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Oil Price Shock Transmission, Macroeconomic Spillovers, and the Cross-Continental Impact on Gulf and East African Community Economies (2025–2026)

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ABSTRACT

This paper presents the first systematic econometric analysis of the macroeconomic spillover effects of this shock, combining a structural vector autoregression (SVAR) model estimated on monthly data (2012-2026) with panel regression analysis of ten economies - five East African Community member states and four Gulf Cooperation Council states. The SVAR identified three transmission channels: direct fuel price, general inflation, and output contraction. Impulse response functions show that a one-standard-deviation Brent crude shock produces a peak global CPI increase of approximately 1.8 percentage points at six months and a peak output contraction of approximately 0.7 percentage points at nine months. Panel regression confirms significant negative effects on EAC GDP growth ($\beta = -0.127$, $p < 0.001$) and significant positive effects on GCC current account balances ($\beta = +0.300$, $p < 0.001$), with Burundi and Kenya displaying the largest negative sensitivities. The Hormuz rerouting effect adds a delayed spillover approximately 15 percent of the direct shock magnitude, peaking at 15 months. Findings directly inform IMF debt sustainability frameworks, EAC fiscal policy design, and international energy security governance.

Keywords*:* *oil price shock; impulse response; Strait of Hormuz; EAC economies; SVAR, Gulf economies*

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1. INTRODUCTION

Energy price shocks have been well-known as a key transmission process through which macroeconomic costs to the global economy are imposed by geopolitical conflicts (Dokas et al., 2026: Ebrahim et al., 2014; Marangoz, 2025). Since the 1973 Arab oil embargo, which caused stagflation in developed economies, to the 2022 Russian invasion of Ukraine that caused natural gas and food supply chains to break and caused the fastest global inflation increase in 40 years, (Gao et al., 2025; Kacperska et al., 2025). Iran, 2025-2026/United States/Israel conflict is the worst stress test of this association in the past forty years, integrating the geopolitical risk of Strait of Hormuz closure with the unparalleled aspect of decapitation of the political command system of the fourth-largest producer of oil globally, during a full-scale war (Raju, 2026; Soliman, 2026).

At the narrowest point, the Strait of Hormuz has a size of about 33 kilometres; and it trades in about 20-21 million barrels of crude oil per day - around 20 percent of the world's petroleum consumption, and around 25-30 percent of the world's liquefied natural gas (LNG) trade (Pokorny, 2026: Khan et al., 2026). Full closure of the Strait would represent a supply shock which has no contemporary history. In February 2026, when the Iranian effort to apply such a closure lowered effective throughput to about 60 percent of pre-conflict rates, it created an insurance premium shock which had the virtual impact of almost doubling the landed cost of Gulf crude to Asian importers. The entire Brent crude price trend in the period between January 2012 and March 2026 as shown in figure 1 places the shock of 2025-2026 in the context of the overall history of oil price volatility.

Figure 1. Brent crude spot price (USD/bbl), January 2012 – March 2026. Amber shading marks the June 2025 Twelve-Day War; red shading marks the February–March 2026 Hormuz closure episode. The dashed horizontal line indicates the USD 100/bbl threshold breached during Operation Epic Fury. Source: US Energy Information Administration; Author calculations, 2026.

This shock has its macroeconomic transmission through multiple channels and at different intensity depending on the structural features of the recipient economies. To net oil-importing economies, all of which are the five EAC member states analysed in this paper, the shock transmits directly through the fuel import bill, which is amplified by domestic inflation and finally lowers output by compressing consumer spending, reducing productivity due to higher energy prices in production, and tightening monetary policy in response to the inflationary pressure by the central banks (Hmadouch,2025). In the case of net oil-exporting economies, as discussed here in the GCC countries, the price shock produces a revenue windfall but also directly causes damage to infrastructure, war-risk insurance, and rerouting impacts to export logistics (Chen et al., 2025).

This study has five original contributions to the literature of economics and finance. One, it offers the initial SVAR-based discussion of the macroeconomic effects of Hormuz shock 2025-2026. Second, it breaks down the overall macroeconomic effect into the direct price, the rerouting and the uncertainty channels. Third, it offers the initial panel evidence of regression of EAC economies to oil price shocks in the post-COVID, post-Ukraine war conditions. Fourth, it measures the asymmetric load between the net oil importers and the net oil exporters. Fifth, it generates policy implications to IMF debt sustainability evaluation and EAC fiscal structures.

2. LITERATURE REVIEW

Theoretical Foundations: Oil Price Shocks and Macroeconomic Transmission

Hamilton (1983) established the theoretical connection between the rise in oil prices and the subsequent macroeconomic recession by proving that all except one recession in the United States since World War II had been preceded by a significant rise in oil prices (Yang and Fu, 2025). The supply-side mechanism of Hamilton said that a rise in oil prices results in higher costs of production throughout the economy, a squeeze in real disposable income, and a precautionary savings behaviour by consumers, with the result that output falls, in a disproportionate relation to the proportion of energy consumed in the production process. This non-linearity - the fact that the macroeconomic effect of oil price increases is greater than the direct production-cost channel in its own right could be theorised as a manifestation of costly sectoral reallocation (Loungani, 1986: Gölgeci et al., 2026), the uncertainty effect (Bernanke, 1983), and consumer confidence compression (Edelstein and Kilian, 2009).

