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Working paper #202602

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12 August, 2026

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Oil price Pass-Through during the US-Iran Conflict: Evidence from Daily Consumer Prices in Türkiye

Gökhan Şahin Güneş¹

Abstract

This paper examines the time-varying association between domestic fuel prices and consumer prices in an energy-importing emerging economy. Focusing on Türkiye during the US-Iran conflict, it uses daily consumer price data and a state-space model to estimate oil price pass-through (OPPT) in real time. The estimates suggest that OPPT varies over the sample. Before the conflict, the estimated relationship between domestic pump prices and consumer prices was small and statistically insignificant. The June 2025 episode coincides with a brief increase in the coefficient. A larger and statistically significant increase is observed during the 2026 escalation, which also coincides with the blockade of the Strait of Hormuz and a sharp rise in crude oil prices. The estimate peaks in late March 2026 and remains above its pre-conflict level after the ceasefire. Exchange rate pass-through, also, increases over the sample, indicating that fuel price and currency movements may have jointly contributed to inflationary pressures. The results suggest that imported energy dependence, exchange rate sensitivity, and inflation expectations may shape the persistence of inflationary responses to geopolitical energy disruptions. Also, they point to a possible role for expectation management, exchange rate stability, and transparent, temporary fuel tax smoothing.

Keywords: oil price pass-through, US-Iran war, inflation.

JEL codes: E31, E37, Q43.

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1. Introduction

Oil price fluctuations are a major source of macroeconomic instability, particularly, in energy-importing economies. Since the seminal contribution of Hamilton (1983), a large body of literature has shown that oil price shocks can affect output, inflation, external balances, and monetary policy conditions through both direct and indirect channels. The direct channel operates through fuel and energy prices included in the consumer price index whereas the indirect channel operates through production costs, transportation expenses, exchange rate pressures, and inflation expectations. The macroeconomic consequences of oil price movements depend on the source of the shock. Kilian (2009), for example, argues that oil price increases caused by global demand conditions differ from those caused by supply disruptions or precautionary demand arising from geopolitical uncertainty. This distinction is especially relevant when oil price movements stem from geopolitical tensions such as the US-Iran conflict.

The US-Iran conflict is a potentially important source of geopolitical uncertainty in oil markets because Iran is located near the Strait of Hormuz, one of the most strategically important routes of world for oil shipments. An escalation in tensions may raise concerns about supply disruptions, increase risk premium in crude oil markets, and contribute to sudden increases in international oil prices. Even when supplies are not immediately interrupted, expectations of future disruptions may generate precautionary demand and greater price volatility. Oil price movements associated with the US-Iran conflict may, therefore, be viewed as commodity price changes occurring in a setting of heightened geopolitical risk, with possible inflationary implications for oil importing countries.

Türkiye provides a relevant setting in which to examine this relationship. As a net importer of crude oil and natural gas, the country is exposed to developments in international energy markets. Higher global oil prices may feed into domestic inflation through fuel prices, transportation costs, administered energy prices, and producer prices. Moreover, because oil is priced in foreign currency, increases in crude oil prices may interact with exchange rate movements and add to domestic cost pressures. This interaction may be particularly relevant in Türkiye, where inflation has historically been sensitive to import prices, exchange rate fluctuations, and expectations. Existing studies document oil price pass-through (OPPT) at different stages of the pricing chain, from import and producer prices to consumer prices (Akcelik & Ögünç, 2016; Dedeoğlu & Kaya, 2014).

Examining the relationship between oil price movements associated with the US-Iran conflict and inflation is useful for several reasons. First, it contributes to the broader literature on the transmission of global oil price changes to domestic inflation by focusing on a period of heightened geopolitical risk. Although many empirical studies examine oil price fluctuations in general, fewer explicitly distinguish conflict-related supply concerns from movements driven by global demand or ordinary market fluctuations. This distinction may matter because geopolitical oil price movements can be abrupt, asymmetric, and strongly influenced by uncertainty. Choi et al. (2018), for example, show that increases in global oil prices are associated with measurable changes in domestic inflation in both advanced and developing economies although the magnitude and persistence vary across countries.

Second, the topic is relevant to monetary policy in Türkiye. In a high inflation environment, external cost shocks may become more persistent if they influence inflation expectations, wage-setting behavior, and pricing decisions of firms. An oil price increase associated with geopolitical conflict may, therefore, complicate the disinflation strategy of the Central Bank of the Republic of Türkiye (CBRT) by raising headline inflation and potentially weakening expectations even when domestic demand is stable. Evidence on the size and timing of OPPT can help inform the policy response. If the effect is temporary and confined largely to headline inflation, policymakers may be able to avoid an excessive response. If second-round effects appear to develop, a stronger response may be considered.

Third, the issue has implications for external vulnerability and macroeconomic stability. Higher oil prices may increase energy import bill of Türkiye, weaken the current account balance, and place pressure on the Turkish lira. These external pressures may, in turn, lead to an increase in inflation through the exchange rate channel. Therefore, US-Iran-related oil price movements can be considered not only as an energy price issue but also as part of a broader macroeconomic transmission process linking geopolitical risk, external balances, exchange rates, and inflation.

Finally, the analysis may be relevant beyond the Turkish case. Many emerging market economies share similar vulnerabilities, including dependence on imported energy, sensitivity to exchange rate movements, and relatively elevated inflation expectations. Experience of Türkiye may, therefore, offer useful evidence on how conflict associated oil price movements are transmitted in open emerging economies. By investigating the relationship between these movements and inflation in Türkiye, the study seeks to contribute to the literature on OPPT, improve understanding of inflation dynamics in energy importing economies, and provide evidence that may be useful to policymakers operating under geopolitical uncertainty.

This study seeks to contribute to the literature methodologically and empirically by examining the association between oil price changes and inflation in Türkiye during the US-Iran conflict using daily data and a state-space model. Its main contribution is to analyze OPPT within a dynamic framework that incorporates time-varying and unobserved components rather than relying solely on a fixed-coefficient model. This approach allows the analysis to identify periods in which the estimated relationship becomes stronger or weaker and to assess whether those changes appear temporary or persistent. Combining daily fuel price and financial variables with inflation dynamics in a state-space framework may also add to the literature on pass-through in energy-importing economies exposed to high-frequency geopolitical disturbances.

