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# **The Effects of Tobacco Taxes on Health: an analysis of the effects by income quintile and gender in Kazakhstan, Russia and Ukraine**

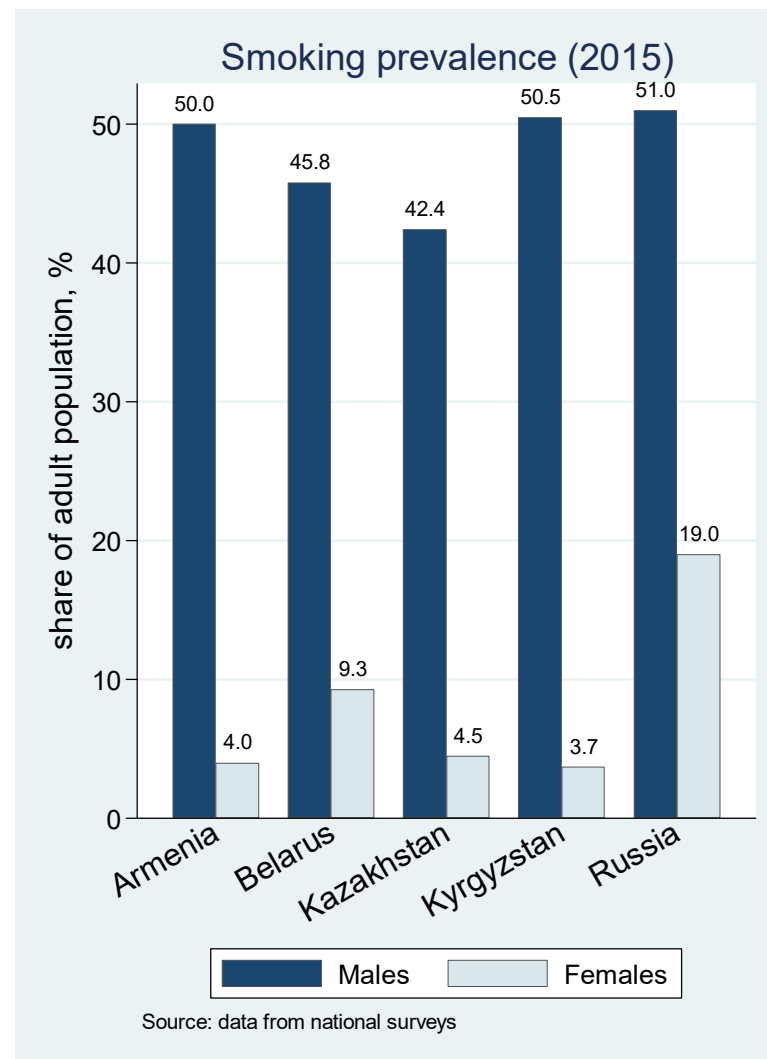
Workshop on Tobacco Economics for Central and Eastern Europe, Warsaw

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# Smoking prevalence is high in the region

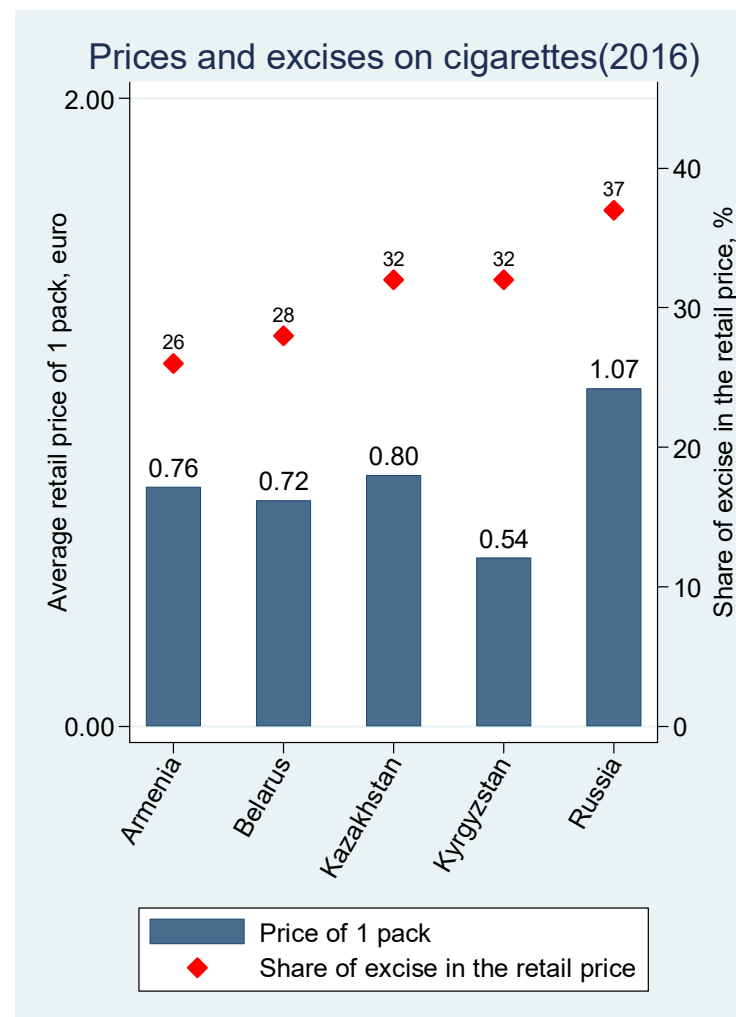
- Smoking is widespread in EAEU countries, particularly among men (from 42% in Kazakhstan to 51% in Russia)
- Ukraine: 49.9% males and 10.5% females (GATS 2017)
- The main tobacco products are predominantly filter cigarettes, except Kyrgyzstan, where certain types of smokeless tobacco (nasvay et al.) are quite popular
- Smoking is not so popular among women as among men, although in Russia, Ukraine and Belarus the absolute smoking prevalence rates are high (respectively 19%, 10.5% and 9.3% of the adult population)