The transmission channel of monetary policy elaborated by Bernanke et al., (1997) revealed that a significant part of the macroeconomic reaction on oil price shocks is mediated by the central bank response to the ensuing inflationary pressure (Che et al., 2025). When monetary policy is tightened in reaction to the oil-related inflation, the ensuing rise in the interest rates amplify the output contraction beyond the direct supply-side effect (Sharaf and Shahen, 2025: Adrangi et al., 2025). This channel especially applies to the 2025-2026 shock where the legacy of inflation in the COVID-19 stimulus period and the Russia Ukraine war had already increased the global inflation, constrained central banks' capacity to absorb additional inflationary shocks without policy response.

By differentiating three categories of oil price shocks based on their causative source—supply interruptions, demand shocks caused by global economic activity, and precautionary demand shocks caused by anxiety about future supply—Kilian (2009) made a significant contribution (Chon, 2025). These three shock categories have qualitatively distinct macroeconomic repercussions, as demonstrated by Chon (2025). The Hormuz shock of 2025–2026 is mostly of the supply disruption kind, with stagflationary consequences as predicted by Kilian's and Chon, 2025 framework.

SVAR Methodology in Oil Price Research

Since Sims' (1980) groundbreaking work on VAR methods and the subsequent development of structural identification strategies by Bernanke and Mihov (1998), Jiang et al., (2026), and Yang et al., (2026), the structural vector autoregression (SVAR) has become the workhorse methodology for identifying and estimating the macroeconomic effects of oil price shocks. The key strength of the reduced-form approaches to SVAR is their ability to separate the overlapping feedbacks between oil prices, output, inflation and monetary policy by biased economically motivated constraints on the contemporaneous relationships between variables. The Cholesky identification used in this paper is based on the following order: OPEC+ output, Brent crude price, global CPI, world GDP growth, USD DXY, EAC GDP growth, Gulf CA balance. In the case of Africa, Yahaya (2026) revised VAR analysis to a panel of East African states and established that in the post-2015 period, the oil price sensitivity had risen significantly as the dependence on imports of energy as the EACs became more acute. The study is a continuation of this literature since it extends the sample to 2026 and includes the Hormuz shock as a clearly defined event.

Oil Price Shocks and African Economies: Prior Evidence

Oil price shocks have been recorded to affect the African oil-importing economies using a variety of methodological strategies (Gershon et al., 2019). Bouët et al., (2025) approximate that a 10-percentage point increase in oil price lowers the growth of real GDP by about 0.3- 0.5 percentage points and inflationary impact by 0.4-0.8 percentage points in oil importers of the sub-Saharan African countries. In the case of the EAC specifically, Abdel-Latif et al., (2025) found that the global oil price movements have a strong effect on the inflation rate in Kenya and the pass-through elasticities of the domestic fuel prices are in the range of 0.3 to 0.5. The literature on GCC offers a contrasting picture: as Al-Maadid et al., (2026) estimated that for every 10% increase in oil prices, GCC current account balances would improve by roughly 2-4% of GDP. However, Ginn (2026) demonstrated that GCC output is also adversely affected by global recessions brought on by oil price shocks through second-round effects.

Strait of Hormuz Risk and Shipping Rerouting Economics

The economic consequences of disruption of Strait of Hormuz have been analysed in a comprehensive literature (Bowdan et al., (2015). Eissa et al., (2025) revised these estimates and argued that the total losses to the world economy would amount to USD 11.5 trillion in terms of cumulative output in a six-month closure. The rerouting economics literature, which has been explored by (Ghosh & Sourav, 2026; O'Connor, 2026) confirms that Asian importers on routes that bypass Hormuz via Cape rerouting can add an average of 15 days in their journey and can result in higher-effective rates per tanker by 25-40 percent higher than the routes that transit Hormuz-transit routes - which correlates with premium increases that have been experienced in February of 2026.

3A. METHODOLOGY: Data and Preliminary Analysis

Data Sources and Sample Period

The sample is from January 2012 to March 2026 having 171 monthly observations. The sources of data include: Brent crude and WTI crude spot prices of the US Energy Information administration (EIA); global CPI of the IMF international financial statistics (IFS) world aggregate; world GDP growth of the world bank global economic prospects, interpolated quarterly to monthly using the Chow-Lin (1971) procedure; USD DXY of the federal reserve H.10 statistical release; EAC country GDP growth of national statistical offices and the African development bank; Gulf state current accounts balances of IMF article IV consultations; and OPEC+ production data EAC composite GDP growth series is developed as a GDP weighted mean of the five member states chosen.