From a methodological perspective, the literature on Türkiye relies primarily on input-output models, vector autoregressions (VARs), structural VARs, rolling VARs, Phillips-curve frameworks, and asymmetric cointegration methods. Although these approaches provide valuable evidence on average effects, asymmetries, and regime dependence, they may be less well suited to describing high-frequency, event-specific changes in pass-through. Rolling VARs partially address time variation, but their estimates can be sensitive to the choice of window length. This limitation may be particularly relevant for geopolitical disturbances because the estimated transmission from oil prices to domestic inflation can change over relatively short periods.

This paper adopts a real-time perspective to examine consumer price movements in Türkiye during periods of oil price volatility associated with the US-Iran conflict. Using a time-varying state-space approach, it estimates daily OPPT. The estimated coefficients suggest three broad phases in the relationship between domestic fuel prices and consumer prices. During the pre-conflict phase, from January 2025 to early June 2025, OPPT is economically small and statistically insignificant, a pattern that may be consistent with relatively muted transmission under prevailing monetary and fiscal conditions. A temporary increase in the coefficient coincides with the Twelve-Day War in June 2025 and recedes as hostilities end and oil prices decline. A more persistent and statistically significant increase is observed around the escalation in February-March 2026. OPPT reaches its highest estimated level in late March 2026, following the peak in Brent crude prices and the blockade of the Strait of Hormuz. After the ceasefire, the estimate declines only gradually and remains above its pre-conflict level through the end of the sample in June 2026.

The paper has the following structure. Section 2 provides a literature review. Section 3 introduces the model and data. Section 4 reports the results. Section 5 concludes.

2. Literature Review

This section reviews the literature on the relationship between oil price fluctuations and inflation in Türkiye. Overall, the evidence suggests that oil price shocks affect domestic inflation although the strength, timing, and persistence of pass-through vary across price indexes, sectors, inflation regimes, policy settings, and empirical methods. Studies, generally, find that producer prices respond more strongly than consumer prices and that OPPT is characterized by asymmetry, time variation, sectoral heterogeneity, and policy sensitivity.

Early evidence suggests that oil price shocks have measurable effects on domestic prices although the size of the effect varies across periods, price indexes, and methodologies. Kibritçioğlu (1999), using the 1979, 1985, and 1990 input-output tables, analyzes the impact of a 20 percent crude oil price shock and finds that its inflationary effect declined over time, from 4.45 percent in 1979 to 1.66 percent in 1985 and 1.08 percent in 1990. Similarly, Berument and Taşçı (2002) show that the inflationary consequences of oil price changes depend not only on the initial energy price increase but also on broader cost and income dynamics, including wages, profits, interest payments, and rents. Akcelik and Öğünç (2016) examine the period from 2004 to 2014 and find that a 10 percent increase in international crude oil prices raises the consumer price index by 0.42 percentage points. Also, they show that the effect on producer prices is approximately twice as large as the effect on consumer prices. Consistent with this view, using data for 1990-2012, (Altunöz, 2022) find that a 1 percent increase in oil prices raises the CPI by 0.04 percent in the short run and the PPI by approximately 0.08-0.10 percent. In the long run, the estimated effects increased to 0.085 percent for the CPI and 0.15-0.16 percent for the PPI. In addition, their time-varying analysis suggests that pass-through to both consumer and producer prices increased over time. Similarly, Altunöz (2022) examines the long-run asymmetric effects of crude oil prices on the CPI and PPI in Türkiye for the period from 2001Q1 to 2021Q1. The results show that a 10 percent increase in crude oil prices raises the PPI by 2.2 percent whereas a 10 percent decline in international oil prices reduces the PPI by 9.4 percent. For consumer prices, a 10 percent increase in oil prices raises the CPI by 1.52 percent while reductions in oil prices do not have a statistically significant effect.

Several studies emphasize that OPPT is not constant across inflation regimes or structural periods. Çatik and Karacuka (2012) examine whether the impact of oil prices on inflation differs across regimes during the period from January 1994 to October 2009. They identify a high-inflation regime lasting until October 2002 and a low-inflation regime thereafter. Their results show that the cumulative pass-through from imported crude oil prices to wholesale prices within six months declined slightly from 13.7 percent in the high-inflation regime to 12.1 percent in the low-inflation regime. The decline is more pronounced for consumer prices for which pass-through falls from 9.7 percent to 2.8 percent. Yanıkkaya et al. (2015), using an augmented Phillips-curve framework for the period from 1990Q1 to 2013Q3. They identify a structural break in the relationship between oil prices and inflation in 2002Q2. Their results indicate that both short-run and long-run OPPT increased after the break.

Sectoral evidence further indicates that the transmission of oil price shocks is heterogeneous. Ekinci and Saygılı (2023) estimate OPPT to headline inflation, core inflation, and two-digit CPI sectoral inflation rates for the period from January 2003 to October 2022. Their findings show that pass-through varies substantially across sectors depending on their exposure to oil-related inputs and that the degree of pass-through has increased across sectors.

Other studies examine the role of oil prices and oil price volatility in broader inflation dynamics. Köse and Ünal (2021), using a structural vector autoregression model for the period from March 1988 to August 2019, show that shocks to oil prices and oil price volatility do not exert a strong influence in the initial months but become more important over longer horizons. Yilmazkuday (2022), focusing on the

drivers of Turkish inflation between January 2005 and August 2021, finds that OPPT reaches approximately 14 percent over a five-year horizon and that global oil prices explain around 40 percent of the variation in the inflation rate.

3. Model and Data

This section introduces the empirical model which is a time-varying local-level state-space model to examine the evolving correlates of daily consumer-price movements.

The use of a time-varying coefficient state-space model is motivated by the possibility that the relationship between consumer prices and macroeconomic variables changes over time. In economies characterized by volatile inflation, large exchange rate movements, energy price shocks, and shifts in global risk appetite, fixed-parameter models may impose an excessively restrictive structure. A constant-parameter specification assumes that the pass-through from macroeconomic variables to prices remains unchanged, an assumption that is unlikely to hold in such an environment. The state-space framework provides a flexible way to address this issue.

