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The impact of Covid-19 and Russia-Ukraine war on food prices in fragile countries: misfortunes never come singly

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Abstract

The objective of the paper is to evaluate whether there is a change in the level or trend of food prices in fragile countries following the Covid-19 pandemic and the Russia-Ukraine war. The empirical evidence is based on Interrupted Time Series Analysis. The following findings are established. Firstly, an immediate and sustained positive effect is noted, indicating that for each month that passes after the Covid-19 and Russia-Ukraine war, food prices increase in most of the fragile countries. Secondly, if the Covid-19 and the Russia-Ukraine war had not happened, the price level and its trend would have been at a significantly lower level in fragile countries. Thirdly, the Russia-Ukraine war intervention period slope is significantly and considerably higher than that of the Covid-19 indicating that the Russia-Ukraine war has increased food prices in fragile countries more proportionately than the Covid-19 pandemic did.

Keywords: Covid-19; Russia-Ukraine war; food prices; fragile countries
JEL Classification: F52; K42; O17; O55; P16

1. Introduction

After the pandemic, many economists thought that economic indicators such as gross domestic product (GDP), debt, prices, financial markets were trending towards green alternatives. Just as the economies were starting to recover from the pandemic, the conflict between Russia and Ukraine started. A recent World Bank (2022) report has focused on the direct impact of the Russian invasion of Ukraine on world trade and investment by identifying five direct trade and investment channels through which, countries would be affected namely: commodity market (especially food and energy), logistic network, supply chains, foreign direct investment and specific sectors. According to this report, trade in food and energy should be the most immediately impacted sector by the conflict. The severity of the impact on the global economy could be explained by the fact that Russia and Ukraine rank among the top producers and exporters of agricultural products.

Food prices in the world are being characterised by a further increase after the surge caused by the Covid-19 pandemic. Compared to developed nations, developing and fragile countries have been the most affected in terms of socio-economic vulnerability. It is important to articulate that before the beginning of the war between Russia and Ukraine, the prices of major commodities were already at a record level (AMIS, 2022a; AGRA, 2022). As explained by AMIS (2022b), the escalating situation in the Black Sea region has increased risks on global food markets. Another fact is that the invasion is creating a food shortage because, *inter alia*, seaports that are a vital gateway for food product distribution are shutting down. AGRI (2022) documents the channels through which the conflict is impacting food markets. They include: reducing grain supplies, rising energy prices, increasing fertilizer prices, disrupting trade due to restrictions or shutting down of major ports, *inter alia*.

The present study evaluates the impact of the 2022 Russia-Ukraine war on food prices in fragile countries taking into account the first impact brought about by the Covid-19 pandemic. More specifically, the aim of the paper is to: (i) measure the immediate and sustained effect of the Covid-19 pandemic and the Russia-Ukraine war on food prices in fragile countries; (ii) evaluate how food prices would have been affected, had the Covid-19 pandemic and the Russia-Ukraine war not occurred and (iii) measure the difference in food prices trends pertaining to the Covid-19 pandemic and the Russia-Ukraine.

The positioning of the study departs from the extant literature on the socio-economic and

political consequences of the Covid-19 and Russia-Ukraine war. On the one hand, the literature on the recent pandemic or Covid-19 health crisis has largely focused on, *inter alia*: the socio-economic ramifications of the Covid-19 crisis (Nicola *et al*., 2020; Asongu et al., 2021a, 2021b); perspectives from policy and scholarly positions on the consequences of the pandemic (Ataguba, 2020); policy insights, socio-economic impacts and avenues that are connected to the attendant health crisis (Ozili, 2020); the incidence of the pandemic on remittance flows (Bisong *et al*., 2020); the effect of the pandemic on externalities of poverty (Agbe, 2020; Diop & Asongu, 2021); nexuses between income, the pandemic, social stratification and inequality (Alon *et al*., 2020; Obeng-Odoom, 2020); the connection between the pandemic and environmental sustainability (Amankwah-Amoah, 2020) and understanding the laboratory responses pertaining to the health crisis (Odeyemi *et al*., 2020).

