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DIESEL PRICE DYNAMICS AMID THE RUSSIAN FOSSIL FUEL CRISIS: INSIGHTS FROM SLOVAKIA

LUKAS VETESKA
COMENIUS UNIVERSITY BRATISLAVA, FACULTY OF MANAGEMENT
ODBOJÁROV 10, P.O.BOX 95, 820 05 BRATISLAVA, SLOVAKIA, EMAIL: LUKAS.VETESKA@FM.UNIBA.SK, ORCID: 0009-0000-1788-1404

MARTINA CHRANCOKOVA
COMENIUS UNIVERSITY BRATISLAVA, FACULTY OF MANAGEMENT
ODBOJÁROV 10, P.O.BOX 95, 820 05 BRATISLAVA, SLOVAKIA, EMAIL: MARTINA.CHRANCOKOVA@FM.UNIBA.SK, ORCID: 0000-0002-2778-2175

EMILIA PALKECHOVA
COMENIUS UNIVERSITY BRATISLAVA, FACULTY OF MANAGEMENT
ODBOJÁROV 10, P.O.BOX 95, 820 05 BRATISLAVA, SLOVAKIA, EMAIL: EMILIA.PALKECHOVA@FM.UNIBA.SK, ORCID: 0009-0005-7065-9518

Abstract
The Russian fossil fuel crisis has precipitated significant disruptions in global energy markets, amplifying concerns about energy security and inflationary pressures, particularly in countries heavily reliant on Russian energy imports like Slovakia. This paper aims to analyse the dynamics of diesel prices and their impact on inflation in Slovakia against the background of the Russian fossil fuel crisis. To achieve the paper's aim, the paper mainly focuses on the causal relationships and the extent of the impact of diesel prices on inflation in 2020-2023. In addition to analysis, synthesis and generalisation, advanced econometric techniques are used. The findings indicate a strong correlation between diesel prices and inflation, with approximately 70.4% of the variability in the inflation rate explained by changes in diesel prices. This research provides valuable insights for policymakers, highlighting the importance of energy diversification, enhancing energy security, and implementing targeted subsidies to mitigate the adverse effects of diesel price volatility on inflation. The paper underscores the critical need for comprehensive strategies to manage economic stability in the face of geopolitical tensions and energy market disruptions.
Keywords: diesel, fuel crisis, energy security, price dynamics, advanced econometric analysis, inflation.

INTRODUCTION

The Russian fossil fuel crisis refers to disruptions in the supply of oil, natural gas, and other energy resources from Russia driven by geopolitical tensions, conflicts, or trade disputes. As one of the world's largest exporters of fossil fuels, Russia plays a pivotal role in global energy markets. Any disturbances in its energy supply can reverberate worldwide, affecting energy prices and supply chains. The Russian oil crisis has significantly impacted Europe since the invasion of Ukraine in early 2022. The European Union responded with a series of sanctions to reduce dependency on Russian fossil fuels, including a partial embargo on Russian crude oil and petroleum products. These sanctions, which took effect in December 2022 and February 2023, respectively, led to a dramatic decrease in Russian oil imports by the EU. By the end of 2022, Russian seaborne crude oil exports to the EU had fallen by almost 70% as the EU redirected its oil supply chains to other countries, such as the United States and Norway (Cahill, 2022; Cannistrà et al., 2022; European Central Bank, 2023; Das et al., 2025).

LITERATURE REVIEW

The crisis poses significant challenges for countries heavily reliant on Russian energy imports, like Slovakia. Slovakia imports a substantial portion of its oil, natural gas, and other energy resources from Russia, making it vulnerable to supply disruptions and price fluctuations. The uncertainty surrounding the availability and cost of energy resources exacerbates concerns about energy security and economic stability (Oravcova, 2023).

Diesel is a vital fuel in Slovakia, powering many transportation fleets, including trucks, buses, and agricultural machinery. Diesel is widely used in various industries, such as manufacturing, construction, and logistics. Given its extensive usage across different sectors, diesel prices, directly and indirectly, impact economic activities and consumer behaviour (Liptakova, 2024).

Fluctuations in diesel prices can influence production costs, transportation expenses, and consumer prices. Moreover, diesel prices can affect consumer purchasing power, particularly for goods and services with high transportation costs. Therefore, changes in diesel prices are closely monitored by technology leaders, policymakers, businesses, and consumers alike due to their significant economic implications (Manera and Cologni, 2005; Kpodar and Liu, 2021; Konvit, Jaseckova & Vartiak, 2023).

Changes in diesel prices directly influence consumer spending and behaviour, making them critical factors in marketing strategy development. As diesel prices rise, transportation and logistics costs increase, leading to higher prices for goods and services. This impacts consumer purchasing power, often shifting behaviour towards prioritising essential items over discretionary spending. Marketing strategies must adapt to this shift by emphasising affordability and value in messaging. For example, promotions such as discounts, loyalty programs, special projects or bundled offers can help consumers manage their expenses while maintaining brand loyalty (Vartiak, 2015; Watson and Lavack, 2013; Garbarova & Vartiak, 2022).

