

Comparison of price tendencies at domestic agro-food market of Ukraine and at global food market

Oleksandr Bitter¹, Lyudmyla Petryshyn²

¹Lviv National Ivan Franko University, Ukraine

²Lviv National Agrarian University in Lviv, Ukraine

Abstract. The article describes price tendencies at the global and domestic agro-food market of Ukraine. It is proved that FAO Food Price Index, prices for food at the domestic market, as well as prices of food products sell by agricultural enterprises coincide. The research presents peculiarities of the tendencies at the markets of certain kinds of products, defines their statistical characteristics and outlines their impact on economic behavior of agricultural enterprises.

1 Introduction

Under current conditions, cereals and grain legumes are the main products at agrarian enterprises of Ukraine. Comparing to other kinds of agricultural products, their production has considerable advantages. A high level of its production profitability is the first one. A high liquidity is the second advantage, i.e. cereals can be sold easier than, for example, vegetables or meat. Third, modern technologies of cereals production can be easily mastered, and do not require specific knowledge and skills of personnel. Forth, there is a developed system of infrastructure to master the technologies, particularly systems of supply of the necessary material and technical resources. Fifth, natural and climatic conditions of the country are favorable for growing of cereals and grain legumes. Thus, potential of domestic agrarian enterprises is substantial in the field. Domestic economists and experts consider it is quite possible to increase amount of grain growing in Ukraine up to 100 million ton, as compared to the achieved level of 50-60 million ton.

Technologically, it is quite real to reach such indicators. However, under conditions of market economy, it is not so important to use capabilities of production of a certain kind of products, but supply its sale. Both national and global market demonstrate tendencies, making negative impact on opportunities of grain sale and on prices for it. Particularly, social-political and financial situation in the countries, traditionally buying Ukrainian grain, i.e. Middle Eastern countries, first Egypt and Libya, is much deteriorated. There are proofs that similar problems can happen in Saudi Arabia, because of considerable fall of prices for oil. Markets of cereals in the Western Europe and other developed countries of the world are oversupplied. Main

difference of the global grain market is that supply exceeds demand. Thus, globally prices for grain have fallen during the last five years.

Governments of countries in the world pay much attention to direct and indirect regulation of prices for food products, because it helps solution of the problems of food safety, income of rural producers, living standards of population, etc. However, under conditions of open economy, opportunities of the governments are limited in the field. Prices at global and national markets are closely connected.

The issue of pricing for agricultural products is studied in the works of numerous Ukrainian scientists. Among them, one should mark works of M. Artus [1], V. Hudak [2], V. Olefir [3], V. Oniechina [4], V. Okhrimenko [5], Kym Anderson [6]. The researchers gives complex description of different aspects of the problem. However, issue of relations between prices at the global food market and domestic agro-food market is poor studied. The given research aims made to fill the gap.

2 Materials and methods

Global statistics of prices for food products, as well as Ukrainian state statistics, contains numerous researches, devoted to comparison of prices dynamics at the global food and domestic agro-food market of Ukraine. Food and Agriculture Organization (FAO) monthly publishes FAO Food Price Index on its website concerning six groups: food products generally, meat, dairy products, cereals, oilseed and sugar [7]. Value of the six indexes are measured by comparison of their level at a certain period with an average level in 2002-2004. Data of the State Office of Statistics of Ukraine help to make correct determination of the values of similar indexes at the domestic agro-food market [8].

*Corresponding author: abitter@ukr.net

*Corresponding author: lydkar@ukr.net

Certain difficulties of methodic character occur because FAO Food Price Index is published in the form of basic index. However, in the process of the research of price tendencies it is necessary to use chain indexes. Considering regularities of relations between basic and chain indexes, the scientist overcomes the obstacle.

Methodologically, it is of great importance to bring indexes of prices at the domestic and global markets to a comparative form. Prices at the global market are determined in dollar equivalent and thus, prices at the domestic market should be defined in the same currency. Thus, it is necessary to transfer prices at the domestic market, revealed in hryvnia, into USD by the way of their division by the average exchange rate of the national currency in the studied period (a year or a month). Corresponding information is presented on the website of the National Bank of Ukraine [9].