On the other hand, the attendant literature on the recent Russia-Ukraine war has focused on *inter alia*: environmental damages of the war (Rawtani *et al*., 2022); the long-term humanitarian consequences of the war in Ukraine (Torbay, 2022); the psychological consequences of the war (Shevlin *et al*., 2022); the corresponding effects on forced displacements (Somers & Politykina, 2022) and impact on mental health (Kalaitzaki *et al*., 2022).

The reminder of the paper is structured as follows. Section 2 describes the data and presents the methodology used to assess the impact of the Covid-19 pandemic and Russia-Ukraine war on food prices in selected fragile countries. Section 3 discusses the empirical findings, and finally Section 4 focuses on the conclusion.

2. Data and model specification

2.1 Data description

The data are collected from the World Bank. Andrée (2021) has developed a machine learning approach for imputation of ongoing sub-national price levels. Using the World Food Program survey in 25 fragile and conflict-affected nations for which real-time monthly food price data are not publicly apparent from official sources, the author computes data covering more than 1200 markets and 43 food types. The countries included are: Afghanistan, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo Republic, Democratic Republic of Congo, The Gambia, Guinea Bissau, Haiti, Iraq, Lao PDR, Lebanon, Liberia, Mali, Mozambique, Myanmar, Niger, Nigeria, Somalia, South Sudan, Sudan, Syrian Arab

Republic and Yemen Republic. The food products included in the estimations are[1]: apples, beans, bananas, bread, cabbage, bulgur, carrots, cassava flour, cassava, cassava meal, chickpeas, cheese, cocoyam, cucumbers, cowpeas, dates, garri, eggplants, garlic, lentils, groundnuts, maize, maize meal, maize flour, milk, millet, oil, onions, oranges, parsley, pasta, peas, plantains, potatoes, pulses, rice, salt, salt iodised, sorghum, sesame, sugar, tomatoes, tea, tomatoes paste, watermelons, wheat flour, wheat, yam and yogurt. The accuracy of the data is judged by estimating the total price variation explained by the models that are imputed and it is established that on average, the models predicted 85% of the observed price variation across countries. These data offer the present study large and interesting perspectives. Firstly, traditional food prices do not take into account price the evolution in rural or poverty-stricken areas as well as the population in fragile conditions (Andrée, 2021). Secondly, since we are assessing the impact of shocks (Covid-19 and Russia-Ukraine war), traditional price indicators are produced with delay and mostly during crisis when economic variables deteriorate rapidly. To evaluate the impact of the Covid-19 pandemic and the very recent Russia-Ukraine war in developing or fragile countries, publicly available data in institutions such as IFS (i.e. International Financial Statistics) or World Development Indicators of the World Bank are not sufficient[2]. Table 1 summarizes the data. The end date of all food prices is June 2022 while the start date varies across countries.

2.2 Model specification

To quantify the short-term effects of the Covid-19 pandemic and the recent Russia-Ukraine war on foods prices in fragile countries, we use the Interrupted Time Series Analysis (ITSA). Since we estimate the treatment effects for two intervention periods (Covid-19 and Russia-Ukraine war), ITSA offers a quasi-experimental research framework with a potentially high degree of internal validity (Shadish *et al*., 2002). According to the literature, ITSA has been used in many areas of research specifically in health to assess the impacts of medical intervention. For Penfold and Fang (2013), Wagner *et al*. (2002), ITSA is considered as the strongest Quasi-Experimental Design and is a powerful tool for the evaluation of the intervention and programs implemented in healthcare settings. Ewusie *et al*. (2020) present a review of the ITSA and its applications. The authors find a significantly increasing trend of the method used over time and where its application in health research almost tripled within the last decade.

[1]Note that all products are not included in country-level estimates.
[2]Based on our last check on the 15th of July 2022.

The baseline of the ITSA is a single-group analysis and a single treatment period. It is represented as follows[3] in Equation (1):

$$\log(FPI_t) = \beta_0 + \beta_1 T_t + \beta_2 Covid_t + \beta_3 Covid_t T_t + \varepsilon_t \ldots (1)$$

Where FPI_t is the food price index measured at each equally spaced time point t, T_t is the time of the starting point of the study, $Covid_t$ is a dummy variable representing the intervention (before the Covid-19 pandemic 0, otherwise 1), and $Covid_t T_t$ is the interaction term representing time elapsed since the event taking 0 before the intervention.ε_t represents the error term assumed to be independent and not correlated.

