EPRC ECONOMIC POLICY RESEARCH CENTRE

POLICY NOTE

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Drivers of changes in Uganda's fuel pump prices during the COVID-19 crisis.

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Executive Summary

This policy note examines fuel price movement in the domestic, regional, and international fuel markets and analyses how local price increases are synchronous with regional and international prices. The global surge in oil prices continued through the first half of 2021 and peaked in October and November 2021. Because of the lifting of COVID-related lockdown conditions, the rebound in global economic activity led to increased global demand for fuel. However, the supply gap widened because of pandemic-induced supply chain disruptions and reduced global oil production. As a result, crude oil prices increased, raising fuel costs for retailers.

When the local pump price is decomposed, in the first and last halves of 2021, international fuel price (crude oil) emerges as the most significant driver of Uganda's fuel pump price, comprising 40% of the pump price, followed by tax (31%) and distribution and marketing costs as well as retail dealer profit margin (29%). Based on pass-through coefficients, results still suggest that through price transmission, international fuel price is an important factor in driving local fuel price - on average, for every dollar increase in global fuel price, there is a likelihood that about 2 dollars are passed through to the pump price. Fuel shortages, exacerbated by a weak fuel reserve capacity, have driven the skyrocketing fuel price observed during January and February 2022. The tendency of an oligopolistic cartel-like structure of the petroleum market also seems to amplify the fuel price crisis.

Domestic policy actions can influence tax-related costs, distribution, and profit margin rather than the international crude oil price. In the medium term, the government can align fuel taxes with the inflation target. Fuel price increase spurs inflation; measures can be established to regulate price and costs related to distribution and margin. To minimise potential losses, tax measures should be implemented alongside regulatory measures. A fuel stabilisation fund or subsidy can also be explored to mitigate the effects of the international price crisis. Building an effective fuel reserve system (with higher capacity) is also crucial for price stabilisation during fuel crises. Regulatory and reserve measures can be designed and implemented under an autonomous public agency.

1. Background and Introduction

Uganda has been experiencing high fuel pump prices with undocumented effects on households, businesses, and the economy's demand for goods and services. Between January and November 2021, average petrol prices increased by nearly 21%, and diesel by about 16%. Paraffin/kerosene prices remained more stable, with a negligible increase of about 1.2% during the same period. The unchecked rises in petrol and diesel pump prices have led to a severe outcry by the public and across government. For example, in November 2021, the Parliament of Uganda[1] sought government intervention to address the fuel pump price crisis. Government officials seem to attribute the price rise solely to rising international crude oil prices. Such a consideration does not factor in the transmission lag of three to six months of global crude oil prices to local fuel pump prices. Others attribute rising local fuel prices to global economic recovery from COVID-19, leading to higher demand for fuel. This calls for a better understanding of the key drivers of the recent rising fuel pump prices and what needs to be done.

In addition, the government in July 2021 increased tax by Ush100 per litre of petrol and diesel. There is scanty evidence on how this has affected fuel price amidst a widespread perception that fuel price increase registered after July 2021 could be associated with the tax increase. This makes it necessary to examine and provide concrete evidence on how the fuel tax influences fuel price changes, among other possible drivers of the fuel price.

1 https://www.parliament.go.ug/news/5451/govt-should-intervene-skyrocketing-fuel-prices-mps

The changes in fuel prices affect the economy at different levels. Key aggregates such as the Balance of Payments Position and Gross Domestic Product (GDP) are affected at the macro level, as is the cost of doing business. Businesses that highly depend on fuel are likely to face higher input costs. Fuel energy is a critical intermediate input in the production of goods and services, and thus, any crisis in its prices culminates in far-reaching adverse effects on the economy. It deteriorates the business environment by escalating the cost of doing business because of increased transport costs. According to the World Bank (2009), high fuel price is the single greatest contributor to total trade-related transport costs, accounting for more than a third (35%) of the costs.

Increases in fuel pump prices also undermine poverty reduction efforts through the impact on the prices of all other goods which use petrol and diesel, among others, as intermediate inputs. For example, the most affected is food, on which the poor spend disproportionately a higher share of their total household expenditures (over 40%) (UBoS 2021). Apart from food, the value of other essential commodities (e.g., sugar, salt, and medicine) is also adversely affected by the fuel price crisis. Overall, rising and steep fuel prices are detrimental to the welfare of households and the population because of resultant high inflation. Also, to note is that most households, especially in rural areas, use paraffin, and any slight price increase might impact their welfare.

At the policy level, Uganda's current National Development Plan (NDPIII) emphasises achieving national development goals through the agro-industrialisation agenda. An increase in fuel prices, especially for diesel—extensively used for industrial purposes—also undermines such policy efforts.

The current fuel price crisis comes at a critical time when the economy is struggling through a recovery path because of the devastating effects that the COVID-19 pandemic and its containment measures inflicted on the economy. It is thus important to examine the factors leading to the fuel price crisis and explore corrective policy interventions to curtail the crisis to ensure a smoother and faster course of economic recovery.

Specifically, this policy note sought to answer the following policy-related research questions.

(a) What have been the global crude oil price movements – are these uniform at that level.
(b) What have been the trends and patterns in domestic fuel pump prices over the past five years, focusing particularly on 2020 and 2021? What explains the variations in spatial prices even within the same geographical location, such as Metropolitan Kampala.
(c) How do the national average pump prices compare with those of the East African partners, and why the variations, if any.
(d) What are the drivers of the observed changes in pump prices.
(e) What corrective measures should be put in place to mitigate the negative impact of the rising fuel pump prices on Uganda's development path and household wealth creation, business environment, including the agro-industrialisation agenda, and the economy at large.

The rest of the policy note is structured as follows. Section 2 discusses the methods and data sources used in the analysis. Section 3 discusses global fuel price movement, whereas Section 4 discusses regional and domestic fuel price patterns. Section 5 dives into the potential drivers of local fuel pump prices. The conclusion and potential corrective policy measures are the subjects of section 6.

2. Methods and data sources

The paper follows a descriptive statistical approach. This involved analysing price movement and identifying price trends using historical and current fuel price data.

(a) To identify the potential driving force behind fuel price surges, we computed the fuel supply gap based on oil demand-supply framework data from the Organization of the Petroleum Exporting Countries (OPEC) and the International Energy Agency (IEA). A trend analysis of the OPEC Reference Basket (ORB) – also known as OPEC Basket (OB), was conducted to examine global price movement. The ORB is a weighted average of prices for petroleum blends produced by OPEC member countries (USD per barrel[2]) – this is used as a benchmark for international crude oil prices.
(b) Trend analysis of the average fuel pump prices was conducted for local, regional and international prices. This explored trends and patterns in these prices.
(c) Analysis was also conducted through average fuel price decomposition, based on the key components of petrol and retail diesel prices - structured by fuel tax regimes for the current and previous fiscal years, the cost of crude oil, and distribution and marketing costs, including the profit margin.
(d) Lastly, we compute the pass-through coefficients to measure the extent to which international fuel prices are passed on to the local price. The computation of the pass-through coefficient is based on the ratio of the increase in fuel retail or pump price to the increase in the international price, using a similar approach by IMF (2020) – see equation 1, and also Bacon & Kojima (2006). All currency measurements

2 In the analysis, we converted into USD per litre, to ensure comparability with domestic prices and prices in other EAC countries.

were converted into USD using a period-specific average exchange rate. The pass-through coefficient is interpreted in terms of the transmitted effect of a unit dollar increase in international fuel price. For a unit or one dollar increase in fuel supply cost (proxied by international price), the coefficient denotes how many dollars or what fraction of a dollar they passed through to the consumer or pump price (see IMF, 2020). The shortcoming of this approach is that it does not disentangle the transmission lag of international fuel price changes. However, we assume a powerful and immediate transmission in this analysis, given that international prices have been steadily rising – fuel pump prices exhibit a strong and rapid response to international (crude oil) price increases but delayed and long-lasting response to crude oil price decreases (Hao & Zesheng, 2021).

$$(1) \quad PT_{it} = \frac{Pump\ price_{i,t} - Pump\ price_{i,t-1}}{Inter\ price_{i,t} - Inter\ price_{i,t-1}}$$

Where *PT* is the pass-through coefficient for i^{th} country (Uganda) at t^{th} time (month/year). The *pump price* is the consumers' retail fuel price, and the *Int price* is the international fuel price.

Data used in the analysis were obtained from local and international sources.

a) The local sources included the Uganda Revenue Authority (URA) and Ministry of Finance, Planning and Economic Development (MoFPED) - average local pump prices (as charged by local fuel stations), fuel tax data by type of fuel, exchange rates for imports, volumes and values as well as monthly revenue from imported fuel. Some of the data (e.g. fuel import values) was obtained from the Uganda Bureau of Statistics (i.e. monthly merchandise trade statistics).

b) Data for prices in other EAC countries (Kenya and Rwanda) was obtained from the Global Petrol Prices database, and for Tanzania was from the Central Bank of Tanzania.