# Cigarette prices in EAEU countries

Prices and excises on cigarettes in EAEU countries are significantly lower than those recommended by WHO

- Russia: the average retail price of cigarettes increased substantially in recent years and in 2016 exceeded 1 euro per pack. Still very low:
  - the minimum excise duty in the EU in 2014 was 1.8 euros per pack
- Prices in Belarus, Kazakhstan and the new members of the EAEU are even lower
- The share of excise tax in the average retail price of the EAEU countries does not exceed 40%,
  - the minimum level in the EU is set on 60% and the level recommended by the WHO – on 70-75%
- Ukraine: share of excise 45% (2012)



- Estimate effects of increase in excise taxes in Kazakhstan, Russia, and Ukraine on
  - prevalence of smoking and cigarette consumption
  - changes in tobacco-related losses in terms of mortality and reduced life expectancy
  - changes in health expenditures, public and total
- Estimate the burden of tobacco-caused mortality as a whole and by main tobacco-related diseases
- Assess the distributional (by income groups) health impact of an increase in tobacco taxation in the three countries

- Health effects are estimated across income quintiles, gender and by five-year age cohorts (following Verguet et.al. 2013 and Jha et.al. 2012)
- To estimate changes in health losses:
  - estimate changes in smoking prevalence and consumption
    - make assumptions on respective elasticities based on literature
  - get estimates of changes in tobacco-related mortality
    - use literature assumptions on age probabilities of avoiding TRD after smoking cessation
  - estimate # of life years gained by reduction in premature mortality
    - use relative (smokers vs non-smokers) risks of dying prematurely from specific diseases to split total # of deaths from disease into those of smokers and non-smokers
    - use life tables to estimate life expectancy of smokers and non-smokers
- To estimate reduction in public health expenditures spent on treatment of tobacco-related diseases
  - estimate input of seven main causes in total tobacco-caused mortality
  - estimate disease-specific treatment costs (adjusted for probabilities of health care utilization) based on ‘medical-economic standards’

## Initial situation in 2012 and assumed increase in excise taxes

	Smoking prevalence, males/females (%)	Average consumer price, national currency units	Share of excise in the average retail price (%)	Increase of excise assumed (%)
Kazakhstan	34/2	157.0	16	200
Russia	61/20	40.0	27	100
Ukraine	53/11	8.8	46	50

*Source: authors' estimates on the base of national official statistics and Euromonitor 2013.*

## Sensitivity of Average Retail Price to Changes in Excise

Different VAT and excise rates. Hence, assume different size of the shock in each country to obtain **similar changes in retail prices**

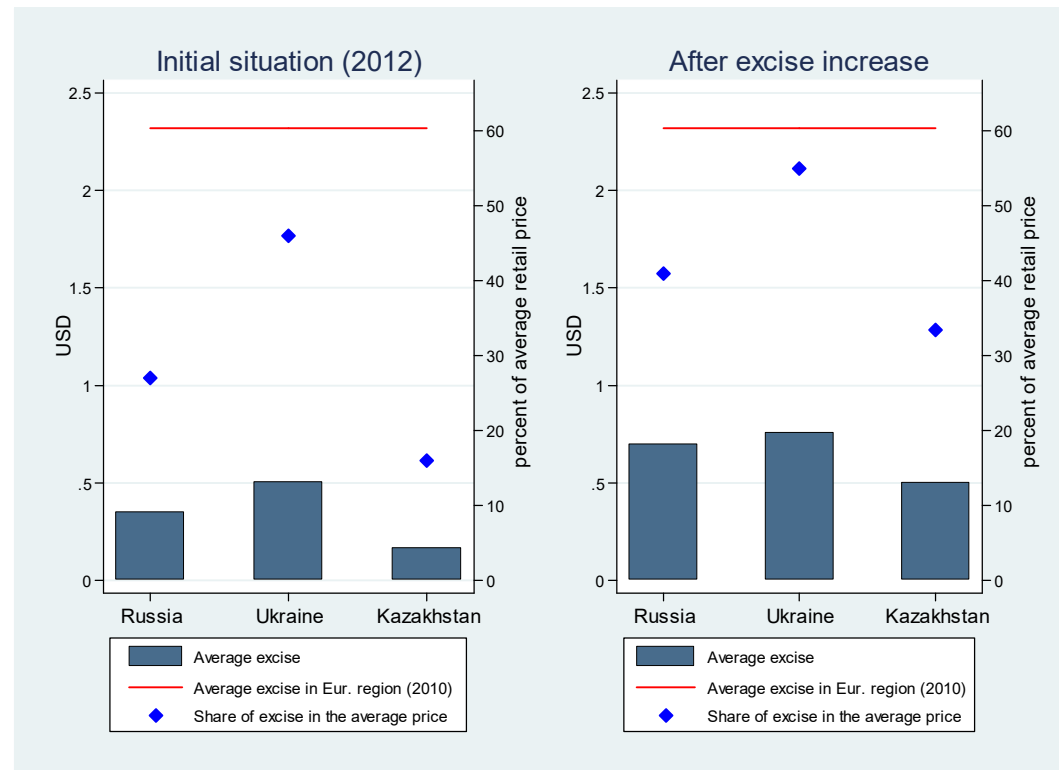
	Share of excise in average retail price (%)	VAT	Percent change of average retail price after 50% increase of excise	Percent change of average retail price after 100% increase of excise	Percent change of average retail price after 200% increase of excise
Kazakhstan	16	12	9	18	36
Russia	27	18	16	32	64
Ukraine	46	20	28	55	110

