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## Measurement of Kazakhstan's non-observed economy (based on the principles of the System of National Accounts)

### Abstract

The authors analyse the existing data on the types of non-observed activities in Kazakhstan. The assessment was conducted based on foreign experience and practice of unobservable activities assessing in accordance with the recommendations of the United Nations Economic Commission for Europe and Eurostat. The accumulation of relevant data from different available sources and own calculations made it possible to assess the actual volume of Kazakh non-observed economy by regions for 2013. Three biggest segments of Kazakh non-observed economy form drug trade (40.8%), prostitution (35.8%) and illegal alcohol production (22.9%).

**Keywords:** Non-observed Economy; Non-observed Activity; Drug Trafficking; Prostitution; Poaching; Smuggling; Illegal Alcohol Production; Unauthorised Copies

**JEL Classification:** A10

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### Измерение ненаблюдаемой экономики Казахстана (на основе принципов Системы национальных счетов)

#### Аннотация

В статье проведен анализ существующих данных по видам ненаблюдаемой деятельности в Казахстане. При проведении их оценки в статье были использованы зарубежный опыт и практика применения оценки ненаблюдаемых видов деятельности по рекомендации Европейской экономической комиссии ООН. Произведенные расчеты дали возможность оценить реальные объемы ненаблюдаемой экономики страны.

**Ключевые слова:** ненаблюдаемая экономика; наркобизнес; проституция; браконьерство; контрабанда; нелегальная алкогольная продукция; неавторизованные копии.

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### Вимірювання неспостережуваної економіки Казахстану (на основі принципів Системи національних рахунків)

#### Анотація

У статті проведено аналіз існуючих даних за видами не спостережуваної діяльності в Казахстані. При їх оцінці були використані зарубіжний досвід та практика застосування оцінки не спостережуваних видів діяльності за рекомендацією Європейської економічної комісії ООН. Проведені розрахунки дали можливість оцінити реальні обсяги не спостережуваної економіки країни.

**Ключові слова:** неспостережувана економіка; торгівля наркотиками; проституція; браконьерство; контрабанда; нелегальна алкогольна продукция; неавторизовані копії.

### 1. Introduction

The objective existence of the non-observed economy necessitates the development of methodologies for its measurement and the development of principles and methods of regulation of its volume in the national economy of Kazakhstan on the basis of accepted international approaches to the usage of basic national accounts.

### 2. Brief Literature Review

Currently, non-observed economic activities are not accounted for by the National Statistical Office of the Republic of Kazakhstan. At the same time, experimental calculations to assess the non-observed activities are conducted in different developed countries [1–6]. Such countries as Albania, Brazil and Moldova are focused on labour costs while doing calculations of non-observed activities [7]. Researches and measurement of non-observed activities are being conducted by the United Nations [7; 8] and OECD [9] on regular basis.

The theory of non-observed economy and its method of accounting have been the subject of investigations conducted by G. S. Becker (1968, 1974) [10], I. Ehrlich (1987) [11], T. Schelling (1980) [12], L. Thurow (1980) [13] and Vandaele W. (1978) [14], A. S. Bolshakov (2011) and others.

From the conceptual point of view, with the «non-observed economy» are connected the concept of «criminal economy» (A. A. Krylov, 1992; A. Nesterov, 1995; R. T. Naylor, 2003). At the modern stage of world economic development, the non-observed economy may be viewed as a part of shadow globalization (L. M. Kapitsa, 2014) [15].

Nowadays, the basic methodological tool for European countries is the international statistical standards known as System of National Accounts (version of 1993) [16], and Guidelines for the measurement of non-observed economy [17] developed by the United Nations Economic Commission for Europe. A practical tool for implementing the principles of the Guidelines is the Eurostat tabular approach.

A. Ramazanov and A. Barlubaev (2004) [18] conducted a study and defined the non-observed economy as the shadow of activities in the field of national security. They concluded that the non-observed economy affects national security.

The topicality of non-observed economy research in Kazakhstan has provoked a series of academic research on the issue. They were conducted by M. Laumulin (2013) [19], G. Ismurzina (2007) [20], T. Aliev (2013, 2015) [21], T. K. Bekzhanova (2005, 2011, 2013) [22], B. N. Darimbetov (2001), F. Schneider (2010, 2013).

**3. The purpose** of the study is to determine the non-observed economy of Kazakhstan and its sources in the regional context.

**4. Results**

It is difficult to measure non-observed activities due to their opacity. Persons involved in the unobservable operations have more than obvious reasons to conceal their involvement in them. Consequently, the more dangerous to society the considered non-observed activities are and the more serious punishment is provided by the national criminal law, the less traditional sources of information are relevant to measuring it. In the Kazakhstan Economic Update of the World Bank Group (fall 2014) a special section was devoted to the Non-Observed Economy in Kazakhstan, as it is, together with economy dollarization, considered to be one of the key constraints to the country's development [23].