Additionally, businesses may need to re-evaluate product assortments, focusing on cost-effective options or smaller pack sizes to appeal to budget-conscious buyers. Consumer behaviour during fluctuating diesel prices also provides valuable insights into preferences and priorities, enabling marketers to refine targeting and segmentation. Understanding these dynamics allows companies to respond effectively and ethically, ensuring their offerings remain relevant and appealing amidst economic pressures (Eagle, Osmond, McCarthy, Low and Lesbirel, 2017; Jaseckova, Konvit & Vartiak, 2022).

Recent studies highlight the intricate relationship between oil prices and macroeconomic variables. Upadhyaya, Nag, and Mixon (2023) examine how oil prices affect key macroeconomic factors in India, finding significant impacts on aggregate output, stock indices, consumer prices, and exchange rates. Another research by Bernoth et al. (2022) explores the influence of oil prices on inflation and economic activity amid crises, emphasising the importance of energy prices in driving inflationary pressures and economic outcomes. Przekota and Szczepańska-Przekota (2022) investigate the pro-inflationary effects of oil prices on Poland's economy. The research analyses how fluctuations in oil prices contribute to inflationary pressures, emphasising the significant role of the oil market in shaping the country's inflation dynamics. Using empirical data and econometric models, the authors demonstrate that rising oil prices lead to higher consumer prices, underlining the importance of monitoring oil price movements for effective inflation management.

Research by Kilian (2018) and Jones (2014) emphasises the impact of geopolitical tensions on energy markets and price volatility. Geopolitical events, such as conflicts or supply disruptions, can lead to heightened uncertainty and fluctuations in energy prices. These disruptions can have far-reaching consequences for global energy supply chains, affecting energy prices, economic stability, and inflationary dynamics in energy-importing countries.

Hamilton's paper examines the 2007-2008 oil price surge, which stemmed from strong demand amid stagnating production, contrasting it with previous supply-disruption shocks. Despite different causes, the economic impacts mirrored earlier shocks, notably reducing consumption and domestic automobile purchases. These declines significantly contributed to the U.S. recession from 2007 Q4 to 2008 Q3. Hamilton concludes that high oil prices were a significant factor in this recession, similar to past episodes (Hamilton, 2009).

Kilian and Park (2009) investigate the effects of oil price shocks on the U.S. stock market, differentiating between demand-driven and supply-driven oil price changes, while Vartiak and Garbarova (2024) analysed KPIs. They find that demand-driven shocks have a more pronounced impact on stock returns compared to supply-driven shocks, with the nature of the shock influencing sector-specific stock responses. The research highlights the complex relationship between oil prices and stock market performance.

Farzanegan and Markwardt (2009) analyse the dynamic relationship between oil price shocks and significant macroeconomic variables in Iran, an oil-exporting country. Their research reveals a positive correlation between oil price increases and industrial output, alongside inflationary effects and evidence of Dutch Disease, where the domestic currency appreciates. This research provides insights into how oil price fluctuations influence economic growth and inflation, highlighting the complex interplay between natural resource wealth and macroeconomic stability.

Barro's paper delves into the interaction between oil prices and inflation within the broader context of macroeconomic theory. Barro examines how fluctuations in oil prices can lead to significant changes in inflation rates, impacting economic stability. He explores the mechanisms through which oil price shocks propagate through the economy, affecting both the supply and demand sides. The discussion includes the historical context of oil price spikes and their inflationary consequences, emphasising the importance of understanding these dynamics for effective monetary policy. Barro highlights the role of central banks in mitigating the inflationary impact of volatile oil prices through targeted policy measures (Barro, 2016).

Another research finds that shocks to economic activity related to oil prices have a more durable effect on inflation expectations and actual inflation than other types of oil price shocks. This discovery contributes to the broader discourse about the role of oil prices in explaining the absence of deflation during the Great Recession, suggesting that the relationship between oil prices and inflation is complex and influenced by underlying market conditions. Using a structural VAR model in the research provides a methodological framework for analysing the transmission of these shocks through actual oil prices (Bordo, Fraunin & Wright, 2023).

Further research found that gasoline price shocks tend to have a more persistent and broader impact on inflation in developing economies than in advanced economies. This suggests that when retail fuel prices rise, it significantly underestimates the pass-through to inflation if one were only to consider crude oil prices. Furthermore, all households experience a decline in purchasing power when fuel prices increase, but this effect is more pronounced and longer-lasting in developing countries (Kpodar & Liu, 2021).

Additionally, Gagliardone & Gertler (2023) highlight the role of oil price shocks and monetary policy in the persistence of inflation surges. Specifically, their research pointed out the complementarity between the use of oil and labour in production and consumption, which amplifies the impact of oil shocks on inflation when combined with wage rigidity.

While the literature has extensively analysed the general relationship between energy prices and inflation, there is a gap in research explicitly addressing the impact of geopolitical events, such as the Russian fossil fuel crisis, on energy markets and inflation dynamics in countries like Slovakia.

The absence of specific research on the impact of the Russian fossil fuel crisis on energy markets and inflation dynamics in countries like Slovakia underscores the need for comprehensive analysis tailored to this unique context. By integrating insights from studies on energy prices, inflation, and geopolitical events, researchers can develop a framework to assess the specific implications of the Russian fossil fuel crisis on Slovakia's economy. This paper aims to fill this gap by examining the interplay between diesel prices, inflation, and the broader economic ramifications of the crisis in Slovakia.

