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Content

Development of Wheat Prices and the Development of Selected Wheat-Based Products in the Czech Republic

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Abstract

The aim of this study was to evaluate the long-term price development of selected types of wheat and selected wheat products in the Czech Republic and to predict their future development. To achieve this goal, content analysis of secondary data and time series analysis were used, including basic measures of dynamics and the ARIMA model for forecasting prices twelve months in advance. The results showed that the prices of wheat and wheat products fluctuated during periods but grew in the long term. The ARIMA model indicated a slightly downward trend in future prices for both types of wheat. The research provided a holistic overview of the price development of a key agricultural commodity and its processed range, and can thus contribute to better economic decision-making in the agricultural and food sectors. The study is limited by its dependence on a single source data, the absent seasonal adjustment, and the model's sensitivity to market shocks, creating room for expanding the analysis.

Keywords: Agricultural commodities, cereal prices, wheat market, price development, time series analysis, ARIMA, Czech Republic.

Introduction

Agriculture is the primary basis of livelihood and serves as a fundamental pillar of every country. Farmers face several challenges due to various factors such as water scarcity, undefined pricing resulting from supply and demand, weather uncertainty, and inaccurate yield forecasts (Joshua et al., 2021). Due to increasing demand driven by a continuously growing population (Zhao et al., 2022), it is necessary for agricultural management to

represent a viable strategy for addressing the growth in crop production (E. Zhang et al., 2025).

Fluctuations in agricultural commodity prices affect both supply and demand (Gu et al., 2022) and have a significant impact on people's daily lives as well as on the inputs and outputs of agricultural production. For consumers, excessive price increases represent a substantial burden on food expenditures, which negatively affects their overall well-being. For farmers, large price fluctuations increase production uncertainty, thereby raising the level of risk they must manage. As a result, accurate forecasting of agricultural commodity prices is crucial for agricultural authorities to make informed decisions and ensure the proper functioning of the socio-economic system (D. Zhang et al., 2020).

Wheat is one of the most important crops in the world (Chen et al., 2025), as also confirmed by Sun et al. (2023) and Li and Li (2022). It is a cereal grown worldwide and plays a crucial role in the global trade market, as it is a key agricultural commodity of the 21st century (Sun et al., 2023). According to Y. Zhang and Li (2022), it is a staple food for approximately 40% of the world's population. The stability of wheat production is therefore closely linked to national food security, sustainable agricultural development, and the livelihoods of millions of people (Sukanya & Babu, 2025).

For this reason, one of the current goals of modern agriculture is to ensure consistent and sustainable yields of this crop, which, due to its high nutritional value and versatility, forms a fundamental component of the human diet and a key commodity in international trade. The cultivation and consumption of wheat have significant economic, social, and cultural implications (Rebouh et al., 2023), and the history of wheat cultivation is as long as the history of civilization itself. Due to its modest cultivation requirements and high nutritional value, wheat rapidly spread from its center of origin (Mesopotamia) across the world (Velimirovic et al., 2021). Today, many types of wheat exist, differing according to regional growing conditions (Donmez, 2024) and climatic exposure (Yue et al., 2025).

Aim of the Study

The aim of this study is to evaluate the development of prices of selected types of wheat and wheat-based products in the Czech Republic over time and to forecast their future development. In line with this objective, the following research questions are defined.

Examining the long-term development of wheat prices makes it possible to identify price trends and differences between food wheat and feed wheat. Evaluating these developments

provides insight into market stability and whether both segments are influenced by similar factors, which is important for understanding the price dynamics of this key agricultural commodity in the Czech Republic.

RQ1: How have wheat prices developed from January 2015 to July 2025, and is the trend the same for food wheat and feed wheat?

Forecasting wheat prices is crucial for farmers, traders, and consumers, as it enables better planning of production and business strategies. The importance of this issue lies in supporting effective decision-making in the agricultural sector.

RQ2: What is the expected price development for food wheat and feed wheat over the next 12 months?

Identifying price developments during periods of geopolitical crisis makes it possible to assess how significantly global events have influenced the domestic market for wheat products. Answering this question helps determine the extent of price transmission from primary commodities to final products and is therefore important for evaluating the economic stability of the food market and the impact of crises on end consumers.

RQ3: How have the prices of selected products (food wheat, fine wheat flour type 00 extra, and fine wheat flour) developed from the beginning of the war in Ukraine (January 2021 to July 2025)?

Data and methods

Based on the literature review, data will be collected using content analysis of secondary data from available online sources, and time series analysis will be applied for their subsequent evaluation. These methods will be used to answer all selected research questions.

Data

For data collection, content analysis of secondary data will be used. For the first and second research questions, data will be collected for the period from January 2015 to July 2025, and for the third research question, data from the period January 2021 to July 2025 will be analyzed, i.e., the period since the outbreak of the war in Ukraine. These data are quantitative in nature and are published on a monthly basis for individual years.

The required data can be found on the website of the State Agricultural Intervention Fund (SAIF, 2025), where they are publicly accessible through the following sections: News – Market Information System – Market Reports – Cereals and Oilseeds. The last-mentioned section contains documents in PDF (Portable Document Format) format, which include market reports on cereals, oilseeds, and feed for the selected year.

