Comparative Assessment of the Meat Markets in Kazakhstan and Turkey in Terms of Current Trends and Development Prospects

Evaluación comparativa de los mercados de carne en Kazajstán y Turquía en términos de tendencias actuales y perspectivas de desarrollo

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ABSTRACT:

The article substantiates the urgency to develop export-import relations of the Republic of Kazakhstan (RK) and Turkey based on a growing dissatisfaction of consumer demand for meat as an essential commodity. The purpose of the article is to elaborate a scope of measures to attain equilibrium in the meat market of Kazakhstan and Turkey aiming to completely satisfy consumer demand. A hindsight analysis of the meat market development in the countries under study has determined fundamental problems of its performance and development. The elasticity of demand has been assessed by constructing a demand function for the meat product range in the markets of Turkey and Kazakhstan. The import of meat has been substantiated as a fundamental way to meet the domestic consumer demand for deficient products in the short term: poultry in Kazakhstan and lamb meat in Turkey. A competitor chart of meat markets has been generatedseparately for each of the countries under study, and their competitive position dynamics by types of meat has been determined. Export potential of lamb meat in the Republic of Kazakhstan and poultry meat in Turkey has been justified. Economic efficiency and expedience of forming export-import relationship between Turkey and Kazakhstan have been reasoned in terms of importing poultry by Kazakhstan and lamb meat by Turkey in order to achieve a balance of national meat markets. A series of strategic measures to increase the livestock sector development efficiency has been presented contributing to the most complete satisfaction of consumer demand for deficient meat products in the context of each country.
Keywords: meat market of Kazakhstan, meat market of Turkey, consumer demand for meat, poultry market, lamb meat market, market equilibrium, meat export/import.

RESUMEN:

El artículo corrobora la urgencia de desarrollar las relaciones de exportación e importación de la República de Kazajstán (RK) y Turquía sobre la base de una creciente insatisfacción de la demanda de los consumidores de carne como producto básico. El objetivo del artículo es elaborar un alcance de medidas para alcanzar el equilibrio en el mercado de la carne de Kazajstán y Turquía con el objetivo de satisfacer completamente la demanda de los consumidores. Un análisis retrospectivo del desarrollo del mercado de la carne en los países estudiados ha determinado los problemas fundamentales de su rendimiento y desarrollo. La elasticidad de la demanda se ha evaluado mediante la construcción de una función de demanda para la gama de productos cárnicos en los mercados de Turquía y Kazajstán. La importación de carne se ha comprobado como una forma fundamental de satisfacer la demanda del consumidor interno de productos deficientes a corto plazo: aves de corral en Kazajstán y carne de cordero en Turquía. Se ha generado un cuadro de competencia de los mercados de carne por separado para cada uno de los países estudiados, y se ha determinado su dinámica de posición competitiva según los tipos de carne. Se justifica el potencial de exportación de carne de cordero en la República de Kazajstán y la carne de aves de corral en Turquía. La eficacia económica y la conveniencia de establecer relaciones de exportación e importación entre Turquía y Kazajstán se han basado en la importación de carne de ave por parte de Kazajstán y carne de cordero por parte de Turquía para lograr un equilibrio en los mercados nacionales de carne. Se presentó una serie de medidas estratégicas para aumentar la eficiencia del desarrollo del sector pecuario, lo que contribuye a la satisfacción más completa de la demanda de los consumidores de productos cárnicos deficientes en el contexto de cada país.
Palabras clave: mercado de carne de Kazajstán, mercado de carne de Turquía, demanda de consumo de carne, mercado de aves de corral, mercado de carne de cordero, equilibrio de mercado, exportación / importación de carne.

1. Introduction

Stable provision of processing industries with agricultural raw materials serves as a basis for ensuring food security in any state. Importance of food and health, as well as nutrition, is the priority in all countries around the world (Global Food Security, 2018). Meat and meat products are one of the staple foodstuffs in the Republic of Kazakhstan and Turkey, while livestock production is the second most important part of the countries' agricultural sector developing on an extensive basis. Reference is also made to the urgency of the meat industry development in Kazakhstan in "Plan of the Nation – 100 Steps to Implement Five Institutional Reforms" of the Head of State Nursultan Nazarbayev

(Mukasheva, 2016) that reflects development trends in the State Program for the Development of the Agribusiness in the Republic of Kazakhstan for 2017–2021 (The Official Internet Resource of the Ministry of Agriculture of the Republic of Kazakhstan, 2017). The main areas of concern in the countries are attraction of strategic investors for development of meat production and processing, enlargement of raw material supplies base and export of processed products, improvement of food security and nutrition, development of agriculture and rural areas, improvement of food safety, in particular, in terms of meat, etc.

However, in the context of a general annual population upsurge in Kazakhstan (+ 1.55%) and Turkey (+ 1.68%), there is a prorated increase in consumption of food products per capita – both of these factors have driven up the domestic demand over the last 10 years by almost 20% in Kazakhstan and 95% in Turkey per capita (Ministry of National Economy of the Republic of Kazakhstan. Committee on statistics, 2018; Statistical Indicators, 2018; Apostolidis & McLeay, 2016). Domestic production is growing at insufficient rates and does not keep up with the accretion of demand, which creates a lack of supply in the meat market and dissatisfaction of population needs in the essential commodity in the countries. In addition, a rise in the prices for meat products in Kazakhstan and Turkey is currently one of the highest in the world. Thus, meat rose in price by 18% in Kazakhstan and by 21% in Turkey over the year in 2017, which may contribute to a further escalation in their prices subject to a growth in demand (Belousova, 2017). In this regard, the goal of this research is to elaborate a scope of measures to attain equilibrium in the meat markets of Kazakhstan and Turkey in order to maximize the consumer demand satisfaction. Within the framework of the research, the following objectives of scientific inquiry have been formulated: to determine the points of concern in terms of the modern meat market performance in the RK and Turkey and the reasons for their occurrence; to substantiate priority methods to satisfy consumer demand for meat in the short term; to reveal the commodity potential of the national meat markets from the standpoint of competitive capacity of the goods; to reason the main directions of public policy to improve the meat market efficiency in each of the countries.

2. Materials and methods

To achieve the main goal of research and to prove the scientific hypotheses formed, the following methods of scientific cognition have been used as the methodological basis.

Method of theoretical generalization is used to justify the productivity of export-import relations in the meat markets of Kazakhstan and Turkey.

Graphic method is used for visual representation of statistical material and a schematic representation of the main theoretical provisions of the study, as well as the current state and major problems of the meat market development in Kazakhstan and Turkey.

Market concentration was assessed in the study based on calculation of Concentration Ratio CR4, Herfindahl-Hirschman Index and Rosenbluth index. CR4 characterizes the total share of four firms in the market that realize maximum total of output in the total sales of meat products separately in Kazakhstan and Turkey, computed by formula (Romanova, 2010):

$$CR4 = \sum_{i=1}^{4} \frac{V^i}{E} \qquad (1)$$

where $\sum_{i=1}^{4} V^i$ is the volume of sales of four firms with the maximum sales volume in the market under analysis

E is the market capacity;

i is the number of operators in the market.

Herfindahl-Hirschman Index allows one to analyze the level of meat market concentration in the countries under study (Naldi, 2003):

$$HHI = \sum_{i=1}^{n} S_i^2 \qquad (2)$$

where S is the share of the operator's production (sales) in the total production (sales) volume in the market;

n is the number of market operators, $i = 1...n$.

The Rosenbluth (Tideman-Hall) (HI) index is calculated through comparing the rankings of business firms in the market of similarly named products and the shares of these firms in the markets under consideration (Romanova, 2010):

$$HI = \frac{1}{2\sum_{i=1}^{n}(i \cdot S_i) - 1} \qquad (3)$$

where i is the ranking of the i-th market operator;

S_i is the share of the operator's production (sales) in the total production (sales) volume in the market;

n is number of market operators, $i = 1...n$.