In summary, while existing literature provides valuable insights into the general relationship between energy prices and inflation, there is a notable gap in research explicitly addressing the impact of geopolitical events like the Russian fossil fuel crisis on energy markets and inflation dynamics in countries like Slovakia. This paper aims to address this gap by offering a comprehensive analysis tailored to the crisis's unique context, drawing on existing literature on energy economics, inflation, and geopolitical tensions.

METHODOLOGY

The subject of this paper is the country of Slovakia, located in the centre of Europe. Slovakia is highly influenced by international politics and the political situation of its neighbouring countries and other countries. Since 2004, it has become part of the EU and thus part of its strategy. However, it also has essential treaties and interconnections with other countries outside the EU. Slovakia is directly dependent on raw materials such as diesel.

This paper aims to investigate the impact of diesel price fluctuations on inflation in Slovakia within the context of the Russian fossil fuel crisis. By employing advanced econometric techniques and analysing empirical data, the paper seeks to uncover the causal relationships between diesel prices and inflationary pressures, offering valuable insights for policymakers. The paper aims to comprehensively understand how geopolitical tensions and energy market disruptions influence economic stability, focusing on developing strategies to mitigate the adverse effects on Slovakia's economy.

This paper adopts a comprehensive methodological approach to investigate the relationship between diesel prices and inflation in Slovakia, particularly in the Russian fossil fuel crisis. The analysis begins with descriptive statistics to summarise and identify key trends, patterns, and variations in the data. This step provides a foundational understanding of how diesel prices and inflation behave over time, highlighting their general tendencies and variability. Building on these descriptive insights, regression analysis examines the strength, direction, and nature of the relationship between the variables. Additionally, ANOVA analysis is used to assess the overall significance of the regression model, ensuring a rigorous evaluation of the relationship between diesel prices and inflation.

The paper utilises data from the Slovak Statistical Office, Eurostat, and the European Central Bank, focusing on diesel prices, inflation rates, and other relevant economic indicators from 2020 to 2023. This period captures the significant impact of the Russian fossil fuel crisis and subsequent economic developments. Additionally, supplementary data on geopolitical events, policy changes such as EU sanctions on Russia, and other contextual information influencing energy markets are included to provide a complete picture.

The paper includes a comparative analysis of diesel prices and inflation trends in Slovakia and neighbouring countries such as Czech Republic, Poland, Austria, and Hungary. Differences in excise duties, VAT rates, and net diesel prices are analysed to contextualise Slovakia's situation within the region.

Based on the results, targeted policy measures are proposed to mitigate inflationary pressures. Recommendations include diversifying energy sources, enhancing energy security, implementing subsidies, and strengthening regulatory frameworks.
We want to prove a statistically significant relationship between the selected variables in our data. Therefore, the hypothesis is: The relationship between the price of diesel and inflation in Slovakia is statistically significant.

RESULTS AND DISCUSSION

Comparison Methods in Selected Countries

First, we examined the Excise Duty, net price and VAT indicators in our country and neighbouring countries (see Figure 1).

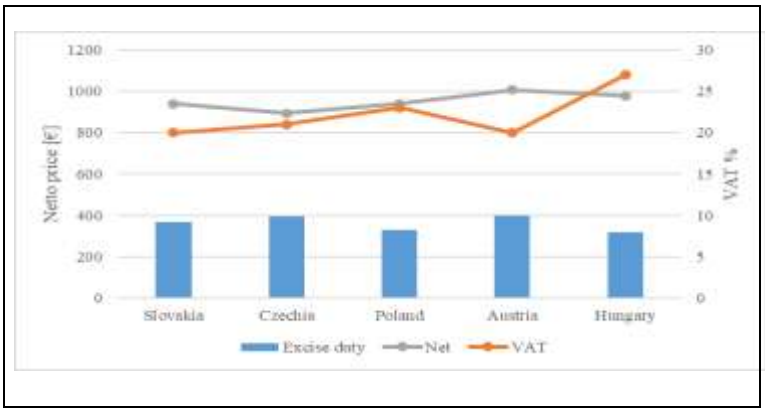

FIGURE 1 Comparison of Excise Duty, Netto price, and VAT in Selected Countries
SOURCE: OWN PROCESSING BASED ON THE DATA BY EUROSTAT

From the bar graph, we can observe the excise duty charged by each country. Slovakia appears to have the lowest excise duty, while Austria has the highest. Czech Republic and Poland have almost similar levels of excise duty, marginally higher than Slovakia, and Hungary stands in the middle of the range.
The net price doesn't vary dramatically among the countries, suggesting that the base price before tax is relatively stable across the region. However, there is a noticeable increase in the net price for Austria and Hungary.
Regarding VAT, Hungary stands out with the highest rate, which exceeds 25%. The VAT rate for Slovakia, Czech Republic, and Poland is closely clustered between 20-25%, with Poland being slightly higher. Austria has one of the highest net prices and has a VAT rate comparable to Slovakia and Czech Republic.
Overall, consumers in Hungary face the highest taxation in terms of VAT and excise duty, whereas Slovakia has the most favourable combination of lower excise duty and moderate VAT. Despite a higher net price, Austria keeps its VAT in the mild range, similar to Slovakia and Czech Republic. This chart helps understand the breakdown of diesel prices and how taxes contribute to consumers' final price at the pump.
Second, we compared the Price of Diesel in Selected countries (see Figure 2).