The best results to measure the amounts of non-observed economy can be obtained using one of the basic national accounting identities:

- the resources of goods and services (the internal release plus imports), which are the use of goods and services (intermediate consumption plus final consumption plus accumulation plus exports);
- gross value added at basic prices, which is equal to the value of output at basic prices minus intermediate consumption;

- GDP at market prices, which is equal to compensation of employees plus net taxes on production and imports, plus gross profit / gross mixed income;
- GDP at market prices, which is equal to final consumption expenditures plus gross capital formation, plus exports, minus imports.

Based on Kazakhstan's present-day realities, we consider it appropriate to assess the following types of non-observed activities: drug trafficking; prostitution; legal activities carried out by persons not entitled to do so; copyright infringement; smuggling.

For each specific type of non-observed activity data were collected to the present research as independently as possible. The same was done with regard to the calculations of resources in use and generation of income. Subsequently, the collected data were integrated and compared.

The main sources of information for the assessment of illegal activities were law enforcement data and data from surveys of target criminal activities. In addition, we used data from health-care institutions of health facilities, research funds and research institutes.

In Kazakhstan, systematic work on data collection and evaluation of illegal activities in the form in which it can be compared with the main macroeconomic indicators is not being carried out by the public authorities. Statistics is often only of forensic character – the number of crimes, the number of cases, the number of criminals, etc. In addition, statistics corresponding to different types of legitimate rights violations does not often take into consideration the economic component.

Practical calculations to assess the aforementioned illegal activities were produced by regions of the Republic of Kazakhstan. Sources of information for the subjects of the calculations are presented in Table 1.

The transition from a communist to a capitalist society in Kazakhstan has spawned a number of socio-economic costs of the non-observed economy, which destabilises the development of Kazakhstan. The non-observed economy leads to « ... disparities and destruction of links between the state and the individual. Mutual trust between them is lost; the principles of the social contract are violated. Undermining the moral and ethical foundations of society erodes the criteria for «cleanliness» choice of means to achieve the goals, the boundaries between permissible and impermissible activities. Economic strain degrades the quality of government regulation, distorts the relationship between the state and businesses, reduces the response for «signals» of social and economic policy. It also distorts communication between business entities and creates a quasi-market relations in the economy» [18].

In Kazakhstan, there is a problem related to drug use. There is a social stratum of drug addicts. Also, there is a drug market with its subjects, retailers and consumers. Drug addiction is a social and economic problem in any country. It poses a threat to society. There are drug cartels which have strong financial and technical resources. Drug trafficking is attractive because of its super profitability. The retail price of drugs in Europe and America covers the cost of production and transportation. In Afghanistan, there are huge reserves of high-quality heroin and opium poppy. While in transit to consumers in the countries of Eastern and Western Europe, part of such drugs are available in the territory of Kazakhstan. In Kazakhstan, heroin is imported

Tab. 1: List of data sources used in the calculations of the present research

Nº	Illegal activity	Source	Note
1.	Drug industry	- Republican Centre for AIDS (RCA); - Committee on Legal Statistics and Special Records of the Prosecutor General's Office of the Republic of Kazakhstan; - Committee on Anti-Narcotics and Drug Control of the Ministry of Internal Affairs of the Republic of Kazakhstan.	- The number of drug addicts is a key indicator in the calculation of drug trafficking. - The number of heroin users is taken according to the (RCA), which estimates data based on sentinel surveillance (SS) and a methodology for rapid assessment (BOS). According to the method of biofeedback, they evaluate not only the number of registered in the law enforcement and medical agencies, but also the number of registered in the unprofitable organizations. - The amount of cannabis is based on a survey of drug addicts held by the Republican Scientific and Practical Centre of Medical and Social Problems of Drug Addiction. - The number of opium users taken on the basis of the Committee on Legal Statistics and Special Records of the Prosecutor General's Office of the Republic of Kazakhstan.
2.	Prostitution	- Republican Centre for AIDS; - Committee on Criminal Police of the Ministry of Internal Affairs of the Republic of Kazakhstan.	- The number of sex workers is defined according to the RCA, with estimates based on a system of sentinel surveillance (SS) and a methodology for rapid assessment (BOS). Using the method of biofeedback allows evaluating not only the number of those who are registered, but also the number of those who are not registered legally.
3.	Poaching	- Committee on Forestry and Hunting of the Ministry of Environment and Water Resources of the Republic of Kazakhstan; - Agency of the Republic of Kazakhstan on Statistics.	
4.	Illegal alcohol	- Agency of the Republic of Kazakhstan on Statistics; - World Health Organization.	
5.	Unauthorized copies	- Committee on Intellectual Property Rights, Ministry of Justice; - Agency of the Republic of Kazakhstan on Statistics.	
6.	Smuggling	- Customs Control Committee of the Ministry of Finance.	