In a state-space model, the observed series is represented as a function of observable explanatory variables and unobserved time-varying coefficients. The coefficients are treated as latent states that evolve over time, typically, according to random-walk processes. This specification allows the data to indicate whether the effect of each explanatory variable strengthens, weakens, or changes sign over the sample period.

The Kalman filter is used to estimate these latent coefficients² recursively. This approach is useful for high-frequency inflation analysis because it tracks the evolution of estimated conditional relationships over time rather than imposing a single average coefficient over the full sample. The analysis relies on filtered rather than smoothed estimates. Filtered estimates use only information available up to time t , whereas smoothed estimates also incorporate future observations. Filtered estimates are, therefore, better suited to real-time or pseudo-real-time analysis because they reflect the information available to policymakers and economic agents at each point in time rather than providing an ex-post reconstruction.

In the analysis of this paper, the observation equation is as follows:

$$\pi_t = \mu_t + x_t' \beta_t + \varepsilon_t, \varepsilon_t \sim \mathcal{N}(0, H)$$

where π_t is the logarithm of daily consumer price index which is proxied by WebTUFE on day t , x_t is the vector of regressors, β_t is a vector of time-varying coefficients, and μ_t is the latent trend, which represents the time-varying baseline component of WebTUFE that is not explained by the included regressors. ε_t 's are residual terms which follow a normal distribution with the mean of 0 and the variance of H . The trend is modeled as a local linear model:

$$\mu_t = \mu_{t-1} + \eta_t, \eta_t \sim \mathcal{N}(0, Q_\mu).$$

The regression coefficients follow stochastic evolution equations of the random-walk form,

$$\beta_t = \beta_{t-1} + \omega_t, \omega_t \sim \mathcal{N}(0, Q_\beta)$$

where Q_β is a diagonal matrix which implies coefficient-specific time variation with no contemporaneous covariance restrictions across coefficient innovations.

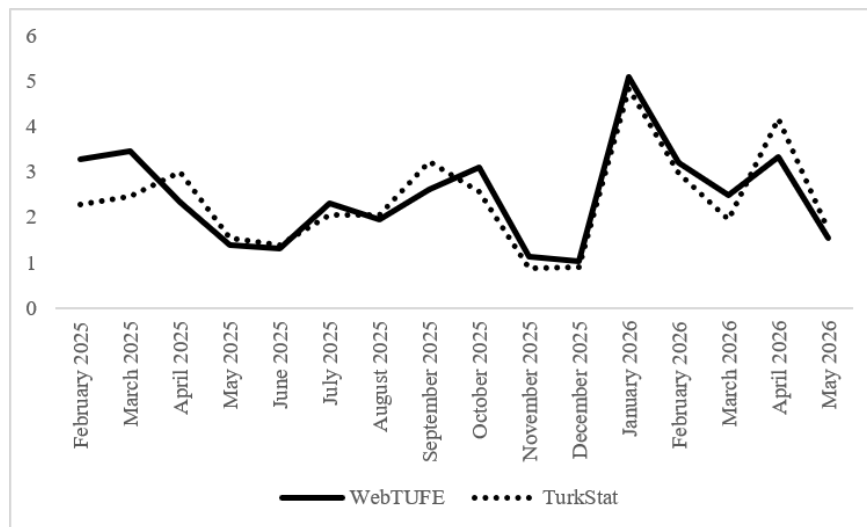
² The state-space model is estimated by using KFAS package in R.

The dependent variable is the logarithm of WebTUFÉ³. WebTUFÉ is a high-frequency, web-based alternative consumer price index (CPI) for Türkiye that seeks to approximate official CPI inflation by using daily online prices, TurkStat-compatible expenditure classifications, and official consumption-weight benchmarks.

Figure 1 compares monthly inflation rates calculated from WebTUFÉ with those reported by TurkStat. Because daily WebTUFÉ data are available only from December 31, 2024 onward, full-month changes can be calculated from February 2025 to May 2026, yielding 16 monthly observations.

The two series move closely together over the sample period. Average monthly inflation is 2.47 percent according to WebTUFÉ and 2.37 percent according to TurkStat. Both series record their largest monthly increase in January 2026, at 5.09 percent and 4.84 percent, respectively, and both show relatively low inflation in November and December 2025. The correlation between the two measures is 0.88.

Figure 1: Comparison of monthly inflation rates of WebTUFÉ and TurkStat



Source: www.webtufe.com and TurkStat

In addition to the time-varying level component, the model includes lagged values of the logarithms of the domestic pump fuel price, the exchange rate, credit default swap (CDS) spreads, and the VIX, the lagged change in the interest rate, and the lagged output gap derived from daily electricity consumption. The logarithmic specification allows the relevant coefficients to be interpreted as elasticities.

The main variable of interest is the domestic pump fuel price, which is used as a proxy for the domestic OPPT. Oil and fuel prices may be associated with consumer prices directly through fuel-related consumption items and indirectly through transportation, production, and distribution costs. Because the variable measures domestic pump prices in Türkiye, it captures the fuel costs faced by firms and consumers more directly than an international crude oil benchmark would.

International oil prices fluctuated sharply in 2025 and 2026. However, Türkiye's *eşel mobil* system, a sliding-scale fuel-tax mechanism, limits the one-to-one transmission of international oil price and exchange rate movements to domestic pump prices. When fuel costs rise, the government can reduce the special consumption tax (SCT) to moderate the increase in retail prices. When costs fall, the SCT

³ The data is obtained from <https://www.webtufe.com/>

can be raised again. Although the system reduces tax revenue, it can limit domestic fuel price volatility and inflationary pressure (Ozgur et al., 2021).

The study uses daily pump prices obtained from OPET⁴, a fuel-distribution company in Türkiye. It takes an equally weighted average of unleaded gasoline and diesel prices because these fuels account for most vehicles in the country. Fuel prices differ slightly across cities. Following Özmen and Akçelik (2017), the analysis uses prices for the European side of Istanbul, the most populous part of the Türkiye.