Regression analysis is a method of statistical analysis of random variable y dependence on variables $x_1, x_2, ..., x_n$. A multivariate regression model has the following form (Eck, 2018):

$$y = b_0 + b_1 x_1 + b_2 x_2 + ... + b_n x_n, \qquad (4)$$

where y is the dependent variable;

$x_{1,...,n}$ are independent variables;

b_0 is the intercept term;

$b_{1,...,n}$ are variable held constants;

The parameters of regression model (b_0, $b_{1,...,n}$) are estimated by the method of least squares. It consists in selection of model parameters whereby the sum of squared deviations of actual values of the dependent variable from the predicted ones is minimized (Eck, 2018):

$$\sum_{i}^{N}(y_i - \bar{y}_i)^2 \rightarrow min, \qquad (5)$$

where y_i is the actual value of the dependent variable in the i-th period;

$\bar{y}_i$ is the predicted value of the dependent variable in the i-th period;

$i = 1, 2, ..., N$.

Price demand elasticity (E_P^D) reflects a percent increase in demand with a price reduction of 1% and is determined by formula (Karlan & Zinman, 2018):

$$E_P^D = \frac{\Delta Q}{\Delta P}, \qquad (6)$$

where ΔQ is a change in the quantity demanded, as %;

ΔP is a price adjustment, as %.

To assess the competitive positions of meat kinds, primarily those that are the object of international trade relations, a competitor chart of the meat market has been constructed separately for each country.

Goods positioning in the matrix is carried out based on a comparison of the actual values of the market share and its gain rates with limit values for competitive position types.

The limits of competitive positions by market shares are determined by formula (Kurenova, 2015):

$$S_i \in \begin{cases} (S_{av} + 3\sigma_2; S_{max}] - & \text{market leaders}; \\ (S_{av}; S_{av} + 3\sigma_2] - & \text{strong competitive position}; \\ (S_{av} - 3\sigma_1; S_{av}] - & \text{weak competitive position}; \\ [S_{min}; S_{av} - 3\sigma_1] - & \text{market outsiders} \end{cases} \qquad (7)$$

where S_i is the market share of the i-th product;

S_{av} is the average market share;

S_{max} is the maximum market share;

S_{min} is the minimum market share;

σ_1 is the mean-square deviation of market shares for the 1st sector (for goods with market shares above the average);

σ_2 is the mean-square deviation of market shares for the 2nd sector (for goods with market shares below the average).

The limits of competitive positions in terms of the market share gain rates are determined by Kurenova's formula (2015):

$$R_i \in \begin{cases} (R_{av} + 3\sigma_\square; R_{max}] - & \text{rapidly improving competitive position}; \\ (R_{av}; R_{av} + 3\sigma_\square] - & \text{improving competitive position}; \\ (R_{av} - 3\sigma_\square; R_{av}] - & \text{deteriorating competitive position}; \\ [R_{min}; R_{av} - 3\sigma_\square] - & \text{rapidly deteriorating competitive position} \end{cases} \qquad (8)$$

where R_i is the market share gain rate of the i-th product;

R_{av} is the average market share gain rate;

R_{max} is the maximum market share gain rate;

R_{min} is the minimum market share gain rate;

$\sigma_\square$ is the mean-square deviation of the market shares gain rates.

3. Results

3.1. Analysis of the current situation in the meat markets in Kazakhstan and Turkey

Meat production in Turkey and Kazakhstan reflects a steady upward trend. Thus, in 1992-2017, the gain in production was 24% in Kazakhstan and 4689% in Turkey (Figure 1) (World Agriculture: towards 2015/2030. An FAO Perspective, 2018; World Meat Production by Year, 2018). In Turkey, such growth was fueled by a record growth in poultry output due to increased meat prices and the need to reduce them. Turkey's broiler stock companies are expanding their production capacity in contrast to large and small cattle meat producers. From 2012 to 2017, poultry production increased 84 times as much.

The produced meat structure remains quite differentiated in Kazakhstan, but the largest share up to 34% accrues to cattle meat, 26.38% to poultry, and 18.15% to lamb. It should be noted that in 1992-2017, poultry was characterized by the largest gain in production of + 6.7%, which may indicate future continuation of this trend for this meat type as the principal competitor of cattle meat (Figure 1) (World Agriculture: towards 2015/2030. An FAO Perspective, 2018; Food Industry of the Ukraine and the World, 2017).

The largest share of the meat production structure in Turkey accounts for poultry – 60.41%. Large cattle meat is characterized by a significant decrease in its production by 9.2% in 1992-2017 (Figure 1) (Statistical Indicators, 2018). It should be noted that Turkey is currently one of the leading poultry exporters in the world along with Brazil, the US, the EU and Ukraine. Turkey ranks 10th in the world in poultry production, and third among the EU countries (World Meat Production by Year, 2018).

Figure 1

Structure of meat production in Kazakhstan and Turkey, as % (Ministry of National Economy of the Republic of Kazakhstan. Committee on statistics, 2018)
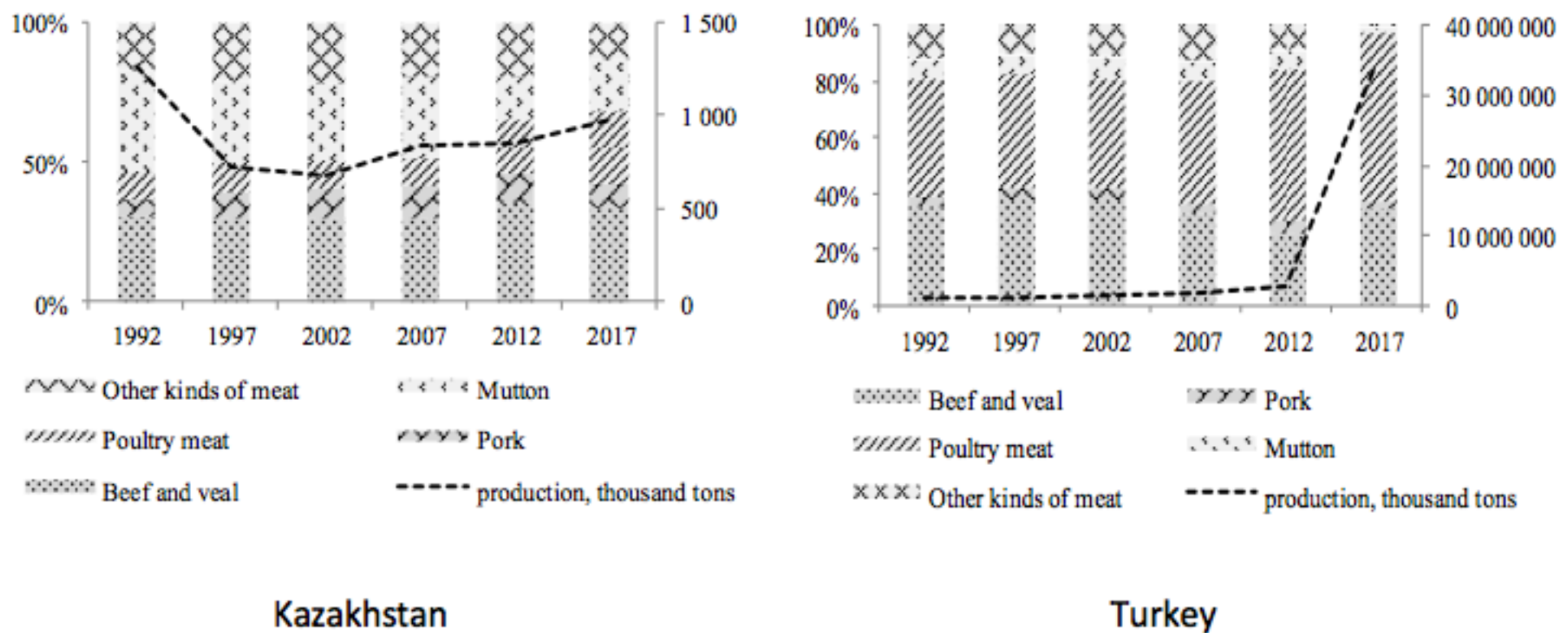
Kazakhstan   Turkey

With the growth in the chicken meat output, its consumption standard also increases. Thus, in 1992-2017, the demand for poultry grew by 86% in Kazakhstan and by 157% in Turkey. Also, pork consumption increased almost 10 times as much in Kazakhstan and 32 times as much in Turkey over the period under study. Beef and lamb meat consumption fell by one third in Kazakhstan, whereas demand for Turkish beef increased twice as much, while lamb meat consumption also fell by 63% (Table 1) (Henchion et al., 2014; Organisation for Economic Cooperation and Development, 2017).