Source: Compiled by the authors

in the form of powder of a high concentration, and then it is diluted by wholesale dealers who turn it into a powder of a low concentration. The process of dilution is considered to be «production».

Kazakhstan itself has plantations of narcotic plants. They are particularly prevalent in Shu valley, where hemp, from which one can get marijuana or hashish, is grown. Poverty pushes many people to engage in drug trafficking. They become collectors of drugs, or «live containers» for their transportation. World experience shows that there has not been found a way to stop drug addiction or drug business yet. The effectiveness of the measures to combat drug trafficking at both national and international levels is low.

In Kazakhstan, drug abuse has an epidemic dissemination. It spreads to virtually all social groups, urban and rural areas. Drug addiction becomes a national disaster.

The calculation of drug use (by example of heroin) is based on Formula 1

$$C = N * D, \tag{1}$$

where:

*C* – annual doze of drugs (grams);

*N* – number of drug users (people);

*D* – average amount of drugs consumed by the addicts in one year (grams).

In Kazakhstan, the consumption of heroin per year is around 41 metric tons as of 2013 (see Table 2).

Estimation of the volume of drugs imports into the country (by example of heroin) can be based on Formula 2.

$$I = C * P_{yg} / P_{wg}, \tag{2}$$

where:

*I* – import (grams);

*P<sub>yg</sub>* – street heroin purity (%);

*P<sub>wg</sub>* – wholesale purity of heroin (%);

*C* – heroin consumption (grams).

Next we can determine the volume of domestic production of heroin in the country (see Formula 3):

$$DP = C - I, \tag{3}$$

where:

*DP* – domestic production of heroin (grams);

*C* – heroin consumption (grams);

*I* – imported heroin (grams).

The main indicator is the result of gross value added (GVA), which is defined as follows (see Formula 4):

$$GVA = DP + MU - IC, \tag{4}$$

where:

*GVA* – Gross Value Added (million Tenge);

*DP* – domestic production (million Tenge);

*MU* – trade margin (million Tenge);

*IC* – intermediate consumption (million Tenge).

Trade margin involved in the calculation of GVA is defined as follows (5):

$$MU = C * (Pr - Pw), \tag{5}$$

where:

*MU* – trade margin (million Tenge);

*C* – consumption (grams);

*Pr* – retail price (Tenge);

*Pw* – wholesale price (Tenge).

We did calculations according to the regional structure of trafficking of heroin in the Republic of Kazakhstan. They indicate large volumes of heroin in South Kazakhstan (13.64%), Mangistau (13.59%) and Atyrau (11.8%) regions.

Issues related to prostitution are determined in the amount of revenue for services rendered (see Formula 6).

$$Out = N_{wcs} * Pa * N_{scs} \tag{6}$$

where:

*Out* – prostitution services (million Tenge);

*N<sub>wcs</sub>* – number of sex workers;

*Pa* – average price for a service (Tenge);

*N<sub>scs</sub>* – number of sexual contacts in the business year.

Intermediate consumption relevant to prostitution should include:

- 1) rent for apartments used for customer service;
- 2) rent for the premises paid by holders of sex parlours, saunas, massage parlours, etc.;
- 3) cost of clothing, cosmetics, and special protection equipment;
- 4) cost of transport, equipment and advertising (ads in newspapers, maintenance of websites).

In practice, it is the easiest to estimate intermediate consumption as a share of output based on expert judgment. The share of intermediate consumption of this type of service is 30%. Gross value added is determined by deducting from the issue of intermediate consumption. The calculations are presented in Table 3.

As the calculations show, in the regional structure of prostitution services a large share is accounted to Almaty city (45.75%).

Poaching as an activity is divided into the following sub-categories:

- 1) illegal logging of wood;
- 2) illegal hunting;
- 3) illegal fishing.

Tab. 2: Evaluation of heroin trafficking in the Republic of Kazakhstan by region for 2013