Here β_0 corresponds to the intercept or the starting level of the outcome. The parameter β_1 denotes the slope of the regression prior to the events taking place. β_2 is the change in the level of Y_t immediately the period following the event (compared with the counterfactual) while $\beta_3$corresponds to the difference between the pre-event and post-event slopes of the food price index. According to Linden and Adams (2011), β_2 and β_3 are expected to be significant, indicating respectively, an immediate treatment effect and a treatment effect over time.

However, in this paper, we treat the impact of two events (Covid-19 and Russia-Ukraine war) on food prices. Thus, we introduce the second event into the first model and it becomes Equation (2) as follows:

$$\log(FPI_t) = \beta_0 + \beta_1 T_t + \beta_2 Covid_t + \beta_3 Covid_t T_{1t} + \beta_4 UW_t + \beta_5 UW_t T_{2t} + \varepsilon_t \ldots (2)$$

FPI_t is the food price index at date*t*,UW_t and $UW_t T_{2t}$ are the new variables representing the second treatment period.β_4 is the variation of the outcome which occurred immediately in the period following the second event while β_5 measures the difference between the first-event and the second-event slopes of the outcome. This model is particularly useful in our study because we have six measures of interest: (i) the preCovid-19 trend, (ii) the Covid-19 period trend, (iii) the Russia-Ukraine war period trend, (iv) the difference between pre Covid-19 trend and the Covid-19 trend, (v) the difference between the Russia-Ukraine war period trend and the pre Covid-19 trend, (vi) the difference between the Covid-19 and the Russia-Ukraine war. According to Linden and Arbor (2017), three of the trend measures (the preCovid-19

[3]We adopt the representation proposed by Huitema and McKean (2000), Linden and Adams (2011), Linden (2015), Simonton (1977a), Simonton (1977b) and repeated by Linden (2017a).

trend (β_1), the difference between the pre Covid-19 trend and the post Covid-19 trend (β_3) and the difference between the Covid-19 event and the Russia-Ukraine war event trends (β_5)) are provided in the regression output. For the remaining measures, we need to compute the Covid-19 event period trend ($\beta_1 + \beta_3$), the Russia-Ukraine war event period trend ($\beta_1 + \beta_3 + \beta_5$) and the difference between the Russia-Ukraine war event period trend and the preCovid-19 trend ($\beta_3 + \beta_5$). The ITSA allows also the introduction of one or more control groups for comparison and Linden (2017a) and Linden (2017b) are favourable to their implementation to face to eventual misleading results). However, since the two events (Covid-19 and Russia-Ukraine war) affect worldwide food prices, we could not select credible candidates for the control group.

3. Empirical results

We apply ITSA for 25 fragile countries to assess the impact of the two most important shocks in the world during the ten last years namely, the Covid-19 pandemic and Russia-Ukraine war on food prices. Thus, we specify a single model with two interventions using Newey procedure with one lag. Table 2 provides all 9 parameters of interest already described in the model. As shown in the regression table, the slopes of the evolution of the food prices are positive and significant indicating that the food prices increase significantly over time. As each month passes, the food prices increase prior to the Covid-19 pandemic for 19 of the 25 fragile countries selected for our study. The slope is strongest in South Sudan (3.1%) and the lowest in Nigeria (-0.4%). Indeed, the Covid-19 pandemic has an immediate effect on food prices. In effect, food prices have changed the first month after the health-related Covid-19 pandemic for 15 of the 25 countries. Sudan is the most impacted country. More precisely, it increases the food prices in the country by 117.2%. It is followed by the Syrian Arab Republic (66.8%), South Sudan (66.5%), Lebanon (47.2%). The surprising result however, is the negative and significant impact of the pandemic on food prices in some countries such as Burkina Faso (-18.1%), Congo Republic (-4.8%), Myanmar (-7.8%) and Mali (-7.6%).