FIGURE 2 Comparison of the Price of Diesel in Selected countries

SOURCE: OWN PROCESSING BASED ON THE DATA BY EUROSTAT.

Observing the trends, the price of diesel and inflation rates in Slovakia and Czech Republic appear to follow similar patterns. Initially, diesel prices and inflation rates increase in tandem, which suggests that as the cost of goods goes up, it may contribute to the overall increase in inflation. This is particularly noticeable in the middle of the timeline, with a pronounced peak for diesel prices and inflation rates, indicating a period of significant economic pressure.
After the peak, both the diesel prices and inflation rates for both countries show a decline, which again seems correlated. This correlation might indicate that a decrease in the price of a significant commodity like diesel can have a deflationary effect on the economy, potentially easing inflation pressures.
For Slovakia, the diesel price and inflation rate curves are very close throughout the period, possibly indicating a strong relationship between fuel prices and the overall inflation in the country. While following a similar trend, Czech Republic seems to have a slightly more pronounced variance between diesel prices and inflation rates. This could mean that other factors, besides diesel prices, may also significantly impact Czech Republic's inflation.
In summary, the relationship between diesel prices and inflation in the chart suggests that changes in the price of diesel are a contributing factor to inflation in both countries. The data indicates that when diesel prices rise, inflation tends to increase as well, and when diesel prices fall, inflation rates tend to decrease shortly after. This relationship highlights the importance of fuel prices as a component of economic indicators and their potential impact on a country's cost of living and purchasing power.
Third, we looked at the consumption of diesel and the price of diesel in Slovakia (see Figure 3).

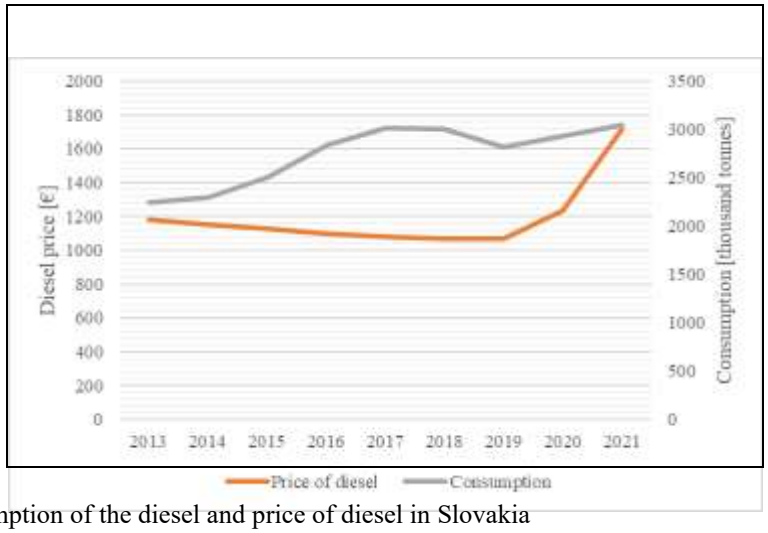

FIGURE 3 Consumption of the diesel and price of diesel in Slovakia
SOURCE: OWN PROCESSING BASED ON THE DATA BY EUROSTAT.

The graph illustrates two main trends in Slovakia from 2013 to 2022: the average price of diesel in Euros and diesel consumption in thousand tonnes. Initially, there was a noticeable upward trend in fuel consumption, from just over 1500 thousand tonnes in 2013 to nearly 2900 by 2017. This increase likely reflects factors such as economic growth, increased industrial activity, or more widespread use of vehicles during this period.
From 2018 onwards, fuel consumption levels off, maintaining a relatively stable pattern of around 3000 thousand tonnes, with minor fluctuations. This suggests that after several years of growth, fuel usage has stabilised, possibly due to reaching a balance between demand and the influences of economic and infrastructural development.
In 2020, the data indicates a minor dip in consumption, which could be linked to the global economic slowdown and travel restrictions imposed during the COVID-19 pandemic, highlighting how external events can impact national consumption patterns. Following this dip, consumption returns to its previous levels, indicating a recovery and return to pre-pandemic activity levels.
The graph reveals a correlation between price and consumption, particularly around 2021 and 2022, where diesel prices surged significantly, yet consumption also steadily increased. This suggests that despite rising costs, the demand for diesel remained strong or even increased. The rise in consumption despite increasing prices could indicate economic growth, increased industrial activity, or higher transportation needs within the country.