Heroin	Number of drug addicts	Dose gr	Consumption gr	Purity street %	Purity wholesale %	Wholesale price, Tenge	Retail price, Tenge	Import, million Tenge	Domestic production, million Tenge	Trade margin, million Tenge	Final consumption, million Tenge	Costs of intermediate consumption, million Tenge	Gross value added, million Tenge
<b>Republic of Kazakhstan</b>	112,740.0		41,262,840.0					13,922.8	97,181.8	108,447.8	219,552.4	10,844.9	194,784.7
Akmola region	2,300.0	2.0	841,800.0	5.0	39.9	2,250.0	6,000.0	237.3	1,656.7	3,156.8	5,050.8	315.7	4,497.8
Aktobe region	3,500.0	2.0	1,281,000.0	5.0	39.9	2,000.0	4,000.0	321.1	2,240.9	2,562.0	5,124.0	256.2	4,546.7
Almaty region	4,500.0	2.0	1,647,000.0	5.0	39.9	1,350.0	7,500.0	278.6	1,944.8	10,129.1	12,352.5	1,012.9	11,061.0
Atyrau region	2,000.0	2.0	732,000.0	5.0	39.9	3,500.0	35,000.0	321.1	2,240.0	32,058.0	25,620.0	2,305.8	22,993.1
West Kazakhstan region	4,000.0	2.0	7,464,000.0	5.0	39.9	2,000.0	3,000.0	366.9	2,561.1	1,464.0	4,392.0	146.4	3,878.7
Zhambyl region	6,800.0	2.0	2,488,800.0	5.0	39.9	2,300.0	5,000.0	717.3	5,006.9	6,719.8	12,444.0	672.0	11,054.7
Karaganda region	13,240.0	2.0	4,845,840.0	5.0	39.9	2,500.0	3,000.0	1,518.1	10,596.5	2,422.9	14,537.5	242.3	12,777.1
Kostanay region	5,100.0	2.0	1,866,600.0	5.0	39.9	5,000.0	6,000.0	1,169.5	8,163.5	1,866.6	11,199.6	186.7	9,843.4
Kyzylorda region	2,200.0	2.0	805,200.0	5.0	39.9	2,250.0	5,000.0	227.0	1,584.7	2,214.3	4,026.0	221.4	3,577.6
Mangistau region	4,100.0	2.0	1,500,600.0	5.0	39.9	14,000.0	20,000.0	2,632.6	18,375.8	9,003.6	30,012.0	900.4	26,479.0
South Kazakhstan region	20,500.0	2.0	7,503,000.0	5.0	39.9	2,250.0	4,000.0	2,115.5	14,766.2	13,130.3	30,012.0	1,313.0	26,583.5
Pavlodar region	12,000.0	2.0	4,392,000.0	5.0	39.9	1,800.0	3,000.0	990.7	6,914.9	5,270.4	13,176.0	527.0	11,658.3
North Kazakhstan region	4,000.0	2.0	1,464,000.0	5.0	39.9	1,500.0	3,000.0	275.2	1,920.8	2,196.0	4,392.0	219.6	3,897.2
East Kazakhstan region	12,000.0	2.0	4,392,000.0	5.0	39.9	2,000.0	4,000.0	1,100.8	7,683.2	8,784.0	17,568.0	878.4	15,588.8
Astana city	6,500.0	2.0	2,379,000.0	5.0	39.9	1,500.0	4,000.0	447.2	3,121.3	5,947.5	9,516.0	594.8	8,474.0
Almaty city	10,000.0	2.0	3,660,000.0	5.0	39.9	2,625.0	5,500.0	1,203.9	8,403.6	10,522.5	20,130.0	1,052.3	17,873.8

Source: Compiled by the authors on the basis of [http://mcadkz.org/assets/files/AR\\_-2014-Kazakhstan-V-1.3-RU.pdf](http://mcadkz.org/assets/files/AR_-2014-Kazakhstan-V-1.3-RU.pdf)

On the basis of data on seizures of products (timber, fish, animals), we have estimated their release at market prices (see Formula 7).

$$Out = Q_{cg} * Pa, \quad (7)$$

where:

*Out* – production;  
*Q<sub>cg</sub>* – volume of confiscated products;  
*Pa* – average price.

The data related to proportion of intermediate consumption can be used for the assessment of the manufacturing industry. Gross value added is calculated as the difference between output and intermediate consumption.

The results of calculations show that there is no GVA dynamics of poaching. This is the nature of such activities: the competent authorities may identify certain violations within a different period. Thus, violations cannot be identified correctly (Tables 4; 5; 6).

The volume of calculations related to poaching in Kazakhstan is insignificant. The share of illegal fishing (79.36%) is relatively large in the structure of poaching.

Evaluation of the illegal production of alcoholic beverages is based on data on production, exports, imports and consumption of alcoholic beverages in the country. By correlating the consumption of alcohol, on the one hand, and the balance of exports and production in the country, on the other, we can calculate data on illegal production of alcoholic beverages. The physical volume of alcoholic beverages is converted into alcohol with 40% of alcohol content.

To calculate the volume of illegal production of alcoholic beverages, it is necessary to determine the scope of the legal alcohol production (see Formula 8):

$$LP = DP + I - E, \quad (8)$$

where:

*LP* – legal production of alcoholic beverages in the country (thousand litres);  
*DP* – domestic production (thousand litres);  
*I* – import (thousand litres);  
*E* – export (thousand litres).

Total consumption of alcoholic beverages in the country is based on data from the World Health Organization [24].

The volume of illegal production is calculated as follows (see Formula 9):

$$ILP = CC - LP, \quad (9)$$

where:

*ILP* – illegal production (thousand litres);  
*CC* – total consumption (thousand litres);  
*LP* – legal production (thousand litres).

The results are shown in Table 7.

With regard to the calculations done in the regional structure of illegal alcohol production in the Republic of Kazakhstan, a large share of illegal alcohol is observed in Almaty (14.79%) and Karaganda (9.12%) regions, and the City of Almaty (12.25%).