When the monthly trend of food prices is taken on board (relative to the pre-Covid), the impact is positive and significant for 15 out of the 25 countries. The sustained effect is positive and significant, indicating that for each month that passes after the Covid-19 pandemic, the food prices in these countries increases. The sustained effect ranges from 0.2% (Lao PDR) to 9% (Lebanon). Liberia is the only country with a negative and significant effect (-0.1%). Regarding the Russia-Ukraine war, the immediate and the sustained effect are

positive and significant in most of the countries. The food prices: (i)increase each month after the war for 11 countries (Burkina Faso, Burundi, Chad, Congo Republic, Haiti, Iraq, Lebanon, Mali, Myanmar, Somalia and Sudan) comparatively to the Covid-19 slope, (ii) are insignificant for 11 countries (Afghanistan, Central African Republic, Democratic Republic of Congo, The Gambia, Guinea Bissau, Lao PDR, Liberia, Mozambique, Niger, Syrian Arab Republic and Yemen) and (iv) are significantly negative for 3 countries (Cameroon, Nigeria and South Sudan). Confounding the two last results, we can conclude that the Covid-19 and the Russia-Ukraine war have both an immediate and sustained positive effect on food prices in fragile countries. Thus, if the Covid-19 pandemic and the Russia-Ukraine war had not occurred, the price level and its trend would have been at a lower level in most of the fragile countries.

On the one hand, the difference between the Covid-19 pandemic intervention and the Russia-Ukraine war intervention slopes on food prices is positive and significant in 11 countries mostly African (Burkina Faso, Burundi, Central African Republic, Chad, Guinea Bissau, Haiti, Lebanon, Mali, Myanmar, Mozambique and Somalia). This result implies a statistically significant increase in food prices in these countries compared to the Covid-19 slope. In effect, there is evidence of a "treatment effect" for the Covid-19 pandemic and an additional increase in food prices after the Russia-Ukraine war and the difference of the impact between the Covid-19 intervention and Russia-Ukraine war is significant. On the other hand, for the Democratic Republic of Congo, the Gambia, Lao PDR and Nigeria, the difference between the impact of the Covid-19 and Russia-Ukraine war on food price is negative and significant. The results correspond to the fact that in these countries, the slopes of the food price are lower than that of the Covid-19 pandemic.

As explained in the previous section, $(\beta_1 + \beta_3)$ measures the Covid-19 event period trend. As shown in Table 2, a significant increase per month on food prices is apparent in Afghanistan(0.8%), Burkina Faso (2.1%), Burundi (0.5%), Cameroon (0.6%), Chad (0.5%), Democratic Republic of Congo (0.4%), the Gambia (1%), Guinea Bissau (0.5%), Haiti (0.5%), Iraq (5%), Lao PDR (0.3%), Lebanon (9.3%), Liberia (0.4%), Mali (0.9%), Mozambique (0.6%), Myanmar (2.6%), Niger (0.6%), Nigeria (1.3%), Somalia (0.9%), South Sudan (2.5%), Sudan (6.2%), Syrian Arab Republic (5.1%) and Yemen Republic (2.2%). Overall, the results reveal an increase in food prices for 23 of the 25 countries. On average, the increase of food prices after the Covid-19 pandemic is 1.75% per month.

Regarding the Russia-Ukraine war event period trend, the "treatment effect" is significantly positive for 23 of the 25 countries (Afghanistan (0.6%), Burkina Faso (4.8%), Burundi (2.2%), Cameroon (0.8%), Central African Republic (3.3%), Chad (2.3%), Gambia (0.3%), Guinea Bissau (8%), Haiti (4.8%), Iraq (0.6%), Lao PDR (0.1%), Lebanon (10.3%), Liberia (0.6%), Mali (3.9%), Mozambique (1.1%), Myanmar (4%), Niger (0.5%), Nigeria (0.5%), Somalia (1.7%), South Sudan (2.3%), Sudan (12,1%), Syrian Republic (5.6%), Yemen (2.9%). On average, food prices increase by 3.53% per month after the start of the Russia-Ukraine war. It is also apparent that the treatment effect of the Russia-Ukraine war is more than twice the impact of the Covid-19 pandemic on food price in fragile countries.