For the first and second research questions, data from tables titled "Development of Agricultural Producer Prices for Food Wheat and Feed Wheat (CZK/t)" will be analyzed.

Table 1: Descriptive Statistics for RQ1 and RQ2

Commodity	Number of observations	Median	Arithmetic mean	Standard deviation	Min.	Max.
Food wheat	127	4623	4803.15748	1166.974071	3539	8654
Feed wheat	127	4414	4454.19685	1075.223240	3337	8073

Source: Own.

For the third research question, data from the following tables will be used: Comparison of average consumer prices, agricultural producer prices, and industrial producer prices for food wheat and wheat flour (CZK/kg).

Table 2: Descriptive Statistics for RQ3

Commodity	Number of observations	Median	Arithmetic mean	Standard deviation	Min.	Max.
Food wheat	55	5.25	5.745091	1.20510315	4.49	8.65
Wheat flour smooth 00 extra	55	10.72	10.66327	1.94827089	7.46	13.57
Wheat flour smooth	55	16.04	16.77582	3.433166496	12.02	22.72

Source: Own.

Methods

The method used to answer all research questions will be time series analysis. For RQ1 and RQ3, simple measures of time series dynamics will be applied, while RQ2 will be addressed using the Autoregressive Integrated Moving Average (ARIMA) model, which is a classical tool for time series forecasting.

A time series is defined as a sequence of values of an indicator measured at specific time intervals. These intervals are often equivalent (uniform), and therefore can be expressed as follows (Hančlová & Tvrdý, 2003):

$$y_1, y_2, \dots, y_n \; or \; y_t, t = 1, 2, \dots, n, \tag{1}$$

where:

y denotes the analyzed variable,

t is the time variable,

n represents the total number of observations.

Line graphs are used to display time series and for their initial analysis, where the horizontal axis represents the time variable and the vertical axis shows the values of the time series yt. For a more precise evaluation, it is appropriate to use simple measures of time series dynamics, which make it possible to characterize their fundamental behavioral patterns. Among the basic measures of time series dynamics yt, which will be used to answer RQ1 and RQ3, are (Hančlová & Tvrdý, 2003):

- The absolute increment (first difference), which expresses individual changes in time series in terms of increases or decreases, can be calculated using the following formula:

$$\Delta y_t = y_t - y_{t-1}, \quad t = 2, 3, \dots, n. \tag{2}$$

- To assess the average magnitude of change over the entire observed period, the average absolute increment will be used, which is expressed in the formula as the arithmetic mean of all absolute increments:

$$\overline{\Delta} = \frac{\sum \Delta y_t}{n-1} = \frac{(y_2 - y_1) + \cdots + (y_n - y_{n-1})}{n-1} = \frac{y_n - y_1}{n-1}. \tag{3}$$

- For the relative expression of time series dynamics, the growth rate coefficient is used, which represents the percentage change between selected periods. It is calculated using the following formula:

$$k_t = \frac{y_t}{y_{t-1}}, \quad t = 2, 3, \dots, n. \tag{4}$$

- The average growth coefficient, when multiplied by 100, indicates the percentage of the previous value that the time series reaches on average over the entire observed period. It can be calculated using the following formula:

$$\bar{k} = \sqrt[n-1]{k_2\, k_3\, \ldots k_n} = \sqrt[n-1]{\frac{y_2}{y_1}\frac{y_3}{y_2}\frac{y_4}{y_3}\ldots\frac{y_n}{y_{n-1}}} = \sqrt[n-1]{\frac{y_n}{y_1}}. \quad (5)$$

The data will be processed in Excel, where tables will be created containing time periods (YYYY-MM) and prices of individual commodities. The data will remain in their original form without rounding, and the above-mentioned formulas will be applied. These tables will subsequently be used to create line graphs illustrating the development of prices of individual wheat types (food wheat and feed wheat) in CZK/t in separate graphs, and selected wheat-based products (food wheat, fine wheat flour type 00 extra, and fine wheat flour) in CZK/kg in a single graph.

For RQ2, time series modeling and forecasting will be conducted using the Autoregressive Integrated Moving Average (ARIMA) model, which is designed to describe time series with stochastic changes in trend (level and slope). The ARIMA model consists of three components, meaning that the current value of the time series depends on past values (AR part – autoregression), past random errors (MA part – moving average), and possibly the difference between the current and past values (I part – integration).

The ARIMA model can be expressed in the following form (Křivý, 2012):

$$\varphi(B)(1-B)^d y_t = \vartheta(B)\varepsilon_t, \quad (6)$$

where:

B is the lag operator,

$\varphi(B)$ *is the autoregressive polynomial,*

$(1-B)^d$ *is the differencing operator,*

y_t is the value of the time series at time t,

$\vartheta(B)$ is the moving average polynomial,

ε_t the random component (so-called white noise).

Calculations and visualizations will be performed in RStudio using the packages forecast, zoo, lubridate, and readxl. Data will be imported from Excel using the read_excel() function. The time series will be plotted using the plot() function. The auto.arima() function will automatically select the optimal combination of parameters (AR, I, MA) based on the AIC and BIC criteria. A 12-month forecast will be generated using the forecast() function and

visualized graphically together with historical data (black), the forecast (blue), and confidence intervals (grey).