Relationship between Prices of Diesel and Inflation

The descriptive statistics reveal key differences in diesel prices and inflation trends between Slovakia and the Czech Republic from 2020 to early 2024. On average, diesel prices in Slovakia were slightly higher at 1403.49 Eur compared to 1393.81 Eur in the Czech Republic. Inflation in the Czech Republic was notably higher at 8.03% compared to 6.81% in Slovakia, indicating more substantial inflationary pressures in the Czech market. Regarding volatility, diesel prices in both countries showed similar variability, with slightly higher fluctuations in the Czech Republic (292.18 Eur) than in Slovakia (276.05 Eur). Inflation in the Czech Republic also exhibited greater volatility (5.80%) than in Slovakia (5.04%), reflecting a more pronounced inflationary environment. The lowest recorded diesel prices were 1000.2 Eur in Slovakia and 940.19 Eur in the Czech Republic, while the highest prices reached 1902.75 Eur in Slovakia and 1925.05 Eur in the Czech Republic. Inflation ranged from 2.1% to 19.1% in the Czech Republic and 0.7% to 15.4% in Slovakia. These findings highlight that, while both countries experienced similar trends in diesel prices, the Czech Republic saw more significant inflation spikes and greater overall volatility (more in Table 1).

TABLE 1 Descriptive Statistics about the Price of Diesel

	Price of diesel SK [€]	*Inflation SK [€]*	Price of diesel CZ [€]	*Inflation CZ [%]*
Count	51.00	*51.00*	51.00	*51.00*
Mean	1403.49	*6.81*	1393.81	*8.03*
Std	276.05	*5.04*	292.18	*5.80*
Min	1000.20	*0.70*	940.19	*2.10*
25%	1172.17	*2.10*	1130.88	*3.10*
50%	1427.60	*4.80*	1398.68	*4.80*
75%	1610.48	*11.55*	1572.01	*12.85*
Max	1902.75	*15.40*	1925.05	*19.10*

Source: own processing based on the data by Eurostat.

The descriptive statistics summarise the central tendencies and variability of Slovakia's diesel price and inflation. The mean diesel price is €1403.49, with a standard deviation of €276.05, indicating considerable variability. Inflation has a mean value of 6.81%, with a standard deviation of 5.04%, showing similar relative fluctuations. The high variability in diesel prices and inflation reflects external influences, likely linked to geopolitical tensions and market disruptions during the analysed period.

Inflation in Slovakia starts relatively low at the beginning of 2020. It remains reasonably stable until the start of 2021 when it increases steadily. This increasing trend continues, reaching its peak towards the end of 2021 and the beginning of 2022. After this peak, inflation shows a sharp decline and then appears to stabilise at a level higher than the initial figures from 2020.

The price of diesel began at a moderate level in 2020. There is a noticeable dip early in the period, which could correspond to the onset of the COVID-19 pandemic and associated economic impacts. Following this dip, the diesel price steadily rises throughout 2021 and 2022. The peak for diesel prices aligns closely with the peak of inflation, suggesting a possible correlation. After the peak, diesel prices also decline but less sharply than inflation, indicating a slower rate of change.

Both the inflation rate and diesel prices show an increase from 2021 into 2022, suggesting they may be correlated during this period, possibly influenced by the same economic factors. The subsequent decline in both metrics indicates a response to changing economic conditions or interventions.

In the following graph, we see inflation and the price of diesel in Slovakia from 2020 to 2023. This figure highlights the relationship between these two critical economic variables. Focusing on these variables is essential due to their significant economic impact, as diesel prices influence production costs, transportation expenses, and consumer prices, directly affecting inflation. The period also includes the Russian fossil fuel crisis, which disrupted energy supplies and increased price volatility, emphasising the need to understand these effects on domestic inflation.

FIGURE 4 Trends in Inflation and Diesel Prices in Slovakia
SOURCE: OWN PROCESSING BASED ON THE DATA BY EUROSTAT.

TABLE 2 Correlation analysis

		Price of Diesel SK	Inflation SK
Pearson Correlation	Price of diesel SK	*1.000*	.839
	Inflation SK	*.839*	1.000
Sig. (1-tailed)	Price of diesel SK	.	<.001
	Inflation SK	*.000*	.
N	Price of diesel SK	*51*	51
	Inflation SK	*51*	51

Source: own processing.

This chart suggests a significant positive relationship between the price of diesel and the inflation rate in Slovakia, indicating that as diesel prices go up, the inflation rate also tends to go up. However, one must consider other economic variables and the broader context to understand the relationship entirely. Also, the predictive power of this model is limited to the data range provided; extrapolating beyond this range would be speculative and could lead to inaccurate predictions.
The Pearson correlation coefficient between the price of diesel and inflation is 0.839, indicating a robust positive relationship. As diesel prices increase, inflation rates tend to rise correspondingly.
This analysis suggests some relationship between diesel prices and inflation in Slovakia during this period. However, without more context, such as external economic events, policy changes, or international market conditions, it's difficult to attribute causality or fully explain the trends. Therefore, we first examine this relationship through a regression analysis between diesel prices and inflation in Slovakia (more in Figure 5).