The last parameter measuring the difference between the Russia-Ukraine war intervention period trend and the Covid-19 trend is positive and significant for 19 of the 25 selected countries: Afghanistan (0.4%), Burkina Faso (4.6%), Burundi (1.8%), Cameroon (0.6%), Central African Republic (3.4%), Chad (2.2%), Guinea Bissau (0.8%), Haiti (4.3%), Iraq (0.7%), Lebanon (9.9%), Mali (3.7%), Mozambique (0.5%), Myanmar (4%), Niger (0.4%), Nigeria (0.9%), Somalia (1.7%), Sudan (10%), Syrian Arab Republic (4.7%) and Yemen (2.3%).

On average with the exception of South Sudan (-0.8%) and the Democratic Republic of Congo (-2%), the difference between the Republic slope and the Covid-19 pandemic slope is positive and significant with an average value of 3.43%. This result indicates that the intervention period slope is significantly and considerably higher than that of the Covid-19 pandemic indicating that the Russia-Ukraine war increased more food prices in fragile countries than the pandemic did.

4. Concluding implications and future research directions

This paper has evaluated the impact of the Covid-19 pandemic and Russia-Ukraine war on food prices in 25 fragile and conflict-affected countries with a focus on the difference between the two impacts. We have used monthly data from the World Food Program survey covering more than 1200 markets and 43 food types. The empirical methodology is based on the Interrupted Time Series Analysis (ITSA) with two interventions (the Covid-19 pandemic and the Russia-Ukraine war). This methodology allows us to evaluate different parameters corresponding to the measures of interest (pre-Covid slope, the Covid-19 slope, Russia-Ukraine war slope, the difference between pre Covid-19 versus the Covid-19 trend, difference

between pre Covid-19 versus Russia-Ukraine war slope and the difference between the Covid-19 versus Russia-Ukraine war trend). The following findings are established. Firstly, the slopes of the evolution of the food prices are positive and significant indicating that the food prices increase significantly over time. Secondly, an immediate and sustained positive effect is noted both prior to the Covid-19 pandemic and Russia-Ukraine war on food prices in most of the countries. More precisely, on average, the increase of food prices during the Covid-19 pandemic is 1.75% per month while the increase during the Russia-Ukraine war is 3.53%. Finally, the Russia-Ukraine war intervention period slope is significantly and considerably higher than that of the Covid-19 indicating that the Russia-Ukraine war has increased food prices in fragile countries more proportionately than the Covid-19 pandemic did.

This study obviously leaves room for future research, especially as it pertains to assessing how the current Covid-19 pandemic has affected other socio-economic outcomes. Moreover, extending the analysis to political outcomes as well as to the consequences for the achievement of sustainable development goals (SDGs) are worthwhile future research directions.

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Appendices

Table 1: Summary of raw food price data

Country	Currency	Markets	Items	Data coverage (%)	Start date
Afghanistan	AFN	09/40	4	69.27	Jan-07
Burkina Faso	XOF	63/65	3	47.70	Jan-07
Burundi	BIF	61/68	7	35.93	Jan-07
Cameroon	XAF	12/51	11	20.82	Jan-07
Central A. Rep.	XAF	18/40	3	36.89	Jan-08
Chad	XAF	35/56	3	39.17	Jan-07
Congo Rep	XAF	05/11	7	44.47	May-10
Congo R. D	CDF	26/83	10	35.43	Nov-07
Gambia, The	GMD	15/28	11	41.91	Jan-07
Guinea Bissau	XOF	03/45	7	56.63	Feb-16
Haiti	HTG	09/09	6	68.83	Jan-07
Iraq	IQD	18/18	13	48.02	May-11
Lao PDR	LAK	17/17	5	46.04	Feb-12
Lebanon	LBP	26/26	15	61.49	Mar-12
Liberia	LRD	18/24	3	49.44	Mar-07
Mali	XOF	77/126	6	58.37	Jan-07
Mozambique	MZN	25/52	7	63.13	Jan-07
Myanmar	MMK	36/165	3	43.00	Apr-07
Niger	XOF	68/79	4	79.60	Jan-07
Nigeria	NGN	33/35	16	27.59	May-12
Somalia	SOS	18/28	4	55.49	Jan-07
South Sudan	SSP	09/20	8	52.35	Jan-07
Sudan	SDG	14/14	3	58.01	Jan-07
Syrian A. R	SYP	36/91	15	56.99	Aug-11
Yemen Rep.	YER	24/24	12	45.48	Nov-08
Average	---	27/49	7	51.47	---