To eliminate short-term fluctuations, the data will be smoothed using a six-month moving average (MA6, rollmean() function from the zoo package). The smoothed series provides a more stable forecast, to which the ARIMA model will be applied again. The predicted values will be exported into a table (write.csv()) containing the average price and a 95% confidence interval for each month.

After applying the methods, the results will be presented using tables and graphs accompanied by statistical descriptions of the time series and interpretations of the individual results of the analysis. The selected methods will be used to evaluate the development of prices of selected types of wheat and selected wheat-based products over the chosen periods. This will provide a clearer understanding of the factors that led to current prices and, based on trend development, allow predictions of whether prices will increase, decrease, or stagnate in the future.

Based on the obtained data and the observed price developments of all commodities and products, it can be expected that the prices of selected types of wheat and wheat-based products will both increase and decrease on a monthly basis over the selected periods. However, over the entire observed period, the average price is expected to show an upward trend.

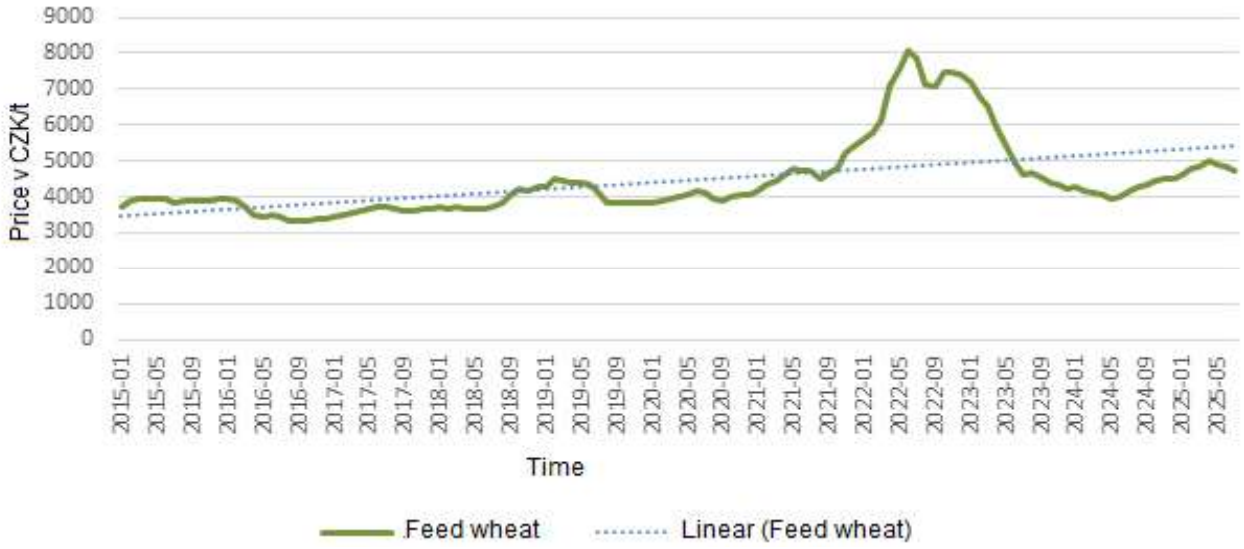
Results

Based on the applied methods, the following results were obtained for the individual research questions.

Within the first research question, RQ1: How have wheat prices developed from January 2015 to July 2025, and is the trend the same for food wheat and feed wheat?, a table was created (see Appendix 1), on the basis of which Graph 1 for food wheat and Graph 2 for feed wheat were developed.

In the first section, attention is focused on the assessment of the development of food wheat prices.

Graph 1: Development of Food Wheat Prices



Source: Own.

Graph 1 shows the development of food wheat prices in the period from January 2015 to July 2025. During this period, prices fluctuate within the range of CZK 3,539 to CZK 8,654 per ton; however, the trend line indicates a long-term upward trend.

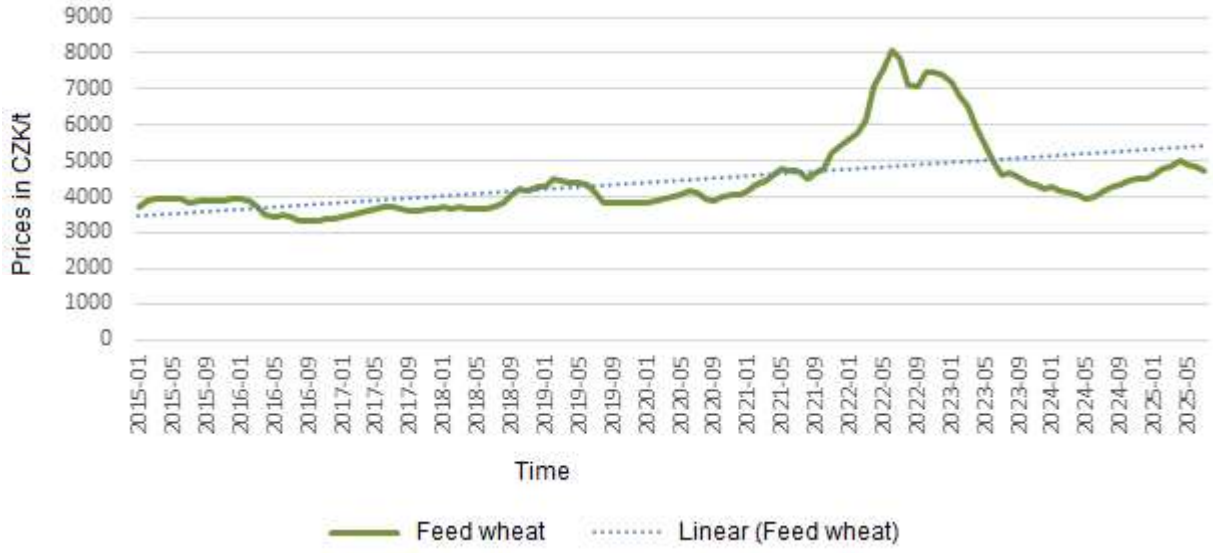
For a more precise assessment of the development, simple measures of time series dynamics were calculated, including absolute increments (see Appendix 2). From these values, calculated using Formula (2), it is evident that monthly prices exhibit typical fluctuations. The average absolute increment, calculated according to Formula (3), amounts to CZK 8.03968254 per ton, indicating that the price of food wheat increased on average.