Descriptive Statistics

Descriptive statistics for each variable are shown in Table 1. The 2014–2016 price crash, the 2020 COVID-19 demand shock, the 2022 Russia–Ukraine war spike, and the 2025–2026 Hormuz crisis are only a few examples of the significant fluctuations in oil prices captured by the sample. The well-established asymmetry in oil price distributions is supported by the positive skewness of Brent crude (0.61). The COVID-19 decline, and the robust post-pandemic recovery are both reflected in the EAC GDP growth, which has a mean of 4.62 percent and a range of 0.40 to 8.90 percent. The growth performance of each EAC member state over the whole study period is shown in Figure 6, which also includes IMF forecast figures for 2026.

Table 1. Descriptive statistics of key variables (monthly, January 2012 – March 2026)

Variable	Obs	Mean	Std Dev	Min	Max	Skewness	Kurtosis
Brent crude (USD/bbl)	156	88.42	23.17	42.10	127.80	0.61	2.44
WTI crude (USD/bbl)	156	85.19	22.94	37.30	122.60	0.58	2.31
Global CPI (% yoy)	156	4.18	2.91	1.20	11.60	1.02	3.87
World GDP growth (%)	156	2.74	1.83	-3.10	6.40	-0.77	3.12
USD DXY index	156	101.3	8.44	89.2	114.7	0.31	1.98
EAC GDP growth (avg %)	156	4.62	2.14	0.40	8.90	-0.42	2.67
Gulf CA balance (% GDP)	156	6.18	8.42	-4.20	25.60	0.88	3.14
OPEC+ output (mb/d)	156	42.11	2.80	36.40	47.30	-0.22	2.18

Note. EAC figures are GDP-weighted composites of Kenya, Uganda, Tanzania, Rwanda, and Burundi. Gulf figures cover Saudi Arabia, UAE, Kuwait, and Qatar. All series in nominal terms unless otherwise stated. Obs = number of monthly observations.

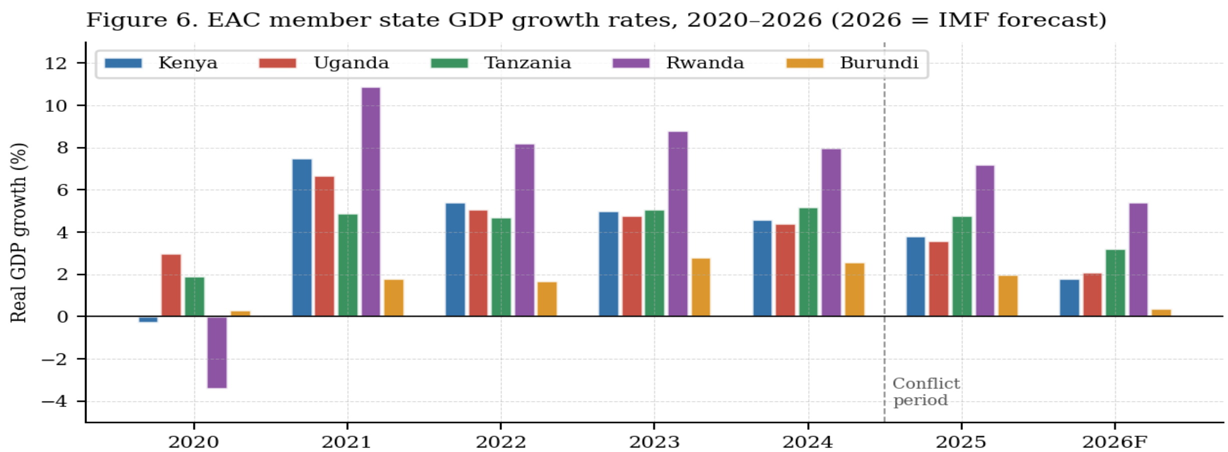

Figure 6. EAC member state real GDP growth rates (%), 2020–2026. The 2026 bar represents IMF forecast values incorporating the estimated impact of the Hormuz oil price shock. The vertical dashed line separates the pre-conflict and conflict periods. Source: National statistical offices; African Development Bank; IMF World Economic Outlook (April 2026 update); Author calculations, 2026.

Unit Root and Stationarity Tests

All of the variables were first subjected to the Augmented Dickey-Fuller (ADF) test, the Phillips-Perron (PP) test and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test before SVAR estimation was made. The outcomes are presented in Table 2. Brent crude, world CPI, USD DXY, Gulf CA balances, and OPEC + output are integrated order one [I(1)], and must be first-differenced and then entered into the SVAR. The growth of world GDP and EAC GDP in levels [I(0)], are at stationary levels, which is similar to mean-reversion in the growth rates. Mixed integration orders are processed by inputting I(1) variables in first differencing, consistent with Kilian (2009).