As Ozgur et al. (2021) explain, the final pump price paid by consumers in Türkiye can be calculated as follows:

$$\text{Final consumer price} = (\text{ex-refinery price} + \text{wholesaler margin} + \text{EMRA revenue share} + \text{distributor and dealer margin} + \text{lump-sum SCT}) \times (1 + \text{VAT}).$$

In this formula, VAT denotes value-added tax. The SCT is a fixed per-liter tax that changes infrequently, whereas VAT is applied at a rate of 20 percent. The ex-refinery price reflects the Mediterranean-Italian market price. The wholesaler margin, Energy Market Regulation Agency (EMRA) margin, distributor and dealer margins, and per-liter SCT are added to the ex-refinery price. VAT is, then, applied to this total to obtain the final consumer price.

The model incorporates other financial and economic variables. The exchange rate is included because exchange rate pass-through is a potentially important channel through which external and financial developments may be associated with domestic prices. In Türkiye, where imported inputs, foreign-currency pricing, and exchange rate expectations play an important role in price formation, depreciation may raise consumer prices through both direct import-price effects and indirect production-cost effects.

CDS is included as a measure of sovereign risk. Sovereign CDS spreads reflect the assessment of country risk. In emerging market economies, higher CDS spreads may be associated with tighter financial conditions, capital outflow pressures, exchange rate depreciation, and deteriorating inflation expectations.

VIX is included as a proxy for global financial uncertainty and risk aversion. The VIX reflects expected volatility in the US equity market and is widely used as an indicator of global risk sentiment. For emerging market economies, increases in global risk aversion can affect domestic prices indirectly through exchange rates, capital flows, risk premium, financing costs, and expectations. Including VIX allows the model to distinguish between domestic sovereign risk conditions, captured by CDS, and broader global risk conditions, captured by VIX.

The interest rate variable is included to account for monetary policy conditions. Interest rate changes may affect inflation through several channels, including aggregate demand, credit conditions, expectations, and the exchange rate. In principle, a higher interest rate may reduce inflationary pressure by weakening demand and anchoring expectations.

The output gap is included as a proxy for domestic demand-side inflationary conditions. In Phillips-curve-type models, a positive (negative) output gap indicates that economic activity is above (below) potential and may be associated with upward (downward) pressure on prices. In this study, the output gap is constructed from daily electricity consumption, which provides a high-frequency proxy for real economic activity. The paper uses electricity-consumption data released by EPIAS⁵.

⁴ The daily historical prices are obtained from <https://www.opet.com.tr/fiyat-arsivi>.

⁵ The daily electricity consumption data can be found on <https://seffaflik.epias.com.tr/home>

Daily electricity consumption is highly volatile and displays strong weekly seasonality. Following Cleveland et al. (1990), the study applies seasonal trend decomposition using LOESS (STL) to separate the series into trend, seasonal, cyclical, and residual components. The decomposition uses the following values for the parameters: period = 7, seasonal = 53, and trend = 53, with robust estimation. The sample covers the period from 31 December 2024 to 8 June 2026 and contains 525 daily observations. Electricity consumption represents total system demand. The daily series is used because it provides sufficient frequency to identify both gradual changes in electricity demand and systematic variation across the days of the week. This approach may be useful because conventional output indicators, such as GDP or industrial production, are, generally, available at lower frequencies and with publication lags. Daily electricity consumption may, therefore, help capture short-run fluctuations in economic activity that could be relevant for high-frequency inflation dynamics.

The cleaned electricity consumption series on day t is denoted by y_t . To separate changes in the underlying level of electricity consumption from regularly recurring short-term fluctuations, the daily series was decomposed using STL. The observed series was represented as:

$$y_t = T_t + S_t + R_t$$

where T_t is the trend component, S_t is the seasonal component, and R_t is the residual component. The trend captures gradual movements in the general level of electricity consumption over time. The seasonal component captures systematic fluctuations associated with the position of each observation within the weekly cycle. The residual component contains the variation that remains after accounting for both the trend and weekly seasonality. Because the observations are daily, the seasonal period parameter was set to seven. Therefore, the resulting seasonal component measures recurring day-of-week variation, including systematic differences between weekdays and weekends.

The decomposition was estimated using robust STL. Robust estimation reduces the influence of observations that deviate sharply from the surrounding pattern while retaining all observations in the sample. This feature is particularly useful for electricity consumption data because isolated events, including extreme weather, public holidays, outages, or unusual economic activity, may generate temporary spikes or declines that could otherwise distort the estimated trend and seasonal components. Because the observations are daily, the seasonal period parameter was set to seven. Therefore, the resulting seasonal component measures recurring day-of-week variation, including systematic differences between weekdays and weekends.

The STL smoothing parameters were selected through an out-of-sample validation procedure. The final 90 observations were reserved as a holdout period, and alternative seasonal and trend smoothing windows were evaluated using the remaining 435 observations. Candidate specifications were compared primarily based on the mean absolute error, while root mean squared error and trimmed root mean squared error were used as supplementary performance measures. The selected specification used a seasonal period parameter of 7, a seasonal smoothing window parameter of 53, and a trend smoothing window parameter of 53. Following parameter selection, the preferred model was re-estimated using the complete sample of 525 observations.

Three variables were obtained from the final decomposition. The variable T_t , reported the estimated underlying level of electricity consumption. The variable S_t , reported measures the estimated weekly deviation from that underlying level. The variable R_t measures the unexplained daily fluctuation. The fitted value of electricity consumption is given by $Y_t = T_t + S_t$ and the residual is calculated as $R_t = Y_t - (T_t + S_t)$. A positive seasonal value indicates that electricity consumption on a given date is expected to be above the underlying trend because of its position within the weekly cycle. A negative seasonal value

indicates expected consumption below the trend. Similarly, a positive residual indicates that actual electricity consumption exceeded the level predicted by the trend and weekly components, whereas a negative residual indicates that consumption was lower than predicted.

The level component is included to capture the latent baseline path of WebTUF_E that remains after controlling for the explanatory variables. This component is important because not all movements in WebTUF_E can be attributed to the observed regressors. Persistent inflationary dynamics, measurement characteristics of web-based prices, unobserved pricing behavior, and omitted slow moving factors may be reflected in the level term. By allowing the level component to vary over time, the model avoids forcing all changes in WebTUF_E to be explained by the included variables.