The same procedure was applied to the growth rate coefficient. After calculation using Formula (4) and conversion into percentages, fluctuations between individual months are again apparent. Using Formula (5), the average growth coefficient was calculated to be 0.1701733%, indicating that food wheat prices increased on average by 0.1701733% over the observed period.

Both the average absolute increment and the average growth coefficient are positive values, confirming that food wheat prices increased over the selected period.

In the second section of the first research question, attention is focused on the development of feed wheat prices.

Graph 2: Development of Feed Wheat Prices



Source: Own.

The elements of Graph 2 are the same as in Graph 1, with the only difference being the price values, which range between CZK 3,337 and CZK 8,073 per ton (data from the last column of Appendix 1). The prices of this commodity again fluctuate monthly; however, in the long term, the trend line is also increasing. The development curve is similar to that of food wheat, only at a lower price level.

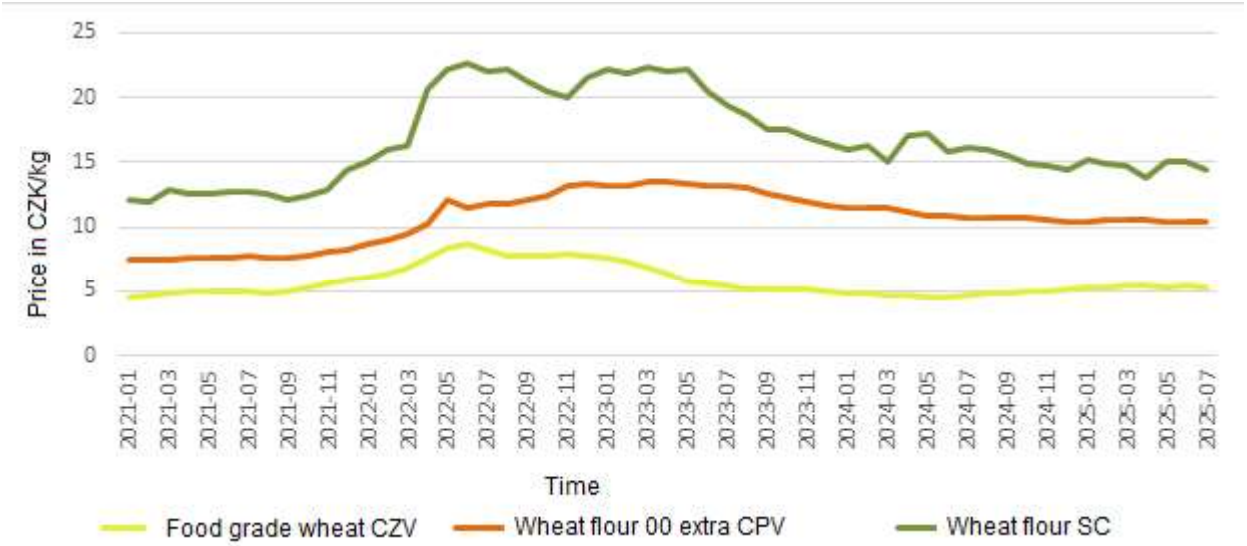
As in the previous case, the values of absolute increments for feed wheat were calculated and are presented in Appendix 3. These values again fluctuate and often follow the development of food wheat. The average absolute increment amounts to CZK 7.674603175 per ton, indicating that the price of feed wheat increased on average over the observed period. The growth rate coefficient is calculated in the same way (see Appendix 3), and after conversion into percentages, monthly price fluctuations are again evident. Using these values in Formula (5), the result of 0.1822865% was obtained, representing the average growth rate of feed wheat prices.

From the values of absolute increments and the growth coefficient, it is evident that feed wheat prices fluctuate between individual months. At the same time, it is confirmed that prices increased on average during the selected period, as supported by the results of both the average absolute increment and the average growth coefficient.

For the third research question, RQ3: How have the prices of selected products (food wheat, fine wheat flour type 00 extra, and fine wheat flour) developed from the beginning of the war in Ukraine (January 2021 to July 2025)?, a table was created (see Appendix 4), based on

which Graph 3 was constructed to illustrate the development of prices of wheat-based products.