3 Results and discussion

Prices for all main groups of agricultural products, sold by agrarian enterprises, increased in 2000-2015. However, rates of their raise were compared to the rates of increase of FAO global prices. The lowest rates were demonstrated by USD sell prices for the groups of cereals and grain legumes. In the studied period, they increased from 81,58 to 133,34 USD/ton, i.e. by 63,4 %. Approximately the same rates of growth were observed in prices for sugar beets. Much higher rates of price increase were seen for the products of animal breeding. In 2000-2015, the highest rates of USD price increase were demonstrated by oilseeds (3,57 times) and for fruits and berries (3,72 times). Such dynamics of prices makes base for economic behavior of agrarian enterprises.

Relatively long-lasting and stable accelerating growth of prices for oilseeds, including sunflower, rape and soybean, has caused a substantial expansion of the area under the crops. The similar conclusion is made concerning rapid development of horticulture and berry growing at agrarian enterprises of Ukraine.

The research has defined a considerable agreement of the rates of price changes for the three groups of agro-food products at the global and national markets. However, to obtain more accurate estimates it is necessary to carry out a more detailed comparison of the corresponding lines of dynamics. Two lines of dynamics of FAO Price Index for food products, i.e. chain and basic, are taken as a fundamental. Domestic dynamic lines are brought to a comparative form.

It is confirmed that integrated basic index of dollar prices for food products constituted 82,4 % at the domestic market. Its peak was reached in 2008 and constituted 161,9 %. Next increase was observed in 2010-2011, but it did not reach the level of 2008. Since 2008, in Ukraine, prices for food products have almost twice fallen in dollar equivalent. Under such conditions, import of food products is getting less important in the

However, the three indexes clearly demonstrate mutual dependence. In case the key index among them, i.e. FAO price index of a certain year, increases or

structure of their consumption, because it is not profitable to bring most of the products from abroad.

The current price situation supplies favorable conditions for export of the most kinds of food products from the country. Increase of dollar prices is particular for almost all kinds of products, produced by agrarian enterprises. Only dollar prices for vegetables were lower in 2015 than the average level in 2002-2004. At the same time, prices for cereals and grain legumes increased by 64,1 %, for oilseeds – by 91,7 %, fruits and berries – by 156,4 %, cattle and poultry (in live weight) – by 31,7 %, milk and dairy products – by 53,6 %, eggs – by 62,9 %. Thus, in the field of the products sell by agricultural enterprises, price tendencies are contrary to the tendencies at the domestic food market. It confirms improvements of economic situation of agrarian enterprises in cooperation with processing enterprises of AIC, on one hand, and growth of their export potential, on the other hand.

It is determined that in 2000-2015, integrated index of dollar prices for sale of agricultural products by agrarian enterprises made 239,2 %, including products of crop production – 249,7 %, and products of animal breeding – 258,9 %. However, degree of growth of prices for agricultural products was higher in favorable years, as compared to the degree of growth of prices for food products, and degree of fall was lower in unfavorable years. Fig 1. demonstrates values of the price indexes (indicator of the current year as compared to the indicator of the previous year).

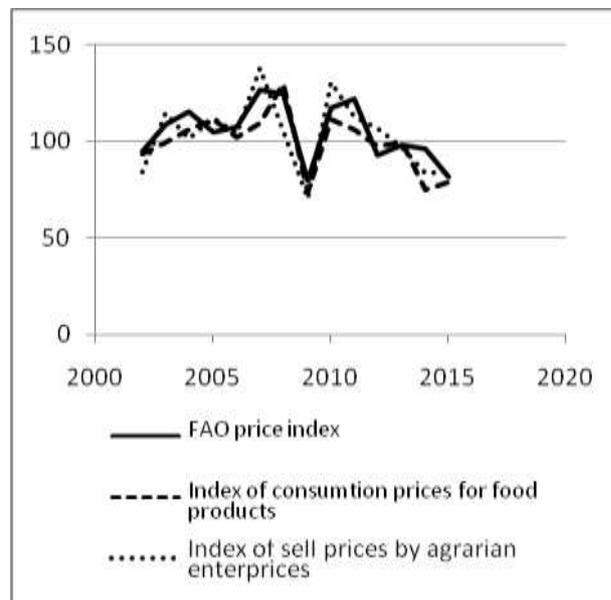


Fig. 1. Chain (indicator of the current year as compared to the indicator of the previous year) index of FAO global prices, consumption price index at food market of Ukraine) and index of sell prices for agricultural products by agrarian enterprises.