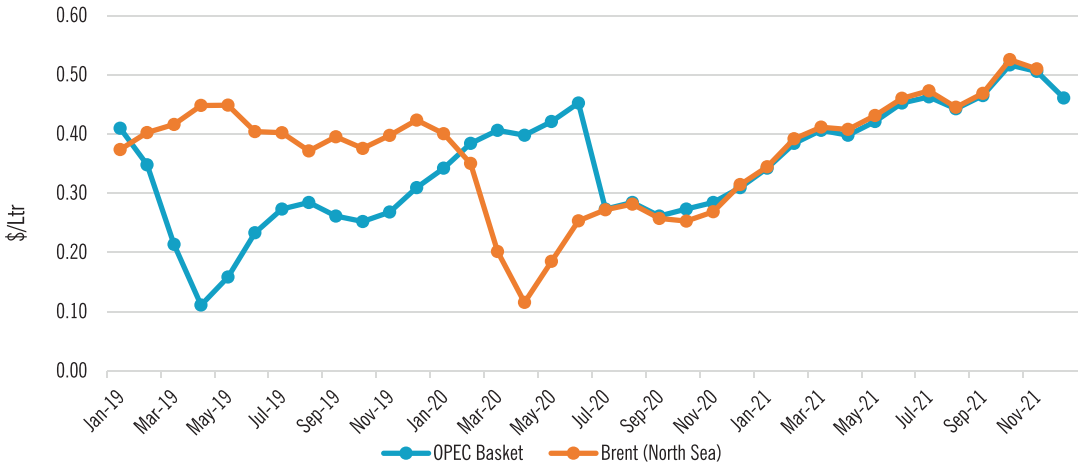
c) The international price data sources are: OPEC, including OPEC Reference Basket data; International Energy Agency (IEA); US Energy Information Administration (EIA); and Department for Business, Energy and Industrial Strategy (UK).

3. Global perspective of crude oil prices

Figure 1 shows a surge in crude oil price at the global level, based on the OPEC basket price benchmark. Similar patterns are observed using the Brent[3] benchmark (from July 2020), confirming the international oil price surge. The surge was by about 13% between July and December 2020. During the first half of the year, the rise continued and peaked in October and November. The increase in crude oil prices in 2021 is mainly due to increasing COVID-19 vaccination rates, relaxation of containment measures, and a global economic rebound that resulted in the global petroleum demand rising faster than supply. Notably is a marked increase between August and November 2021, by 17% (August - October 2021) and 14% (August - November 2021). Since Uganda is a large importer of petroleum products, the increase in international crude oil price potentially impacts the domestic fuel price through a price transmission effect of the crude oil price, affecting the local fuel price. As discussed in the next sub-section, the local pump price movement (see Figure 2 and Figure 3) follows a similar pattern as the international oil price, reflecting the likely international price transmission.

3 Brent blend is a blend of crude oil extracted from oilfields in the North Sea between the United Kingdom and Norway. It is a benchmark used for pricing crude oil in Europe and internationally.

Figure 1 Trends in international oil prices (USD per litre)



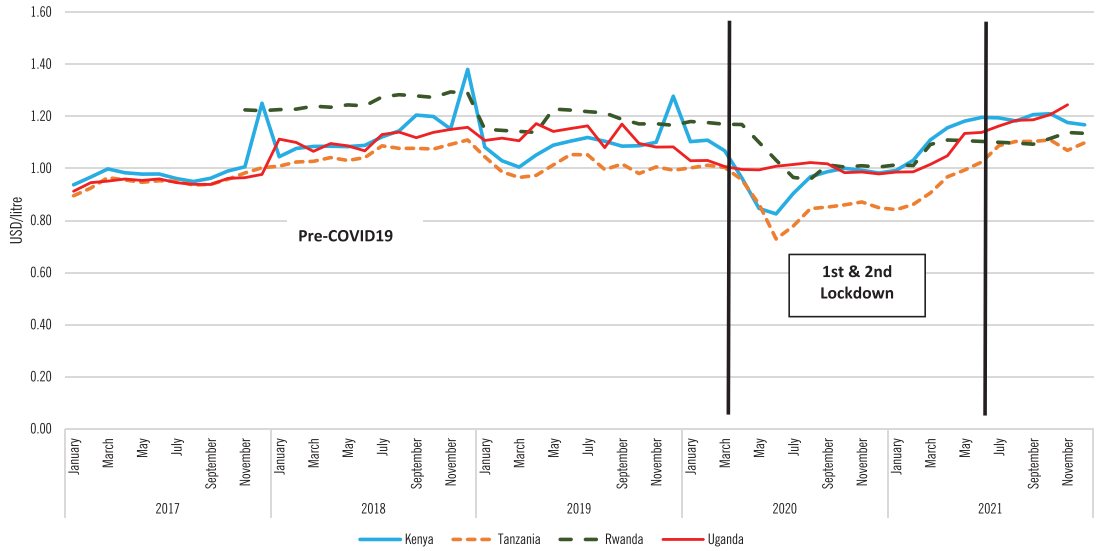
Notes: Original data from the OPEC database is in USD per barrel, but we converted this into USD per litre for comparability with regional and local pump price
Source: EPRC's computation using OPEC and US EIA data (2020-2021).

We observe that the Brent benchmark exhibited a different trend compared to the OPEC benchmark, especially in the first half of 2020. In this reference period, the Brent benchmark was significantly reduced because of high inventory levels in Europe, coupled with low demand (because of reduced economic activity), hence excess oil supply. According to EIA (2020), because of high inventory levels, the Brent crude oil spot prices were forced to move downwards by about 72%, from a monthly average of USD 64 a barrel in January to only USD 18 a barrel in April 2020.

4 Regional and national fuel pump price trends and patterns

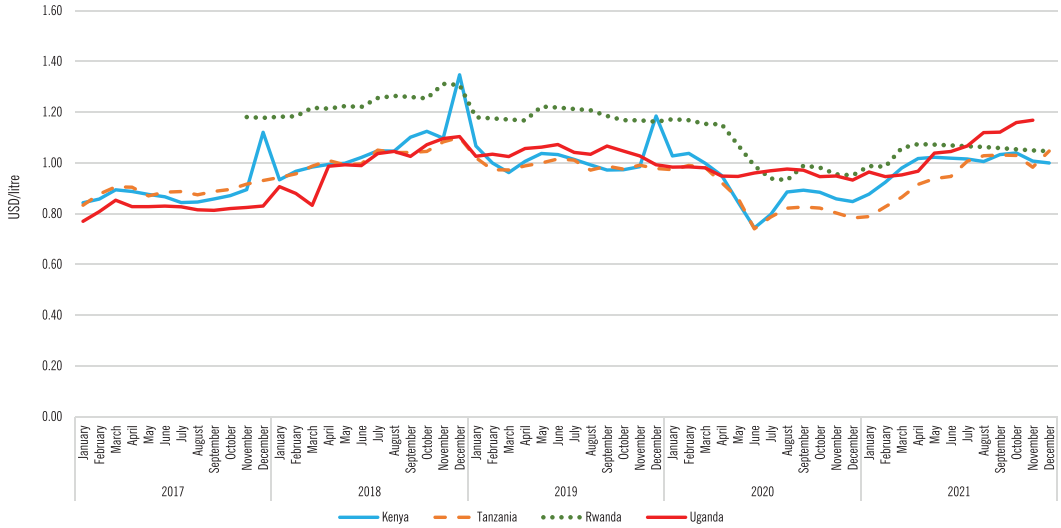
Fuel pump prices (petrol and diesel) have been relatively stable across the different East African Community countries, especially in Uganda, before the pandemic (Figure 2 and Figure 3). The relatively stable exchange rate and mildly increasing imports of petroleum products could partly explain the observed stability for Uganda at the time. For instance, between January 2017 and December 2019, Uganda's foreign exchange rate (UGX/USD) averaged USD 3,690. The imports of petroleum products increased mildly from USD 892

Figure 2 Trends in average petrol prices (USD per litre)



Source: EPRC's computation using monthly pump price data (2017-2021). Data were obtained from global petrol prices (Kenya and Rwanda), MoFPED (Uganda) and the Central Bank of Tanzania (Tanzania).

Figure 3 Trends in average diesel prices (USD per litre)



Source: EPRC's computation using monthly pump price data (2017-2021). Data were obtained from global petrol prices (Kenya and Rwanda), MoFPED (Uganda) and the Central Bank of Tanzania (Tanzania).

million to USD 1,068 million during the same period (UBoS 2021[4]). The increase in the importation of road vehicles and motorcycles could also partly explain the noticeable increase in petroleum and petroleum products imports. The import value of road vehicles increased from USD 397 million to USD 644 million.

During the COVID-19 pandemic, fuel pump prices for all the EAC countries have fluctuated, albeit at different levels and in different periods (Figure 2 and Figure 3) – partly reflecting the different fuel regimes across these countries. For example, the fuel pump prices for Kenya, Tanzania and Rwanda sharply decreased between March 2020 and June 2020, while Ugandan prices experienced a "mild" decline. This observation suggests that fuel prices were less volatile in Uganda than in these countries.