Graph 3: Development of Prices of Food Wheat, Fine Wheat Flour Type 00 Extra, and Fine Wheat Flour



Source: Own.

The graph captures the period from January 2021 to July 2025, and the vertical axis displays the prices of individual products in CZK/kg. The values for food wheat are presented as agricultural producer prices, for fine wheat flour type 00 extra as industrial producer prices, and for fine wheat flour as consumer prices. The price range for food wheat is from CZK 4.49 to CZK 8.65/kg, for fine wheat flour type 00 extra from CZK 7.46 to CZK 13.57/kg, and for fine wheat flour from CZK 12.02 to CZK 22.72/kg.

Prices of all three product types fluctuate monthly; however, in the long term, they exhibit an upward trend. These findings are verified using simple measures of time series dynamics.

In the case of food wheat, the values of absolute increments and growth rate coefficients are calculated in the table in Appendix 5. The monthly development again fluctuates. The average absolute increment amounts to CZK 0.014074074/kg, indicating that the price of food wheat increased on average. This result is also confirmed by the average growth coefficient of 0.2900037%.

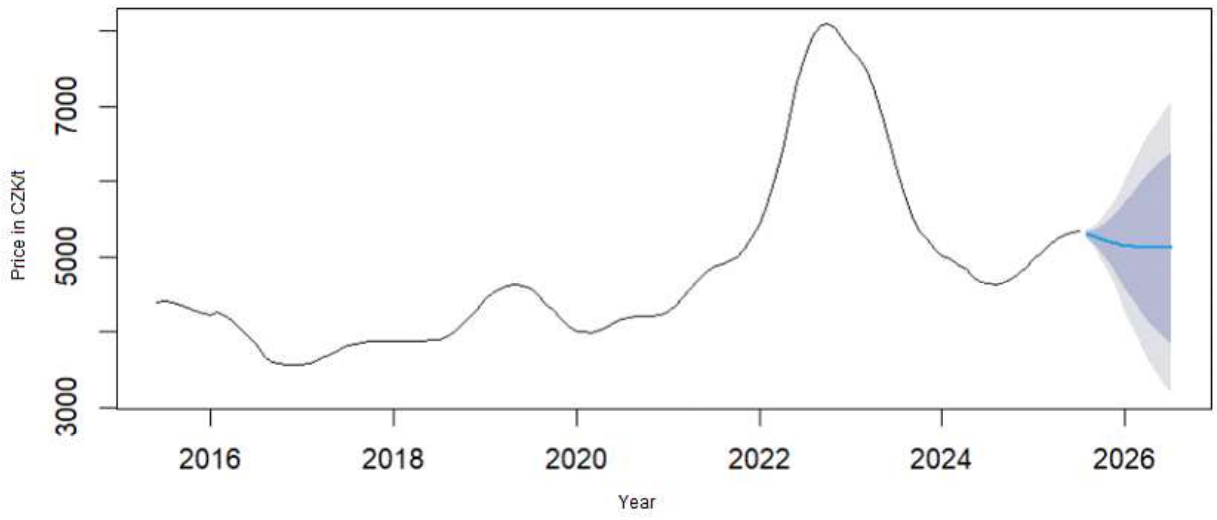
The same calculations, with similar results, were also performed for fine wheat flour type 00 extra. The results (see Appendix 6) show a similar pattern of development as for food wheat. The average absolute increment of this commodity amounts to CZK 0.054259259/kg, confirming its long-term price growth. The average growth coefficient reaches 0.6118813%.

The last selected wheat-based product is fine wheat flour, whose absolute values and growth rate coefficients are calculated in Appendix 7. Both the graph and the calculated values confirm that its price also changes monthly. The average absolute increment amounts to CZK 0.043703704/kg, indicating long-term price growth. The average growth coefficient reaches 0.3302589%.

To answer the second research question, RQ2: What is the expected price development for food wheat and feed wheat over the next 12 months?, time series modeling using the ARIMA model is applied. This method is used on smoothed data for food wheat and feed wheat prices. The forecast is then generated for a twelve-month period, i.e., from August 2025 to July 2026.

Regarding food wheat, its original (grey) and smoothed (black) time series are illustrated in Graph 4. Data smoothing allows for a more accurate identification of the underlying trend.