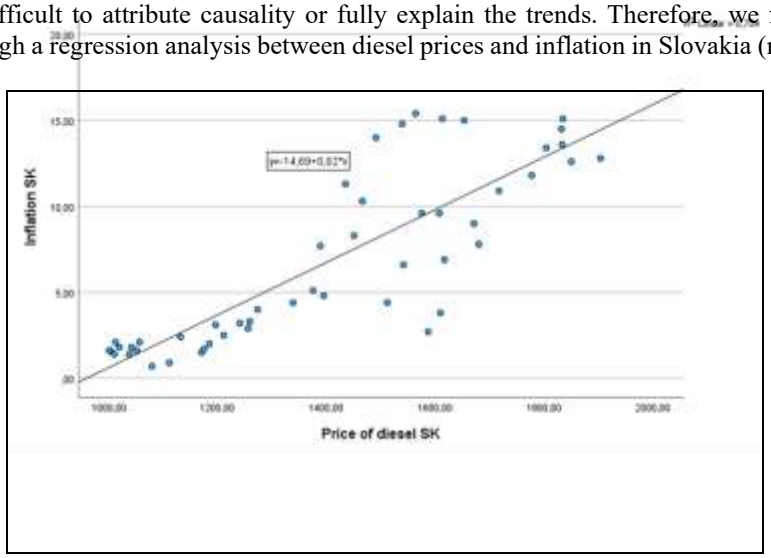

FIGURE 5 Regression Analysis of Diesel Prices and Inflation in Slovakia
SOURCE: OWN PROCESSING BASED ON THE DATA BY EUROSTAT.

The horizontal axis represents the diesel price, with values ranging from around 900 € to 1900 € per 1000 litres. The vertical axis represents the inflation rate in Slovakia, with values ranging from 0 to approximately 18 per cent. The regression line equation is given by y = 0.02x - 14.688. This equation implies that for every unit increase in the diesel price, the inflation rate is expected to increase by 0.0153 percentage points after accounting for the model intercept. The R^2 value is 0.704, indicating that approximately 70.4% of the variability in the inflation rate can be explained by the changes in diesel prices according to this linear model. This is significant, suggesting a strong correlation between diesel prices and inflation in this dataset.
A few points are distant from the regression line, indicating that they are outliers or that there may be other factors influencing inflation that are not captured by diesel prices alone.

TABLE 3 Model Summary of Regression Analysis

Model	R	*R Square*	Adjusted R Square	*Std. Error of the Estimate*	F Change	*df1*	df2	*Sig. F Change*	Durbin-Watson
1	,839a	,704	,698	*151,71091*	116,538	*1*	49	*<.001*	,165

Source: own processing.

TABLE 4 ANOVA analysis of Regression Analysis

Sum of Squares		*df*	Mean Square	*F*	Sig.
Regression	2682259,705	1	2682259,705	*116,538*	<,001b
Residual	1127793,841	49	23016,201		
Total	3810053,545	50			

Source: own processing.

The model summary highlights a strong positive correlation between diesel prices and inflation, as indicated by the high R-value. The R-squared value demonstrates that a significant portion of the variability in diesel prices is explained by inflation, with the adjusted R-squared further confirming the model's reliability without overfitting. The standard error of the estimate provides a measure of the model's predictive accuracy, though improvements could be achieved with a lower value. However, the low Durbin-Watson statistic suggests positive autocorrelation in the residuals, which may affect the model's validity. Addressing this issue through additional predictors or adjustments, such as time-series modelling, and conducting residual diagnostics, could enhance the model's robustness and predictive accuracy.
The ANOVA analysis reveals a statistically significant regression model ($F = 116.538$, $p < 0.001$), confirming that inflation predicts diesel price changes significantly. The sum of squares for regression (2682259.705) is substantially higher than the residual (1127793.841), further validating the model's predictive strength. The statistically significant F-statistic provides strong evidence of a meaningful relationship between the variables. The large explained variance highlights the importance of inflation as a driver of diesel price changes, underlining its economic implications.
The results of the regression analysis confirmed the hypothesis that: The relationship between the price of diesel and inflation in Slovakia is statistically significant.

RECOMMENDATIONS

In response to the challenges posed by the Russian fossil fuel crisis and its implications for diesel prices and inflation, policymakers in Slovakia need to adopt proactive measures to mitigate economic risks and ensure stability. Based on the findings of this paper, key recommendations focus on enhancing energy security, stabilising the economy, and mitigating inflation.

Diversifying energy sources
Invest in renewable energy - Slovakia should accelerate investments in renewable energy sources such as solar, wind, and hydropower. This diversification will reduce reliance on fossil fuels and enhance energy security.
Promote energy efficiency - implement programs and incentives to improve energy efficiency in industries, transportation, and households. Reducing energy consumption can help mitigate the impact of volatile diesel prices on the economy.
Support research and development - invest in research and development of alternative energy technologies and infrastructure. Supporting innovation in energy storage, smart grids, and clean technologies can facilitate a transition to a more sustainable energy system.

Strengthening Energy Security

Enhance domestic production - encourage domestic exploration and production of energy resources, including biofuels and other renewable sources, to decrease import dependency.

Diversify import sources - establish and strengthen trade relationships with a broader range of countries to diversify energy import sources. Reducing reliance on a single country, such as Russia, can decrease vulnerability to supply disruptions.

Strategic reserves - increase the strategic reserves of diesel and other critical fuels to buffer against supply shocks. Maintaining adequate reserves can provide a safety net during periods of geopolitical instability.