Generally, the noticeable decrease in the fuel pump prices during this period can be attributed to the global decline in international oil prices due to a fall in demand for fuel on account of the pandemic and the associated containment measures[5]. Notably, the decline in demand resulted in a reduction in the global production of fuel.

More specifically, the pandemic is associated with COVID-19 cases and containment measures such as lockdowns, travel bans, business closures and increasing barriers to trade such as testing and quarantine requirements that shuttered economic activity, especially industrial production and movement of people and goods. Notably, countries also reduced their imports of petroleum and petroleum products during this period. For instance, the value of oil imports in Uganda declined from USD 240 million in the first quarter of 2020 (Jan – March) to USD 131 million in the second quarter of 2020. Therefore, over the past five years, for all EAC countries – apart from Uganda, a mix of supply and demand factors pushed fuel pump prices to their lowest level during the pandemic (March-June 2020).

With the relaxation of containment measures and reductions in the increase in COVID-19 cases, economies experienced a rebound in economic activity. This increased the demand for fuel both globally and regionally, as evidenced by the increase in oil and/or fuel imports. However, because of pandemic-induced supply chain disruptions and reduced global production of oil, the demand exceeded the supply. This resulted in increases in the crude oil prices which raised the cost of fuel for the retailers. As expected, the retailers passed on this price increase to the consumers through higher fuel pump prices.

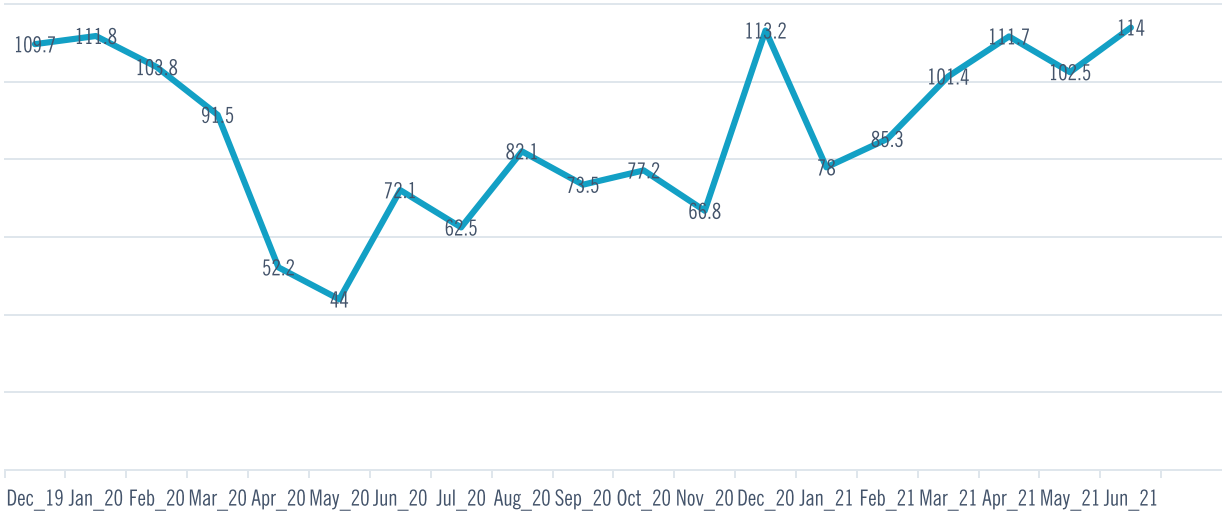
Figure 2 and Figure 3 show that fuel prices started rising around August 2020 for other EAC countries, but not Uganda – again reflecting sluggishness in price movement compared to other countries. Uganda's more stringent lockdown measures could partly explain this "*stickiness*" compared to the other economies – as restrictions on movement and the closure of some business activities resulted in low consumption, thus keeping fuel prices down. Uganda's fuel pump prices started increasing around January 2021, a trend that has continued to date, despite stability in the exchange rate and amidst some increases in fuel imports.

As observed in Figure 2 and Figure 3, the current increase in fuel pump prices is not a localised but a regional and global issue. The trend suggests that factors beyond domestic ones could explain the recent price increases. For instance, crude oil prices fell drastically during the first quarter of 2020. Still, they started rising in May as the supply decreased with a positive demand shock following the global re-opening of economies. Despite the recurrence of COVID-19 and the reinstatement of restriction measures in some countries in 2021, there was no observed decline in the global oil prices. This is partly because the containment measures, such as the second lockdown, were not as stringent as the first measures.

During the first lockdown, there was a sharp decline in domestic fuel demand (proxied by import), but fuel demand has been on an upward trend (Figure 4a and Appendix 2). For the case of Uganda, the second lockdown meant that economic recovery was slower than expected. Therefore, economic activity continued, and the demand for fuel (petrol and diesel) was unabated. Relatedly, whereas the government increased the tax per litre of petrol and diesel by UGX 100 to boost domestic revenue, there is unlikely a recognisable pass-through to domestic prices. However, from August 2021 to date, Uganda's fuel price increase has been more pronounced than the rest of the EAC countries – this was especially so for diesel. Hence Ugandan prices for both petrol and diesel surpassed the fuel prices in all other EAC countries over the same period, as illustrated in Figures 2 and 3. This may be explained, in part, because other EAC countries (e.g., Tanzania, Kenya, and Rwanda) have put in place fuel price regulations, and this may help them take the edge off the recent shock of steadily rising international fuel prices by tailoring the international price shock to be absorbed by fuel dealers rather than consumers. For example, in Tanzania, the government, through the Energy and Water Utilities Regulatory Authority, implements a fuel price ceiling whereby a uniform wholesale price is fixed for each type of fuel (petrol or diesel) while factoring in import, tax, and other related costs – the retail fuel price only varies according to the region because of variations in distribution costs. In November 2021, given the observed steady price increase, the government of Tanzania intervened through a price reduction action that was achieved by reducing some of the fuel-related fees or charges imposed on petroleum products and collaborating with wholesalers to keep prices at affordable levels.

4 UBOS data on imports of petroleum, petroleum products and related materials (2021).
5 As shown in the previous section, national fuel pump prices tend to be less volatile than the international crude prices.

Figure 4a Import of petroleum, petroleum products (USD millions)

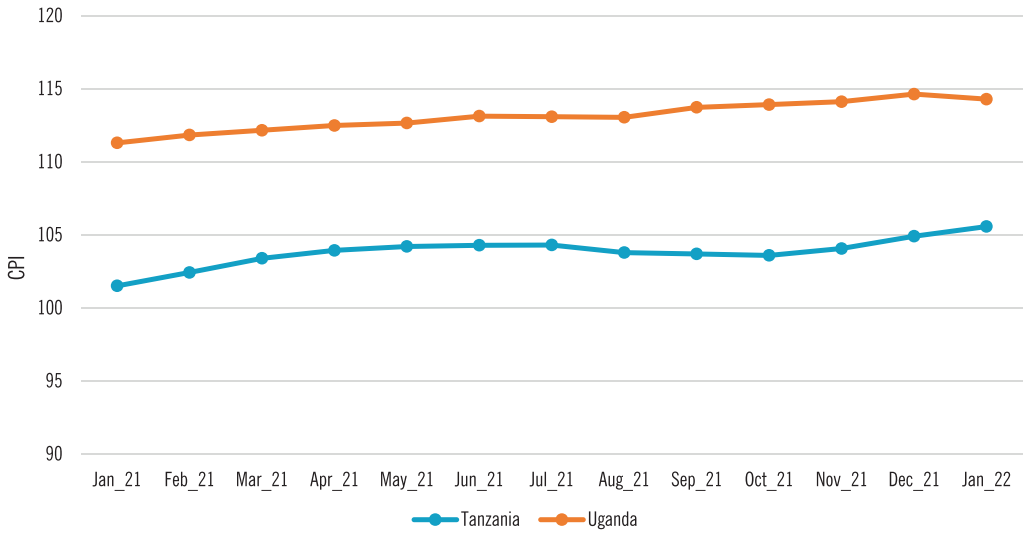


Source: EPRC's computation using monthly merchandise trade statistics from UBOS, 2021.

The interventions undertaken by the Tanzanian government with respect to keeping fuel prices at a relatively lower level through regulation and related actions have potentially benefited the economy by maintaining a lower aggregate price level for goods and services. This suggests a higher purchasing power of Tanzania's currency unit than Uganda, as illustrated in Figure 4b. For example, the Consumer Price Index (CPI) was only 103.69 for Tanzania and 113.02 for Uganda on average in 2021. In the same year, the highest CPI for Tanzania was 104.92 in December, and that of Uganda was 114.65 (Figure 4b). This implies that towards the end of 2021, when both international and local fuel prices were at their highest levels, Tanzania experienced a rise in inflation level of only 5%, compared to a rise of 15% in Uganda. Therefore, this has led to a relatively higher purchasing power in Tanzania.