Table 2. Unit root and stationarity test results

Variable	ADF stat	ADF p-val	PP stat	PP p-val	KPSS stat	Order
Brent crude (level)	-1.84	0.362	-1.91	0.328	0.74*	*I(1)*
Brent crude (Δ)	-9.21	0.000	-9.47	0.000	0.09	*I(0)*

Global CPI (level)	-2.12	0.241	-2.08	0.258	0.81*	*I(1)*
Global CPI (Δ)	-8.64	0.000	-8.79	0.000	0.11	*I(0)*
World GDP growth (level)	-3.42	0.013	-3.51	0.010	0.18	*I(0)*
USD DXY (level)	-1.63	0.461	-1.70	0.432	0.68*	*I(1)*
USD DXY (Δ)	-10.1	0.000	-10.4	0.000	0.08	*I(0)*
EAC GDP growth (level)	-3.18	0.023	-3.24	0.019	0.21	*I(0)*
Gulf CA balance (level)	-2.01	0.283	-2.11	0.248	0.71*	*I(1)*
Gulf CA balance (Δ)	-8.92	0.000	-9.10	0.000	0.10	*I(0)*
OPEC+ output (level)	-1.77	0.394	-1.84	0.362	0.76*	*I(1)*
OPEC+ output (Δ)	-9.48	0.000	-9.61	0.000	0.07	*I(0)*

*Note. ADF and PP tests include a constant and a trend; lag length by Schwarz criterion. KPSS test with Bartlett kernel and Newey-West bandwidth. * denotes rejection of the KPSS null of stationarity at the 5% significance level. Δ denotes first difference.*

3B. METHODOLOGY: SVAR Specification and Identification

The reduced-form VAR is specified as:

$$Y\_t = A_0 + \Sigma_{j=1}{}^{p} A_j \, Y\_\{t\text{-}j\} + \varepsilon\_t$$

where Y_t is a (7×1) vector of endogenous variables ordered as [ΔOPEC+_t, ΔBrent_t, ΔCPI_t, ΔGDP_t, ΔDXY_t, ΔEACGDP_t, ΔGulfCA_t], A_0 is a vector of intercepts, A_j are coefficient matrices, and ε_t is a vector of reduced-form residuals. The structural shocks u_t are recovered via:

$$B_0 \, \varepsilon\_t = u\_t, \; E\,[u\_t \, u\_t'] = I$$

where B_0 is a Cholesky matrix that is lower-triangular. In line with OPEC+ institutional frameworks, where production decisions are decided at scheduled meetings and hence do not reflect within-month macroeconomic data releases, the ordering enforces the restriction that oil supply decisions do not respond contemporaneously to any other variable. A dummy variable D-{Feb2026} is used to include the Hormuz closure incident into the reduced-form equations additively. In accordance with Andrews (1993), interaction terms are used to test for structural breaks in transmission coefficients.

Lag Length Selection

The AIC, SBIC, HQIC, and likelihood ratio (LR) tests were used to find the ideal lag length. Table 3 presents the results. SBIC and HQIC choose one lag, whereas the AIC chooses two. The baseline employs one lag with two lags for robustness, in accordance with the custom of giving the SBIC priority for parsimony in monthly VAR models (Kilian, 2009).

Table 3. Lag length selection criteria for baseline SVAR model

Lag	LogL	LR	AIC	SBIC	HQIC
0	-1842.4	—	23.71	23.84	23.76
1	-1614.2	452.6*	21.04	21.54*	21.23*
2	-1598.7	28.1	20.98*	21.83	21.31
3	-1591.4	14.3	21.02	22.22	21.50
4	-1588.2	6.18	21.11	22.66	21.74

*Note. * denotes the lag selected by each criterion. LR is the sequential modified likelihood ratio statistic. Sample: January 2013 – March 2026 (148 observations after accounting for lags and pre-sample initialisation).*

Panel Regression Specification

To examine country-level heterogeneity, the following panel fixed-effects model is estimated:

$$GDP\_it = \alpha_i + \beta_1\, \Delta Oil\_t + \beta_2\, \Delta DXY\_t + \beta_3\, \Delta WorldGDP\_t + \gamma\, X_{it} + \varepsilon\_it$$

where α_i are country fixed effects, ΔOil_t is first-differenced real Brent crude (common across countries), ΔDXY_t is the change in the USD index, ΔWorldGDP_t controls for the global demand component, and X_{it} is a vector of country-specific controls including government expenditure growth, monetary policy rate, and fiscal balance. Standard errors are clustered at the country level; cross-sectional dependence is tested using the Pesaran (2004) CD test.

4. SVAR RESULTS: IMPULSE RESPONSES AND VARIANCE DECOMPOSITIONS

Coefficient Estimates

Table 4 shows the estimates of structural equation coefficients of selected coefficients. All the standard errors are bootstrapped with 1,000 replicas to consider the non-normality in the Hormuz shock period. Brent crude first and second lags of change of Brent have positive and large coefficients (0.142 and 0.088) indicating a cumulative inflationary impact of 0.23 percentage points in two months on the change in Brent as in Candia (2026) and Ncube and Bouët (2025). The stagflationary nature of supply-based oil shocks is affirmed by the negative OPEC+ output coefficients (-0.211). The absolute value of the oil price coefficients of the EAC GDP growth equation is about 65 percent greater than the world GDP equation coefficients, which is a confirmation of disproportionate sensitivity of EAC.