Implementing Targeted Subsidies

Subsidise affected sectors - provide targeted subsidies to industries and sectors most affected by high diesel prices, such as transportation, agriculture, and manufacturing. These subsidies can help alleviate the cost burden and prevent significant price hikes for consumers. It reflects how businesses can align marketing strategies with consumer support programs to maintain loyalty and positive brand perception.

Support low-income households - offer financial assistance or subsidies to low-income households to offset the higher costs of transportation and goods resulting from increased diesel prices. Ensuring affordability for vulnerable populations is crucial for social stability.

Enhancing Regulatory Frameworks

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Support low-income households - offer financial assistance or subsidies to low-income households to offset the higher costs of transportation and goods resulting from increased diesel prices. Ensuring affordability for vulnerable populations is crucial for social stability.

Policy Coordination and Regional Cooperation

Coordinate with EU partners - Work closely with European Union partners to develop coordinated policies and strategies for energy security and market stability. Collaborative efforts can enhance the overall resilience of the region's energy supply.

Regional energy projects - participate in regional energy projects and initiatives, such as cross-border energy infrastructure and interconnectors, to improve energy flow and integration within the EU.

Share best practices - exchange knowledge and best practices with other countries facing similar challenges to develop effective strategies for managing energy price volatility and inflation.

Long-Term Economic Planning

Develop contingency plans - formulate and regularly update contingency plans to address potential energy crises. These plans should include strategies for maintaining economic stability during high energy price volatility periods.

Economic diversification - diversify the economy to reduce reliance on energy-intensive industries. Encouraging technology, services, and green sector growth can create a more resilient economic structure.

Public awareness campaigns - conduct public awareness campaigns to educate citizens and businesses about energy conservation and the benefits of renewable energy. Promoting a culture of energy efficiency can lead to broader societal support for sustainable practices. Marketing teams can design and execute these campaigns, emphasising energy efficiency and sustainability to align with Corporate Social Responsibility goals.

By implementing these recommendations, Slovakia can better navigate the complex challenges of diesel price volatility and geopolitical tensions. These measures will help stabilise inflation and enhance the country's energy security, economic resilience, and overall sustainability.

CONCLUSIONS

This paper comprehensively analyses the relationship between diesel prices and inflation in Slovakia, particularly in the context of the Russian fossil fuel crisis. Using advanced econometric techniques, including linear regression, descriptive analysis, the research highlights significant findings contributing to our understanding of economic dynamics during geopolitical tension and energy market disruptions.

The results indicate a strong positive correlation between diesel prices and inflation in Slovakia. The regression analysis reveals that approximately 70.4% of the variability in the inflation rate can be explained by

changes in diesel prices, underscoring the critical impact of fuel costs on the broader economy. Results suggest that diesel price fluctuations have predictive power over inflation rates, establishing a causal link in the economic context.

The analysis also underscores the heightened volatility and uncertainty in diesel prices due to the Russian fossil fuel crisis, which has exacerbated inflationary pressures in Slovakia. This volatility is attributed to supply disruptions, geopolitical tensions, and market speculation, all of which have far-reaching economic consequences.

Through comparative analysis, the paper highlights how Slovakia's diesel price and inflation trends align with those of neighbouring countries, yet also points out the unique vulnerabilities faced by Slovakia due to its high dependence on Russian energy imports. The policy analysis and scenario simulations provide valuable insights for policymakers, suggesting that measures such as diversifying energy sources, enhancing energy security, implementing targeted subsidies, and improving regulatory frameworks can mitigate the adverse effects of diesel price fluctuations on inflation.

In summary, this paper fills a crucial gap in the literature by thoroughly examining the interplay between diesel prices, inflation, and the broader economic ramifications of the Russian fossil fuel crisis in Slovakia. The findings offer practical insights for policymakers navigating the complex challenges of energy price volatility and geopolitical tensions. Future research should explore the long-term effects of sustained high diesel prices and the potential benefits of transitioning to renewable energy sources to enhance economic resilience and stability.

Diesel price volatility significantly impacts inflation through cost-push effects, where rising transportation and production costs increase product prices across supply chains. For marketing teams, this necessitates strategic adjustments to pricing, promotions, and product positioning to maintain competitiveness and consumer trust. Higher diesel prices compel marketers to balance profitability with affordability while transparently communicating the external factors driving price changes to manage consumer expectations. Promotional efforts often shift toward value-driven messaging, emphasising affordability, discounts, or bundled offers to appeal to price-sensitive consumers during inflationary periods. Adjusting product positioning is also critical; premium brands may justify higher prices by emphasising quality and durability.

Meanwhile, budget-focused segments can attract cost-conscious buyers with smaller pack sizes or economical options. Additionally, sustainability narratives, such as local sourcing or reduced transportation emissions, can resonate with environmentally conscious consumers. Proactive adaptation to diesel-driven inflation allows marketing teams to mitigate its effects while fostering brand loyalty and strengthening market positioning.