Basing on the comparison of the three lines of dynamics, one can make conclusion about a high level of their instability in the whole period of the study. decreases, as compared to the previous year, one observes increase or decrease of the two other indexes.

It can happen not in the same year, but with one-year lag.

Nevertheless, until 2012 particularly great differentiation of the indicators was observed concerning dynamics of sell prices for products of agrarian enterprises. In case they increase in a certain year, the raise is much higher than FAO prices or prices at the domestic food market. In case they decrease, the fall is also at rather high rate. However, since 2013, degree of their fluctuation has been average between the degree of FAO price fluctuation and prices at the domestic food market.

Comparison of dynamics of the same three indexes according to the basic method of their calculation demonstrates some other correlation. In 2002-2006, sell prices for products of agrarian enterprises increased much slower, comparing to the rates of growth of FAO global prices for food products and prices for food products at the national agro-food market (fig. 2).

In 2008-2010, they either exceeded them or were lower. Since 2009-2010, one has observed a clear tendency, i.e. rates of increase of sell prices for agricultural products, produced by agrarian enterprises, have been approximately the average of the rates of growth of FAO global prices and prices for food products at the national agro-food market.

The tendency is permanent in the last five years. Responding to the changes, agrarian enterprises grow their export potential, because they expect that the mentioned tendency will be long-lasting and benefits from export of agricultural products will prevail over opportunities to gain profit from their sale at the domestic market. Such economic behavior of agrarian enterprises is quite logical, in spite of the remarks of numerous domestic scientists about excessive export focus of production at large agrarian enterprises.

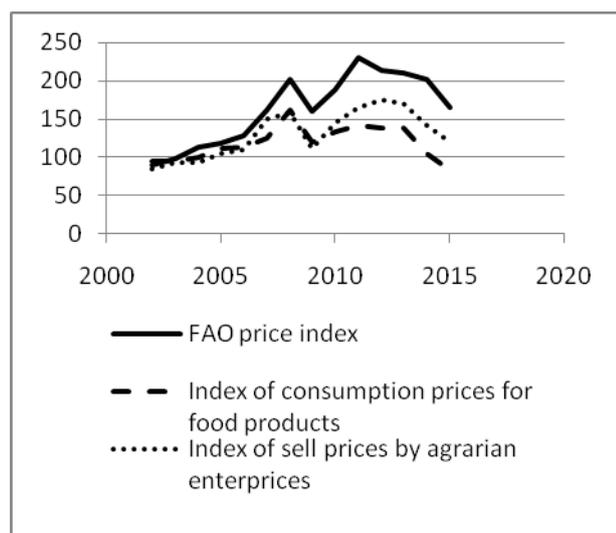


Fig.2. Basic (indicator of the current year to the average indicator in 2002-2004) FAO global price index, consumption price index at the food market of Ukraine and index of sell prices for agricultural products by agrarian enterprises

For small agrarian enterprises, growth of export potential is an extra complicated task, because it is difficult for them to meet all the requirements to the

quality of exported commodities and control for them. Thus, one can see the situation, when supply of agricultural products at the domestic market is the business of small agrarian enterprises, and large enterprises are engaged in export of the products.

The authors of the article use statistical indicators of variation and correlation for a deeper analysis of price environment of agrarian enterprises development. Coefficient of variation, as a ratio of the standard deviation to the value of arithmetical average, revealed in percent, demonstrates a level of likeness of a certain complex of statistical indicators. Table 1 presents values of variation coefficients of chain indexes of prices for the whole complex of agro-food products and for separate kinds of them, defined by FAO in 2002-2015.

Table 1. Coefficients of variation of FAO chain price index, consumption prices at the domestic food market and sell prices for the products, sold by agrarian enterprises in 2002-2015.