*Source: authors' estimates on the base of national official statistics and Euromonitor 2013.*

# Modelled excise tax shocks

## Modelled shocks:

- 200 percent excise change in Kazakhstan (36 percent change of average retail price)
- 100 percent excise change in Russia (32 percent change of average retail price)
- 50 percent excise change in Ukraine (28 percent change of average retail price)





# Assumptions for Price Elasticity of Demand, and Elasticity of Participation

	1 (the poorest)	2	3	4	5 (the richest)	Total
Price elasticity of demand	-0.4	-0.4	-0.250	-0.2	-0.130	-0.30
Elasticity of participation	-0.2	-0.2	-0.125	-0.1	-0.065	-0.15

To compare:

Estimates for China {-0.64, -0.51, -0.38, -0.25, -0.12} Verguet et al. [2013]

Estimates for India {-1.4, -1.4, -1.1, -0.7, -0.5} Murphy et al. [2013])

## Relative risks by causes of death, males/females

Age	Ischemic disease	Stroke	Other cardiovascular diseases	Chronic obstructive pulmonary disease COPD	Other respiratory diseases	Lung cancer	Other neoplasms
30–44	5.5/2.3	3.1/4.6	2.2/2.0	10.8/12.3	1.9/2.2	21.2/12.5	2.2/1.4
45–60	3.0/3.8	3.1/4.6	2.2/2.0	10.8/12.3	1.9/2.2	21.2/12.5	2.2/1.4
60–69	1.9/2.5	1.9/2.8	2.2/2.0	10.8/12.3	1.9/2.2	21.2/12.5	2.2/1.4
70–79	1.4/1.7	1.4/2.0	2.2/2.0	10.8/12.3	1.9/2.2	21.2/12.5	2.2/1.4
80 and over	1.1/1.4	1.1/1.0	2.2/2.0	10.8/12.3	1.9/2.2	21.2/12.5	2.2/1.4

Source: Danaei et al. 2009.

Note: the relative risk presents the ratio between the probability to die for smoker and the probability to die for non-smoker. Therefore, the relative risk of diseases that are not caused by tobacco is equal to 1.0

## Assumptions about Public Health Expenditures for Selected Diseases

Sverdlovsk region medical economic standards are used to estimate treatment costs for Russia.

Those are indexed to the ratio of per capita public health expenditures of Kazakhstan and Ukraine.

	Russia, Rub	Kazakhstan, US\$	Russia, US\$	Ukraine, US\$
Ischemic heart disease	60,000	1,071	1,948	584
Stroke	70,000	1,250	2,273	682
Other cardiovascular diseases (arteriosclerosis)	45,000	804	1,461	438
Respiratory diseases (COPD)	25,000	446	812	244
Cancer (lung cancer)	65,000	1,161	2,110	633

*Source: WHO GHO 2014 and authors' estimates*

# RESULTS

## Estimated Difference in Life Expectancy, Smokers and Nonsmokers

Age	Males	Females
<b>Kazakhstan</b>		
30–44	7.24	8.13
45–59	6.59	7.25
60–74	4.66	4.49
75 and older	2.81	2.03
<b>Russia</b>		
30–44	6.45	6.42
45–59	5.74	5.94
60–74	3.84	3.92
75 and older	1.93	1.73
<b>Ukraine</b>		
30–44	6.77	7.17
45–59	6.11	6.64
60–75	3.99	4.13
75 and older	2.01	1.93

# Estimated Tobacco-Caused Health Losses

	Tobacco-caused mortality, thousand per year	Input of smoking into total mortality (15 years and older, %)	Input of smoking into total mortality (years 30–59, %)
<b>Kazakhstan</b>			
Men	14.3	18	25
Women	0.6	1	2
Total	14.9	10	18
<b>Russia</b>			
Men	265.0	24	31
Women	45.0	5	16
Total	310.0	15	27
<b>Ukraine</b>			
Men	65.0	19	29
Women	6.0	2	9
Total	71.0	10	23