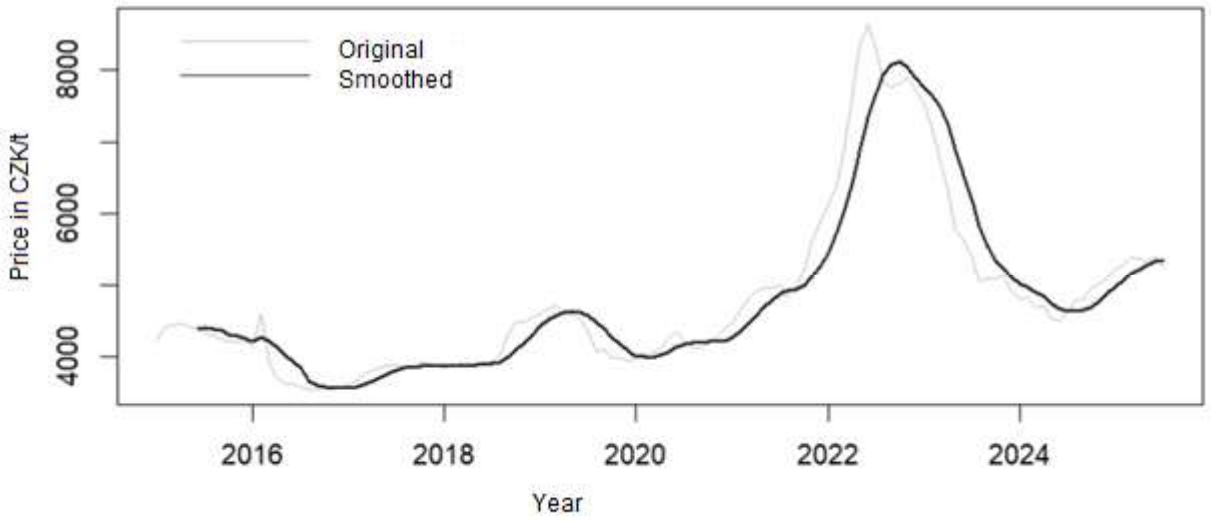
Graph 4: Original vs. Smoothed Time Series (MA6) for Food Wheat



Source: Own.

Based on the smoothed data, a predictive model for the following 12 months (August 2025 to July 2026) is constructed, which is illustrated in Graph 5.

Graph 5: ARIMA Forecast after Data Smoothing (MA6) for Food Wheat



Source: Own.

This graph displays historical data as a black line, the resulting forecast as a blue line, and confidence intervals are represented by grey bands. It is evident that the predicted development of food wheat prices shows a slightly decreasing trend.

Below is Table 3 with the exact predicted values for food wheat in CZK/t.

Table 3: Forecast and 95% Confidence Interval of Food Wheat Prices (CZK/t)

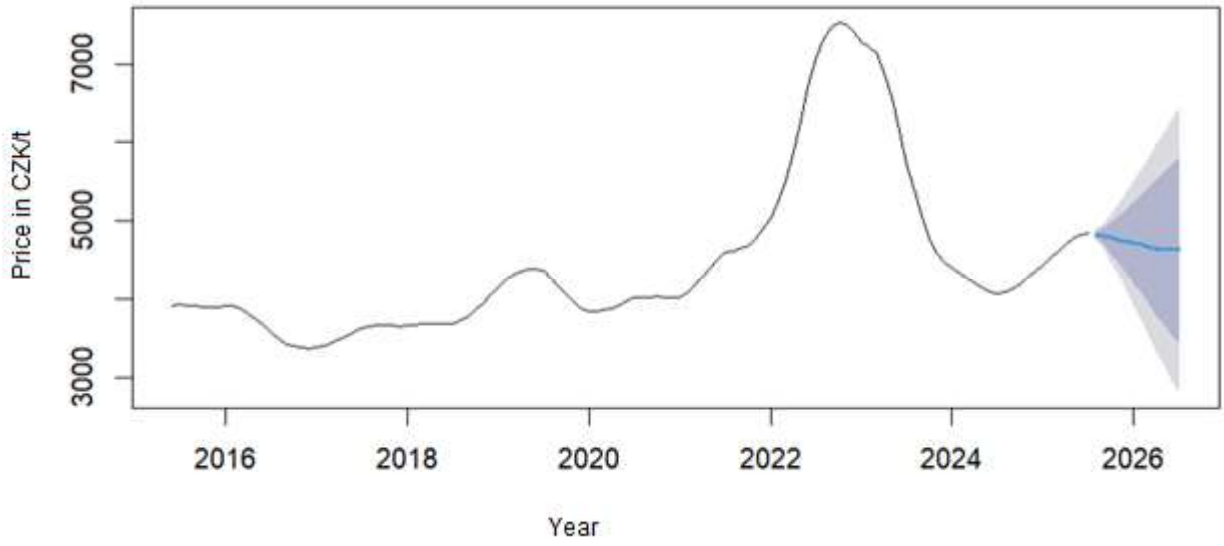
Date	Predictions (Kč/t)	Lower bound of the 95% confidence interval (CZK/t)	Upper bound of the 95% confidence interval (CZK/t)
2025-08	5312.58	5255.55	5369.61
2025-09	5269.33	5115.34	5423.31
2025-10	5234.79	4944.03	5525.55
2025-11	5205.95	4744.50	5667.40
2025-12	5170.39	4510.18	5830.60
2026-01	5149.74	4266.57	6032.91
2026-02	5119.77	4004.51	6235.03
2026-03	5092.75	3737.84	6447.66
2026-04	5064.28	3462.88	6665.68
2026-05	5038.70	3186.84	6890.55
2026-06	5012.31	2906.04	7118.58
2026-07	4988.67	2625.32	7352.01

Source: Own.

The resulting forecast values confirm the graphical representation. The price of food wheat shows a slight downward trend, decreasing from an estimated CZK 5,312.58 per ton in August 2025 to CZK 4,988.97 per ton in July 2026. However, it is necessary to take into account the relatively wide confidence interval, which at the end of the observed period indicates that the actual price could, with 95% probability, lie anywhere between CZK 2,625.32 per ton and CZK 7,352.01 per ton.

A similar procedure is applied to the second commodity within the second research question, feed wheat. The smoothed and original time series are compared in Graph 6.