Results for Uganda also reveal that domestic fuel prices have risen to higher levels than pre-COVID-19 period prices, especially after the first and second lockdowns. This implies that besides regulatory gaps, factors related to the COVID-19 pandemic have affected fuel prices. Also, the lack of regulations means Uganda is a fertile ground for unfair trade practices, whereby price adjustments can be made unfavourably to consumers, by any magnitude, at the sole discretion of fuel dealers. The unfair trade practices (given lack of regulation) may also arise out of the possibility of fuel cartels in fuel dealerships

Figure 4b Consumer Price Index (Uganda and Tanzania)



Source: Computed by EPRC using CPI data from Uganda Bureau of Statistics and National Bureau of Statistics, Tanzania.

in Uganda, hence limited competition and fuel price manipulation. There is a possibility of a cartel and collusion; only two oil companies (Vivo Energy Uganda Ltd and Total Uganda Ltd) dominate the market, accounting for 30.17% of the market share (16.86% and 13.31% for Vivo Energy and Total, respectively)[6] among over 60 oil marketing companies with the majority of the companies having a market share of less than 2%. Uganda's over spike in fuel price (as compared to the rest of the EAC countries) also raises concerns about imperfection in the market—specifically, if fuel dealers efficiently cost fuel. There is also a possibility of the fuel market suffering from the hazard of operating in uncertainties. For example, current actions of charging higher fuel prices may result from the dealers' need to recover lost revenue during the first and second lockdowns and anticipate future uncertainties in the market.

Variations in fuel pump prices are observed even at the fuel station level. In particular, different retailers from the same fuel company charge different rates even in the same geographical area. Although this is a phenomenon that can be further investigated to understand the underlying factors behind such variations fully; there are indications of potential factors that include: competition among retailers, quality of fuel (e.g. high-performance fuel such as V-Power for Shell Uganda), profit margin, and distribution including marketing and other services as well as transport costs.

It is also important to note that fuel prices in Uganda soared in January 2022, beyond the price level registered in 2021. Specifically, petrol and diesel pump prices increased by 5.7% and 1.6%, respectively, during January 2022 (See Appendix 5). This has been mainly attributed to fuel shortage, as discussed in information box 1. According to the information obtained during the study, Uganda's capacity to mitigate shocks arising from fuel shortage is weak. This is because the existing fuel reserve tankers can only store 5 million litres of fuel, which can only run for about six days, beyond which, the system becomes dysfunctional.

Information Box 1: Fuel shortage and skyrocketing fuel prices in Uganda: The case of January 2022

The average fuel pump prices for both diesel and petrol generally increased during the month of January 2022, to higher levels compared to the previous month (2021) prices (See Appendix 5). The observed increase in the fuel prices during January can be partly explained by the continued increase in global prices for crude oil , rising domestic demand for fuel especially due to the further relaxation of COVID-19 containment measures – e.g., re-opening of; schools for all levels of education, entertainment industry, and resumption of other economic activities. More notably, the strike in January 2022, by truck drivers against the compulsory COVID-19 testing at the border between Uganda and Kenya also explains the sharp increase in fuel prices. The strike curtailed the transportation of fuel to Uganda resulting in shortages of fuel, especially for petrol. The dealers responded by increasing their prices to cushion the shock and also to make "some abnormal profits" from the impasse.

5. Potential drivers of local fuel pump prices

5.1 Oil demand and supply market forces

One of the key determinants of fuel prices is the global supply and demand of oil. Globally, the oil market experienced an extraordinary decline in demand between 2019 and 2020, from 100 to 91 million barrels per day (mb/d) on average (Table 1). The fall is majorly attributed to the low level of economic activities across the globe due to COVID-19 related reasons, especially between the first and third quarters of 2020. The fall in demand led to a production cut by

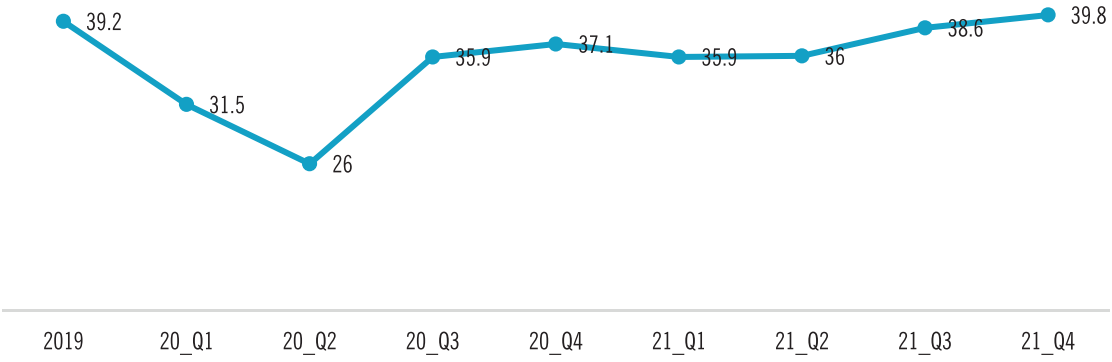
6 Market shares of oil marketing companies in 2019, based on the 2019 Statistical Abstract – Ministry of Engery and Mineral Development, Republic of Uganda.

Table 1 Global oil demand and supply (MB per day)

		2020					2021				
	2019	Q1	Q2	Q3	Q4	All	Q1	Q2	Q3	Q4	All
Demand											
OECD	47.7	45.4	37.6	42.3	43.1	42.1	43.3	43.8	45.4	46.5	44.7
Non-OECD	52.0	48.3	45.3	50.4	51.7	48.9	50.7	51.1	52.3	52.7	51.7
All	99.7	93.7	82.9	92.7	94.8	91.0	94.0	94.9	97.7	99.2	96.4
Supply											
OECD	28.5	29.9	26.9	27.1	27.8	27.9	27.8	28.1	28.3	28.7	28.2
Non-OECD	32.0	32.3	30.0	29.7	29.9	30.5	30.3	30.8	30.8	30.7	30.6
All	60.5	62.2	56.9	56.8	57.7	58.4	58.1	58.9	59.1	59.4	58.8

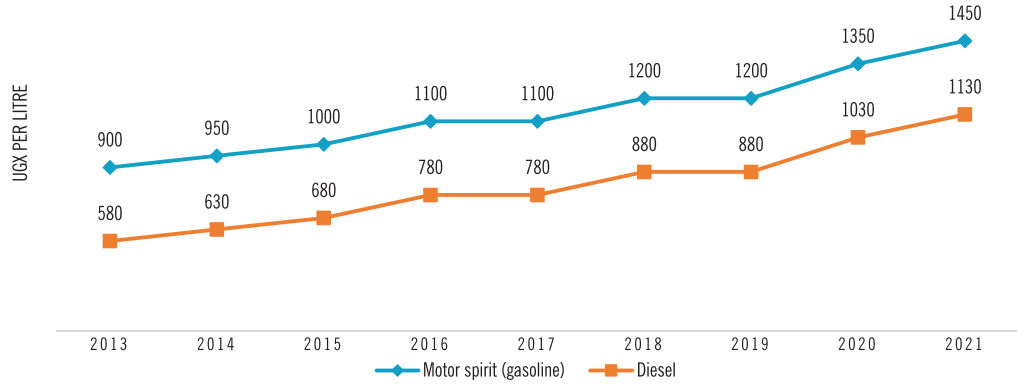
Source: Compiled using data from International Energy Agency (2019 – 2021).

Figure 5 Trend in global supply gap (million barrels per day)



Source: EPRC's computation using International Energy Agency world oil statistics. https://www.iea.org/data-and-statistics

Figure 6 Uganda's fuel tax regime (Tax – UGX per litre)



Source: EPRC's computation using fuel tax data from Uganda Revenue Authority (URA) - 2021.

OPEC – in 2020, OPEC cut oil production by 10 million barrels per day[7], following the fall in demand.

However, the decline in demand for oil did not last or spill over to 2021. The rebound in oil demand started in the second quarter of 2021, and since then, demand has been steadily rising until the last quarter of 2021, with a marked increase observed between the third and fourth quarter (2021) from 97.7 to 99.2 million barrels per day. The recovery and rise in demand are associated with the opening up of economies due to the relaxation of COVID-19 restrictions and related economic activities.

However, the rising demand has not been matched with increased production and supply. Given the production cut, the global oil supply has been sticky and not commensurate with the increasing demand, primarily because of low production, especially by OPEC. By the third and fourth quarters of 2021, oil demand rebounded back to the pre-COVID-19 period (2019) volume of almost 100 million barrels per day, but supply has not been proportionately responsive.

Supply rigidity has led to a large supply gap, and the gap has been steadily rising from the first quarter of 2021, peaking at almost 40 mb/d in the fourth quarter of 2021 (Figure 5). The supply shortfall is likely to persist months into 2022 since the OPEC production cut is still being implemented until the phase-out[8] of the oil production cut is achieved by September 2022[9].

