$K = K_{2011} \times J / 100$	550	5	16	36	75
L Taxable cigarette sales, mln packs	$L = L_{2011} - K$	550	545	534	514	475
M Taxable cigarette sales, UZS mln.	$M = L \times F$	760650	824961	840925	864269	898721
N Excise revenues, UZS mln.	$N = B \times L$	96250	114455	140010	179883	249431
O VAT share in wholesale price, %	O	16,67%	16,67%	16,67%	16,67%	16,67%
P VAT revenue, UZS mln.	$P = M \times O$	126775	137494	140154	144045	149787
R Total revenue, UZS mln.	$R = N + P$	223025	251949	280164	323927	399218
S Nominal revenue increase	$S = R / R_{2011}$		1,13	1,26	1,45	1,79
T Inflation-adjusted revenue increase	$T = S / C$		1,05	1,17	1,35	1,66
U Excise share in average retail cigarette price	$U = B / F$	13%	14%	17%	21%	28%

\* -  $D_{2011}$  is calculated as  $D_{2011} = F_{2011} / (100\% + E) - B_{2011}$ .  $F_{2011}$  is taken from Fig.5.

sequently, almost no reduction in cigarette sales. Nominal budget revenues grow by 13%, and inflation-adjusted - only by 5%.

With 1.5-fold ascent of excise rates, the inflation-adjusted price will rise by only 6%, but this will lead to an increase in revenues by 17% in inflation-adjusted terms.

With two-fold excise tax rates increase, the inflation-adjusted price will increase by 13%, just slightly over prices in 2011. Still, this will result in taxable sales decline by

7%. However, inflation-adjusted revenue growth will constitute 35%.

With 3-fold excise increase, inflation-adjusted price is increasing by 27% and taxable sales are declining by 75 million packs of cigarettes. Despite this decrease, revenues from both excise tax and VAT will increase by 79% in nominal terms and by 66% in inflation-adjusted terms. Even if the reduction in the number of taxable cigarettes was double the forecast (not 75 million but 150 million packs), the calculation shows that inflation-adjusted revenues would increase by 40%, which is more than in each of the other options considered. In all the hypothetical scenarios, major part of revenues increase is ensured by the growth of excise revenues. Revenues from VAT increase as well but to a much lesser extent.

Alternative model was also calculated for the wholesale prices with the deflator equal to 1.15 (average value for 2009-2011) used instead of the CPI. This model produced results for cigarette sales decline and real revenue growth very similar to the main model.

## DISCUSSION

The tobacco taxation system in Uzbekistan in 1993-2011 was not consistent, and it has been largely determined by the commercial interests of the tobacco industry.

In 1994, transnational tobacco company British American Tobacco (BAT) established a joint venture with the government of Uzbekistan. The state-owned tobacco monopoly was thus actually replaced with a private one. BAT was given some economic privileges: an exemption from taxes on foreign currency income and exemption from import, customs and excise duties on materials imported

for processing (Gilmore, McKee, & Collin, 2007). BAT is actually a monopoly of cigarette production, but it was given freedom to set prices for its cigarettes, and to avoid inclusion in the monopolies register. Although BAT had recognized that Uzbek excise rates were very low, it had from the outset aimed to lower them (Gilmore, Collin, & Townsend, 2007). BAT has repeatedly tried to prevent significant increases in excise rates, and it used traditional argument that high excise rates will cause very high increase in illegal cigarette sales.

Studies conducted in several countries indicate that the reports on the levels of illegal tobacco trade, which are commissioned by tobacco companies systematically and substantially overestimate levels of illegal inflow of cigarettes into the country (Eriksen, Mackay, & Ross, 2012). In cases where the government ignored the claims by the tobacco industry about the alleged threat of smuggling and significantly increased excise tax rates, this usually resulted in significant excise revenue increases (Krasovsky, 2010). In other cases, when authorities followed the tobacco industry advice, real revenue could grow only with large increase of cigarette sales. Such revenue growth was observed in Uzbekistan in 2005-2009. In 1999-2005, on average, approximately 300 million cigarette packs were sold annually; while in 2008-2011, an average of more than 500 million packs was sold.

The increase in taxable sales in 2005-2009 was too high to be explained by increase in domestic consumption only. Our analysis revealed that this increase could hardly be explained by the reduction of illicit cigarette inflow to Uzbekistan.