Taking into account the excise policy of the European Union, it is easier for EU citizens to bring contraband alcohol from countries where excise taxes are low. However, in Kazakhstan the situation is different: the national excise policy is the mildest among the CIS countries. That is, it makes no sense to smuggle alcohol and tobacco to Kazakhstan. It is more profitable to produce it in the country itself, as shown by the results of statistical analyses.

Tab. 3: Assessment of prostitution services in the Republic of Kazakhstan by region for 2013

	Persons engaged in prostitution, number of people	Average price for service, Tenge	Number of visits in a year (peer review)	Issue, million Tenge	Intermediate consumption, million Tenge	Gross value added, million Tenge
<b>Republic of Kazakhstan</b>	1,9943.0			25,0152.7	75,045.7	175,107.0
Akmola region	400.0	15,303.8	900.0	5,509.4	1,652.8	3,856.6
Aktobe region	600.0	20405.1	900.0	11,018.8	3,305.6	7,713.2
Almaty region	290.0	15,303.8	900.0	3,994.3	1,198.3	2,796.0
Atyrau region	1,200.0	15,303.8	900.0	16,528.1	4,958.4	11,569.7
West Kazakhstan region	300.0	15,303.8	900.0	4,132.0	1,239.6	2,892.4
Zhambyl region	803.0	10,202.5	900.0	7,373.3	2,212.0	5,161.3
Karaganda region	1,020.0	15,303.8	900.0	14,048.9	4,214.7	9,834.2
Kostanay region	390.0	10,202.5	900.0	3,581.1	1,074.3	2,506.8
Kyzylorda region	350.0	10,202.5	900.0	3,213.8	964.1	2,249.7
Mangistau region	450.0	10,202.5	900.0	4,132.0	1,239.6	2,892.4
South Kazakhstan region	2,720.0	10,202.5	900.0	24,975.7	7,492.7	17,483.0
Pavlodar region	750.0	10,202.5	900.0	6,886.7	2,066.0	4,820.7
North Kazakhstan region	480.0	10,202.5	900.0	4,407.5	1,322.3	3,085.2
East Kazakhstan region	1,000.0	15,303.8	900.0	13,773.4	4,132.0	9,641.4
Astana city	880.0	15,303.8	900.0	12,120.6	3,636.2	8,484.4
Almaty city	8,310.0	15,303.8	900.0	114,457.1	34,337.1	80,120.0

Source: Compiled by the authors based at Table 1

Tab. 4: Evaluation of illegal felling of timber in the Republic of Kazakhstan by region for 2013

	Seized wood (m <sup>3</sup> ) release	Average price per meter of wood	Cost of seized wood (production, Tenge)	Percentage of intermediate consumption (in legal business)	Assessment of intermediate consumption (Tenge)	Gross value added, (million Tenge)
<b>Republic of Kazakhstan</b>	884.0		6,306,964.0		2,825,180.7	3.5
Akmola region	101.0	9,815.0	991,315.0	44.6	442,126.5	0.5
Aktobe region	0.0	7,571.0	0.0	44.6	0.0	0.0
Almaty region	76.0	7,571.0	575,396.0	41.4	238,213.9	0.3
Atyrau region	0.0	7,571.0	0.0	41.4	0.0	0.0
West Kazakhstan region	16.0	7,571.0	121,136.0	41.4	50,150.3	0.1
Zhambyl region	187.0	7,571.0	1,415,777.0	43.1	610,199.9	0.8
Karaganda region	0.0	4,308.0	0.0	42.7	0.0	0.0
Kostanay region	81.0	4,519.0	366,039.0	41.2	150,808.1	0.2
Kyzylorda region	0.0	7,571.0	0.0	40.7	0.0	0.0
Mangistau region	0.0	7,571.0	0.0		0.0	0.0
South Kazakhstan region	153.0	7,571.0	1,158,363.0	43.7	506,204.6	0.7
Pavlodar region	246	6,200	1,525,200.0	50.0	762,600.0	0.8
North Kazakhstan region	6	5,769.0	34,614	42.2	14,607.1	0.0
East Kazakhstan region	18.0	6,618.0	119,124.0	42.2	50,270.3	0.1
Astana city	0.0	7,571.0	0.0	42.4	0.0	0.0
Almaty city	0.0	7,571.0	0.0		0.0	0.0

Source: Compiled by the authors based at Table 1

Tab. 5: Assessment of illegal hunting in the Republic of Kazakhstan by region for 2013