# Expected Health Effects of Increased Excise Taxes (50 years), Males

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
<u>Kazakhstan</u>						
Reduction in smoking prevalence, %	5.88	5.88	3.71	2.98	1.95	3.97
Reduction in tobacco-related mortality, ths person	7.60	7.92	4.87	4.34	3.16	27.89
Total and by income group reduction in mortality, %	27	28	17	16	11	100
Years of life gained, million	0.06	0.06	0.04	0.03	0.02	0.21
Public health expenditures averted, 2012 US\$ million	8.47	8.65	5.32	4.77	3.51	30.71
Total health expenditures averted, 2012 US\$ million	14.62	14.94	9.19	8.24	6.05	53.04
<u>Russia</u>						
Reduction in smoking prevalence, %	5.34	5.34	3.37	2.71	1.77	3.78
Reduction in tobacco-related mortality, ths person	134	125	74	57	38	428
Total and by income group reduction in mortality, %	31	29	17	13	9	100
Years of life gained, million	0.89	0.83	0.50	0.38	0.6	2.87
Public health expenditures averted, 2012 US\$ million	282	261	158	120	81	902
Total health expenditures averted, 2012 US\$ million	473	437	264	201	136	1,511
<u>Ukraine</u>						
Reduction in smoking prevalence, %	4.73	4.73	2.98	2.39	1.56	3.44
Reduction in tobacco-related mortality, ths person	37	31	19	14	8	110
Total and by income group reduction in mortality, %	33	29	17	13	8	100
Years of life gained, million	0.26	0.22	0.13	0.10	0.06	0.77
Public health expenditures averted, 2012 US\$ million	24	20	12	9	5	71
Total health expenditures averted, 2012 US\$ million	46	39	24	18	11	137

# Expected Health Effects of Increased Excise Taxes (50 years), Females

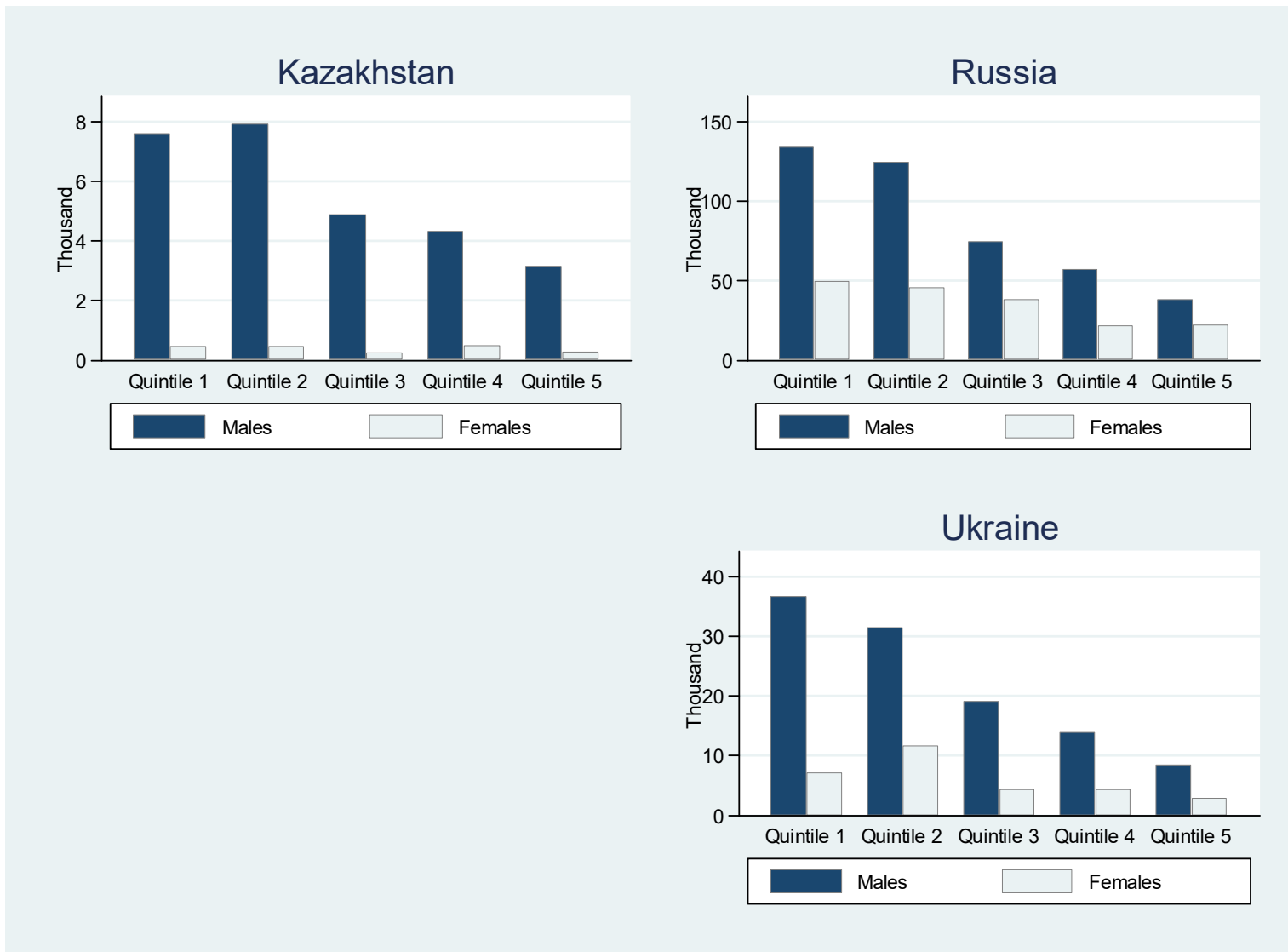
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
<u>Russia</u>						
Reduction in smoking prevalence, %	5.34	5.34	3.37	2.71	1.77	3.57
Reduction in tobacco-related mortality, thousand person	50	46	38	22	22	178
Total and by income group reduction in mortality, %	28	26	22	12	13	100
Years of life gained, million	0.34	0.31	0.26	0.15	0.15	1.21
Public health expenditures, 2012 US\$ million	117	108	92	51	53	420
Total health expenditures avoided, 2012 US\$ million	195	180	154	86	88	704
<u>Ukraine</u>						
Reduction in smoking prevalence, %	4.73	4.73	2.98	2.39	1.56	3.33
Reduction in tobacco-related mortality, thousand person	7	12	4	4	3	30
Total and by income group reduction in mortality, %	24	38	14	14	9	100
Years of life gained, million	0.06	0.09	0.03	0.03	0.02	0.23
Public health expenditures avoided, 2012 US\$ million	5	9	3	3	2	23
Total health expenditures avoided, 2012 US\$ million	10	17	6	6	4	44