Table 1

Meat consumption profile in Kazakhstan and Turkey

Indicator	1992	2000	2013	2015	2017
Beef and veal, kilograms per capita					
Kazakhstan	25.26	14.46	16.91	17.24	17.27
Turkey	4.24	3.97	7.79	8.46	8.29
Pork, kilograms per capita					
Kazakhstan	0.49	7.25	5.34	4.69	4.53
Turkey	0.03	0.04	0.01	0.08	0.95
Poultry meat, kilograms per capita					
Kazakhstan	7.55	3.12	14.41	14.88	14.01

Turkey	6.95	9.16	16.14	17.54	17.88
Lamb meat, kilograms per capita					
Kazakhstan	12.48	5.59	8.08	8.04	7.84
Turkey	5.68	5.19	4.06	4.11	4.12

Thus, it can be noted that strategic development of the meat markets in the countries under study is focused on increasing poultry output and reducing other types of meat. The current situation stems from a priority growth in demand for poultry meat. Thus, the poultry demand level increased by 194% in Kazakhstan and by 257% in Turkey in 1992-2017 (Figure 2) (Organisation for Economic Cooperation and Development, 2017).

Figure 2
Poultry meat demand behavior, kilogram per capita

Kazakhstan   Turkey
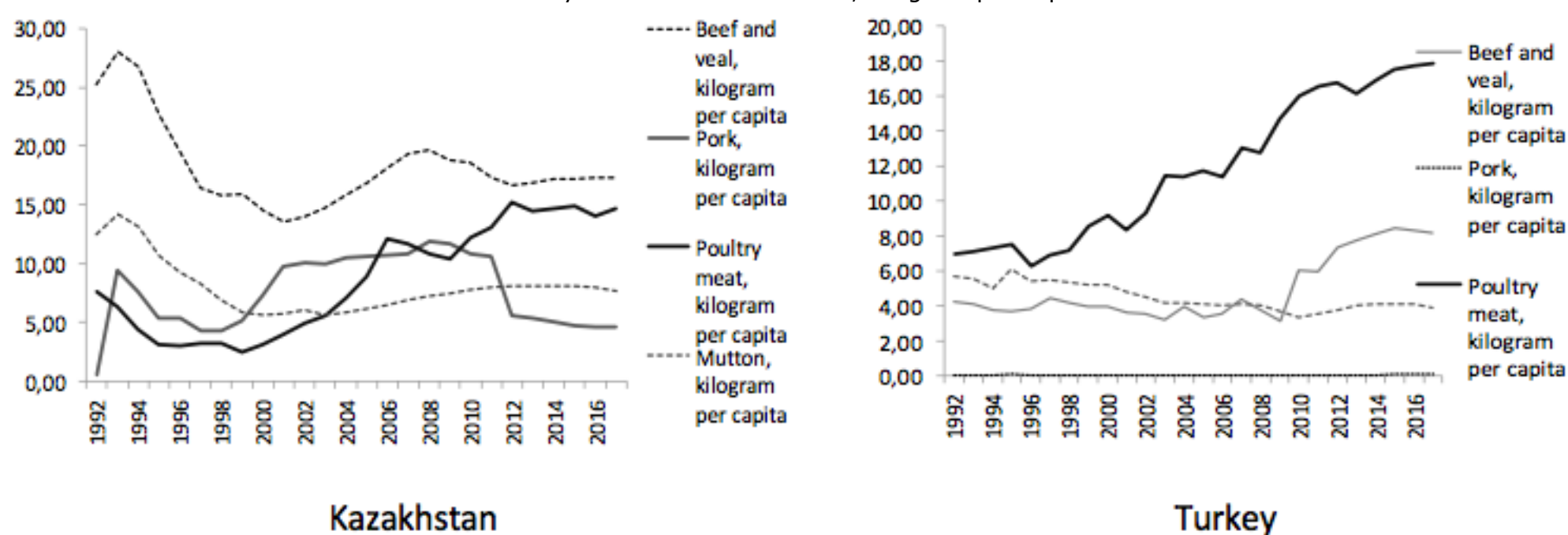
It should be noted that despite the steady growth of meat output in the countries, the problem of completely satisfying the domestic market demand remains unresolved –the consumption growth rates exceed the meat output growth rates (Figure 3) (Organisation for Economic Cooperation and Development, 2017; Vranken et al., 2014; Allievi et al., 2015). This problem is especially urgent in Kazakhstan. The dynamics of livestock population growth in the Republic of Kazakhstan (RK) does not keep up with meat consumption; it increases by 3-4% annually, while the deficit remains at the level of 30-50 thousand tons. As of today, national enterprises have been meeting only 85.3% of the domestic demand in the meat market. Lamb production supplies the Kazakhstan market demand by 100.1%, pork – by 99.4%, horse meat – by 99.1%, beef – by 98.5%. The current situation causes a fall in meat prices along with their seasonal advance throughout the country. Kazakhstan poultry production meets only 49.4% of the domestic consumer demand, which is conditioned by the availability of cheap imported products in the market (Belousova, 2017; Yessimzhanova & Kaliyaskarova, 2014).

In Turkey, the consumer demand deficit was observed only for lamb meat at the rate of 2.5 kilogram per capita in 2017 (Organisation for Economic Cooperation and Development, 2017). However, the supply increase rate compared to the consumption growth rate began to decline in 2014, which might cause a supply deficit in the market in the short term. The solution to this problem was an increase in the quantity of raw meat imports to the country in 2017 twice as much (MK-Turkey, 2018).

Figure 3
Rate of increase in meat consumption and supply, %
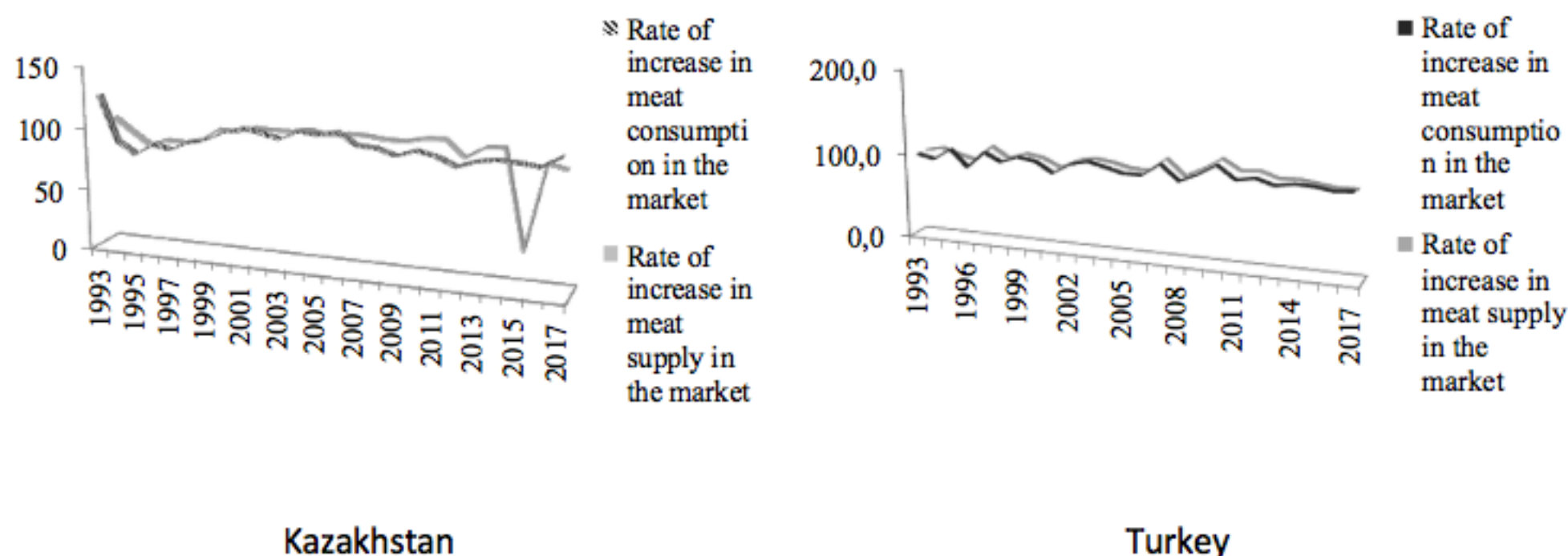
Kazakhstan   Turkey