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REFERENCES

- Barro, R. J. (2016). Modern macroeconomics. *Journal of Economic Literature*, 54(2), 429–442.
- Bernoth, K., et al. (2022). Inflation, oil prices, and economic activity in recent crisis. *Economic Modelling. Advance online publication*. https://doi.org/10.1016/j.econmod.2022.04.014
- Bordo, M., Fraunin, M., & Wright, D. J. (2023). Inflation expectations, uncertainty, and the pass-through of oil price shocks. *Journal of International Money and Finance*.
- Cahill, B. (2022). *European Union imposes partial ban on Russian oil*. Center for Strategic and International Studies. https://www.csis.org/analysis/european-union-imposes-partial-ban-russian-oil
- Cannistrà, M., Agasisti, T., Amagir, A., Poder, K., Holz, O., Vartiak, L., & De Witte, K. (2022). A comparative analysis of financial literacy levels and initiatives among students in five European countries. *Research in Comparative and International Education*, 17(2), 246–280. https://doi.org/10.1177/17454999211066183
- Das, S., Mondal, S., Majerova, J., Vartiak, L., & Vrana, V. G. (2025). Tweet sentiments: Understanding X (Twitter) users' perceptions of the Russia-Ukrainian crisis on consumer behavior and the economy. *International Journal of Consumer Studies*, 49(1), e70009. https://doi.org/10.1111/ijcs.70009
- Eagle, L., Osmond, A., McCarthy, B., Low, D., & Lesbirel, H. (2017). Social marketing strategies for renewable energy transitions. *Australasian Marketing Journal*, 25(2), 141–148. https://doi.org/10.1016/j.ausmj.2017.04.006
- European Central Bank. (2023). *Oil price developments and Russian oil flows since the EU embargo and G7 price cap*. European Central Bank Economic Bulletin. https://www.ecb.europa.eu/press/economic-bulletin/focus/2023/html/ecb.ebbox202302_02~59c965249a.en.html
- Farzanegan, M. R., & Markwardt, G. (2009). The dynamic relationship between oil prices and the Iranian economy. *Energy Economics*, 31(1), 134–151. https://doi.org/10.1016/j.eneco.2008.08.003

- Gagliardone, L., & Gertler, M. (2023). Rising oil prices, loose monetary policy, and US inflation. *NBER Working Paper* (31263). https://www.nber.org/papers/w31263
- Garbarova, M., & Vartiak, L. (2022). Identification of customer's preferences as one of the main activities of destination management. *TEM Journal: Technology, Education, Management, Informatics*, 11(1), 159–163. https://doi.org/10.18421/TEM111-18
- Hamilton, J. D. (2009). Causes and consequences of the oil shock of 2007–08. *Brookings Papers on Economic Activity*, 215–261.
- Jaseckova, G., Konvit, M., & Vartiak, L. (2022). Vernadsky's concept of the noosphere and its reflection in ethical and moral values of society. *History of Science and Technology*, 12(2), 231–248. https://doi.org/10.32703/2415-7422-2022-12-2-231-248
- Kilian, L., & Park, C. (2009). The impact of oil price shocks on the U.S. stock market. *International Economic Review*, 50(4), 1267–1287.
- Konvit, M., Jaseckova, G., & Vartiak, L. (2023). A contemporary view of the planetary oikos through the prism of technology and management. *Meta-Research in Hermeneutics, Phenomenology and Practical Philosophy*, 15(2), 367–386.
- Kpodar, K. R., & Liu, B. (2021). The distributional implications of the impact of fuel price increases on inflation. *IMF Working Papers*, 2021(271). https://doi.org/10.5089/9781616356156.001
- Liptakova, J. (2024). Slovakia takes another step towards decarbonising road transport. *The Slovak Spectator.* https://spectator.sme.sk/business/c/slovakia-takes-another-step-towards-decarbonising-road-transport
- Manera, M., & Cologni, A. (2005). Oil prices, inflation and interest rates in a structural cointegrated VAR model for the G-7 countries. *Working Papers*. https://ideas.repec.org/p/fem/femwpa/2005.101.html
- Oravcova, V. (2023). *Energy without Russia: The consequences of the Ukraine war and the EU sanctions on the energy sector in Europe*. Friedrich-Ebert-Stiftung.
- Przekota, G., & Szczepańska-Przekota, A. (2022). Pro-inflationary impact of the oil market—A study for Poland. *International Journal of Financial Studies*, 11(4), 123. https://doi.org/10.3390/ijfs11040123
- Upadhyaya, K. P., Nag, R., & Mixon, F. G. Jr. (2023). Causal relationships between oil prices and key macroeconomic variables in India. *International Journal of Financial Studies*, 11(4), 143. https://doi.org/10.3390/ijfs11040143
- Vartiak, L. (2015). Achieving excellence in projects. In C. Bektas (Ed.), *Proceedings of the 4th World Conference on Business, Economics and Management (WCBEM-2015)* (Vol. 26, pp. 292–299). *Procedia Economics and Finance.* https://doi.org/10.1016/S2212-5671(15)00855-2
- Vartiak, L., & Garbarova, M. (2024). Key performance indicators for the creative industry. *Baltic Journal of Economic Studies*, 10(2), 14–23. https://doi.org/10.30525/2256-0742/2024-10-2-14-23
- Watson, L., & Lavack, A. M. (2014). Using social marketing to encourage the purchase of fuel efficient vehicles. In K. Avinash & K. Chinmaya (Eds.), *Dynamics of competitive advantage and consumer perception in social marketing* (pp. 253–277). IGI Global.