Kinds of products	FAO price index	Index of consumption prices at the domestic food market	Index of sell prices for the products, sold by agrarian enterprises
Agro-food products	14,0	14,9	17,4
Bread and cereal products, cereals and grain legumes	18,6	15,2	28,0
Vegetable oils, oilseeds	21,7	18,8	24,8
Sugar, sugar beet	24,0	21,3	16,8
Meat and meat products, cattle and poultry	10,7	18,9	23,8
Milk and dairy products	25,7	17,9	27,9

Coefficients of variation, presented in the table 1, characterize degree of likeness of prices for the determined kinds of products in a period, i.e. degree of their stability in the studied period. The carried analysis proves a rather high level of instability of FAO food prices, coefficient of correlation of the price index for the whole complex constitutes 14,0 %. The value of the coefficient could be much higher, but prices for meat and meat products demonstrated relatively stable character and they occupied a substantial share in the structure of the global agro-food market. Variation coefficient of all other kinds of products was some higher or lower than 20%. Among the above-mentioned kinds of products, prices for milk and dairy products were the least stable in the period of 2002-2015. Degree of variability of the global price indexes for sugar was not much lower.

In the process of correlation analysis of the lines of indexes of FAO food prices, consumption prices index at the domestic food market and sell prices for the products, sold by agrarian enterprises, the researchers obtain data about degree of relations between the lines.

Corresponding values of correlation coefficient are demonstrated in the table 2.

Coefficient of correlation between FAO price indexes and indexes of consumption prices at the domestic food market constituted 0,843 in the period of 2002-2015. Thus, price situation in AIC of the country heavily depends on its dynamics at the global agro-food market.

Table 2. Coefficient of correlation between FAO chain price indexes, consumption price indexes at the domestic food market and sell prices for the products, sold by agrarian enterprises in 2002-2015.

Kinds of products	FAO price index: indexes of consumption prices at the domestic food market	FAO price index: indexes of sell prices for the products, sold by agrarian enterprises	Indexes of consumption prices at the domestic food market: indexes of sell prices for the products, sold by agrarian enterprises
Agro-food products	0,843	0,810	0,728
Bread and cereal products, cereals and grain legumes	0,801	0,468	0,620
Vegetable. oils, oilseeds	0,624	0,708	0,275
Sugar, sugar beet	0,497	0,817	0,640
Meat and meat products, cattle and poultry	0,808	0,790	0,939
Milk and dairy products	0,644	0,894	0,851

One should stress that at the markets of certain kinds of agro-food products, the defined degree of mutual dependence substantially differed in 2002-2015. Particularly, time dynamics of consumption prices at the global and national markets of bread and cereal products was closely connected (coefficient of correlation constituted 0,801).

In 2002-2015, ratio between price tendencies at the markets of vegetable oils and oilseeds were even more various. Coefficient of correlation between the indexes of prices for vegetable oils at the global and national markets constituted 0,624. At the same time, the same indicator in dynamics of prices both at the global market and for products of agrarian enterprises was much higher and constituted 0,708. However, degree of mutual dependence between dynamics of prices for vegetable oils at the domestic market and dynamics of prices for oilseeds at agrarian enterprises was so low that it could be neglected. Dynamics of sell prices for sunflower, rape and soybean, sold by agrarian

enterprises, was determined not by dynamics of prices for products of their processing at the domestic market, but by dynamics of prices at the global market. Similar situation was observed at the markets of sugar in the studied period.

The highest indicators of mutual dependence between price tendencies at the global and national markets were observed at the markets of meat and meat products. Contrary to the other kinds of products, dynamics of sell prices for cattle and poultry, sold by agrarian enterprises, was determined by dynamics of prices for meat and meat products at the domestic consumption market, which demonstrated high indicators of dependence on dynamics of prices at the global market. Almost the same situation concerning price correlations occurred at the markets of milk and dairy products in 2002-2015. However, national market of the products was considerably independent from the global market in the studied period.

4 Conclusions

Statistical processing of the data about dynamics of prices for food products generally and their separate kinds, with application of dispersive and correlation analysis, results in conclusions that price environment of agrarian enterprises development is mainly defined by price tendencies at the global market, not at the national market. Such situation proves a weak position of the national government in opportunities to activate its impact on price situation. However, it does not mean that the tendency should be supported in future. Obviously, the government, which cares about income of domestic commodity producers in agricultural field, as well as about living standards of population, should influence price tendencies, because it is one of its tasks.

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