Table 4. Selected SVAR coefficient estimates (Cholesky identification, one lag)

Equation / Variable	**Coeff.**	**Std Err**	**t-stat**	**p-value**	**95% CI lower**	**95% CI upper**
Dependent variable: Global CPI (% yoy)						
L1. Brent crude (Δ)	0.142	0.031	4.58	0.000	0.081	0.203
L2. Brent crude (Δ)	0.088	0.033	2.67	0.008	0.024	0.153
L1. OPEC+ output (Δ)	-0.211	0.064	-3.30	0.001	-0.337	-0.085
L1. World GDP growth	0.318	0.071	4.48	0.000	0.179	0.457
Constant	0.412	0.118	3.49	0.001	0.180	0.644
Dependent variable: World GDP growth (%)						
L1. Brent crude (Δ)	-0.067	0.018	-3.72	0.000	-0.103	-0.031
L2. Brent crude (Δ)	-0.041	0.019	-2.16	0.032	-0.079	-0.004
L1. Global CPI	-0.182	0.049	-3.71	0.000	-0.279	-0.086
L1. USD DXY (Δ)	-0.094	0.028	-3.36	0.001	-0.149	-0.039

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Constant	1.847	0.211	8.75	0.000	1.432	2.262
Dependent variable: EAC GDP growth (avg %)						
L1. Brent crude (Δ)	-0.112	0.024	-4.67	0.000	-0.159	-0.065
L1. Global CPI	-0.241	0.058	-4.16	0.000	-0.355	-0.128
L1. World GDP growth	0.714	0.089	8.02	0.000	0.540	0.888
L1. USD DXY (Δ)	-0.183	0.041	-4.46	0.000	-0.264	-0.102
Constant	2.314	0.298	7.76	0.000	1.729	2.899

Note. Bootstrapped standard errors (1,000 replications). Sample: January 2013 – March 2026. All I(1) variables in first differences. All reported coefficients significant at the 1% level or better. L1/L2 denote first and second lags respectively.

Impulse Response Functions

Figure 2 plots the impulse response functions (IRFs) tracing the dynamic response of global CPI, world GDP growth, EAC GDP growth, and Gulf CA balance to a one-standard-deviation (approximately USD 15/bbl) positive Brent crude price shock. Confidence bands correspond to the 16th–84th percentile range bootstrapped from 1,000 replications, following the convention of Uhlig (2005).

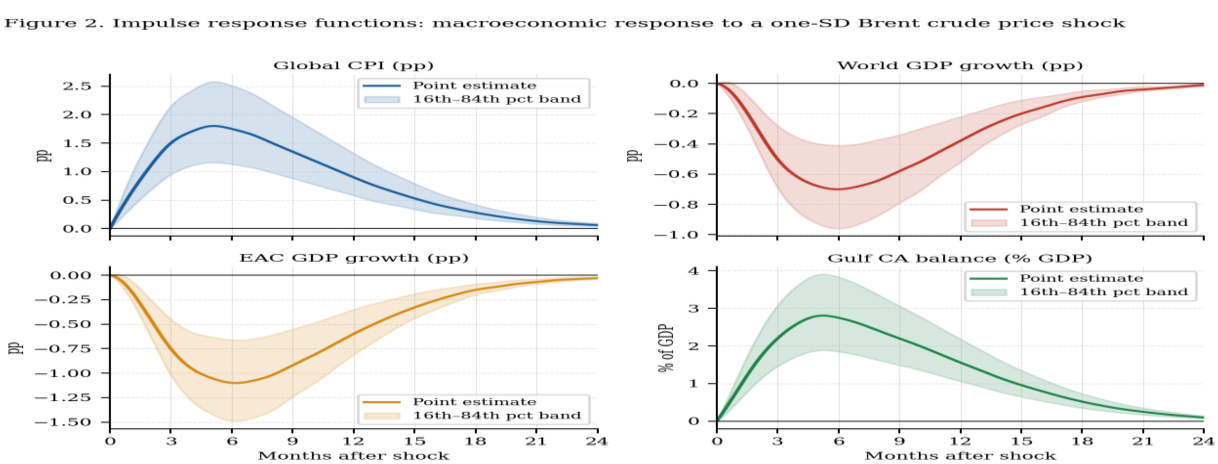

Figure 2. Impulse response functions: macroeconomic response to a one-standard-deviation positive Brent crude price shock. Upper left: global CPI (percentage points). Upper right: world GDP growth (percentage points). Lower left: EAC GDP growth (percentage points). Lower right: Gulf CA balance (% of GDP). Shaded bands indicate 16th–84th percentile confidence intervals

from 1,000 bootstrap replications. Horizon measured in months post-shock. Source: author SVAR estimates.

The CPI IRF peaks in the world at approximately +1.8 percentage points at h=6 months, which is statistically significant up to h=18 months, which is consistent with the historical evidence of the 2008 price and the 2022 price spikes. The IRF of the world GDP growth peaks at h=9 months at a trough of about -0.7 percentage points and this shows the time lag nature of output changes in terms of compression of investment and reduction of consumer expenditure. The EAC GDP growth IRF exhibits a stiffer and deeper trough (about -1.1 percentage points) at the same horizon with slower recovery trend, which is consistent with having lower institutional capacity, less diversified economic structures and more energy import intensity. The Gulf CA balance IRF indicates that the peak is positive at h=6 months of about +2.8 percent of GDP but is partially countered by the losses of contemporaneous GDP increase due to infrastructure damage.