Today, the meat price levels in Kazakhstan remain one of the lowest in the world; nevertheless, the poultry meat prices exceed the cost of the same type of meat in Turkey by 1% in 2017. Generally, the poultry price levels in Kazakhstan and Turkey are lower by 54% and 52%, respectively, than the average world price. The beef price in

Kazakhstan as the main type of meat in domestic consumer demand is also lower than the average world price by 52%, while the cost of Turkish beef is one of the highest in the world and exceeds the average cost of meat in the world by 11% (Figure 4) (Numbeo, 2018). The beef price level in Turkey as of 2017 was approximately at the European level, which significantly exceeds the beef cost in the markets of Oceania, Asia, Africa, and America. Turkey ranks 8thin Asia for high beef prices, making room for such highly developed countries as Hong Kong, South Korea, Singapore, Israel, Taiwan, Japan and Palestine (Numbeo, 2018). As of today, high meat prices in Turkey remain one of the high-priority unresolved problems of the state government.

Figure 4
World meat prices in 2017, dollars per kilogram
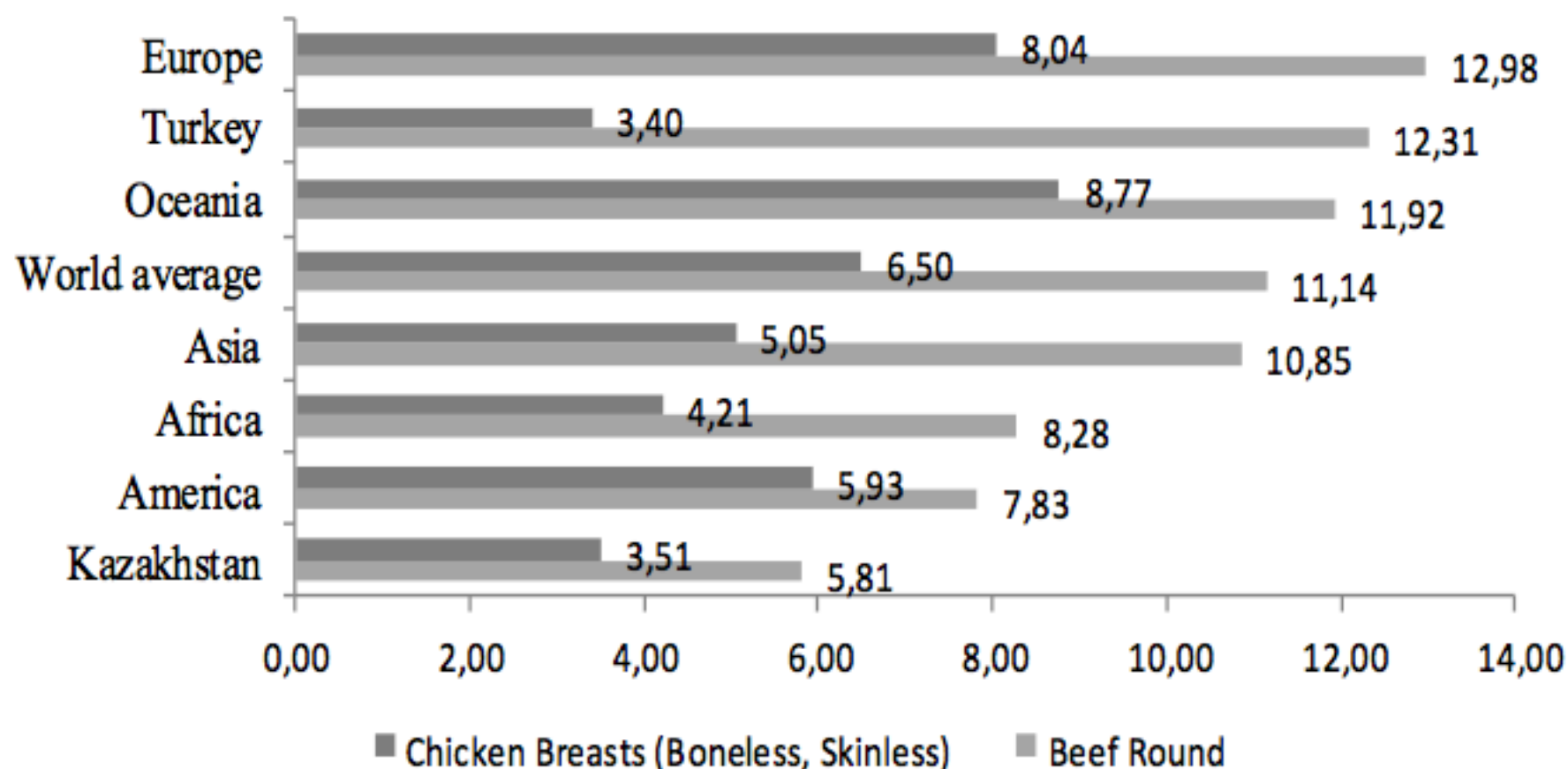
A sustainable price growth in the meat market necessitates a research of the market concentration level as well.

Estimation of the meat market concentration indicates that, as of 2017, the Kazakhstan meat market is moderately concentrated since CR4 = 48% for large cattle, pork and lamb meat, and CR4 = 54% for poultry meat. 13 major firms hold the largest share in the sales of large cattle, pork and lamb meat accounting for 82% of trade in this market sector. The Kazakhstan poultry market is more concentrated as seven largest sellers account for 70% of the market.

The cattle, pork, and lamb meat market in Turkey is also characterized as an oligopoly as CR4 = 61%, since six largest traders occupy 69% of the market for this type of meat. Thus, the control of market participants over the price levels is limited by interdependence of the major operating firms or coordination of actions between them. A decision is made only based on a competitive reaction to each other's actions. Such situation contributes to an uneven change in meat prices. In other words, prices change only in certain periods and by a significant amount due to a limited number of sellers dominating the market.

It should be noted that the HHI and HI values for the large cattle, pork and lamb meat market are 966 and 0.17, respectively, for the poultry market – 888 and 0.31. This suggests that, given a relative degree of market concentration, there are no high entry barriers for new operators in the market. This gives evidence of the possibility to promote competition and to shape a competitive pricing policy.

In the large cattle, pork and lamb meat market in Turkey, there is evidence for the existence of high barriers for new business entities to enter the commodity market in order to compete on equal footing with those already operating therein (HHI = 1259; HI = 0.46). This contributes to the market concentration and hampers competition, which, in turn, will drive up prices in the absence of effective antimonopoly control in the long term.