## Summary of expected health consequences of tax increase

	Russia		Ukraine		Kazakhstan
	Males	Females	Males	Females	Males
Reduction in tobacco-related mortality, thousand person	428	178	110	30	28
Total reduction in mortality attributable to two poorest income quintiles (%)	60	54	62	62	55
Years of life gained, million	2.87	1.21	0.77	0.23	0.21
Total health expenditures avoided, US\$, million	1,511	704	137	44	53

# Distribution of Reduction in TCMortality Due to Excise Growth



# **OVERVIEW OF TOBACCO EXCISE POLICY IN THE EURASIAN ECONOMIC UNION**

## Structural evolution of integration process (recent steps)

2009 (signed)  
2010 (in force)

- **Customs Union (Belarus, Kazakhstan, Russia):**  
Treaty on the establishment of the Common Customs Space and formation of the Customs Union

2011 (signed)  
2012 (in force)

- **Common Economic Space:**  
Declaration on the Eurasian economic integration

2014 (signed)  
2015 (in force)

- **Eurasian Economic Union  
(3 countries + Armenia and Kyrgyzstan):**  
Treaty on the Eurasian Economic Union

## Excises in EAEU countries (2016)

- Armenia: 5500 AMD per 1000 pieces or **0,20 euro per pack**
- Belarus:
  - From January, 1 to June, 30:
    - Within the I price group (up to 610 000 rubles per 1000) – 148 800 rubles
    - Within the II price group (from 610 000 up to 840 000 rubles per 1000) – 343 100 rubles
    - Within the III price group (from 840 000 rubles) – 390 300 rubles;
  - From July,1 to December, 31:
    - Within the I price group (up to 615 000 bel. rubles per 1000) – 153 000 bel. rubles
    - Within the II price group (from 615 000 up to 890 000 bel. rubles per 1000) – 373 500 bel. rubles
    - Within the III price group (from 890 000 bel. rubles) – 422 500 bel. rubles

Weighted excise about **0,20 euro per pack**

- Kazakhstan: 5000 KZT per 1000 pieces or **0,26 euro per pack**
- Kyrgyzstan: 750 KGS per 1000 pieces or **0,17 euro per pack**
- Russia: 1 250 rubles per 1 000 pieces + 12 percent of maximum retail price but no less than 1 680 rubles per 1 000 pieces or **0,40 euro per pack**

## Qualitative scope of harmonization of tobacco excises within EAEU

Draft Agreement allows participant countries to significantly deviate from the indicative excise rates

	2016	2017	2018	2019	2020
Indicative rate, euro per 1000 pieces	22	25	27	30	32
<i>Possible deviation below the indicative rate:</i>					
Kazakhstan, Russia, Belarus (except I price group)	-30%	-30%	-25%	-20%	-15%
Armenia, Kyrgyzstan, Belarus (I price group)	-55%	-45%	-35%	-30%	-20%
<i>Possible deviation above the indicative rate:</i>					
All EAEU countries	+10%	+10%	+10%	+10%	+10%

Actual excise rates in 2016 were as follows:

Armenia – 10,1 euro (-54% from the indicative rate),

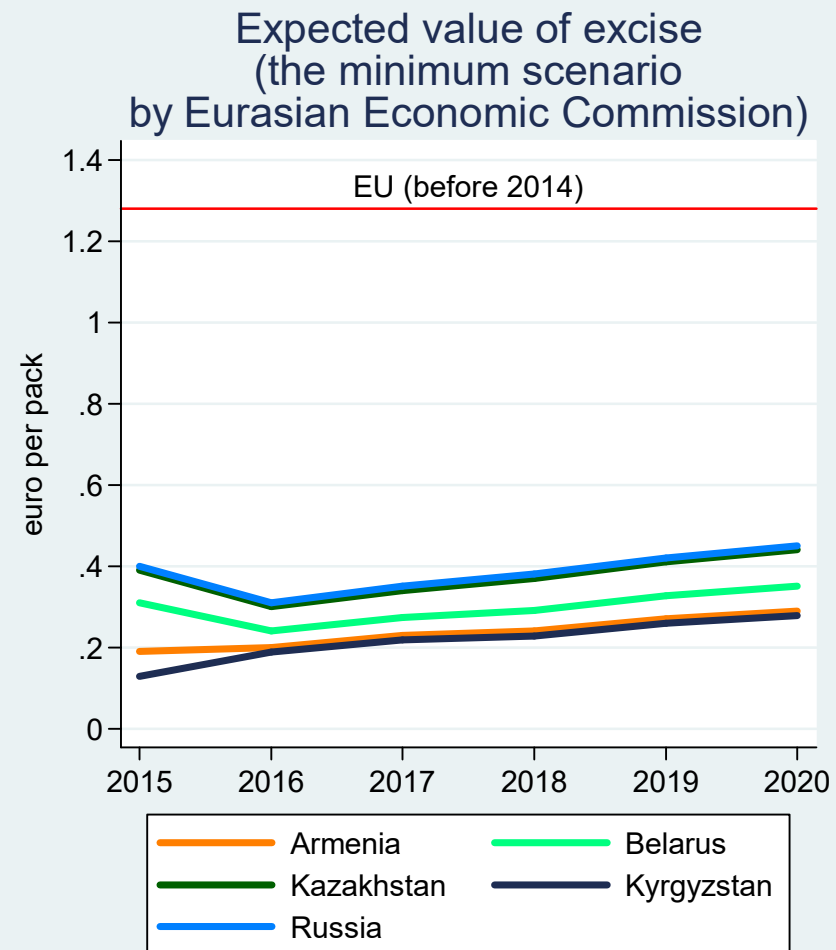
Belarus – 9,9 euro (-55%), Kazakhstan – 12,8 euro (-42%),