5.2 Taxation on fuel

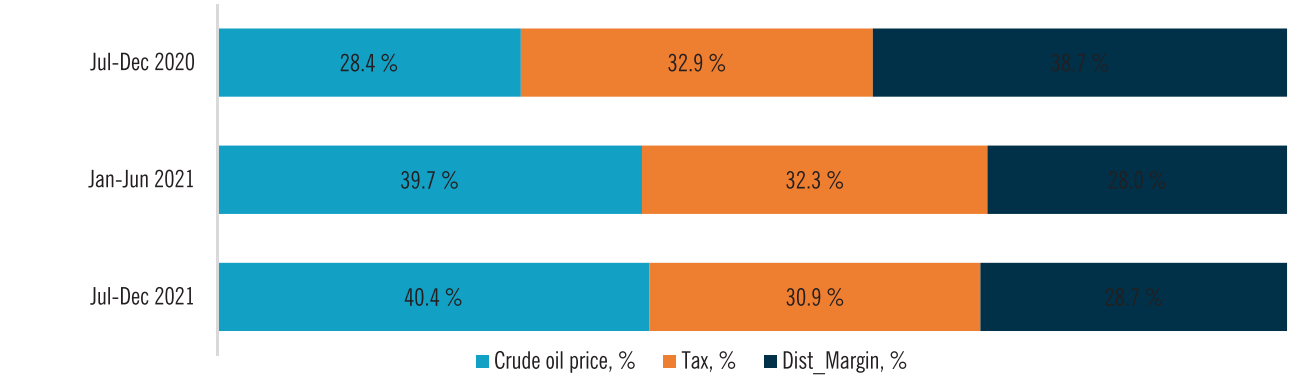
It is important to note that the fuel price crisis in Uganda coincided with a modest increase in tax as a domestic revenue mobilisation fiscal strategy by the government in this current fiscal year. As shown in Figure 6, the government increased tax on fuel (per litre) by UGX 100, from 1,350 in 2020 to 1,450 in 2021 for gasoline; and from 1,030 to 1,130 for diesel over the same period. There is thus speculation as to whether the recent fuel price crisis is attributed to a tax increase or not, given the pump price rise that followed the period after the tax increase. In the next section, fuel tax is

7 https://www.aa.com.tr/en/energy/international-organization/opec-to-cut-oil-by-97-mln-barrels-per-day-from-may-1/28961.

8 OPEC to phase out 5.8 million barrels per day of oil production cuts by September 2022. Planned increase in overall production is by 400,000 barrels per day monthly. Details: https://www.cnbc.com/2021/07/18/opec-allies-agree-to-fully-end-oil-production-cuts-by-september-2022.html.

9 As per resolution by OPEC.

Figure 7 Uganda: Fuel retail price decomposition, 2020-2021



Source: EPRC's computation using pump price data, URA, OPEC, & Global petrol prices (2020-2021).

factored in as one determinant of local pump price to assess the extent of its influence. However, in all the years before 2020, when tax adjustments were made upwards, there was no sharp spike in prices. This then downplays the speculation that the current fuel price crisis could be following the recent modest upward tax adjustment. This provides another ground to examine other drivers of the pump price beyond fuel tax.

5.3 Decomposition of Uganda's fuel price to identify drivers

Different components determine fuel pump prices for different countries. While the international crude oil prices are uniform, they affect the local pump prices – though the magnitude varies across countries. Governments determine the domestic components of fuel pump price variation through either taxation or subsidies, distribution and marketing costs, road accident funds such as that of South Africa; other levies such as those meant to finance the under-recovery of the sector, import levies, among others; and other domestic features that include transport costs, wholesale and retail margins and service costs. Perhaps the basic fuel price would be determined by the international crude oil prices and the exchange rate (depreciation or appreciation). Countries with fuel subsidies that attempt to hedge consumers from international price shocks include; Nigeria, Rwanda, and Kenya.

Figure 7 shows the components of the average pump price of fuel (petrol and diesel) per litre in Uganda and variations in the share of the components. In 2020 (July – December), the distribution, marketing, and retail dealer costs and profit margin accounted for the highest share (39%) of the total pump fuel price, followed by taxes (33%). Therefore, these were the most significant drivers of fuel pump prices in 2020 (July – December). Crude oil prices accounted for a smaller share (28%). In this analysis, international prices (crude oil prices) do not include the cost of refining oil, so they aggregate the refining cost elements[10] under distribution, marketing, and fuel dealer costs and margin.

However, in the first and last halves of 2021, the crude price, which reflects the cost of imports, emerged as the highest driver of fuel price. Crude oil was associated with the largest share of total pump fuel price (40%), followed by taxes (31%) and distribution and marketing costs and retail dealer profit margin (29%). This is plausible, given the notable increase in international fuel price observed in 2021, as shown earlier in Figure 1, which has led to skyrocketing pump prices across the globe. For example, fuel (such as petrol) pump prices have steadily increased in line with global oil market prices, which have doubled from USD 40 per barrel a year ago to USD 85 per barrel in recent weeks because of a sudden rise in post-pandemic energy demand[11]. Elsewhere, statistics from the Department for Business, Energy and Industrial Strategy of the United Kingdom show pump price movement also follows the trend in international fuel prices (see Appendix 1).

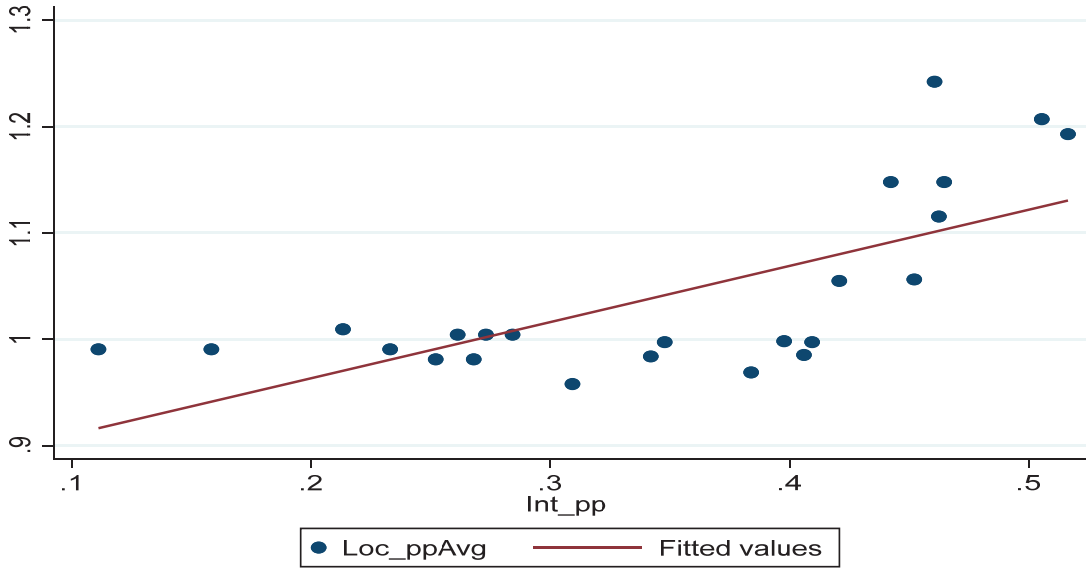
However, it is important to note that although international fuel prices (crude price) constitute about 40% of the pump price in the recent period, the government can hardly control the parameter of the international price. The rest of the composition of the share of pump price (60%) are factors that government can influence through domestic policy – i.e., taxation and costs related to distribution and fuel dealer's margin.

5.4 Relationship between international and local fuel prices

We used Ugandan pump price data to examine the relationship between local pump prices and international fuel prices. The results show that local fuel pump prices positively correlate with international fuel prices. In Figure 8, the fitted values of local pump prices are

10 We did not obtain sufficient data to disaggregate refining cost.
11 https://www.theguardian.com/money/2021/oct/25/uk-petrol-prices-record-highs-oil-market-diesel

Figure 8 Visualising the relationship between international oil prices and local fuel pump prices (USD per litre)



Source: EPRC's computation using average local pump price data and international fuel price data.

plotted on the y-axis, and the international prices are plotted on the x-axis. As shown in Figure 8, the exhibited linear relationship suggests that the local pump price increase is synchronous with international fuel prices. As the global price increases, the local pump price increases. An increase in local pump prices is associated with the rise in international prices. This is consistent with the results of the pump price decomposition, which show that international fuel price is currently (July-December 2021) the largest driver (with the highest share) of the local fuel pump price.

5.5 Extent of international oil price increase transmission to retail pump price

Given the observed relationship between international and local fuel prices, we further estimate how international prices are transmitted (or passed on to consumers in Uganda). The estimation is based on pass-through coefficients for different periods between January 2019 and December 2021.

The results in Table 2 show that increase in international fuel price was by 35% between January and December 2021. More of the international price increase was passed on to the pump price for gasoline (pass-through coefficient of 2.5) compared to diesel (coefficient of 1.8). The results show that a unit dollar increase in international fuel price results in a pass-through of USD 2.5 and USD 1.8 for gasoline and diesel prices. On average, about USD 2 are passed through to the pump price for every dollar increase in international fuel price (considering January-December 2021). For example, the increase in international price was USD 0.119 between Jan-Dec 2021, and the pass-through effect of this is reflected in the change in local pump price by an additional USD 0.259 (about UGX 900 to 1,000). A similar international price increase pass-through is observed from January 2020 to December 2021. However, for gasoline and diesel, the price increase pass-through has been more powerful in January-December 2021, compared to January-December 2020 and January/2019-December/2019. These pass-through coefficients (especially for January-December 2021) suggest that, through price transmission, international fuel price has been an important factor in driving local fuel prices in recent times. The results also show that the pass-through effect was relatively larger for diesel (0.403) than petrol (0.322) in the pre-COVID-19 period (2019), but in 2020 and 2021, the pass-through for petrol became higher than that for diesel (Table 2). The possibility that before COVID-19, more diesel was being consumed for industrial purposes can explain this. When COVID-19 set in, in 2020 and 2021 and industrial activities subsided, there was less diesel consumption; hence, this could have led to a lower pass-through for diesel in 2020 and 2021. In addition, the rate of increase in petrol prices has been on average higher than diesel in 2020 and 2021, even at the international level. This could have sped up the petrol price increase pass-through.