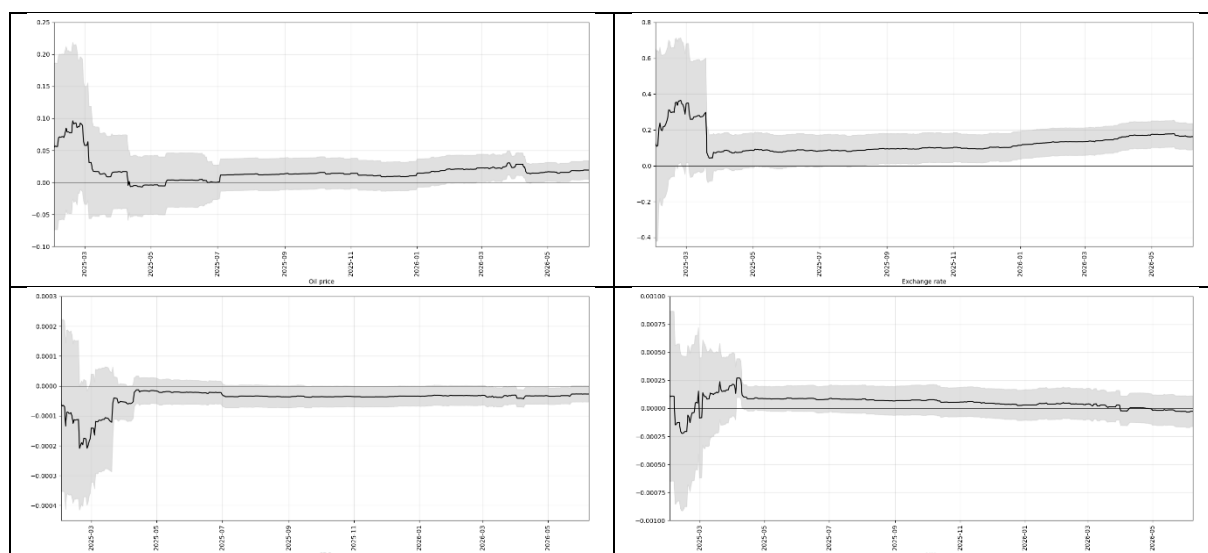
Finally, the model uses the first lags of the independent variables to mitigate contemporaneous simultaneity between WebTUF_E and its covariates. Price developments, exchange rates, risk premia, oil prices, and financial-market indicators may respond to one another within very short intervals. Lagging the regressors imposes a temporal ordering in which the explanatory variables precede the dependent variable, which is useful in a high-frequency setting. Nevertheless, the use of lags should be interpreted as reducing, rather than resolving, endogeneity concerns.

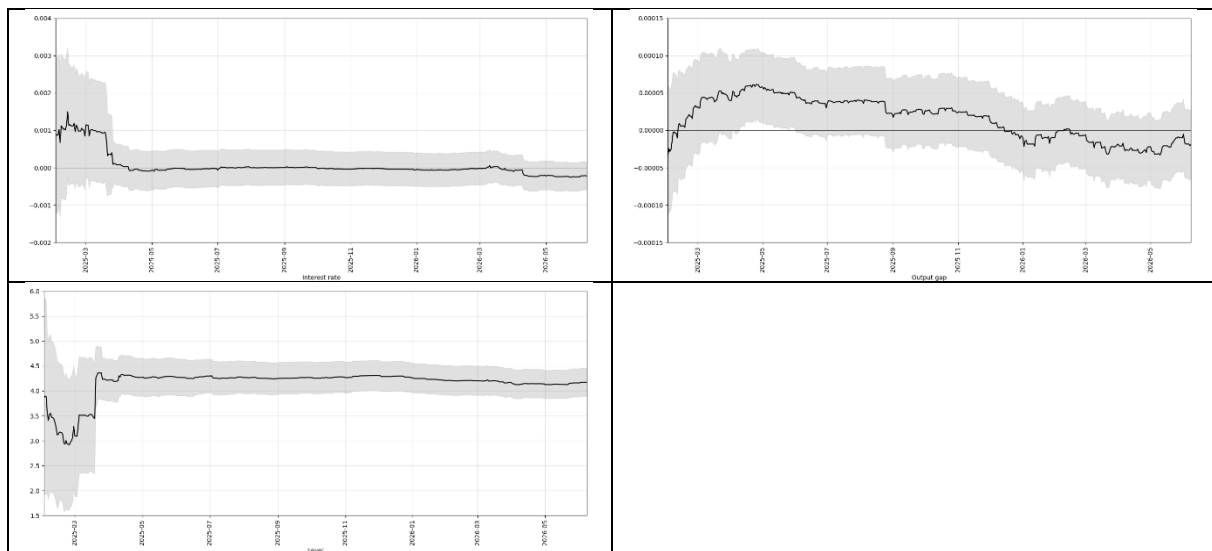
4. Results

The model is estimated from December 31, 2024, to June 8, 2026. The starting date is determined by the availability of WebTUF_E data, and the sample contains 525 daily observations.

Figure 2 presents the estimates. The time-varying parameter state-space model indicates that the estimated elasticity of daily consumer prices with respect to domestic pump fuel prices varies over the sample and is statistically insignificant in some periods. Changes in the coefficient broadly coincide with major geopolitical episodes in the US-Iran confrontation. These temporal correspondences are descriptive and do not, by themselves, establish that the conflict caused the estimated changes.

Figure 2: Time-varying estimates and 90 percent confidence intervals





During the first five months of the sample, OPPT is economically small and statistically insignificant after controlling exchange rates, CDS, VIX, interest rate changes, and the output gap. The estimates fluctuate within a relatively narrow range, broadly between -0.005 and 0.35 percent. This pattern is consistent with a period of relative calm in global oil markets. Brent crude traded in the USD 65-70 range while disinflation program of CBRT, tight monetary policy, and managed domestic energy pricing may have contributed to relatively limited pass-through to the daily price index. Stronger monetary policy credibility, better-anchored inflation expectations, and tighter monetary policy can reduce the transmission of oil price shocks to inflation (Bernanke et al., 1997; Blanchard and Gali, 2007; Blinder and Rudd, 2013; Chen, 2009).