Note: the first column reports the local currency in which prices are measured, the second column reports the number of markets from which data is used as a fraction of all known market location for which predictions are made, the third column reports the number of food items for which data are used to construct the food price index, the fourth column reports the total number of price observations as share of all *market*time* combinations where market is the first number in the third column, the final column reports when the estimated price index starts.Source: Andree (2021).

Table 2: ISTA Estimations results

Country	β_0	β_1	β_2	β_3	β_4	β_5	$\beta_1+\beta_3$	$\beta_1+\beta_3+\beta_5$	$\beta_3+\beta_5$	F-stat	Obs
Afghanistan	-0.239*** (0.041)	0.002*** (0.000)	0.006 (0.026)	0.006*** (0.002)	0.013 (0.028)	-0.002 (0.002)	0.008*** (0.002)	0.006*** (0.001)	0.004*** (0.001)	597.07***	186
Burkina Faso	-0.097** (0.039)	0.002*** (0.000)	-0.181*** (0.036)	0.019*** (0.000)	0.064*** (0.019)	0.027*** (0.007)	0.021*** (0.000)	0.048*** (0.007)	0.046*** (0.007)	426.24***	186
Burundi	-0.186*** (0.011)	0.004*** (0.000)	-0.012 (0.031)	0.001 (0.002)	0.078*** (0.026)	0.017*** (0.002)	0.005** (0.002)	0.022*** (0.001)	0.018*** (0.001)	1847.01***	186
Cameroon	-0.120*** (0.003)	0.001*** (0.000)	0.052* (0.028)	0.005 (0.003)	-0.106* (0.059)	0.001 (0.004)	0.006** (0.003)	0.008*** (0.002)	0.006*** (0.002)	1737.21***	186
Central A. Rep.	0.110*** (0.004)	-0.000** (0.000)	0.073*** (0.016)	0.000 (0.001)	-0.001 (0.017)	0.033*** (0.002)	0.001 (0.001)	0.033*** (0.002)	0.034*** (0.002)	401.23***	178
Chad	-0.151*** (0.044)	0.000* (0.000)	-0.004 (0.055)	0.003 (0.002)	0.042* (0.023)	0.018*** (0.003)	0.005** (0.002)	0.023*** (0.002)	0.022*** (0.002)	79.43***	186
Congo R. D	-0.300*** (0.017)	0.005*** (0.000)	0.207*** (0.027)	-0.000 (0.000)	-0.004 (0.010)	-0.019*** (0.005)	0.004*** (0.000)	-0.015*** (0.005)	-0.020*** (0.005)	890.55***	176
Congo Rep	-0.022*** (0.008)	0.001*** (0.000)	-0.048*** (0.017)	-0.001 (0.001)	0.020** (0.008)	-0.002 (0.002)	0.000 (0.000)	-0.002 (0.002)	-0.003 (0.002)	63.13***	141
Gambia, The	-0.296*** (0.012)	0.003*** (0.000)	0.124** (0.050)	0.007** (0.003)	-0.015 (0.025)	-0.007** (0.003)	0.010*** (0.003)	0.003*** (0.001)	0.000 (0.000)	2384.87***	186
Guinea Bissau	0.09*** (0.006)	-0.000* (0.000)	0.069*** (0.010)	0.006*** (0.000)	0.003 (0.003)	0.002*** (0.000)	0.005*** (0.000)	0.008*** (0.001)	0.008*** (0.000)	926.91***	90
Haiti	-0.226*** (0.031)	0.004*** (0.000)	0.357*** (0.061)	0.001 (0.003)	0.149*** (0.044)	0.042*** (0.004)	0.005* (0.003)	0.048*** (0.001)	0.043*** (0.000)	1803.72***	186
Iraq	0.031*** (0.004)	-0.001*** (0.000)	0.049*** (0.012)	0.006*** (0.001)	0.011* (0.00)	0.001 (0.001)	0.005*** (0.001)	0.006*** (0.001)	0.007*** (0.001)	420.58***	135
Lao PDR	-0.054*** (0.004)	0.001*** (0.000)	0.028*** (0.010)	0.002*** (0.000)	0.008 (0.011)	-0.001** (0.000)	0.003*** (0.000)	0.001*** (0.000)	0.000 (0.000)	1126.86***	158