	Amount of seized saiga horns (pcs.)	Average price	Assessment of seized saiga horns value (production, Tenge)	Percentage of intermediate consumption (in legal business)	Intermediate consumption, million Tenge	Gross value added, million Tenge
<b>Republic of Kazakhstan</b>	301.0	6,000.0	1,806,000.0		512,334.0	1.0
Akmola region	0.0	6,000.0	0.0	45.3	0.0	0.0
Aktobe region	26.0	6,000.0	156,000.0	43.4	67,704.0	0.1
Almaty region	0.0	6,000.0	0.0	45.4	0.0	0.0
Atyrau region	0.0	6,000.0	0.0	45.1	0.0	0.0
West Kazakhstan region	32.0	6,000.0	192,000.0	45.4	87,168.0	0.1
Zhambyl region	0.0	6,000.0	0.0	45.1	0.0	0.0
Karaganda region	0.0	6,000.0	0.0	46.0	0.0	0.0
Kostanay region	4.0	6,000.0	24,000.0	44.7	10,728.0	0.0
Kyzylorda region	239.0	6,000.0	1,434,000.0	45.1	646,734.0	0.8
Mangistau region	0.0	6,000.0	0.0	44.7	0.0	0.0
South Kazakhstan region	0.0	6,000.0	0.0	42.9	0.0	0.0
Pavlodar region	0.0	6,000.0	0.0	42.9	0.0	0.0
North Kazakhstan region	0.0	6,000.0	0.0	44.5	0.0	0.0
East Kazakhstan region	0.0	6,000.0	0.0	48.8	0.0	0.0
Astana city	0.0	6,000.0	0.0	44.5	0.0	0.0
Almaty city	0.0	6,000.0	0.0	44.3	0.0	0.0

Source: Compiled by the authors based at Table 1

In assessing the production and sale of counterfeit goods (counterfeit products) its value is adopted for the release. Seizure of products in accordance with the laws of the Republic of Kazakhstan is defined as a violation of intellectual property.

To calculate intermediate consumption, we have considered the share of intermediate consumption of legal production. Gross value added is determined by the difference between output and intermediate consumption.

Tab. 6: Assessment of the illegal fishing in the Republic of Kazakhstan by region for 2013

	The amount of seized fish (kg)	Average price	Valuation of seized fish (production, Tenge)	Percentage of intermediate consumption (in legal business)	Intermediate consumption, million Tenge	Gross value added, million Tenge
<b>Republic of Kazakhstan</b>	50,031.4		20,362,570.8		2,942,527.2	17.3
Akmola region	0.0	286.0	0.0	14.5	0.0	0.0
Aktobe region	148.0	347.0	51,356.0	13.4	6,881.7	0.0
Almaty region	3,560.0	609.0	2,168,040.0	13.8	299,189.5	1.9
Atyrau region	17,244.0	436.0	7,518,384.0	14.5	1,090,165.7	6.4
West Kazakhstan region	14,207.8	345.0	4,801,691.0	14.7	720,548.6	4.2
Zhambyl region	1,151.0	247.0	284,297.0	14.3	40,654.5	0.2
Karaganda region	2,237.0	321.0	718,077.0	13.7	98,376.5	0.6
Kostanay region	0.0	381.0	0.0	15.1	0.0	0.0
Kyzylorda region	2,667.0	388.0	1,034,796.0	14.1	145,906.2	0.9
Mangistau region	3,036.6	538.0	1,633,690.8	15.3	249,954.7	1.4
South Kazakhstan region	1,859.0	392.0	728,728.0	14.5	105,665.6	0.6
Pavlodar region	341.0	332.0	113,212.0	13.9	15,736.5	0.1
North Kazakhstan region	27.0	216.0	5,832.0	14.1	822.3	0.0
East Kazakhstan region	3,553.0	339.0	1204467.0	14.0	168,625.4	1.0
Astana city	0.0	392.0	0.0	0.0	0.0	0.0
Almaty city	0.0	609.0	0.0	15.1	0.0	0.0

Source: Compiled by the authors based at Table 1

mediate consumption of the industry «Wholesale and retail trade; repair of motor vehicles and motorcycles», as this is a trade, though illegal. Gross value added is calculated as the difference between output and intermediate consumption (see Table 9).

The calculations show small amounts of contraband in the Republic of Kazakhstan with a relatively large proportion of smuggled goods in Mangistau region (32.13%) in the regional structure.

Thus, the calculations were made on the basis of the proposed methodology. It is possible to estimate the volume of the non-observed economy in Kazakhstan. Drug trafficking, prostitution and illegal production of alcoholic beverages contribute most to the non-observed economy. The situation is as follows: the proportion of drug business (by example of heroin) in the non-observed economy of

Tab. 7: Assessment of the illegal production of alcoholic beverages in the Republic of Kazakhstan by region for 2013