An apparent exception occurs in the first two weeks of January 2025. The point estimate rises from near zero on 2 January to a peak of approximately 2.6 percent on 8 January before retreating rapidly. The confidence interval also widens substantially over this window. Because this episode occurs near the beginning of the filtering period, it should be interpreted cautiously. By mid-January, the estimate returns to a level near zero that characterizes most of the remaining pre-conflict period.

An increase in the point estimate is observed in the third week of June 2025, coinciding with the outbreak of the Twelve-Day War. Joint US-Israeli airstrikes against Iranian nuclear facilities at Fordow, Natanz, and Isfahan began on June 13, 2025. In anticipation of and during the conflict, Brent crude rose from approximately USD 65 per barrel in early June to the low USD 80s. The OPPT begins to rise in the third week of June, increasing from approximately 0.003 percent in early June to 0.0045-0.0049 percent by June 15-17, although it remains statistically insignificant.

The rapid conclusion of hostilities and the partial reversal of crude oil prices led to a renewed decline in OPPT. By late June and early July 2025, OPPT stabilizes near zero and remains statistically insignificant. This movement is consistent with a role in changing market expectations.

Although the Twelve-Day War ended quickly and oil prices retraced, geopolitical uncertainty surrounding Iran persisted through the second half of 2025. Over this period, OPPT drifts slowly upward from approximately 0.0001 percent in July 2025 to about 0.015 percent by October 2025 while remaining statistically insignificant. The gradual increase may be consistent with a slow build-up in global oil risk premium and lagged domestic input cost pressures although other unobserved factors may also have contributed.

A more pronounced change in the estimated coefficient is observed from late January 2026 and accelerates in February. The coefficient rises from approximately 0.014 percent at the start of the year

to 0.022 percent by the end of February, becoming statistically significant for the first time on February 25. This timing closely coincides with the outbreak of full-scale war between the US-Israeli coalition and Iran on February 28, 2026, which was followed by the closure of the Strait of Hormuz. Price of Brent crude oil rose from approximately USD 72 per barrel before the strikes to more than USD 90 by the end of the first week of March and ultimately approached USD 120, an increase of more than 55 percent from its pre-war level. The coincidence in timing is notable although the model does not separately identify the causal contribution of the conflict.

The OPPT estimate reaches its highest level and displays its most sustained statistical significance in March 2026, during the period identified as the most acute phase of the Hormuz blockade. The point estimate rises from 0.022 percent in early March to a local peak of approximately 0.03 percent on March 25-26, more than an order of magnitude above the typical pre-conflict baseline.

Diesel prices in Türkiye increased by nearly 10 percent on March 3 alone, prompting the government to reinstate the *eşel mobil* mechanism through a presidential decree published in the Official Gazette. Under the measure, reductions in the SCT of up to 75 percent were offered to buffer domestic retail prices from global price movements. Nevertheless, OPPT continued to rise during the month. This pattern may indicate that the tax measure did not fully offset the international price increase, that its effects differed across WebTUFÉ categories, or that other contemporaneous factors also influenced the estimated relationship.

The announcement of a ceasefire on April 8, 2026, is followed by a gradual decline in OPPT from its late-March peak, from 0.03 percent in the first week of April to approximately 0.014 percent by mid-April. OPPT becomes statistically insignificant after April 11-12. This timing may be consistent with an easing of supply disruption concerns although the point estimate remains above its pre-conflict baseline. The pattern is also broadly consistent with evidence from other geopolitical oil price episodes in which consumer price responses are concentrated in periods of acute uncertainty and partly reverse as market expectations normalize.

From May 2026 onward, OPPT stabilizes in the range of 0.015-0.019 percent and is statistically significant during much of the period. These values remain substantially below the March 2026 peak but are higher than the pre-conflict estimates. The persistence of a positive coefficient through the end of the sample is consistent with the possibility that conflict associated fuel price movements remained related to Turkish consumer prices after immediate supply concerns had eased. This interpretation is broadly consistent with Kilian et al. (2026), who document persistent inflationary effects of the Hormuz disruption beyond its most acute phase, and with TurkStat data showing elevated annual consumer price inflation in Türkiye in April 2026 when energy costs were also high.

The coefficient of the exchange rate provides estimates of the time-varying association between exchange rate movements and WebTUFÉ. Because both the dependent variable and the exchange rate are specified in logarithms, the coefficient can be interpreted as elasticity. A coefficient of 0.10, for example, indicates that a 1 percent increase in the exchange rate in the previous period is associated with an approximately 0.10 percent increase in WebTUFÉ, *ceteris paribus*. Therefore, a positive coefficient indicates a positive conditional association between lira depreciation and consumer prices.

The early part of the sample displays considerable instability. In the first days of January 2025, the estimated coefficient fluctuates sharply, including a positive and statistically significant value on 6 January 2025, followed by large negative estimates in the subsequent days. However, from late January to July 2025, the exchange rate coefficient is mostly positive but often statistically insignificant.

During February and early March 2025, the coefficient temporarily rises to approximately 0.30-0.36 and becomes statistically significant. This result suggests a positive conditional association between exchange rate movements and WebTUFÉ during this period although the relationship is not yet persistent. From late March to July 2025, the coefficient declines substantially to approximately 0.07-0.09 and becomes statistically insignificant.

A more persistent positive exchange rate coefficient is observed from August 2025 onward. Beginning in mid-August, the estimates become positive and statistically significant and remain so throughout much of the rest of the sample. This pattern suggests that exchange rate movements became more systematically associated with WebTUFÉ after the summer of 2025.

The estimated magnitude of exchange rate pass-through also increases over time. During August-November 2025, the coefficient is generally close to 0.09-0.10. By December 2025 and January 2026, it rises to around 0.11-0.13. In the first half of 2026, the coefficient reaches approximately 0.16-0.18 by April-May before declining slightly to around 0.16 in early June 2026.

This pattern is broadly consistent with the exchange rate pass-through literature, which identifies import costs, production costs, expectations, and pricing behavior as possible channels through which exchange rate movements may be associated with domestic prices (Aron et al. 2014). Also, it is also in line with evidence that exchange rate pass-through tends to be more pronounced in emerging market economies than in advanced economies although the strength of the relationship varies across countries and periods (Ca'Zorzi et al. 2007). In the Turkish context, previous studies document an important but time-varying relationship between exchange rates and domestic prices (Dedeoğlu and Kaya, 2014; Ögünç, 2005). The present estimates are consistent with this literature but do not identify the specific transmission channel.