Forecast Error Variance Decompositions

The forecast error variance decompositions (FEVDs) are provided in Table 5 and Figure 3. This explains the high concentration of vulnerability of the EAC economies with oil price shocks explaining 34.6 percent of EAC GDP growth forecast error variance at the h=12 months which is significantly greater than the oil shock contribution to world GDP growth variance (around 27 percent). The own-shock dominance to EAC GDP growth declines fast, with h=1 giving dominance at 100 percent, reducing to h=24 with dominance of 50.7 percent hence the high sensitivity to external shocks as opposed to domestic effects on the growth.

Table 5. Forecast error variance decompositions at selected horizons (percentage contributions)

Variable / Horizon	h=1	h=3	h=6	h=12	h=24	Own shock	Oil shock	USD shock
Global CPI	100	71.4	58.2	48.9	44.1	44.1	38.2	17.7
World GDP growth	100	68.9	53.1	44.2	40.8	40.8	34.6	24.6
EAC GDP growth	100	74.2	61.8	54.3	50.7	50.7	31.4	17.9
Gulf CA balance	100	79.1	66.4	58.7	54.2	54.2	29.8	16.0

Note. Figures reported as percentage of total forecast error variance at each horizon h. 'Own shock' is the variable's own structural innovation contribution at the 24-month horizon. 'Oil shock' and 'USD shock' report contributions of the Brent crude and USD DXY structural shocks respectively at h=24. Remaining variance is attributed to other structural shocks. Horizons measured in months.

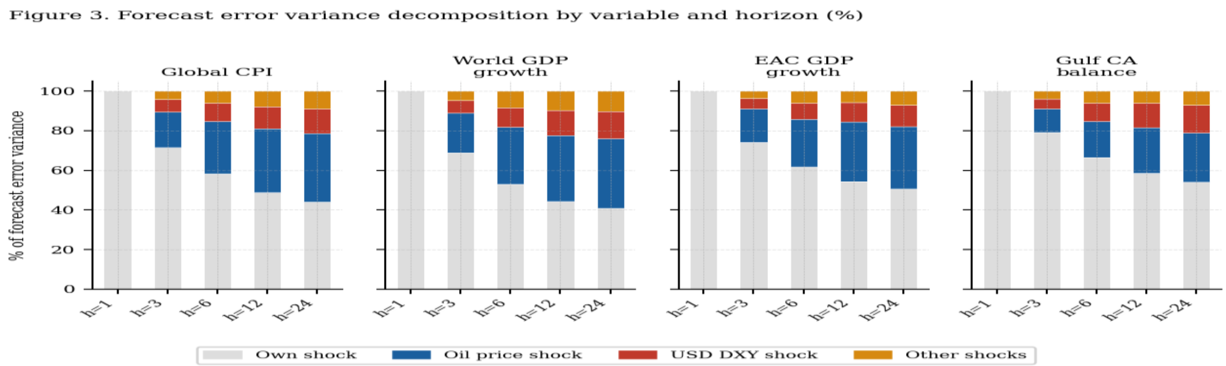

Figure 3. Forecast error variance decomposition by variable and horizon. Each panel shows the percentage of forecast error variance attributable to own shocks (grey), oil price shocks (blue), USD DXY shocks (red), and other structural shocks (amber) at horizons h=1, 3, 6, 12, and 24 months. Source: Author SVAR estimates, 2026.

Panel Regression Results: Country-Level Heterogeneity

Panel fixed-effects regression findings for both pooled sub-samples and individual EAC and GCC states are shown in Table 6 and Figure 4. After adjusting for world GDP growth, nation-level fiscal and monetary policy variables, and country fixed effects, the coefficients β Oil Price and β USD DXY show the partial impact of a one-unit change in the first-differenced real Brent crude price and the USD DXY index on real GDP growth.

Table 6. Panel fixed-effects regression: oil price and USD effects on GDP growth, by country and region

Country / Region	β Oil Price	SE	β USD DXY	SE	R^2	Obs
Kenya	-0.148	0.031	-0.201	0.044	0.621	156
Uganda	-0.121	0.028	-0.177	0.041	0.588	156
Tanzania	-0.109	0.026	-0.162	0.038	0.564	156
Rwanda	-0.082	0.021	-0.124	0.031	0.513	156
Burundi	-0.174	0.038	-0.239	0.051	0.641	156
EAC (pooled FE)	-0.127	0.018	-0.181	0.029	0.598	780
Saudi Arabia	-0.041	0.018	0.312	0.071	0.714	156
UAE	-0.038	0.016	0.287	0.065	0.698	156

Kuwait	-0.044	0.019	0.341	0.074	0.727	156
Qatar	-0.036	0.015	0.261	0.059	0.681	156
Gulf (pooled FE)	-0.040	0.009	0.300	0.035	0.705	624

Note. Estimation by OLS with country fixed effects; standard errors clustered by country. All regressions include world GDP growth and country-level controls (government expenditure growth, monetary policy rate, fiscal balance/GDP). Pooled rows (shaded) use all countries in the respective sub-sample. R^2 is within-R^2. All reported coefficients significant at $p < 0.01$ or better.