	Production of 40% alcohol (thousand litres)	Exports of 40% alcohol (thousand litres)	Import of 40% alcohol (thousand litres)	Legal production of 40% alcohol	Consumption of 40% alcohol per capita	Population (15+)	Consumption of 40% alcohol (thousand litres)	Average price of vodka (Tenge per litre)	Average price of vodka (peer review) (Tenge per litre)	Structure of household expenditure on alcohol	Illegal production on cost structure (thousand litre)	Illegal production on the structure of costs = Issue (million Tenge)	Intermediate consumption (% of legal production (million Tenge))	Intermediate consumption (million Tenge)	Gross value added (million Tenge)
<b>Republic of Kazakhstan</b>	70,512.5	10.8	3,058.6	73,560.3		12,478,360.0	209,634.7			100.0	136,074.7	178,665.5	66,572.5	112093.0	73560.3
Akmola region	19,066.5	0.0	12.3	19,078.8	16.8	560,373.0	9,414.3	1,429.0	1,286.1	4.2	5,715.1	7,350.2	27.9	2,050.7	5,299.5
Aktobe region	15,676.4	0.0	747.6	16,424.0	16.8	594,837.0	9,993.3	1,476.0	1,328.4	4.3	5,851.2	7,772.7	35.0	2,720.4	5,052.3
Almaty region	17,846.2	0.0	279.3	18,125.5	16.8	1,416,703.0	23,800.6	1,220.0	1,098.0	17.7	24,085.2	26,445.5	37.3	9,864.2	16,581.3
Atyrau region	0.0	0.0	0.0	0.0	16.8	387,779.0	6,514.7	1,357.0	1,221.3	2.0	2,721.5	3,323.8	22.6	751.2	2,572.6
West Kazakhstan region	0.0	0.0	19.1	19.1	16.8	470,439.0	7,903.4	1,636.0	1,472.4	3.1	4,218.3	6,211.0	26.5	1,645.9	4,565.1
Zhambyl region	1,500.0	0.0	0.0	1,500.0	16.8	731,821.0	12,294.6	1,570.0	1,413.0	3.4	4,626.5	6,537.2	30.1	1,967.7	4,569.5
Karaganda region	0.2	0.0	25.7	25.9	16.8	1,051,518.0	17,665.5	1,501.0	1,350.9	11.2	1,5240.3	20,588.1	50.3	10,355.8	10,232.3
Kostanay region	4,241.5	0.0	137.0	4,378.5	16.8	699,740.0	11,755.6	1,585.0	1,426.5	6.7	9,117.0	13,005.4	50.3	6,541.7	6,463.7
Kyzylorda region	0.0	0.0	0.0	0.0	16.8	495,479.0	8,324.0	1,399.0	1,259.1	2.3	3,129.7	3,940.6	22.6	890.6	3,050.0
Mangistau region	0.0	0.0	3.5	3.5	16.8	391,075.0	6,570.1	1,942.0	1,747.8	1.5	2,041.1	3,567.4	27.6	984.6	2,582.8
South Kazakhstan region	2,078.6	0.0	0.0	2,078.6	16.8	1,748,354.0	29,372.3	1,818.0	1,636.2	5.2	7,075.9	11,577.6	40.0	4,631.0	6,946.6
Pavlodar region	1,105.2	0.0	0.7	1,105.9	16.8	587,730.0	9,873.9	1,237.0	1,113.3	5.9	8,028.4	8,938.0	39.0	3,485.8	5,452.2
North Kazakhstan region	3,002.2	0.0	13.9	3,016.1	16.8	453,824.0	7,624.2	1,769.0	1,592.1	5.1	6,939.8	11,045.9	42.9	4,740.0	7,305.9
East Kazakhstan region	200.3	0.0	0.2	200.5	16.8	1,087,830.0	18,275.5	1,283.0	1,154.7	9.4	12,791.0	14,769.8	32.7	4,829.7	9,940.1
Astana city	0.0	0.0	46.7	46.7	16.8	608,858.0	10,228.8	1,732.0	1,558.8	4.8	6,531.6	10,181.5	14.2	1,445.8	8,735.7
Almaty city	5,795.4	10.8	1,772.6	7,557.2	16.8	1,191,900.0	20,023.9	1,448.0	1,303.2	13.2	17,961.8	23,407.8	41.3	9,667.4	13,740.4

Source: Compiled by the authors based at Table 1

The results of these estimations by regions for 2013 are presented in Table 8.

The calculations show the production of counterfeit goods in the Republic of Kazakhstan is insignificant. We observe a relatively large share of the South Kazakhstan region (85.28%) in the structure of production.

Smuggling is considered to be any violation of the customs legislation (transportation of prohibited goods, transport of goods under the guise of something else and undervaluation of goods). To conduct an analysis of the offenses under the Criminal Code of the Republic of Kazakhstan concerning smuggling, we selected only those that meet certain criteria.

Thus, the calculations considered data only on the amount of goods seized under Article 209 «Economic Contraband»[25], which later were used as output. Intermediate consumption of trade in contraband goods is estimated as a share of output, and the corresponding value of the gross value added is viewed as the difference between output and intermediate consumption.

For the calculation of intermediate consumption share of contraband is used the inter-

Kazakhstan was 40.8% in 2013, and it is expected that the proportion of drug trafficking in the non-observed economy may remain around this level (see Figure 1).