The estimated CDS coefficient summarizes the time-varying conditional relationship between sovereign-risk perceptions and consumer prices. At the beginning of the sample, the coefficient is positive and statistically significant at approximately 1.7 percent. Then, it reverses sign and takes significant values between roughly -0.95 and -0.76. After the initial adjustment period, the CDS coefficient becomes much smaller in absolute value and is frequently statistically insignificant. From mid-January to the summer of 2025, it generally fluctuates around zero.

A slightly more persistent negative association appears later in the sample. From mid-September 2025 onward, the coefficient becomes slightly negative and statistically significant, generally remaining close to -0.0035 percent. A similar pattern appears in March and April 2026, when estimates often range from approximately -0.0043 to -0.003 percent.

The negative sign should not necessarily be interpreted as evidence that sovereign risk directly reduces consumer prices. In the Turkish context, CDS spreads are closely linked to broader macroeconomic and financial conditions, including exchange rate risk, inflation expectations, monetary policy credibility, and global risk appetite. The literature emphasizes that sovereign CDS spreads reflect both expected default losses and risk premia demanded by investors rather than a pure measure of domestic fundamentals alone (Remolona et al. 2007). Moreover, studies on emerging markets show that exchange rate risk and sovereign risk premia are strongly connected, particularly, in economies with external vulnerabilities (Gadanecz et al., 2014; Hofmann et al., 2016). Specifically, for Türkiye, existing evidence suggests that exchange rate changes and inflation are important determinants of CDS premia while central bank credibility tends to reduce sovereign risk premia (Varlık and Öbekcan, 2023).

Therefore, the small negative CDS coefficient is best interpreted as a conditional association rather than a direct causal price effect. Because the model already includes exchange rates, fuel prices, VIX, interest rate changes, and the output gap, the CDS coefficient reflects residual sovereign risk variation not

captured by these variables. Its negative and very small value in later periods may indicate that much of the inflation relevant information in CDS is shared with other channels, especially exchange rate and global risk variables.

The estimated coefficient on VIX captures the time-varying relationship between global financial market uncertainty and WebTUFÉ. Theoretically, the inclusion of VIX is relevant because it is widely used as a proxy for global risk sentiment and financial market uncertainty. The VIX measures expected near term volatility in the US equity market based on S&P 500 option prices and is frequently interpreted as an indicator of global investor risk aversion. In emerging market economies, increases in global risk aversion may affect domestic prices indirectly through capital flows, exchange rates, risk premium, external financing conditions, and expectations (Obstfeld et al., 2019; Rey, 2015). However, the sign of the VIX coefficient is theoretically ambiguous. A rise in global risk aversion may increase inflationary pressure through currency depreciation and higher external financing costs but it may also reduce inflationary pressure by weakening demand, lowering commodity prices, or tightening financial conditions.

The estimates display substantial instability at the beginning of the sample. The VIX coefficient is positive and statistically significant on 2-3 January 2025, turns negative and statistically significant on 4-5 January, and changes sign again between 6 and 9 January. After the initial adjustment period, the coefficient becomes small in magnitude and is mostly statistically insignificant. From mid-January through March 2025, the estimates fluctuate close to zero and remain insignificant.

A short-lived positive association appears in early April 2025. Between 5 and 9 April, the VIX coefficient is positive and statistically significant, with estimates around 0.025-0.027 percent. Although the magnitude is small, the positive sign is consistent with the possibility that episodes of heightened global risk aversion are associated with domestic price pressures through financial market channels. However, the episode is brief and the relationship is not statistically significant after mid-April 2025.

For the remainder of 2025, the VIX coefficient remains positive but statistically insignificant, generally fluctuating between 0.00005 and 0.00009. The estimated relationship is weak and imprecise. In 2026, the coefficient declines further and turns slightly negative from April onward, but these estimates are also statistically insignificant. Thus, the model does not provide evidence of a persistent direct conditional association between VIX and WebTUFÉ.

Apart from the initial filtering period and a brief statistically significant episode in early April 2025, the VIX coefficient is close to zero and statistically insignificant. The results are consistent with the possibility that global uncertainty is related to WebTUFÉ mainly through other macro-financial variables in the model.

The estimated coefficient on the change in the interest rate captures the time-varying association between monetary policy movements and WebTUFÉ. In theory, the sign of the interest rate coefficient may be negative or positive depending on the dominant transmission channel. Under the conventional interest rate channel, monetary tightening is expected to reduce aggregate demand, credit growth, and inflationary pressure over time (see, for instance, Mishkin, 1996). However, in economies with high inflation, strong exchange rate pass-through, and financial frictions, the effect of interest rate changes on prices may be weaker, delayed, or difficult to identify separately from other macroeconomic channels (Başçı et al., 2008). In addition, the cost channel view of monetary transmission suggests that higher interest rates may increase financing costs of firms, which can generate short-run upward pressure on prices if firms pass these costs on to consumers (see, for instance, Barth, & Ramey, 2001; Christiano et al., 2005).

The interest rate coefficient is unstable at the beginning of the sample. It is negative and statistically significant on January 4, 2025, but positive and statistically significant on January 5. After the first few observations, it is statistically insignificant for almost the entire sample. From mid-January to March 2025, the coefficient is generally positive but small, fluctuating around 0.001. Conditional on the other explanatory variables, the model does not identify a clear independent association between interest rate changes and WebTUFÉ during this period.

From April 2025 onward, the coefficient becomes very small and frequently negative. During April-June 2025, the estimates are close to zero and mostly negative. A similar pattern continues through the second half of 2025, when the coefficient fluctuates around zero without statistical significance. In early 2026, the coefficient remains negative in many periods, and it becomes somewhat more negative during April-June 2026, reaching values around -0.0002. Nevertheless, the coefficient is not significant.

Overall, interest rate changes do not display a robust independent association with WebTUFÉ in this specification. This finding should not be interpreted as evidence that monetary policy is irrelevant to inflation dynamics. Rather, it indicates that, conditional on the other variables in the model, the direct marginal relationship is weak and imprecisely estimated. This interpretation is consistent with the monetary transmission literature, which emphasizes that policy rate changes affect prices through multiple channels and with long, variable, and uncertain lags (Mishkin, 1996).