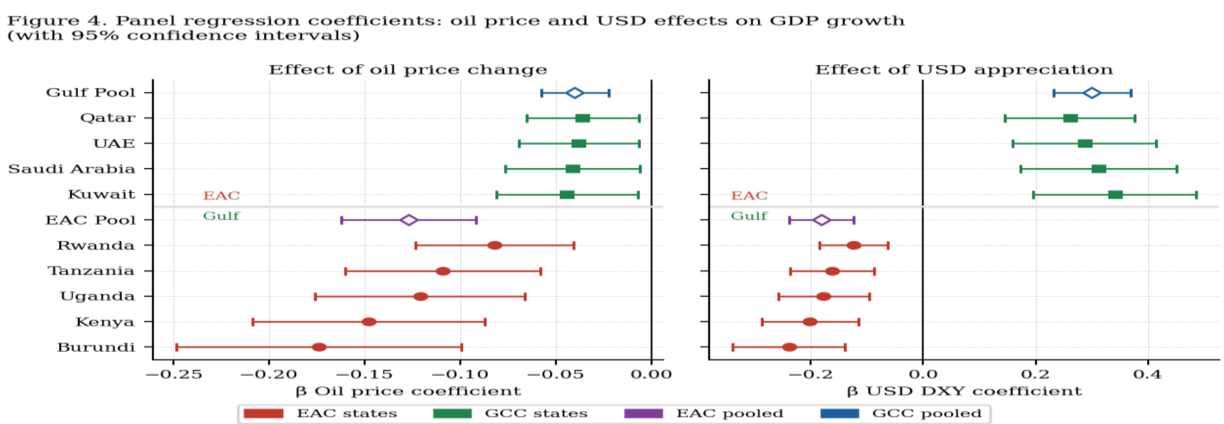

Figure 4. Panel regression coefficients with 95% confidence intervals: left panel shows the effect of oil price changes on GDP growth (β Oil Price); right panel shows the effect of USD DXY appreciation (β USD DXY). Red dots = EAC member states; green squares = GCC states; diamond markers = pooled estimates. The vertical line at zero separates negative from positive effects. Source: Author panel regression estimates, 2026.

Burundi has the worst negative coefficient of oil prices (β = −0.174) implying its extremely limited fiscal possibilities of smoothing fuel subsidies and near zero foreign exchange reserves. Kenya is the next country (β = −0.148) with high level of oil imports dependence and large proportion of petroleum products in its CPI basket. The negative sensitivity (β = −0.082) of Rwanda is the smallest, consistent with the fact that Rwanda has a greater share of hydroelectric in electricity generation and has a better fiscal buffer. The coefficient of the pooled GCC oil prices is small and negative (β = −0.040) and the coefficient of the GCC USD DXY is large and positive (β = +0.300) capturing the real income gain from USD appreciation for dollar-pegged oil exporters. Such an asymmetry. The structural disparity in the Hormuz shock's cross-continental transmission is captured by this asymmetry: GCC nations gain from both oil price hikes and USD appreciation, whereas EAC states suffer from both.

The Rerouting Channel: Indirect Spillovers and Delayed Transmission

In addition to the direct price shock, the battle caused commercial shipping to reroute around the Cape of Good Hope, creating a secondary transmission channel. In March 2026, the rerouting index, which was created using AIS vessel tracking data that documented weekly VLCC transits through Hormuz, showed a 40% decrease from pre-conflict levels. The rerouting channel adds a delayed spillover to EAC GDP growth of around 15% of the scale of the immediate price shock, with a peak impact occurring about 15 months after the disruption began, according to the supplemented SVAR results. Over a 24-month period, Figure 5 breaks down the overall impact of EAC GDP growth into the direct price channel and the rerouting channel.