Table 2 International price increase pass-through.

Jan/2019 - Dec/2019	Price increase/change (USD/Ltr) [%]	Pass-Through Coefficient
Gasoline	(0.032) [-2.927]	0.322
Diesel	(0.040) [-3.947]	0.403
Average (Gasoline & Diesel)	(0.036) [-3.418]	0.363
International price increase	(0.100) [-24.470]	-
Jan/2020 - Dec/2020		
Gasoline	(0.039) [-3.827]	1.192
Diesel	(0.040) [-4.079]	1.213
Average (Gasoline & Diesel)	(0.039) [3.950]	1.202
International price increase	(0.033) [-9.581]	-
Jan/2020 - Dec/2021		
Gasoline	0.273 [26.737]	2.300
Diesel	0.217 [22.282]	1.830
Average (Gasoline & Diesel)	0.245 [24.561]	2.065
International price increase	0.119 [34.682]	-
Jan/2021 - Dec/2021		
Gasoline	0.298 [29.971]	2.514
Diesel	0.219 [22.469]	1.843
Average (Gasoline & Diesel)	0.258 [26.261]	2.178
International price increase	0.119 [34.682]	-

Source: EPRC's computation using pump price data and OPEC international fuel price data.

5.6 Movement of the pump price against exchange rate

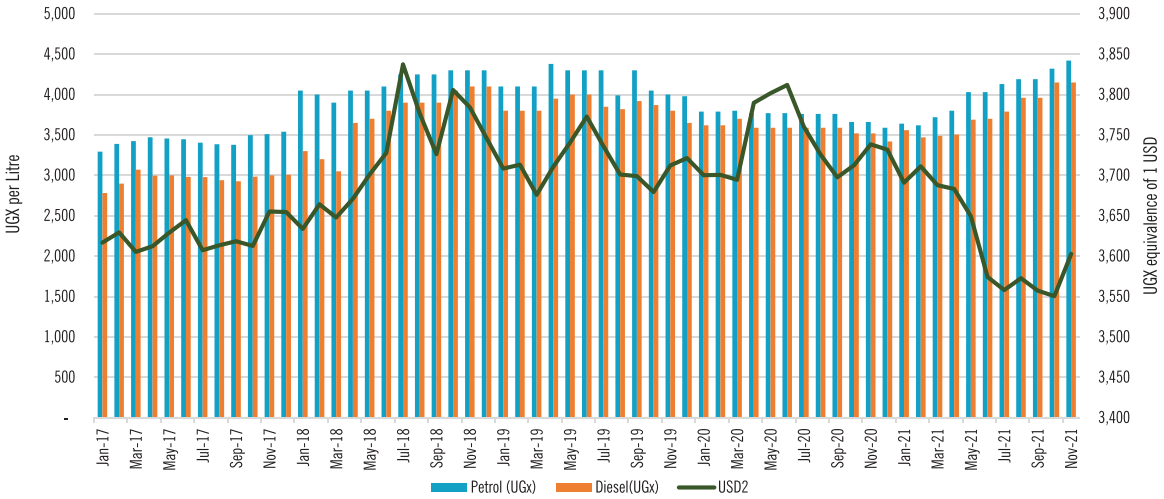
Figure 9 shows a negative relationship between fuel prices (diesel and petrol) and the exchange rate during the COVID-19 period (January 2020 to December 2021). In other words, fuel prices are increasing while the exchange rate (USD) is generally depreciating.

Conventionally, a depreciation in the dollar could imply that it is less costly to import fuel and thus lead to lower fuel prices. However, in Uganda, the depreciation in the dollar has had little or no effect on fuel prices. Fuel prices have been increasing, especially in 2021, despite the appreciation of the shillings (UGX) against the USD. This could reinforce the earlier finding that the movements in the domestic prices are explained more by the fluctuations in the international prices than other factors.

We also examined exchange rate movement against the rate of change in fuel pump prices to establish if appreciation in the shillings potentially has some soothing effect on the pump price increase. Appendix 6 shows the growth rate in the fuel pump prices (petrol and diesel) and movements in the exchange rate. The movements in the exchange rate were more stable than changes in the fuel prices over the review period. Generally, there was a negative but weak correlation (-0.24) between the growth in fuel prices (petrol and diesel) and fluctuations in the exchange rate between February 2017 and December 2021. In other words, fluctuations in the exchange rate were followed by "minor changes" in petrol and diesel prices.

However, during the pandemic (2020 and 2021), the negative relationship between the fluctuations in the exchange rate and the average month-on-month growth in the fuel prices for both diesel and petrol was more pronounced, with a correlation coefficient of about 0.4. The month-on-month growth of fuel prices accelerated in 2021 compared with 2020, primarily due to increasing crude oil prices. Therefore, the recent depreciation of the dollar has been associated with increases in fuel prices, albeit at a decreasing rate – especially during 2021. The observed general insensitivity of fuel pump prices to the exchange rate (dollar) movements makes the price mechanism less effective.

Figure 9 Trends in fuel pump prices and exchange rate



Source: EPRC's computation using pump price data and URA exchange rate data (2017-2021). The exchange rate data used is for import exchange rates.

This insensitivity reinforces an earlier argument (Section 4) that some unscrupulous dealers could make the most of the crisis by charging exorbitant prices, even with a reduction in the cost of importing fuel (diesel and petrol), i.e. in terms of the appreciation of the shillings. Fuel dealers may take advantage of the situation to make some "abnormal profits" as long as the crisis persists. This may be related to the tendency of a growing oligopolistic cartel-like structure of the petroleum business in Uganda.

6. Conclusion and emerging policy considerations

The evidence in this paper suggests that the recent fuel price increase is both a global and domestic phenomenon. Fuel pump prices had been relatively stable before the COVID-19 pandemic within the EAC region. However, pump prices for EAC countries fluctuated at different levels during the pandemic. Governments' effective fuel price regulatory interventions have significantly curtailed high fuel price spikes in some EAC countries.

Rebound in economic activity, especially after the first COVID-19 induced lockdown, increased global and regional demand for fuel. However, the supply gap remains because of pandemic-induced supply chain disruptions and reduced global oil production. The key driver of the rise in local fuel pump prices is rising demand (which has not been matched by an increase in production and supply) and international price (or cost of importing fuel). Disaggregated data show that international price is the largest driver of the pump price, constituting 40%. However, if combined, the rest of the pump price ingredients constitute a share of 60% (i.e., taxation and costs related to distribution and fuel dealer's margin). The tendency of an oligopolistic cartel-like structure of the petroleum business in Uganda also seems to contribute to high fuel prices. The drastic rise in fuel prices in the early month (s) of 2022 has been majorly a result of fuel shortage; however, the fuel reserve capacity is weak and, therefore, unable to mitigate the adverse effects of the shortage.

Effective management of internal fuel price drivers: Fuel tax alignment may be essential to consider, given the results under fuel price decomposition. The international oil price has the largest share of fuel price, but it is a parameter that is out of control through local policy action. However, in the absence of a sharp international price increase, pump prices are driven mainly by distribution and profit margin costs. So the parameters that government can change through policy are costs related to tax, distribution, and profit margin. Taxes can be aligned to deal with the fuel price increase in line with the inflation target. Fuel tax should be prudently approached and kept at a minimal level or rate to abate inflationary tendencies – it should not be revenue reducing and not welfare hurting. Alternatively, a tax reduction response can be implemented as a temporary measure when an international fuel price crisis occurs. Any temporary tax measure should be approached cautiously to avoid serious revenue losses. Evidence based on tax simulation reveals that fuel tax cuts would increase tax losses and can only increase real GDP if the pump prices adjust downwards proportionate to the tax cuts (MoFPED, 2021) [12]. If pump prices remain rigid downwards, the benefit of GDP gains would not be attained. Price rigidities would also lead to losses in GDP in the short run, affecting intended policy objectives negatively. Increases in GDP would only be attained with an effective regulatory measure (*ibid*).

Time to establish some regulatory measures: Distribution and margin costs, or generally fuel price, can be controlled by establishing regulatory measures. In particular, the regulation can target limiting fuel profit margin, for example, through a fuel price control regime to cap prices of petroleum products at wholesale and retail levels. Having regulations in place, especially price regimes, means the fuel dealers will absorb any drastic international price shock by keeping their profit margins low rather than passing the international price shock to consumers. The regulatory measures can also be designed with a strategy to disrupt the tendency of an oligopolistic cartel-like structure of the petroleum business. This can also be a tool employed to eliminate potential fuel price rigidities in the downward direction.