The poultry market in Turkey is characterized by a high level of sophistication. Concentration indices are CR4 = 0.36, HHI = 589; HI = 0.09 make it arguable that this segment of the Turkish meat market is weakly concentrated and is characterized by: a significant number of sellers and buyers, a total absence of possibility for sellers to influence the market price; free market entry and withdrawal for new economic entities, etc. The intensity of competition in the poultry meat market is much higher than in the oligopolistic large cattle, pork, and lamb meat market.

Thus, based on the above, it may be concluded that the main problem of the meat market in Kazakhstan is the unsatisfied consumer demand for poultry meat, and for lamb meat (mutton) in Turkey. The meat market undersupplied with these types of goods provokes a stable trend towards higher prices in the meat market, which also reinforces the oligopolistic structure of the poultry market in Kazakhstan and the mutton market in Turkey. In turn, this intensifies the need to justify areas of focus for resolving the above-mentioned problems in order to attain equilibrium in the meat markets.

3.2. Import of meat as a factor in satisfying consumer demand in the meat markets of Kazakhstan and Turkey

Based on the provisions of theoretical economics, one may state that market equilibrium is attained by adjusting the quantity demanded and supplied till they reach an equilibrium value. In terms of resolving the problem of satisfying consumer demand in the meat markets of Kazakhstan and Turkey, two variable leverages to achieve a balance in consumption are possible: an increase in supply and a decrease in demand (Mathijs, 2015; Pournaras et al., 2017).

An increase in supply is possible by means of expanding production facilities. It calls for an increase in the livestock population, extension of pastures, beef breeding, establishing effective physical distribution systems, enhanced

technical support for the fodder production industry, increased veterinary security, establishing new business patterns, etc. This approach to attaining equilibrium in the meat market is the most thorough but based on long-term outlook and large-scale capital investments. Since meat is an essential product, demand for it is to be satisfied as soon as possible.

An increase in supply is also possible by means of importing products, the demand for which tightens the meat market. This approach to solving the problem in the short term seems more effective: it ensures a higher economic efficiency in the short term that delivers an immediate result and meets the objective.

Balance in the meat market of Turkey and the RK can be achieved by reducing demand. This approach is possible by means of consumer preferences shifting to other types of meat.

If the demand and supply per capita are taken into account when calculating meat consumption balance, there is a shortage of poultry observed in Kazakhstan in 1992-2017 and a shortage of sheep in Turkey, as was already mentioned in the study while analyzing the current state of the meat market in the countries based on official statistics.

In order to substantiate the ways of satisfying the consumer demand for deficient meat products in the framework of the research, a demand function has been constructed separately for each of the countries under study – functions of dependence of the quantity demanded on the factors influencing its formation in the market disaggregated by produced meat categories.

The greatest influence on the size of consumption of goods and services is exerted by: prices, the solvency of consumers (purchasing power) and country, availability of substitute goods and prices for them (Sans & Combris, 2015). Other types of meat are primary substitutes. These categories were also taken into account as constituent factors when developing the demand function for meat (Table 2).

Table 2
Meat demand function in Turkey and the Republic of Kazakhstan

Dependent variable	Function	Independent variable
Kazakhstan		
Demand for beef and veal (D1)	$D1 = 27.7945 - 25.8069*X5 + 1.1624 * X6 + 0.0078 * X7 + 0.0359 * X8$	X5 –Prices forbeef;
Demand for pork (D2)	$D2 = 30.02630 + 0.00353 * X5 - 0.07712 * X6 + 0.04181 * X7 + 0.03238 * X8$	X6 - Prices forpork; X7 - Prices forpoultry; X8 - Prices formutton;
Demand for poultry meat (D3)	$D3 = 5.845293 + 0.006143 * X5 - 0.015548 * X7 + 0.000956 * X9$	X9 –GNI level per capita
Demand for mutton (D4)	$D4 = 6.144734 + 0.019319 * X7 - 0.007910 * X8$	
Turkey		
Demand for beef and veal (D1)	$D1 = 26.15687 - 3.33656 * X5 + 1.64378 * X8 + 0.00034 * X9$	X5 - Prices forbeef; X6 - Prices forpork;
Demand for poultry meat (D3)	$D3 = -27.0056 + 3.3448 * X5 - 3.6999 * X7$	X7 - Prices forpoultry; X8 - Prices formutton;
Demand for mutton (D4)	$D4 = 17.58399 + 1.41668 * X5 - 0.48145 * X8$	X9 - GNI level per capita

By estimating the elasticity of demand, the developed demand functions made it possible to determine efficiency of meat imports and reduction of consumer demand as operational methods of attaining equilibrium in the meat markets of Kazakhstan and Turkey. The price demand elasticity was computed for each type of meat forming a current supply in the market of each country.

Demand elasticity is a change in the demand for goods under the influence of economic and social factors associated with price modifications. Demand is considered elastic if a percentage change in its volume exceeds the fall in prices (elasticity coefficient < | 1 |), and inelastic if the fall in prices exceeds the demand growth (elasticity coefficient> | 1 |) (Karlan & Zinman, 2018).

If demand is inelastic, a shift to other types of products is impossible. If demand is elastic, it is possible to adjust supply to demand by increasing the demand for substitute goods.

The calculation data for the meat market price elasticity of demand in Kazakhstan and Turkey are presented in Table 3.

Table 3
Estimated meat market mix price elasticity of demand in Turkey and Kazakhstan

		Kazakhstan	Turkey

Elasticity of demand for beef	0.08	0.00
Elasticity of demand for pork	0.03	-
Elasticity of demand for poultry meat	0.00	0.00
Elasticity of demand for mutton	0.00	0.00

Based on the tabular data, it can be said that for all types of meat in Kazakhstan and Turkey, the value of elasticity coefficients does not exceed 1, which is indicative of demand inelasticity. Under such conditions, a shift to other product types is impossible. In turn, on the basis thereof it can be argued that satisfaction of consumer demand in the meat market of Kazakhstan and Turkey turns out to be possible and expedient only through the import of deficient products, as of today.

Poultry meat is a scarce type of meat in Kazakhstan, while this meat market is leading with a production surplus in Turkey. In Turkey, in turn, the consumer demand for lamb meat is not met, whereas it is abundant in Kazakhstan. Therefore, to adjust production and consumption of meat between these countries, it is practical if Kazakhstan imports poultry from Turkey and export lamb meat, while Turkey does the opposite.

An additional proof of the meat imports priority in the framework of the export-import policy of the Republic of Kazakhstan and Turkey as a priority area for complete satisfaction of consumer demand is the developed competitor chart of meat markets separately for each country.

The competitor chart of meat market has been formed according to the following algorithm (Kurenova, 2015).

First, market shares of each type of meat and its gain rate are determined based on the commodity turnover data. Arithmetic averages of the market shares of chicken, pork, beef, lamb, horse meat and other types of meat are calculated on the basis thereof (Table 4).

Table 4
Market share by types of meat in the market, %

Type of meat	Kazakhstan			Turkey		
	2015	2016	2017	2015	2016	2017
Chicken, domestic fowl	26.49	27.11%	26.38%	59.72	61.14	60.41
Pork	9.8	8.78%	8.36%	4.85	2.24	2.3
Beef	38.52	38.87%	33.84%	27.9	33.82	35
Lamb meat	12.75	14.02%	18.15%	6.14	2	1.8
Horse meat	8.92	3.46%	3.43%	-	-	-
Other types of meat (including wild fowl)	3.52	4.76%	6.63%	1.39	0.8	0.49

For Kazakhstan, the average market share is: 19.30% in 2015; 18.35% in 2016; 18.03% in 2017.

Two market sectors have been singled out, the first meat market sector in Kazakhstan comprises poultry and beef with a market share above the average in 2015 and 2016:26.49% and 38.52% in 2015; 27.11% and 38.87%, respectively, in 2016; apart from poultry and beef, lamb meat with a share of 18.15% in 2017. Pork, lamb and horse meat are referred to the 2nd sector in 2015 and 2016 with respective market shares below the average: 9,80%, 18,15% and 8,92% in 2015; 8.78%; 14.02% and 3.46%, respectively, in 2016; pork (8.36%) and horse meat (3.43%) in 2017.