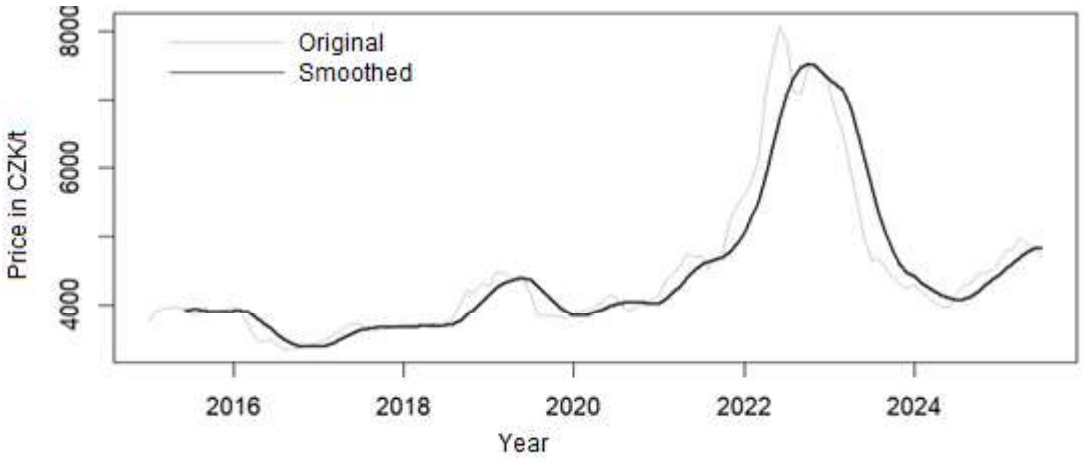
Graph 6: Original vs. Smoothed Time Series (MA6) for Feed Wheat



Source: Own.

Based on these smoothed data, an ARIMA forecasting model is also constructed for the period from August 2025 to July 2026. The results for feed wheat are illustrated in Graph 7.

Graph 7: ARIMA Forecast after Data Smoothing (MA6) for Feed Wheat



Source: Own.

This graph again illustrates historical data (black line), the forecast itself (blue line), and grey bands representing the confidence intervals. The forecast for feed wheat also indicates a slightly decreasing trend. Exact point estimates in CZK/t and confidence intervals are presented in Table 4.

Table 4: Forecast and 95% Confidence Interval of Feed Wheat Prices (CZK/t)

Date	Predictions (Kč/t)	Lower bound of the 95% confidence interval (CZK/t)	Upper bound of the 95% confidence interval (CZK/t)
2025-08	4830.26	4769.24	4891.28
2025-09	4810.00	4647.24	4974.75
2025-10	4789.43	4478.46	5100.40
2025-11	4764.43	4297.38	5231.47
2025-12	4739.33	4110.02	5368.63
2026-01	4719.09	3920.96	5517.23
2026-02	4697.09	3724.19	5670.00
2026-03	4683.86	3529.19	5838.52
2026-04	4672.17	3331.45	6012.88
2026-05	4666.20	3137.28	6195.12
2026-06	4661.28	2941.63	6380.92
2026-07	4668.64	3317.02	6020.26

Source: Own.

In the case of feed wheat as well, the tabulated forecast data confirm the declining trend shown in the graph. The estimated price at the beginning of the forecast period (August 2025) is approximately CZK 4,830.26 per ton and gradually decreases to an estimated value of CZK 4,668.64 per ton (July 2026).

It is also necessary to emphasize the widening confidence interval, which reaches a considerable range by the end of the forecast period. With 95% probability, the price could range between CZK 3,317.02 per ton and CZK 6,020.26 per ton.

Disscusion of results

Based on the obtained results, it is possible to answer the defined research questions.

RQ1: How have wheat prices developed from January 2015 to July 2025, and is the trend the same for food wheat and feed wheat?

The evaluation of time series using basic measures of dynamics showed that the prices of both types of wheat fluctuated significantly on a monthly basis between 2015 and 2025. Both commodities exhibited a very similar long-term development. Although their price levels differed, the trend line and average increments had almost identical characteristics, as the average absolute increment for food wheat was CZK 8.03968254 per ton and CZK 7.674603175 per ton for feed wheat.

It is noteworthy that the COVID-19 pandemic did not significantly affect prices, whereas the geopolitical conflict in Ukraine, which began in 2022, had a noticeable impact and led to a short-term but intense increase in prices.

It is particularly interesting that the similarity between both time series is surprisingly strong, despite the fact that food wheat and feed wheat enter different production chains. This suggests that the Czech market is strongly interconnected with the global grain market, and that price formation is significantly influenced by it. Another factor that may affect these prices is the export orientation of the Czech Republic. As a result, domestic producers may naturally respond to global signals and expectations. The short-term price spike following the outbreak of the war in Ukraine further confirms this interconnection.

These findings are consistent with the conclusions of Martin & Minot (2022), who highlight the long-term growth of global wheat prices and the existence of stable relationships between global and domestic prices. Granados Sanchez et al. (2020) also confirm that basic grain prices increased at the domestic level, which subsequently had a negative impact throughout the entire transformation chain through rising prices of processed products. The impact of the outbreak of the war between Russia and Ukraine on wheat prices is also confirmed, for example, by Xu et al. (2023).