Lebanon	-0.136*** (0.031)	0.003*** (0.001)	0.472*** (0.062)	0.090*** (0.001)	0.033** (0.017)	0.009*** (0.001)	0.093*** (0.001)	0.103*** (0.000)	0.099*** (0.012)	21598.15***	124
Liberia	-0.525*** (0.009)	0.006*** (0.000)	0.095*** (0.020)	-0.001** (0.000)	-0.015 (0.009)	0.002 (0.001)	0.004*** (0.000)	0.006*** (0.001)	0.000 (0.001)	7280.68***	184
Mali	0.002 (0.019)	0.001*** (0.000)	-0.076*** (0.021)	0.008*** (0.001)	0.049*** (0.013)	0.029*** (0.002)	0.009*** (0.001)	0.039*** (0.001)	0.037*** (0.001)	592.25***	186
Mozambique	-0.359*** (0.012)	0.006*** (0.000)	0.019 (0.033)	0.000 (0.000)	0.012 (0.010)	0.005*** (0.001)	0.006*** (0.000)	0.011*** (0.000)	0.005*** (0.000)	2344.62***	186
Myanmar	-0.012 (0.025)	0.001*** (0.000)	-0.078* (0.043)	0.024*** (0.002)	0.045* (0.023)	0.015*** (0.004)	0.026*** (0.002)	0.04*** (0.004)	0.04*** (0.004)	1135.74***	183
Niger	-0.021 (0.024)	0.000*** (0.000)	-0.014 (0.031)	0.005*** (0.002)	0.021 (0.025)	-0.001 (0.002)	0.006*** (0.002)	0.005*** (0.001)	0.004*** (0.001)	121.63***	186
Nigeria	0.061** (0.026)	-0.004*** (0.022)	0.119*** (0.022)	0.017*** (0.001)	-0.051** (0.020)	-0.008*** (0.001)	0.013*** (0.001)	0.005*** (0.000)	0.009*** (0.000)	294.38***	122
Somalia	-0.016 (0.056)	0.000 (0.000)	0.027 (0.032)	0.008*** (0.001)	0.045*** (0.011)	0.008*** (0.002)	0.009*** (0.001)	0.017*** (0.001)	0.017*** (0.001)	518.91***	186
South Sudan	-1.461*** (0.147)	0.031*** (0.002)	0.665*** (0.178)	-0.005 (0.005)	-0.155** (0.077)	-0.002 (0.005)	0.025*** (0.005)	0.023*** (0.002)	-0.008*** (0.003)	500.93***	180
Sudan	-1.900*** (0.053)	0.022*** (0.000)	1.172*** (0.104)	0.040*** (0.003)	0.125* (0.066)	0.059 (0.038)	0.062*** (0.003)	0.121*** (0.040)	0.100*** (0.040)	4339.25***	186
Syrian A. R	-0.153*** (0.030)	0.009 (0.000)	0.668*** (0.072)	0.042*** (0.003)	-0.040 (0.033)	0.004 (0.012)	0.051*** (0.003)	0.056*** (0.011)	0.047*** (0.011)	3742.72***	131
Yemen Rep.	-0.222*** (0.022)	0.006*** (0.000)	0.163*** (0.035)	0.017*** (0.002)	0.023 (0.035)	0.006 (0.005)	0.022*** (0.002)	0.029*** (0.005)	0.023*** (0.005)	1755.38***	164

Source : Authors, ***p<0.01, **p<0.05,*p<0.1