The proportion of prostitution was 35.8% in 2013. Production of illegal alcohol accounted for 22.9%; 0.5% are formed

Tab. 8: Evaluation of the production of counterfeit goods in the Republic of Kazakhstan by region for 2013

	The amount of seized counterfeit goods (KZT)	Intermediate consumption (%)	Intermediate consumption (KZT)	Gross value added (KZT)
<b>Republic of Kazakhstan</b>	<b>66,444,547.0</b>		<b>20,645,480/8</b>	<b>45,799,066.2</b>
Akmola region	170,600.0	37.1	508,492.6	862,107.4
Aktobe region	89,650.0	37.5	33,618.8	56,031.2
Almaty region	799,800.0	38.1	304,723.8	495,076.2
Atyrau region	1,909,696.0	25.1	479,333.7	1,430,362.3
West-Kazakhstan region	855,200.0	37.9	324,120.8	531,079.2
Zhambyl region	809,372.0	37.1	300,277.0	509,095.0
Karagandy region	307,250.0	38.5	118,291.3	188,958.7
Kostanai region	826,900.0	36.1	298,510.9	528,389.1
Kyzylorda region	541,400.0	35.1	190,031.4	351,368.6
Mangistau region	1,284,113.0	35.7	458,428.3	825,684.7
South-Kazakhstan region	56,117,906.0	30.4	17,059,843.4	39,058,062.6
Pavlodar region	289,200.0	36.5	105,558.0	183,642.0
North-Kazakhstan region	410,280.0	36.9	151,393.3	258,886.7
East-Kazakhstan region	298,000.0	36.6	109,068.0	188,932.0
Astana city	302,680.0	38.6	116,834.5	185,845.5
Almaty city	232,500.0	37.4	86,955.0	145,545.0

Source: Compiled by the authors based at Table 1

Tab. 9: Evaluation of contraband in the Republic of Kazakhstan by region for 2013

	The value of seized goods (million tenge) = Issue	Intermediate consumption (% of legal production)	Intermediate consumption (million tenge)	Gross value added (million tenge)
<b>Republic of Kazakhstan</b>	4,331.9		1,933.4	2,398.5
Akmola region	0.0	44.8	0.0	0.0
Aktobe region	9.6	44.8	4.3	5.3
Almaty region	523.4	45.4	237.6	285.8
Atyrau region	25.9	44.5	11.5	14.4
West-Kazakhstan region	38.1	43.9	16.7	21.4
Zhambyl region	100.8	42.7	43.0	57.8
Karagandy region	141.9	44.0	62.4	79.5
Kostanai region	5.2	43.7	2.3	2.9
Kyzylorda region	0.0	41.8	0.0	0.0
Mangistau region	1383.7	44.3	613.0	770.7
South-Kazakhstan region	145.4	44.0	64.0	81.4
Pavlodar region	51.2	41.4	21.2	30.0
North-Kazakhstan region	5.5	44.6	2.5	3.0
Ost-Kazakhstan region	53.9	42.2	22.7	31.2
Astana city	1,429.0	45.0	643.1	785.9
Almaty city	4,183	45.2	189.1	229.2

Source: Compiled by the authors based at Table 1

with regard to other types of non-observed activities among which are smuggling, counterfeiting and poaching.

### 5. Conclusions

Based on the proposed methodology, we have calculated main non-observed activities in Kazakhstan, taking into account all the data available at the regional level for the 2013. Eurostat as well as UNECE recommended to consider drug trafficking, prostitution and smuggling of tobacco and alcohol

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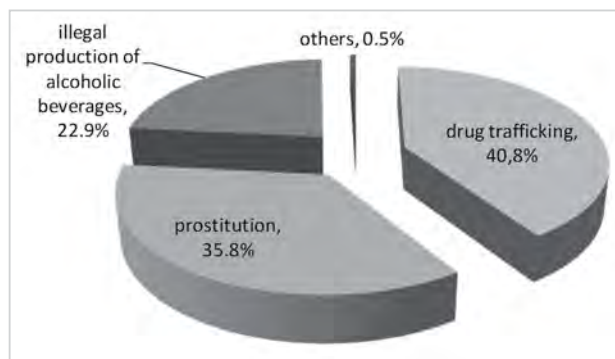


Figure. Structure of the non-observed economy in Kazakhstan in 2013

Source: Compiled by the authors

to be activities that have the greatest impact on GDP. The calculations have proved the correctness of the recommendations. Drug trade (40.8%), prostitution (35.8%) and illegal alcohol production (22.9%) contribute most to the non-observed economy of Kazakhstan.

To reduce the scale of the non-observed economy, the government should create favorable conditions for conducting legal business. It should become more profitable if compared with non-observed activities. Also, there is a need to continue joint efforts of the state bodies, political and social movements and associations to reduce the scale of non-observed economy.