For Turkey, the average market share is calculated at the levels: 24.65% in 2015; 24.80% in 2016; 24.88% in 2017. The 1stsector includes poultry meat and beef with a market share above the average: 59.72% and 27.90% in 2015; 61.14% and 33.82% in 2016; 60.41% and 35% in 2017, respectively. Pork and lamb are referred to the 2ndsector with a market share below the average: 4.85% and 6.14% in 2015; 2.24% and 2% in 2016; 2.3% and 1.8% in 2017, respectively.

Second, the average gain rate of the market share and its mean-square deviation for each type of goods relative to the previous year for 2015-2017 is calculated (Table 5).

Table 5
Market share gain rates by types of meat relative to the previous period, %

Type of meat	Kazakhstan		Turkey	
	2016/2015	2017/2016	2016/2015	2017/2016
Chicken, domestic fowl	2.34%	-2.69%	2.38	-1.19

Pork	-10.41%	-4.78%	-53.81	2.68
Beef	0.91%	-12.94%	21.22	3.49
Lamb meat	9.96%	29.46%	-67.43	-10
Horse meat	-61.21%	-0.87%	-	-

Market share index is an estimate for a specific point in time. Market situation is volatile, it is necessary to know this index trend and the related change in the competitive position of commodity. This trend is estimated by means of the share gain rate.

Based on the maximum, average and minimum gain rates, changes in the competitive position of meat have been determined:

1) rapidly improving competitive position;

2) improving competitive position;

3) deteriorating competitive position;

4) rapidly deteriorating competitive position.

A negative value of the gain rate indicates a downward trend in the market share, a positive value indicates an upward trend, that is, values indicate a deterioration or improvement in the competitive position of meat.

Values of the limits of competitive position groups, according to the classification of competitiveness of goods (the market leaders, a strong competitive position, a weak competitive position, the market outsiders) are determined based on the values of minimum (Smin), maximum (Smax), average (Sav) market share by types of meat, and a mean-square deviation of the market share by the 1st($\sigma 1$) and the 2nd sector ($\sigma 2$) (Table 6).

Table 6
Typology of meat markets in terms of the market share and its dynamics

Competitive position	Kazakhstan				Turkey			
	2016		2017		2016		2017	
	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit
Market share								
Market leaders	34.29%	38.87%	29.27%	33.84%	25.31%	61.14%	25.94%	60.41%
Strong competitive position	18.35%	34.29%	18.03%	29.27%	24.80%	25.31%	24.88%	25.94%
Weak competitive position	2.61%	18.35%	6.79%	18.03%	24.29%	24.80%	23.82%	24.88%
Market outsiders	3.46%	2.61%	3.43%	6.79%	2.00%	24.29%	1.80%	23.82%
Market share gain rates								
Rapidly improving competitive position	5.50%	9.96%	11.37%	29.46%	1.31%	21.22%	2.45%	3.49%
Improving competitive position	-11.68%	5.50%	1.63%	11.37%	-24.41%	1.31%	-1.26%	2.45%
Deteriorating competitive position	-28.86%	-11.68%	-8.10%	1.63%	-50.14%	-24.41%	-4.96%	-1.26%
Rapidly deteriorating competitive position	-61.21%	-28.86%	-12.94%	-8.10%	-67.43%	-50.14%	-10.00%	-4.96%

Based on the assessment results of the market share distribution and the change rate of the competitive positions of the analyzed meat markets, a matrix has been formed based on cross-classification of the market share size and dynamics for certain types of meat. In the matrix structure, the market share gain rates are indicated row-wise, and the types of meat according to their position within each group, which is determined by their market share, are indicated column-wise (Figure 5). This approach has allowed for identification of development prospects of consumer demand for these types of meat.

Figure 5
Competitive chart of meat markets in Kazakhstan and Turkey
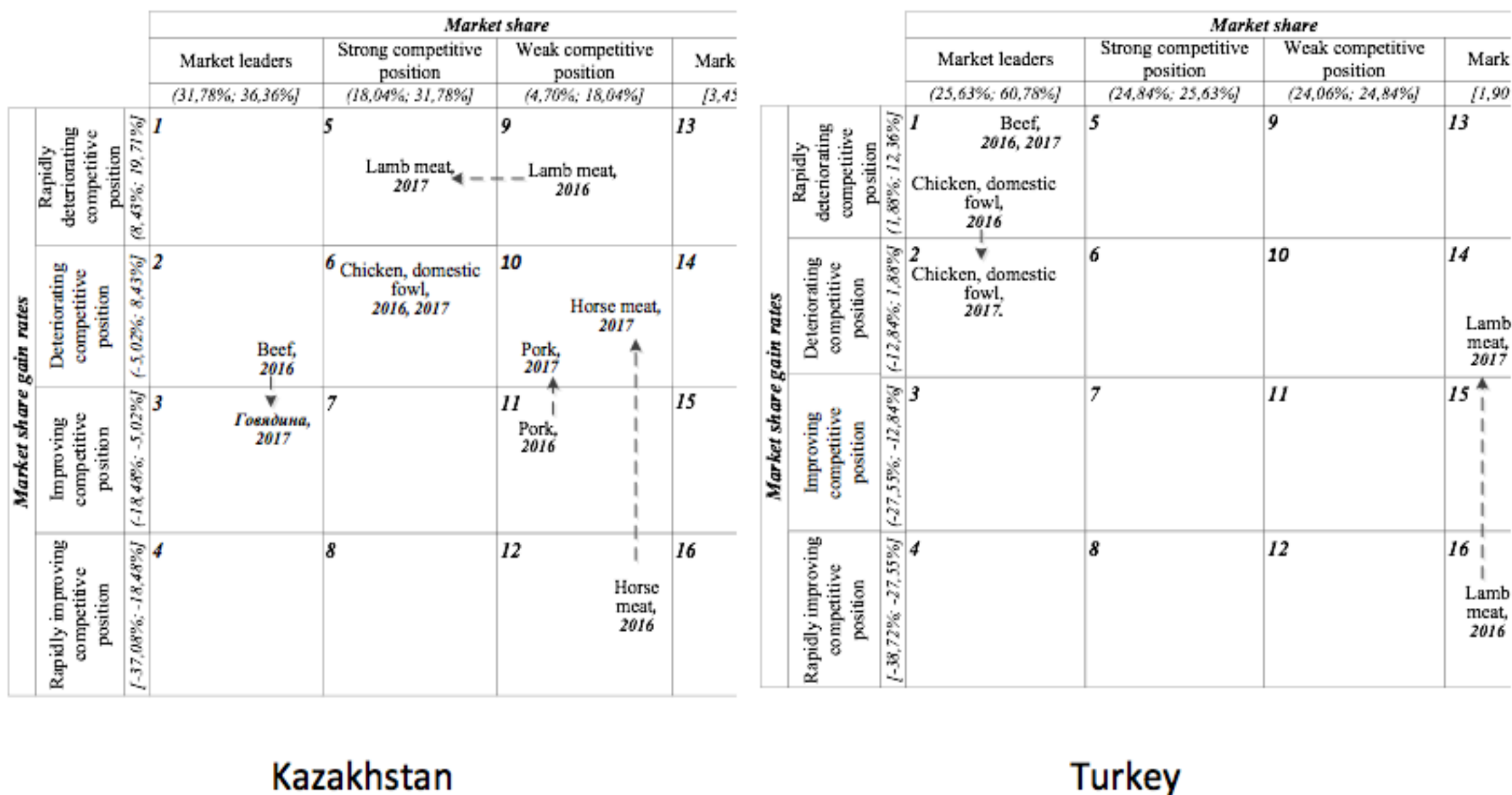
Based on the competitive chart of the meat markets of Turkey and Kazakhstan, the following can be said. The competitive position of beef in the market of the Republic of Kazakhstan changed from strengthening 2016 to weakening one in 2017, however, remaining the market leader. This indicates a decrease in consumer demand for this type of meat and a consumer shift to poultry and lamb meat.