There is also a need to explore a fully-fledged cheaper means of transporting fuel from Mombasa to Kampala (e.g. use of an oil pipeline by all oil transporters) to reduce costs associated with the distribution of fuel. Also, the meter-Guage Railway can be fast-tracked, including its rehabilitation for transportation.

Fuel stabilisation fund and reserve: A fuel stabilisation fund or subsidy can be explored to provide mitigation, especially during an international crisis. Combined with a regulatory measure, a self-sustaining stabilisation fund can be developed so that when fuel prices are declining, surpluses can be built and used to control fuel prices when international prices are increasing, recompensing losses incurred by fuel dealers. Lastly, the government can consider building an effective fuel reserve system void of private sector manipulation to target price stabilisation when there is a fuel shortage or price crisis. An autonomous public agency can be established to manage and implement both the regulatory measures and the fuel reserve system under one institutional framework.

12 MoFPED. (Forthcoming). Impact of reducing excise tax on petrol and diesel in Uganda: An application of the Uganda Integrated Macroeconomic Model (IMEM). Macroeconomic Policy Department - Ministry of Finance, Planning and Economic Development, Uganda. March 2022, Issue 2.

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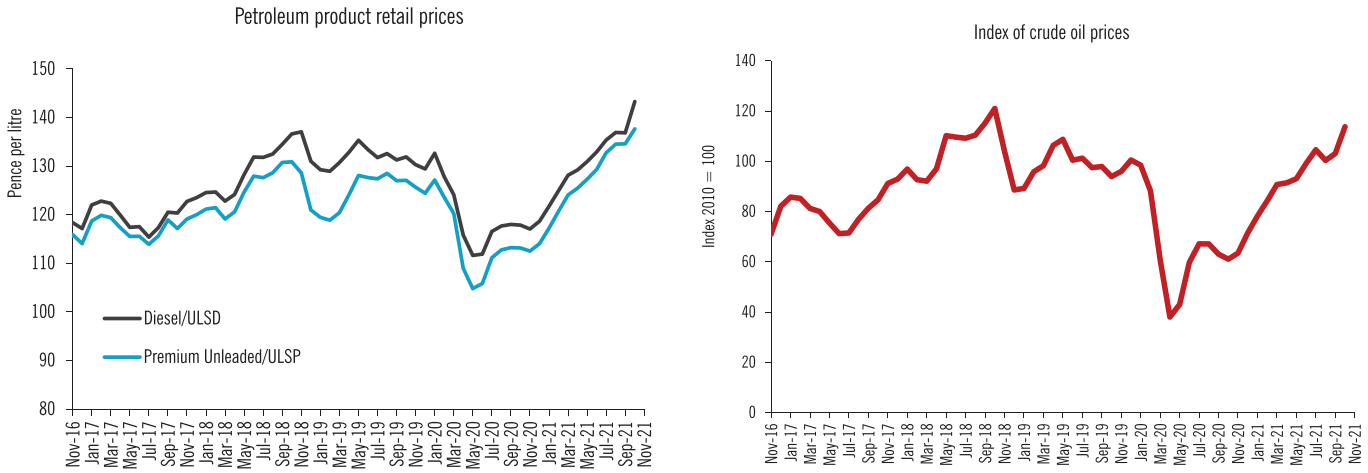
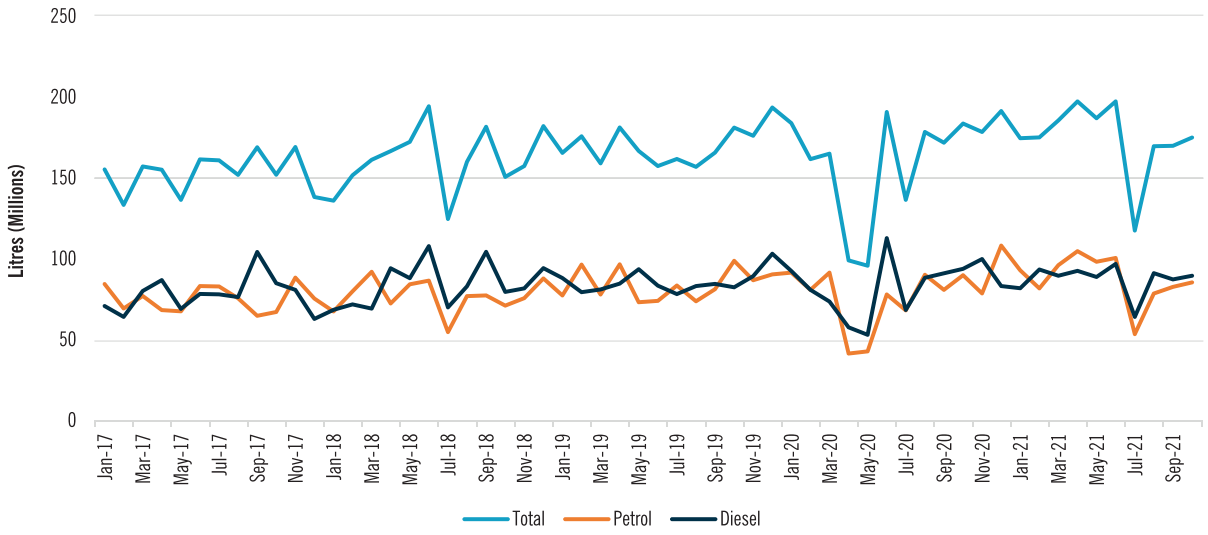
Annex 1: Relationship between retail fuel price and international fuel price in other countries (the case of UK)



Source: Department for Business, Energy and Industrial Strategy of the UK (2016 – 2021).

Annex 2: Monthly fuel import volumes in litres



Source: EPRC's computation fuel import data from URA.

13 Appendix 2 shows that fuel (diesel and petrol) imports have steadily increased over the past five years owing to the growth in demand due to the purchase of vehicles and motorcycles and an increase in suppliers (wholesalers and retailers). During the pandemic, especially between March and May 2020, imports of petrol and diesel reduced significantly – due to stringent containment measures (such as travel bans and total lockdown) that resulted in the decline in demand for fuel. However, with the relaxation of the lockdown and other containment measures, economic activity rebounded, and domestic travel improved, boosting the local demand for fuel, increasing fuel imports – especially between July 2020 and June 2021. The increase in fuel imports was upended by the announcement and implementation of the second lockdown starting on 18th June 2021. Though less severe than the first lockdown, transport and movement were disrupted, resulting in lower demand for diesel and petrol, occasioning a decline in fuel imports.

Annex 3: Monthly fuel imports (all sales) in litres fy2016/17-2021/22

	2021/22	2020/21	2019/20	2018/19	2017/18	2016/17
All						
July	126,535,649	141,534,587	179,234,001	134,956,353	177,819,062	130,401,985
August	180,123,108	192,217,304	166,945,422	178,294,002	165,382,349	152,661,527
September	182,898,051	186,193,476	193,137,663	201,898,309	180,716,647	183,186,321
October	189,055,826	194,675,902	197,826,167	174,902,613	174,235,965	147,564,684
November	-	183,559,189	187,598,667	172,029,286	184,099,219	143,270,831
December	-	199,714,257	206,626,147	200,370,548	150,119,174	144,480,945
January	-	186,324,615	206,791,464	182,234,722	155,179,431	168,477,059
February	-	182,954,112	171,106,897	183,211,296	171,262,994	152,276,038
March	-	199,585,206	180,553,828	174,752,826	176,291,960	175,145,725
April	-	214,302,462	108,612,238	192,096,788	185,577,948	167,992,400
May	-	194,459,370	98,283,342	185,491,901	183,458,545	154,221,344
June	-	218,009,127	205,364,018	174,918,989	209,916,104	173,693,567
TOTAL	**678,612,634**	**2,293,529,607**	**2,102,079,854**	**2,155,157,633**	**2,114,059,398**	**1,893,372,426**
Petrol						
July	53,422,328	68,162,377	83,531,523	54,681,727	82,910,453	40,798,653
August	78,523,455	90,172,013	73,802,885	76,991,722	75,604,014	61,465,196
September	82,691,499	80,788,004	81,270,099	77,365,131	64,799,720	85,363,762
October	85,462,376	89,906,777	98,769,275	71,101,876	67,101,199	67,439,758
November		78,644,248	86,795,901	75,683,788	88,384,978	70,670,220
December		108,289,162	90,426,544	87,919,746	75,492,046	61,136,082
January		92,885,111	91,465,771	77,417,056	67,504,595	84,479,085
February		81,749,494	80,870,597	96,422,776	79,885,546	69,296,782
March		96,126,687	91,525,079	77,997,444	92,029,667	77,020,052
April		104,783,503	41,445,237	96,649,999	72,465,100	68,324,636
May		98,184,924	42,782,761	73,193,793	84,311,457	67,518,155
June		100,553,320	78,001,961	74,013,725	86,546,426	83,217,818
TOTAL	**300,099,658**	**1,090,245,621**	**940,687,634**	**939,438,783**	**937,035,201**	**836,730,199**
Paraffin						
July	3,089,986	3,134,860	4,738,946	5,633,620	4,773,296	5,811,032
August	3,604,477	4,496,928	4,615,421	4,215,318	4,736,846	4,787,204
September	3,900,565	3,167,055	6,221,556	4,507,118	3,556,350	4,445,356
October	3,754,575	3,102,415	5,899,103	6,450,715	5,063,103	4,809,988
November		2,519,622	1,927,140	4,533,066	4,786,701	4,162,903
December		3,979,523	4,374,698	4,235,210	2,953,231	3,837,248
January		3,916,791	3,736,381	4,920,549	7,014,183	3,119,657
February		3,061,779	1,708,272	2,079,308	5,541,393	6,910,390
March		4,304,902	6,140,007	3,281,333	4,767,455	4,546,189
April		6,136,294	3,428,750	3,289,368	4,892,226	3,789,278
May		2,501,932	2,425,264	6,032,421	3,050,146	5,859,598
June		5,518,371	11,509,244	5,239,945	5,633,979	5,440,427
TOTAL	**14,349,603**	**45,840,472**	**56,724,782**	**54,417,971**	**56,768,909**	**57,519,270**
Diesel (AGO)						
July	64,081,001	68,394,092	78,260,484	70,028,656	78,016,822	66,743,300

