COMMON MARKET ORGANISATION CHANGES IMPACT ON SUGAR PRODUCTION AND FOREIGN TRADE

VLIV ZMĚN SPOLEČNÉ ORGANIZACE TRHU NA PRODUKCI A ZAHRANIČNÍ OBCHOD S CUKREM

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Anotace:
Příspěvek se zabývá změnami společné organizace trhu s cukrem v rámci EU a nastiňuje možné dopady těchto změn na vývoj produkce cukru v ČR a na zahraniční obchod s cukrem. Sloučení kvót A a B a jejich následné zkrácení povede ke snížení produkce cukru a možnému zvýšení dovozu této komodity do ČR. V příspěvku je diskutován i problém zachování příjmů pěstitelů řepy po roce 2006 a také vliv na světové ceny cukru.

Klíčová slova:
reforma, společná organizace trhu, světová cena, kvotace, cenová regulace

Abstract:
The paper deals with the changes of sugar common market organisation (CMO) in EU and outline possible impacts of these changes on sugar foreign trade and on Czech sugar industry. There exists an acceptance of sugar and sugar-beet prices variation from the sight of the Czech farmers and sugar mills, however the A and B quotas merging and their subsequent reduction will lead to restriction of sugar production. The increase in import is expected. Sugar CMO reform is needful and today proceedings within member countries leads to such reform proposal, which will reduce the overproduction with contemporary prevention of farmer receipt falls. The paper expects the impact clarification of EU sugar reform in result. The problem of sugar farmer receipts beyond the year 2006 is discussed and the potential impact of world sugar prices is suggested.

Key words:
reform, common organisation of market, sugar, world price, quotation, price regulation

Introduction

The 2006 will be a difficult year for sugar producers in the EU. The price will be reduced drastically, A and B quotas will be converted into a single quota and there will also be a reduction in united production quota. The current intervention price of € 631.9/t will be replaced by a reference price with the state guarantee then no longer existing. The reference price forms the price basis for imports from ACP countries (African, Caribbean and Pacific), the least developed countries (LDC) and from the Balkan states. It also clears the way for future possible private storage. In the coming two years the reference price remains equivalent to the intervention price. In 2008/09, however, it sinks 17 % and in the following year reaches the final level of € 404.4/t (see table 1).

Table 1: *Sugar and beet prices*

		2006/07	**2007/08**	**2008/09**	**2009/10**	**2010/11**
Reference price of sugar (consumer level)	€/t	631.9	631.9	541.5	404.4	404.4
Reference price of sugar (producer level)	€/t	505.5	458.1	427.4	404.4	404.4
Sugar beet price	€/t	32.9	29.8	27.8	26.3	26.3
Restructuring fee*	€/t	730	730	625	520	0

*maximum payment for sugar producers, which completely stop the production

The minimum sugar beet price in the coming year will be reduced by 20 % from € 43.6/t (A-beet in 2005/06) to € 32.9/t. This price will apply to all beet, i.e. for the present B-beet too. In each of the following years the price will sink so that from 2009/10 it will be € 26.3/t. EU compensation for the sugar beet farmers is 64.2 % of the difference between the minimum price so far and the future minimum price (€ 26.3 /t). Distribution of this compensation in the individual countries is to be left to the respective governments and could be part of single farm payments or hectare premiums.

The basic and supplementary levies will no longer be deducted from sugar beet price. Instead, there is to be a general production levy of € 12/t of sugar. While this arrangement makes the price more transparent, it could lead to a problem with exports: when in future no income from the supplementary levy is flowing into the EU budget there is then the danger that the EU may, in order to save money, not take full advantage of the export possibilities remaining until 2013.

The amount of future quota is very closely bound to the success of the restructuring funds. If one takes into account ACP imports of 1.3 m t, those from the Balkan States (300,000 t) and the special preference imports (300,000 t) as well as the expanded isoglucose quota of 400,000 t, this means that 2.3 m t quota sugar must be taken out of the market.

Methodology

In evaluation of situation on markets of particular commodities most analyses is based on evaluation of price development. For complete characteristics of market it is useful to analyze prices in product verticals because only just so in some degree a future possible development on market with the selected commodity can be derived. Besides economic analyses mostly statistic methods from area of time series are used because with the help of these methods long-term development tendencies can be described, as well as a short-term and long-term variance of values of the monitored indicator with a possibility to construct predictions for next period.