RQ2: What is the expected price development for food wheat and feed wheat over the next 12 months?

Using time series modeling through the ARIMA model and smoothed data, it was found that the forecast for the period from August 2025 to July 2026 indicates a slightly declining trend in prices for both commodities. In both series, there is a gradual decrease in values during the forecast period, while at the same time a widening of confidence intervals is observed. This suggests increasing uncertainty of the predictive model over a longer time horizon.

This development likely reflects market stabilization following the period of extreme price fluctuations between 2021 and 2023. It can be interpreted as a return to more balanced levels rather than a significant price decline. However, it is evident that wheat price formation is currently much more sensitive to external shocks than in the past. The ARIMA model captures this uncertainty through wide confidence intervals, which is an important insight for future users of forecasts.

The difficulty of predicting wheat prices is also highlighted by other authors. Kumari et al. (2025) agree with this statement and identify the interplay between economic trends, environmental variability, unpredictable market conditions, and the lack of reliable data as the main challenges. Cariappa et al. (2020) further argue that wheat production levels in a given country also influence price predictions, finding that expected prices tend to be higher

in countries with low or negligible wheat production and lower in countries with higher production.

RQ3: How have the prices of selected products (food wheat, fine wheat flour type 00 extra, and fine wheat flour) developed from the beginning of the war in Ukraine (January 2021 to July 2025)?

The third research question focused on a period significantly influenced by geopolitical events. The results showed that the prices of all three wheat-based products exhibited considerable fluctuations, but overall increased during the period from 2021 to 2025.

From the graphs, absolute increments, and growth rate coefficients, it is evident that prices did not change significantly at the beginning of the observed period, with gradual increases occurring approximately from September 2021. A more pronounced price increase was observed from March 2022. All product categories reached their maximum price levels between May and June 2022, i.e., a few months after the outbreak of the conflict, when disruptions in wheat imports from war-affected regions began to occur.

Not only did prices increase, but in the case of selected wheat-based products, they even grew faster than the price of wheat itself. This amplification of the price shock may have been caused by rising costs of energy, packaging materials, and transportation, which significantly increased processing costs. The sensitivity of the food sector may have been further intensified by logistical complications and high market uncertainty, creating a combination of factors that pushed the prices of these products even higher than those of the primary commodity.

Granados Sanchez et al. (2020) support these findings, stating that the transmission of price shocks to final products is significant. Ferguson & Ubilava (2022) also agree, noting that the outbreak of war in the "breadbasket of Europe" sent major grain prices into an upward spiral. Devadoss & Ridley (2024) further analyzed wheat price developments following the outbreak of the conflict in Ukraine and found that this event led to price increases across all countries by approximately 2%.

The discussion shows that the results of this study are consistent with current research findings on the development of wheat and wheat-based product prices. The chosen methodology of time series analysis and ARIMA-based forecasting proved to be appropriate, transparent, and capable of providing high-quality results. However, it is necessary to consider the limitations of both the data used and the predictive model. Nevertheless, the

results represent a relevant and well-interpretable basis for understanding the development of wheat and wheat-based product prices in the Czech Republic.

Conclusion

The aim of this study was to evaluate the development of prices of selected types of wheat and wheat-based products in the Czech Republic over time and to forecast their future development. This objective was achieved through time series analysis using basic measures of dynamics and the ARIMA forecasting model, which enabled a detailed assessment of price developments.

Based on these methods, all defined research questions were successfully answered. For the first research question, it was found that both food wheat and feed wheat prices increased between 2015 and 2025, although their monthly development showed considerable fluctuations. Both commodities exhibited similar trends as well as similar values of increments and growth rates, indicating very similar market behavior. These results are consistent with the literature, which also describes rising grain prices and their transmission into subsequent processing industries.

For the second research question, a forecast of wheat price development for the following 12 months (from August 2025 to July 2026) was developed. The ARIMA model indicated a slightly declining trend in the prices of both commodities, while the accuracy of the forecast was limited by the increasing width of the confidence intervals. This approach demonstrated that the ARIMA model is a suitable tool for short-term forecasting of price time series, as confirmed by other academic studies. At the same time, it was shown that the forecast remains sensitive to external factors not captured by the model.

The third research question focused on the development of wheat and selected wheat-based product prices since the beginning of the conflict in Ukraine. The results showed that the prices of all observed commodities increased significantly after the outbreak of the war, reaching their highest values between May and June 2022. Flour prices increased even faster than wheat prices, which corresponds with findings from studies examining the impact of price shocks on agricultural markets.

The limitations of the research primarily consisted of the use of data from a single source (SAIF), the absence of seasonal adjustment, and the limited ability of the forecasting model

to capture unexpected external shocks. Nevertheless, the obtained results were sufficiently reliable to answer the research questions and achieve the aim of the study. Therefore, the defined objective was fully accomplished.

The contribution of this study lies in the detailed evaluation of wheat price developments over a long time period, the identification of the impact of recent crisis events, and the creation of a forecast that may serve as a basis for decision-making by stakeholders in the agricultural and food sectors. The results also demonstrate that price development is complex and sensitive to a range of external factors, which creates opportunities for future research using more advanced models or a broader set of input variables.

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