Kyrgyzstan – 8,7 (-61%), Russia – 20,1 euro (-8%)

# Expected consequences of harmonization of tobacco excises 1

Current plans for the harmonization will weaken the excise policy of the largest countries of the union. Slowing growth in excise taxes would nullify the achievements of anti-smoking campaign of recent years.

- Allowing countries to understate the indicative rate by 30-50% actually makes it unpractical
- National governments, while developing their excise policy, use the minimum level of excises, given in the EAEU legislation
- Thus, one can state that harmonization scenario assumes low excise growth in 2016-2020, especially in Russia, where weakening of excise policy would lead to a stabilization of the smoking prevalence at a very high level

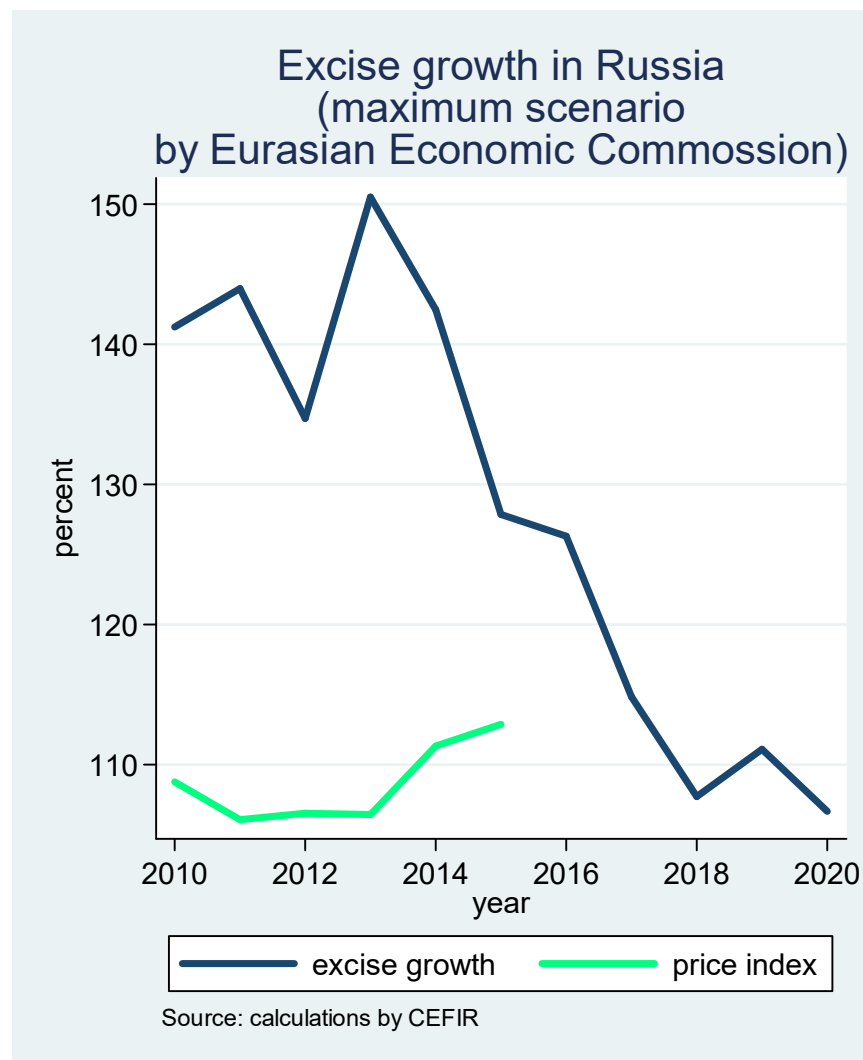


Source: calculations by CEFIR

## Expected consequences of harmonization of tobacco excises 2

If the plans of Eurasian economic commission will be implemented in practice, the real growth of tobacco taxes in Russia will stop