For this purpose time series of monthly import and export prices (IP; EP) have been analyzed as well as average monthly prices of industrial producers (PP), consumer prices (CP) – in Czech crowns per ton (CZK/t), quantity of export and import (in tons) and world market price (WP; in USD/t). Period May 2004 to April 2006 was evaluated. Data were obtained from public resources of the Czech Statistical Office (CZSO - ČSÚ) [1] and Ministry of Agriculture [2].

Fluctuations which we monitor in a time series can be caused by seasonal factors or can vary in a longer term. As seasonal influences are considered a collection of direct and indirect causes which repeat. A consequence of seasonal influences on the analyzed time series are so called seasonal fluctuations (swings), i.e. regular swings of examined series up and down towards a certain "non-seasonal" normal development of series during years.

At first it is necessary identify whether these swings are really statistically significant. If a real existence of seasonal component in a time series is proved, than its turn has a quantification of seasonal swings.

Neoclassical analysis of time series [3] is based on a hypothesis that a time series is a realization of so called stochastic process. The stochastic process is a group of random magnitudes organized in time $'t'$. In practical applications it is stemmed from following presumptions: a random magnitude can be described by a median (in time it can change), a variance and a correlation function. The last presumptions documents that a correlation between random magnitudes $'Y'$ is supposed. A value of correlation coefficient depends only on a shift $'k'$, so on a distance of both random magnitudes, not on their position in the organized series. A basic element of a construction of time series model is a random component; a random component can be composed of correlated random magnitudes. The centre of gravidity of the technique lies in correlation analysis of more or less dependent observations, organized in a shape of time series.

In evaluation of further development of sugar industry tools of analysis are used as well as a comparison of the existing sugar regime and impacts which changes of this regime in frame of the EU will bring to Czech sugar beet growers and sugar producers. The resent state stems from the Regulation of EC Council No. 1260/2001, whose validity ended on the June 30, 2006. Possible alternatives of development then stems from the Reform of CMO with sugar which was published by the European Commission in years 2005 and 2006.

Results

The test of significance of the seasonal component in time series showed that this component is statistically significant in the series of Export price and World price only (at the significance level $\alpha = 0.05$ respectively $\alpha = 0.01$; see table 2). The variance of other series is rather due to the influence of a random component than the seasonal variation.

The value of export price shows the highest growth during May – July, when a seasonal increase by more than 10 % was detected with regard to the long - term, main development. On the contrary, bottom prices occur in the months October and November. The rise of export prices in the spring period can be connected with the raising demand for sugar before the main sugar cane harvest. Vice versa, the export price decline in autumn corresponds with the tendency to clear the stores before the main season of sugar beet production.

There has occurred no increase of the seasonal world price higher than 10 %. The only rise in prices exists in the period July – October, which can be connected with the term before the beginning of the sugar beet production.

Table 2: Seasonal indexes of selected time series of sugar prices (%)

Month	Producer price	Export price	World price
1	99.5	93.4	94.2
2	99.0	96.8	94.7
3	97.4	102.0	96.7
4	96.0	102.3	94.2
5	96.7	116.0	92.9
6	101.5	112.1	98.2
7	102.7	111.2	108.2
8	103.3	97.4	107.7
9	99.5	95.3	107.3
10	99.8	84.4	106.3
11	102.6	91.5	104.0
12	102.0	97.6	95.6

Subsequently, regression and correlation analysis was used to detect, how the individual sugar prices influence mutually. From the table 3, which characterizes the matching correlation coefficients of chosen variables, it is evident, that middle dependence exists between import price and producer price and between consumer price and producer price. Other dependencies are rather weaker.

Table 3: *Correlation matrix of input (independent) variables*

	Import price	Import quantity	Producer price	Consumer price	World price
Import price	1	0.0737	-0.4938	0.0102	-0.1256
Import quantity	0.0737	1	0.4179	-0.6246	-0.0410
Producer price	-0.4938	0.4179	1	-0.4423	0.3875
Consumer price	0.0102	-0.6246	-0.4423	1	0.2062
World price	-0.1256	-0.0410	0.3875	0.2062	1

A multiple linear regression was subsequently constructed on the basis of data from the regression and correlation analysis. The output shows the results of fitting the multiple linear regression model to describe the relationship between sugar export quantity (y_1; in tons) and 3 independent variables – sugar import quantity (x_1; in tons), producer price (x_2; in CZK/t) and world market price of sugar (x_3; in USD/t):

$$y_1 = 76121.0 - 1.3019\ x_1 - 2.6454\ x_2 + 23.8646\ x_3.$$

The adjusted determination coefficient (r^2), which is more suitable for comparing models with different numbers of independent variables, indicates that the model as fitted explains 32% of the variability in export quantity. Since the probability value in the analysis of variance is less than 0.05, there is a statistically significant relationship between the variables at the 95% confidence level. The Durbin-Watson statistic, which tests the residuals to determinate if there is any significant correlation regarding the order in which they occur, is 1.7, so there is probably no serious autocorrelation in the residuals.