As of today, poultry meat in the Republic of Kazakhstan holds a strengthening competitive position throughout 2016-2017, that is, the domestic consumer demand for poultry meat will continuously increase at a swift rate. This means the state needs to take tactical measures to meet the demand for this product in the market: to increase production capacity for a specific type of meat or increase the efficiency of government export-import policy. However, since the need to import meat is justified in the framework of the study, it seems expedient to import it also from Turkey where poultry is the meat market leader and the demand for this product is satisfied at most.

Since 2016, lamb meat has been positioned as a commodity with a weak competitive position but with a rapidly improving trend. Taking into account the fact that, according to the research, domestic demand in the meat market of the Republic of Kazakhstan has been almost satisfied and the competitive position of this product is improving, it can be concluded that this type of meat can be imported to other countries.

Pork and horse meat gained in the market share in 2017, which indicates an upward trend of demand for these types of goods, but in conditions of low levels of competition against beef, poultry and lamb meat.

According to the competitive chart of the Turkish meat market, beef and poultry have remained the market leaders over the period under consideration. In 2016-2017, poultry meat reined in the market share gain as a factor in reduced domestic demand for this product due to the strong competitive position of beef and the rapidly growing market share. In the current context of completely satisfied domestic consumer demand in the Turkish meat market, this type of goods is one of the basic commodities imported by Turkey.

Pork and lamb are among the market outsiders despite an increase in consumer demand: pork was characterized as a commodity with a rapidly growing competitive position in 2017, as well as lamb that had an improving competitive position in 2017. These kinds of meat cannot compete with beef and poultry at the current demand level.

Thus, based on the elasticity of demand, it has been found that meat imports are the main tactical method to satisfy consumer demand for meat in present-day conditions of the meat market development in Kazakhstan. In the context of improving competitive position of poultry meat in Kazakhstan and the supply shortage in the domestic market, it is necessary to import this type of meat. Poultry meat is the Turkish meat market leader with an improved competitive position against beef. Given the completely satisfied demand for chicken meat inside the country, poultry meat is one of the staple products of Turkey's imports. Taking into account the research findings, it seems necessary to argue the effectiveness of the export and import policy of Turkey and Kazakhstan in the meat market.

4. Discussion

The fundamental problem of the meat market in the Republic of Kazakhstan, as identified, is unsatisfied domestic

consumer demand for poultry meat. The main importer of poultry meat in Kazakhstan is the United States, whose share in the product import is about 70%. The Turkish poultry market appears to be more profitable with high competitive positions in geographical terms, since there is a surplus and a growing competitive position of the product in its domestic market, according to the study. In this regard, it seems necessary to justify the effectiveness of meat exports/imports from Turkey and Kazakhstan.

-effectiveness analysis of poultry meat imports to Kazakhstan has been made based on this product prices in Turkey, the USA (as potential exporters) and Kazakhstan, as of 2017 (Table 7) (Numbeo, 2018).

Table 7
Poultry meat price levels, 2017

Country	Price, dollars per kilogram	Price including customs duty	
		Price within the tariff quota, dollars per kilogram	Price in case of exceeding the tariff quota, dollars per kilogram
Turkey	3.40	4.25	6.12
The USA	8.55	10.69	15.39
Kazakhstan	3.51	-	-

Out of the countries surveyed, the lowest price for poultry meat is in Turkey –$3.40. In the US, the poultry meat price is 2.5 times as high as in Turkey. Therefore, subsequent to the comparison of these two countries, it is economically and geographically more expedient for Kazakhstan to import poultry meat from Turkey. The price of poultry meat in Turkey is lower than in Kazakhstan, but the imported goods are liable to a customs duty of 25% of the customs value within the tariff quota, which is 140 thousand tons of poultry meat per year, but not less than 0.2 euros per kilogram. In case the tariff quota is exceeded, the customs duty is charged at a rate of 80%, but no less than 0.7 euro per kilogram (Antonenko & Tynnikova, 2017).

Consequently, the price of poultry meat imports from Turkey is 4.24 dollars per kilogram within the tariff quota and 6.12 dollars per kilogram kg if it is exceeded; from the USA – 10.69 and 15.39 dollars per kilogram, respectively. Under such conditions, it is more expedient to expand the production of poultry meat in Kazakhstan or imports from Turkey while reducing the customs duty to 3%.

On the other hand, the lamb meat market is underserved in Turkey. The main lamb exporters in the world are Australia and New Zealand. Yet, according to the research, the surplus of this type of meat is also currently observed in Kazakhstan, with the rapidly growing competitive product position in the national market. In addition, the lamb price levels in Kazakhstan are significantly lower than the international prices and import prices in New Zealand and Australia. The lowest lamb price in Kazakhstan is 1.4 euros per ton, while it is 1.46 euros in New Zealand, 1.51 euros in Australia, 6.89 euros in Turkey (Table 8) (Categories & Products, 2018).

Table 8
Lamb price levels, 2017

Country	Price, euros per ton	Price including customs duty, euros per ton
Kazakhstan	1.4	1.4
New Zealand	1.46	1.46
Australia	1.51	1.51
Turkey	6.89	-

The tariff quota for mutton imports to Turkey is 475 thousand units of sheep, rams, and goats. Zero import duty is charged within the tariff quota (Duyum, 2017). Therefore, to meet the demand for mutton in Turkey, it is economically advantageous to import the products from Kazakhstan where lamb prices are the lowest. Expansion of domestic production is cost-prohibitive, as the price for mutton in Turkey is 4.9 times as high as in Kazakhstan.

Taking into account the justified economic efficiency of the meat exports/imports between Kazakhstan and Turkey, it can be said that under the current conditions of the meat market development, Turkey should become the major importer to fully meet the consumer demand for poultry meat. To eliminate the deficit of mutton in the meat market for Turkey, it seems expedient to import lamb from Kazakhstan. The effectiveness of the proposed approach is justified by:

• geographical proximity of the countries;
• the lowest meat prices for lamb and poultry, as well as acceptable import duties compared to their major importers;
• the need to import meat as a basic tactical and most cost-effective way to meet the consumer demand, to attain equilibrium in the meat market and stabilize prices in the short term.

The research has also identified the problem of a rather high concentration of the poultry meat market in Kazakhstan and the lamb meat market in Turkey.

In contrast to the very logic of market development, the growth of retail prices for poultry meat in the Republic has not had a positive impact on its production scale-up. On the contrary, poultry production is characterized by a downward trend, having decreased by 60% from 1992 to 2017 (World Agriculture: towards 2015/2030. An FAO Perspective, 2018). Consequently, a gain in poultry meat production can be ensured mainly by increasing the poultry stock in private households. However, taking into account the oligopolistic structure of the poultry market, meat production in households and farms is declining due to high market entry barriers for full-fledged participants, according to the data.

A major role in the meat market development in Kazakhstan is played by the public policy implementation that ensures a stable growth in the population of livestock and poultry, manufacture of livestock products, and an increase in the yield of livestock and poultry. In this regard, it seems appropriate to implement the following set of measures in order to increase competition in the meat market and to attain equilibrium in the poultry market:

- to increase the investment support for individual households and farming enterprises in order to improve their product competitive capacity in the market;
- to increase the government reimbursement of outlays for construction and reconstruction of poultry facilities up to 60%;
- to strengthen the breeding base and to increase the genetic potential of poultry;
- to ensure scientific support and implementation of large-scale breeding in poultry husbandry;
- to create a stable fodder base and ensure adequate feeding;
- to expand a network of seed farms for fodder plant seeds production;
- to subsidize new poultry farms construction expenses up to 20% through investment;
- to provide investment subsidies for enterprises planning to expand production capacity up to 20% of the cost of equipment and construction of production facilities;
- to have outdated cold generation equipment replaced, including the use of modern energy-saving and environmentally friendly refrigeration units, etc.