	2021/22	2020/21	2019/20	2018/19	2017/18	2016/17
August	91,166,994	88,299,960	83,158,484	83,050,679	76,374,055	80,135,234
September	87,274,016	91,064,808	84,487,671	104,308,245	104,232,617	81,093,776
October	89,579,099	93,826,179	82,415,874	79,577,532	84,973,018	69,451,101
November		99,858,044	89,346,195	81,725,908	80,789,414	54,933,870
December		83,198,435	103,178,526	94,230,002	62,819,644	67,064,817
January		81,804,435	92,540,591	88,167,546	68,474,833	70,858,992
February		93,412,007	80,815,609	79,370,649	71,813,904	64,112,221
March		89,545,281	73,584,237	81,111,281	69,262,719	80,196,123
April		92,609,819	57,634,827	84,654,843	94,170,480	86,876,075
May		88,831,945	53,046,517	93,581,012	88,040,713	69,040,058
June		96,859,623	112,859,122	83,429,654	107,858,127	78,334,423
TOTAL	**332,101,110**	**1,067,704,627**	**991,328,137**	**1,023,236,007**	**986,826,346**	**868,839,990**
Jet						
July	5,942,334	1,843,258	12,703,048	4,612,350	12,118,491	17,049,000
August	6,828,182	9,248,403	5,368,632	14,036,283	8,667,434	6,273,893
September	9,031,971	11,173,609	21,158,337	15717815	8,127,960	12,283,427
October	10,259,776	7,840,531	10,741,915	17,772,490	17,098,645	5,863,837
November		2,537,275	9,529,431	10,086,524	10,138,126	13,503,838
December		4,247,137	8,646,379	13,985,590	8,854,253	12,442,798
January		7,718,278	19,048,721	11,729,571	12,185,820	10,019,325
February		4,730,832	7,712,419	5,338,563	14,022,151	11,956,645
March		9,608,336	9,304,505	12,362,768	10,232,119	13,383,361
April		10,772,846	6,103,424	7,502,578	14,050,142	9,002,411
May		4,940,569	28,800	12,684,675	8,056,229	11,803,533
June		15,077,813	2,993,690	12,235,665	9,877,572	6,700,899
TOTAL	**32,062,263**	**89,738,887**	**113,339,301**	**138,064,872**	**133,428,942**	**130,282,967**

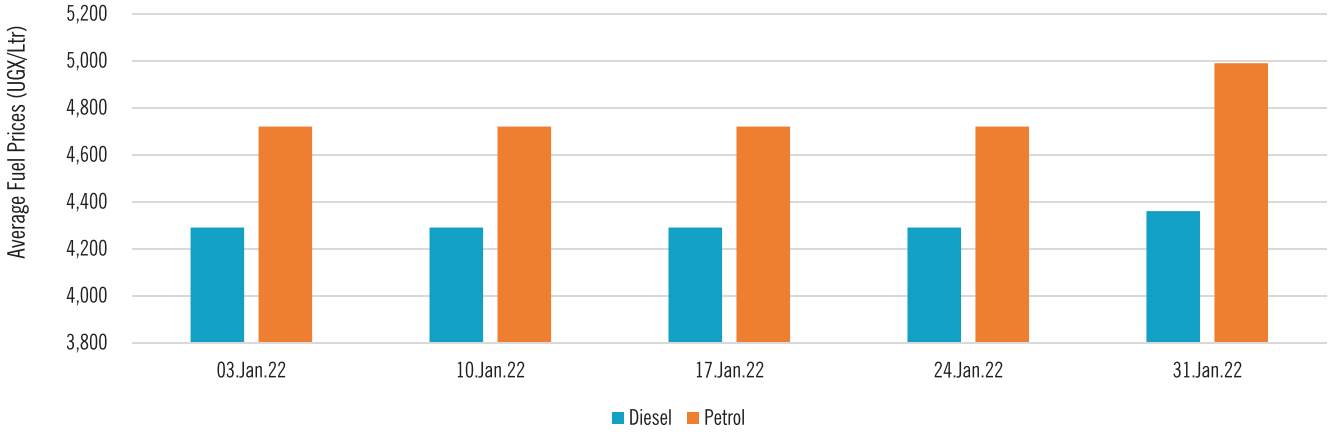
Source: URA.

Annex 4: Petroleum duty Revenue (in "Billions")

FY	July	August	September	October	November	December	January	February	March	April	May	June
2016/17	98.1	131.1	158.0	129.3	121.4	120.3	148.8	127.6	148.2	143.7	129.3	153.7
2017/18	153.0	143.7	153.3	141.1	161.2	132.6	129.1	145.0	156.2	154.1	162.0	180.5
2018/19	128.4	166.3	185.5	156.6	163.6	189.3	171.5	186.0	165.6	191.1	171.4	163.3
2019/20	170.1	162.7	173.1	192.2	183.2	200.2	191.9	168.5	175.8	101.1	98.5	195.2
2020/21	142.6	186.8	177.7	191.1	182.8	232.7	210.5	207.2	222.9	238.1	224.5	236.6
2021/22	150.5	217.6	219.3	587.4	225.9							

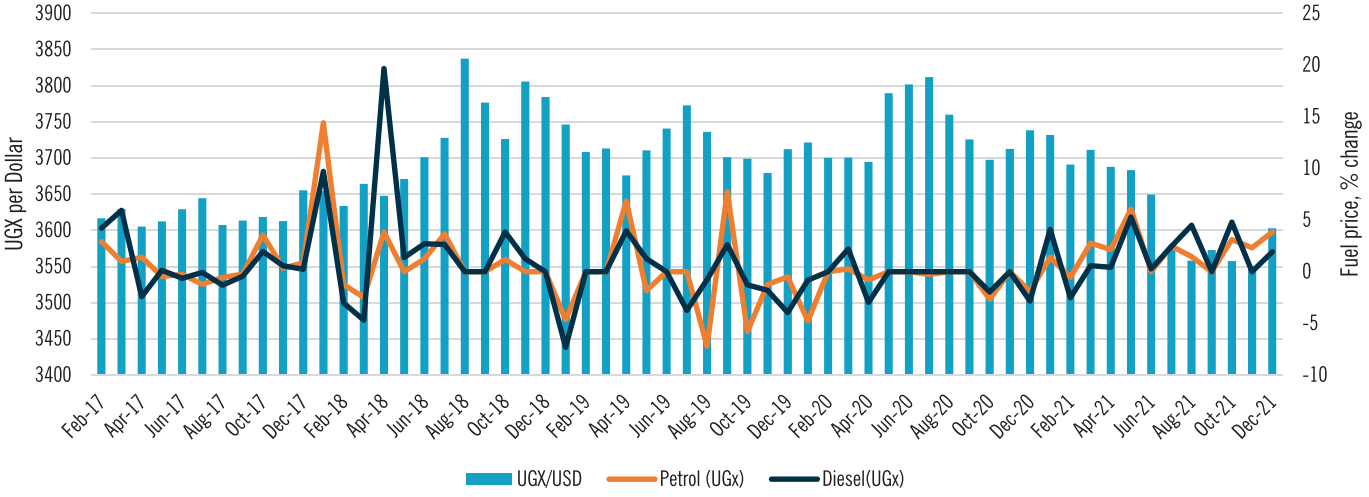
Source: Uganda Revenue Authority (2021)

Appendix 5: Average Fuel Pump Price Movements in Uganda (January 2022)



Source: Computed by EPRC using local pump price data from select fuel stations (weekly price for January 2022).

Appendix 6: Exchange rate movement and rate of change in fuel pump prices



Source: Computed by EPRC using exchange rate data from URA and local pump price data.

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Policy Note: 7, August 2021
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Endnotes

1 The teachers could not be traced directly through their schools, since they are not operating during the lockdown and hence could not be accessed through their work places.

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