The absence of a statistically robust interest rate coefficient may also reflect the structure of the model. Because the exchange rate and CDS are included separately, part of the association with monetary policy may be captured by financial market variables. In the Turkish context, the policy rate may be related to WebTUFÉ indirectly through exchange rate stabilization, expectations, and risk perceptions rather than through a direct contemporaneous price effect (Başçı et al., 2008). Therefore, the estimates should be read as evidence of a weak direct conditional relationship in this specification not as evidence that monetary policy has no effect on inflation.

The estimated coefficient on the output gap captures the time-varying association between domestic real activity conditions and WebTUFÉ. The use of the output gap is consistent with the Phillips-curve tradition, in which deviations of actual output from potential output are used to measure demand side inflationary pressure (see, for instance, Galí, 2015). In this framework, a positive output gap coefficient would indicate that stronger real activity is associated with higher prices while a negative coefficient would suggest that demand side pressures are weak or dominated by other factors.

Because the output gap in this study is constructed using daily electricity consumption, it provides a high-frequency proxy for real economic activity. This approach is supported by recent empirical work showing that electricity consumption and electricity market indicators can be informative real time measures of economic activity, especially, when conventional macroeconomic indicators are available only with delay (Beyer et al., 2021; Fezzi and Fanghella, 2020).

The estimated output-gap coefficient suggests that the conditional demand-side relationship is weak and time-varying. At the beginning of the sample, the sign changes rapidly. The coefficient is negative on January 2, 2025, positive and statistically significant from January 3 to 5, and negative and statistically significant from January 6 to 13. After mid-January, it becomes small and is mostly statistically insignificant. From late January through March 2025, it fluctuates around zero, providing little evidence of a robust independent association between the electricity-based output gap and WebTUFÉ after the other variables are controlled for.

A clearer positive association is observed from early April to the end of May 2025. During this period, the coefficient is generally positive and statistically significant on many dates, typically ranging from

0.005 to 0.006 percentage points. The sign is consistent with the Phillips-curve view that stronger activity may be associated with upward price pressure. However, the small magnitude and limited duration of statistical significance suggest that the estimated demand side relationship is neither large nor stable over time.

From June 2025 onward, the output gap coefficient is statistically insignificant. It remains positive but small through much of the summer and autumn of 2025 before declining toward zero and turning slightly negative near the end of the year. In 2026, the coefficient is mostly negative and insignificant. The results provide little evidence of a persistent independent relationship between the electricity-consumption-based output gap and WebTUFEE during the later part of the sample.

The estimated level component summarizes the underlying baseline path of WebTUFEE after conditioning on financial, external, monetary, and real activity indicators. The estimates show a short initial period of instability. In the first days of January 2025, the level component is close to zero and subsequently displays large fluctuations and wide confidence intervals.

After mid-January 2025, the level component becomes positive but remains statistically insignificant. Conditional on the explanatory variables included, this pattern may reflect a positive underlying component in WebTUFEE. However, it should not be interpreted as a separately identified structural source of inflation because the level may also capture omitted slow-moving factors and measurement characteristics of the daily price index.

A clearer pattern emerges from February 2025 onward. The level component declines from the elevated values observed in late January and stabilizes around approximately 3.0 to 4.3 points during the subsequent months. From April 2025 onward, the component becomes particularly stable, fluctuating around 4.2 points.

The estimates are also consistent with a gradual moderation after late 2025. The level component remains around 4.3 during much of the second half of 2025 and declines gradually during the first half of 2026, reaching values close to 4.1 by April and June. This movement may indicate a mild weakening in the estimated baseline component of WebTUFEE. The component remains positive but its economic interpretation should remain cautious because it is latent and may absorb several unobserved influences.

5. Conclusion

This paper examines the time-varying relationship between domestic fuel prices and consumer prices in Türkiye, an energy-importing emerging economy with substantial exposure to external prices and exchange rate movements. Using daily WebTUFEE data and a time-varying state-space model, it estimates the evolution of OPPT during the 2025-2026 US-Iran conflict. The estimates suggest that OPPT varies considerably over the sample. During relatively tranquil periods, the relationship between domestic pump prices and consumer prices is small and statistically insignificant. During short-lived conflict episodes, the coefficient increases but may recede quickly. During the larger and more persistent oil market disruption in early 2026, OPPT becomes economically larger and statistically significant.

The estimates suggest three broad phases. Before the conflict, OPPT was small and statistically insignificant, a pattern consistent with muted transmission under relatively stable oil market conditions and domestic price-smoothing mechanisms. The Twelve-Day War in June 2025 coincides with a temporary increase in pass-through that recedes as oil prices decline. The largest change is observed around the escalation in February-March 2026. During this episode, the blockade of the Strait of Hormuz and the surge in crude oil prices coincide with a marked increase in the estimated fuel price coefficient, which peaks in late March and remains above its pre-conflict level after the ceasefire. The evidence is

consistent with the possibility that inflationary responses to large geopolitical oil price movements can persist beyond the most acute phase of an event, particularly when exchange rate pressures and inflation expectations are also elevated. The paper contributes to the literature by documenting that a single average coefficient may obscure substantial time variation in OPPT. The high-frequency data and real-time filtering framework are useful for describing changes that unfold over days or weeks rather than months or quarters.

The policy discussion suggests that it may be useful to distinguish temporary relative price changes from more persistent movements that could affect broader inflation dynamics. Short-lived oil price increases may require a different response from persistent increases accompanied by exchange rate pressure or signs of second-round effects. Transparent and fiscally sustainable fuel-tax smoothing may help moderate short-term volatility but the estimates in this paper do not identify the optimal policy response. Over the longer term, lower dependence on imported energy may reduce exposure to geopolitical energy disturbances.

Taken together, the findings are consistent with the possibility that geopolitical oil price disturbances can be associated with persistent inflationary pressure in economies where imported-energy dependence, exchange rate pass-through, and weakly anchored expectations reinforce one another. For Türkiye and similar emerging markets, credible monetary policy, cautious and transparent fiscal smoothing, and greater energy resilience may help limit vulnerability to such episodes.

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