To ensure completely satisfied consumer demand for lamb in Turkey, it is recommended to implement the following measures at the domestic level:

- to increase the amount of government subsidies for individual households and farming enterprises;
- to encourage formation of medium and large-scale livestock commodity production, to switch the lamb production to an industrial basis;
- to expand personnel, scientific and information-marketing support of production;
- to construct new production facilities and increase capacities of the existing ones based on modern technologies;
- to implement pilot projects on creation of livestock breeding farms for specialized breeds of sheep;
- to develop the infrastructure for slaughtering sheep, for livestock production, storage, transportation, realization, etc.

5. Conclusion

The research findings have allowed for the following conclusions:

1. As part of the analysis of the meat market development in Kazakhstan and Turkey in 1992-2017, two fundamental problems of market performance have been identified: unsatisfied domestic consumer demand for poultry meat in Kazakhstan and mutton in Turkey; oligopoly of the poultry meat market in Kazakhstan and the mutton market in Turkey from the standpoint of high market concentration and the presence of high entry barriers for new participants in the market. In the context of continuous population growth, these trends contribute to a steady rise in prices for these types of meat and a disturbance of market equilibrium, as well as the persistent tendency of population's demand for these kinds of meat being unsatisfied with the internal reserves of the national livestock sector.

2. By generating functions of the demand level dependence on the factors influencing its formation in the market, the calculated demand elasticity coefficients have made it possible to determine the efficiency of meat imports and the reduction of consumer demand as operational methods to attain equilibrium in the poultry market of Kazakhstan and the mutton market in Turkey.

3. The formed competitive chart of the meat market has indicated the improving competitive position of poultry meat in Kazakhstan and the rapidly growing competitive position of mutton in Turkey. This has helped to substantiate the upward trend of domestic consumer demand for these types of meat against the background of the domestic resources shortage to meet it.

4. The economic efficiency of export-import relations between Kazakhstan and Turkey has testified that the growing competitive positions of poultry and lamb in Kazakhstan necessitate poultry imports from Turkey and the expediency of lamb imports to Turkey from the RK. This approach is rational in terms of the countries' geographical proximity, lower prices and tariff duties on this meat category against the main importers of Kazakhstan and Turkey, and the need to import meat as a basic tactical and most cost-effective way to meet the consumer demand.

5. The proposed strategic measures to improve the performance of the poultry market in Kazakhstan and the mutton meat market in Turkey are based on increasing the research intensity and modernization of the industry, and increased government funding. Practical implementation of the measures along with development of export-import relations between Kazakhstan and Turkey will promote competition in the meat market, the most complete satisfaction of consumer demand in the short term and attainment of the market equilibrium in the long-term.

References

Allievi F., Vinnari M., Luukkanen J. (2015). Meat consumption and production – analysis of efficiency, sufficiency and consistency of global trends. Journal of Cleaner Production, 92, 142-151.

Antonenko A.V. and Tynnikova N.A. (2017). The Eurasian Movement of the Russian Federation. URL: http: //eurasian-

studies.org/archives/3998.

Apostolidis Ch., and McLeay F. (2016). Should we stop meating like this? Reducing meat consumption through substitution. FoodPolicy, 65, 74-89.

Belousova A. (2017). Why the prices for meat are growing in Kazakhstan. URL: https://lsm.kz/pochemu-v-kazahstane-rastut-ceny-na-myaso.

Categories & Products. (2018). Tridge. URL: https://www.tridge.com/intelligences?sectorCode=agriculture-food.

Duyum S. (2017). Turkey Livestock and Products Annual Report 2017. URL: https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Livestock%20and%20Products%20Annual_Ankara_Turkey_8-15-2017.pdf.

Eck D.J. (2018). Bootstrapping for multivariate linear regression models. Statistics & Probability Letters, 134, 141-149.

Food Industry of the Ukraine and the World. (2017). Forecast: Global meat production to increase by 13% by 2026. URL: https://ukrprod.dp.ua/2017/08/08/prognoz-mirovoe-proizvodstvo-myasa-uvelichitsya-na-13-k-2026-godu.html.

Global Food Security. (2018). The Challenge. URL: https://www.foodsecurity.ac.uk/challenge/.

Henchion M., McCarthy M., Resconi V.C., Troy D. (2014). Meat consumption: Trends and quality matters. Meat Science, 98(3), 561-568.

Karlan D. and Zinman J. (2018). Price and control elasticities of demand for savings. Journal of Development Economics, 130, 145-159.

Kurenova D.G. (2015). Competitive market maps and their construction as a stage of enterprise competitiveness research. Economics, Sociology and Law, 1, 88-92.

Mathijs E. (2015). Exploring future patterns of meat consumption. Meat Science, 109, 112-116.

Mukasheva S. (2016). The Plan of the Nation – 100 Steps to Implement Five Institutional Reforms. Newspaper "Kapshagai Business Digest", 17. URL: http://www.alm.adilet.gov.kz/ru/articles-inner/plan-nacii-100-shagov-po-realizacii-pyati-institucionalnyh-reform.

Ministry of National Economy of the Republic of Kazakhstan. Committee on statistics. (2018). The official statistical information. URL: http://stat.gov.kz/faces/wcnav_externalId/publicationsPage?_afrLoop=8868964408279919#%40%3F_afrLoop%3D8868964408279919%26_adf.ctrl-state%3Dgbk1w2dsx_57.

MK-Turkey (2018). Turkey addresses the "meat" problem. URL: http://mk-turkey.ru/economics/2018/04/03/turciya-zanimaetsya-myasnoj-problemoj.html.

Naldi M. (2003). Concentration indices and Zipf's law. Economics Letters, 78(3), 329-334.

Numbeo. (2018). Price Rankings by Country. URL: https://www.numbeo.com/cost-of-living/country_price_rankings_main.

Organisation for Economic Co-operation and Development. (2017). Meat consumption. URL: https://data.oecd.org/agroutput/meat-consumption.htm.

Pournaras E., Yao M., Helbing D. (2017). Self-regulating supply–demand systems. Future Generation Computer Systems, 76, 73-91.

Romanova L.E. (2010). Problems of the analysis of market structures. News of Tula State University. Economic and Legal Sciences, 15-26. URL: https://cyberleninka.ru/article/n/problemy-analiza-rynochnyh-struktur.

Sans P. and Combris P. (2015). World meat consumption patterns: An overview of the last fifty years (1961–2011). Meat Science, 109, 106-111.

Statistical Indicators. (2018). Turkish Statistical Institute. URL: http://www.turkstat.gov.tr/UstMenu.do?metod=istgosterge.

The Official Internet Resource of the Ministry of Agriculture of the Republic of Kazakhstan. (2017). State Program for the Development of the Agribusiness in the Republic of Kazakhstan for 2017-2021. URL: http://mgov.kz/ru/aza-stan-respublikasyny-a-k-damytudy-2017-2021-zhyldar-a-arnal-an-memlekettik-ba-darlamasy/.

Vranken L., Avermaete T., Petalios D., Mathijs E. (2014). Curbing global meat consumption: Emerging evidence of a second nutrition transition. Environmental Science & Policy, 39, 95-106.

World Agriculture: towards 2015/2030. An FAO Perspective. (2018). Livestock commodities. URL: http://www.fao.org/docrep/005/y4252e/y4252e05b.htm.

World Meat Production by Year. (2018). URL: http://beef2live.com/story-world-meat-production-1960-present-0-111818.

Yessimzhanova S.R. and Kaliyaskarova E.A. (2014). Analysis of Meat Market and Meat Products Market in Kazakhstan. Procedia - Social and Behavioral Sciences, 109, 1216-1219.

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