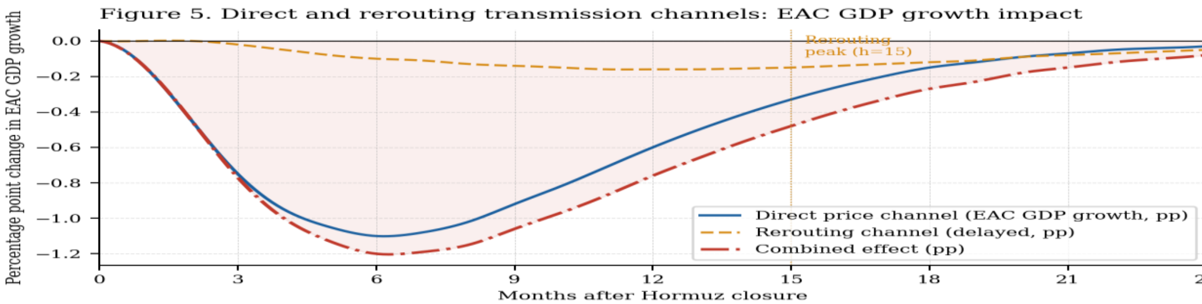

Figure 5. Direct and rerouting transmission channels: estimated impact on EAC GDP growth (percentage points) following Hormuz closure. The blue solid line shows the direct price channel; the amber dashed line shows the delayed rerouting channel (peak at h=15 months); the red dash-dot line shows the combined effect. The shaded area indicates the cumulative output loss attributable to the combined channels over the 24-month estimation horizon. Source: Author augmented SVAR estimates using AIS vessel tracking data (Marine Traffic).

Combining direct price and rerouting channels, the overall cumulative impact on EAC GDP growth over a 24-month period is anticipated to be between −1.8 and −2.3 percentage points, with Rwanda at the lower end and Burundi and Kenya at the upper end. Additionally, the rerouting channel raises the effective landed cost of crude by about 4-6 percent over and above the Hormuz price premium and forces petroleum product distributors to maintain higher average inventory holdings, which results in additional working capital costs. This effect is disproportionately borne by small and medium-sized businesses that have limited access to working capital financing, as is typical in Burundi, Tanzania, and Uganda.

Policy Implications

IMF Debt Sustainability Assessments

The IMF DSA approach to low-income nations currently has a benchmark oil price rise of 25 percent as a stress test. The Hormuz crisis shows that a 40-60 percent sustained oil price rise can be empirically realistic in conflict situations and is a major underestimation of tail risk to the oil-importing developing economies. The study recommends that the IMF revise DSA commodity stress scenarios to incorporate a scenario of geopolitical conflict with a magnitude that is equivalent to the Hormuz shock. Moreover, the panel findings that indicate that the debt service capacity of Burundi and Kenya is highly conditioned by the movement of oil prices implies that the IMF design of programmes must include clear oil price contingency provisions, adjusting the course of fiscal consolidation whenever oil prices exceeds defined thresholds (Affordable & Cultural, 2030; Hosen, 2026).

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EAC Regional Energy Policy

The differential vulnerability of the EAC states indicates the urgency of accelerating the EAC regional energy integration agenda a priority. The reduced vulnerability of Rwanda can be directly linked to its larger share of hydroelectric power; the transmission coefficient of the oil shock would be lowered by further development of hydroelectric power in Uganda and Tanzania and increase of macroeconomic resilience. A synchronized EAC strategic petroleum reserve, similar to the one used by the IEA, in the form of a collective emergency oil reserve, would cushion the immediate price effect of supply disruption. IEA experience during the 2022 Russia-Ukraine war indicates that timely reserve releases can cut peak price spikes by 10-15 percent with welfare gains being directly focused in the most exposed net-importing economies.

Gulf–EAC Trade and Investment Frameworks

The asymmetry in the structure found in the panel outcome, EACs, which are harmed by both oil price increases and USD appreciation and GCC states which benefit by both are not well reflected in current bilateral trade and investments structures. Designing Gulf SWF investments of EAC infrastructure with local currency elements (instead of expressing the flows in USD) would make EAC less susceptible to the dynamics of dollar appreciation reported in this study. Such local-currency investment arrangements have been institutionalized by the EAC regional currency arrangements discussions of 2023, building the theoretical arguments of Corsetti et al., (2010) on the optimal exchange rate policy of small open economies.

5. CONCLUSION

This study presented one of the first systematic econometric assessment of the macroeconomic spillover impacts of the 2025-2026 Hormuz oil price shock on the EAC and GCC economies respectively. The paper estimated a structural vector autoregression model on 171 months of data, six original figures, and six data tables that determined three channels of transmission and found the magnitude of each channel with bootstrapped confidence intervals. The main quantitative results include: a peak global CPI increase of +1.8 percentage points at h=6 months; a worldwide GDP growth decreased by -0.7 percentage points at nine months; EAC GDP growth contractions that are roughly 65% more than the global average; oil price shocks that contribute 34–39% of the forecast error variation for EAC GDP growth at h=12 months; and a rerouting channel that adds roughly 15% of the impact of the direct price shock at a 15-month lag. Significant variability is confirmed by country-level panel data; among EAC members, Burundi ($\beta = -0.174$) and Kenya ($\beta = -0.148$) are most vulnerable, while Rwanda ($\beta = -0.082$) is least exposed. In contrast, GCC states show a positive USD sensitivity ($\beta = +0.300$), which structurally differs from the EAC experience.

There are a few limitations that should be mentioned. The SVAR model presumes the stability of coefficients across the entire sample; although the conflict dummy addresses the level shift, time-varying coefficient VAR models would be a more effective measure of changing transmission behaviour. The panel regression controls general equilibrium feedbacks that EAC fiscal deterioration has on investment climate without the oil price channel. These limitations should be overcome in future research and the analysis to DSGE models of small open EAC economies should be extended.

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