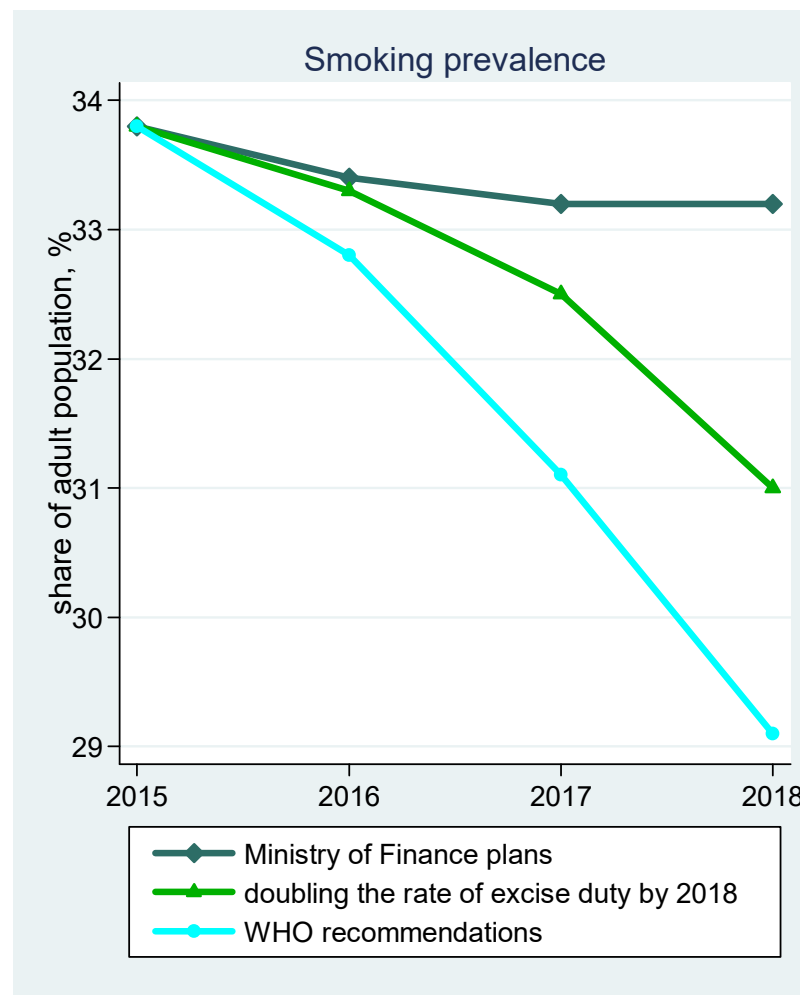
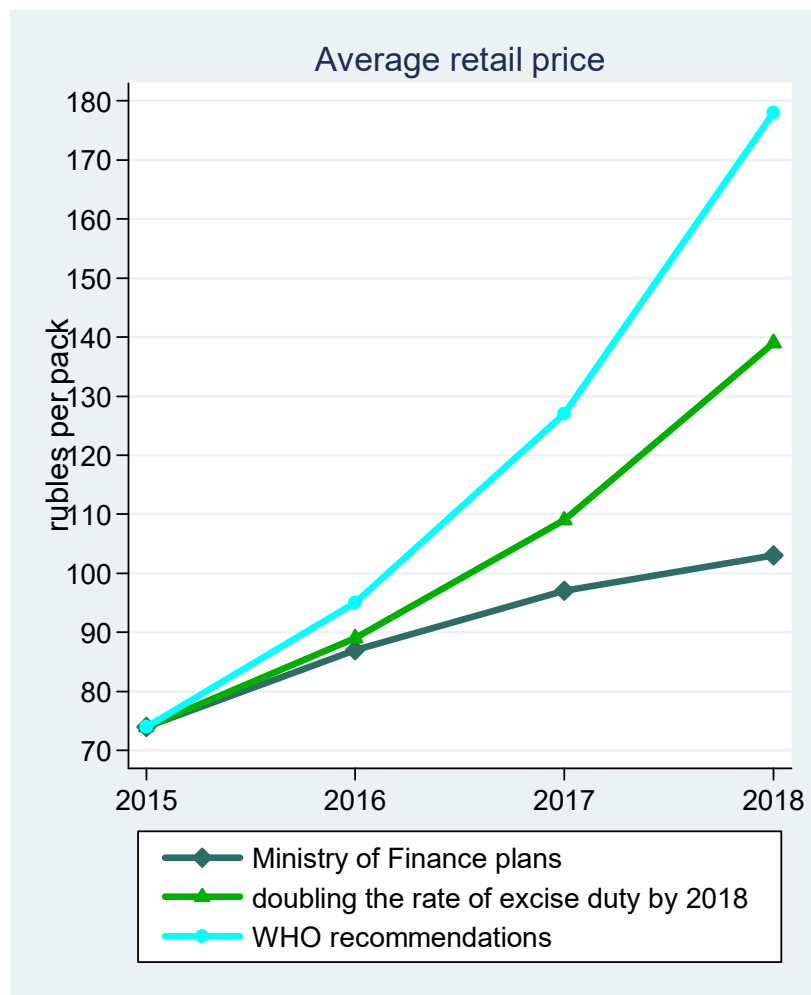
- In Russia smoking prevalence is higher than in other EAEU countries
- At the same time Russia is the largest cigarette market in the EAEU
- Since 2009, prices and excise duties began to grow significantly, which led to some improvement in the situation
- The actual freezing of tobacco taxes in accordance with EAEU plans would nullify all the achievements of the last few years anti-smoking campaign in the country