From the above mentioned equation, it follows that when the values of import quantity and producer price decrease, the sugar export quantity will grow. Increasing sugar

world price (ceteris paribus) will rise the export quantity, which matches the common theory of foreign trade.

For forecasting of price development, it was necessary to determine the most suitable trend. There were used basic functions (linear, quadratic, exponential), which were supplemented by the model of exponential balancing. The most suitable models were selected according to the criteria M.S.E. (Mean Squared Error) and M.A.P.E. (Mean Absolute Percentage Error). The MAPE values have ranged from 0 to 5 %. The forecasts of price development were determined for 8 months of the year 2006 (May – December; see table 4).

The forecast for consumer price is not introduced because, owing to the CR accession into the EU and to the adoption of CMO, sugar consumer prices are regulated and any forecast stemming from the past is irrelevant.

Likewise there is not mentioned the forecast of sugar import price, because of the high MAPE value (20.6 %), i. e. the estimates would be considerably unreliable.

Table 4: *Price development forecast of the selected sugar price variables*

Month	World Price	Export Price	Producer Price
	USD/t	*CZK/t*	*CZK/t*
V.06	395.05	11443.8	18418.0
VI.06	419.00	11617.6	18339.4
VII.06	449.88	11981.3	18022.9
VIII.06	459.46	11767.2	17769.7
IX.06	474.56	13062.2	17896.9
X.06	523.89	12361.0	18788.7
XI.06	602.61	12006.7	19010.8
XII.06	624.04	10300.3	19116.2

Relatively the most exact is the producer price forecast (the relative error MAPE is 2.14 %), of course, even the influence of the common sugar market is manifested here. Nevertheless, the forecasts are determined on the base of the presumption that the present development of time series will repeat also in the future. In case of sugar prices, the situation is different. The reason are the changes which the common organization of sugar market brought about and also the changes for the future, which are estimated in connection with the adoption of the CMO reform in consequence of the obligations resulting from the membership in the WTO.

Discussion and conclusion

Till the half of 70's only rarely sugar production exceeds its consumption. That situation changed in 1974 when prices significantly grew on the world sugar market. The world price of sugar exceeds even the price on the internal EC market. Briefly before the Common Agricultural Policy came in force in the Great Britain which newly joined the

Community and which were in sugar production non-self-sufficient and had to buy it for high prices on the world market. It meant enormous costs for the European Community because imported sugar had to be subsidized so that it could be sold for uniformly set priced valid in the EU. In the following economic year both production quotas and prices were significantly increased. It was a start of extreme growth of sugar production in EU countries, which is a great problem for EU now.

It was certain that change of CMO with sugar would happen. As Bavorová reports [4], it was force also by a new global trade agreement principles of which were adopted in August 2004 in Geneva as the fulfillment of agreement of so called Qatar round of WTO negotiation.

The new members of EU have given eminently lower B quota of sugar production than the old members (EU15). Consequently, the reduction of merged quota will lead to the reduction of sugar production. Nevertheless, in order to take rest sugar out of the market, Spain, Greece, Portugal, Italy, Ireland, Finland and Latvia would have to completely stop their beet production. Higher LDC imports should mean that the reduction requirements are even more, the countries giving up might have to be joined by Lithuania, Denmark and Hungary.

All these predictions calculate with the low world market price of raw sugar. But at around present 390 €/t the white sugar price on the London Exchange almost reached the future EU reference price and the upswing continues. Current world market prices mean that imports from the less-developed countries may well turn out lower than expected. After all, the listed price in London applies FOB. On top of this come ship freight costs and unloading in the EU. Taking all this into consideration costs for LDC exporters are higher than the 2006/07 EU guaranteed € 505.5/t for white sugar. For this reason the LDC exporters could well concentrate more on other markets involving lower freight costs and where higher market prices could bring better margins. Sugar imports could therefore turn out substantially lower than expected – but only as long as the world market price sustains its current level.

If sugar world price will stay on the same level (i. e. relatively high) like at present, it will not mean a serious problem for the EU. The contemporary high raw oil prices play up to this scenario, reflecting a higher sugar cane use for the bio-ethanol production as an alternative fuel (e. g. Brazil). On the contrary, increased sugar imports under a low world price would lead to the further decrease of production capacities, which would mean dampening of the sugar beet growing especially in the new EU member states.

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