A more likely cause of sales increase in 2005-2009 was cigarette purchases for illegal outflow from Uzbekistan to Turkmenistan and other countries where cigarette prices are higher. Press service of the State Border Protection Committee of the National Security Service of Uzbekistan reported that 60 attempts to smuggle tobacco products into Turkmenistan were disclosed in 2011 on the Uzbek-Turkmen border. In early 2012, trafficking of 10 tons of tobacco products illegally exported from Uzbekistan to Turkmenistan was ceased. In December 2011, the National Security Service of Uzbekistan disclosed tobacco products shipment to Turkmenistan estimated as USD250,000 (REGNUM Information Agency, 2011).

Similar phenomena of sharp increase in cigarette sales without the growth in consumption have occurred in 2000-2007 in Ukraine (Krasovsky, 2010) and in 2005-2011 in Belarus (Krasovsky, 2012), which was due to the expansion of the illicit outflow of cigarettes from these countries.

In 1995-1998, excise tax rates in Uzbekistan did not change. In 1999, they were significantly increased, which resulted in substantial revenue growth. However, later, despite the inflation and income growth in 2001-2008, excise tax rates were reduced and remained at the same level, which resulted in a decline in real revenues from the excise tax.

Contrary to expectations, the transition to specific excise tax in Uzbekistan with keeping excise tax rates at the same level in 2005-2008 did not avert cigarette price increase; budgetary revenue was lost to the benefit of the tobacco industry incomes, as they increased the pre-tax part of cigarette prices.

In contrast, a significant increase in excise taxes in 2010 and 2011 led to an increase in revenue from excise taxes even with cigarette sales shrinking.

The share of excise in average weighted retail price of filter cigarettes in 2004-2011 ranged from 10-17% (or 16-27% in the weighted average wholesale price), which is much lower than both the level of 70% recommended by the WHO (World Health Organization, 2010) and the level established by the European Union Directive – 57% (Council of the European Union, 2011). Our calculations show that even in case of three-fold excise tax increase, the share of excise in the wholesale cigarette price will only rise from 16% to 32%. The European Union Directive also states that minimum excise per 1000 cigarettes should be 64 euro, while in Uzbekistan in 2013 the excise was only 5 euro.

The results confirm the inverse relationship between the level of taxes and prices, on the one hand, and the demand for cigarettes, on the other, that is, the higher the tobacco price, the lower are the sales. Conversely, when real cigarette prices decline, people smoke more (Jha & Chaloupka, 1999). Low cigarette taxes also result in relatively low budget revenues, which is a missed opportunity to recover the economic costs of tobacco use.

Along with certain strengths, the study bears some limitations. Most of them derive from a limited time span for which data were available to pursue country-based estimates. The price elasticity value of -0.5 looks rather high, it should be taken into account that cigarette demand is also determined by other tobacco control measures, and Uzbekistan adopted tobacco control law in late 2011 and ratified FCTC in early 2012. The actual

price elasticity of the cigarette demand in Uzbekistan could be lower than that estimated by the authors; but smaller elasticity would mean lower decline in cigarette sales and larger increase in revenue would follow in case of excise rate increase. We assumed that the tobacco industry increase its pre-tax price only by the CPI, while in reality they could change it both ways. With larger increases of the pre-tax price decline in cigarette sales would be more tangible but the revenues might be smaller than modelled. Changes in the tobacco taxation policy in the neighbouring countries may have impact on illicit cigarette export and import with subsequent changes in taxable sales. Therefore, the suggested revenue forecasts show potential trends, while the exact estimates may be subject to additional number of determinants.

## CONCLUSIONS

1. Stabilization or reduction in cigarette excise taxes in Uzbekistan in 2002-2008 led to a decline in real excise revenues and the growth of cigarette sales.
2. In those years (1999, 2010, and 2011) when the excise tax rates were significantly increased, the real revenues grew, despite the decline in cigarette sales.
3. Levels of cigarette excise in Uzbekistan remain low both as a percentage of price (on average 15% of the retail price), and compared to most of the neighboring countries.
4. As a result of low excise rates, illegal outflow of cigarettes from Uzbekistan apparently exceeds the illegal inflow of cigarettes in Uzbekistan.
5. A significant increase in cigarette excise (1.5-3 fold) can both increase budget revenues and re-

duce cigarette consumption, with faster increase yielding more benefits.

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