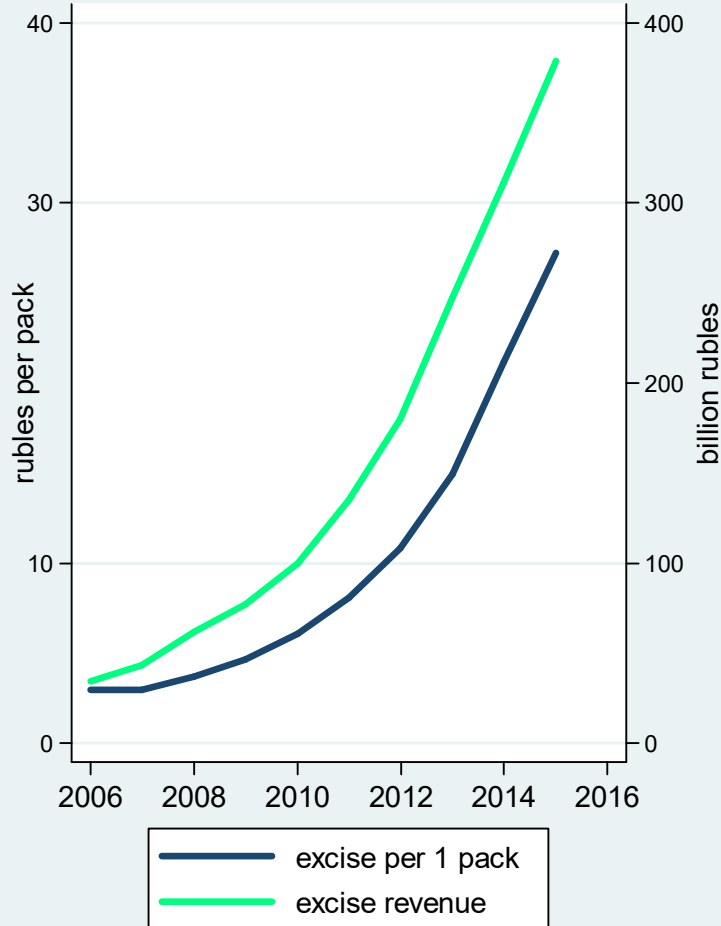
# Expected consequences of harmonization of tobacco excises 3

Due to the low elasticity of demand for cigarettes, to reduce smoking prevalence only a sharp increase in excise taxes is required

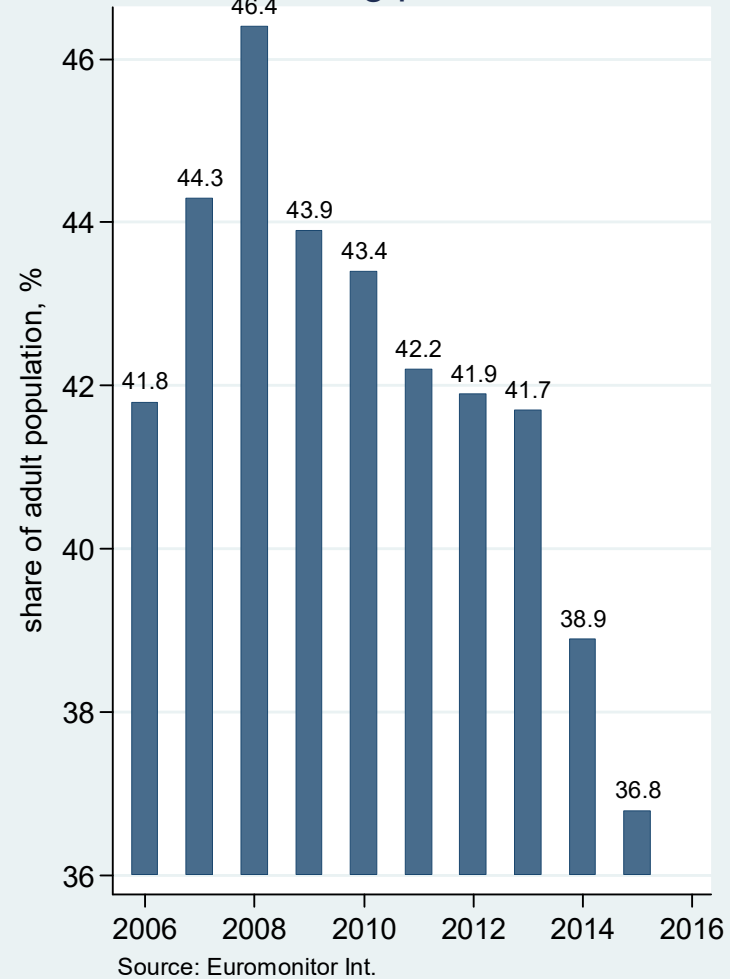


# The consequences of tightening the tobacco excise policy in Russia

## Rate of excise duty and excise revenue on cigarettes in Russia



## Smoking prevalence



- Smoking is a major risk factor for a number of diseases; in many countries of EAEU contribute of smoking into male mortality exceeds 30%
- The excise policy of the member countries remains liberal, despite its substantial tightening in recent years in a number of countries, particularly in Russia
- Plans for the harmonization of tobacco taxes within the EAEU would lead to weakening the excise policy of the largest countries of the union, that are also present the largest market for tobacco products in the region