



MENA Macro Monitor – 10/17/2022

The MENA Macro Monitor is a bi-weekly newsletter that provides data and analyses on recent macroeconomic developments in the Middle East and North Africa (MENA) region.

Highlights from this edition¹:

- The latest MENA GDP Growth forecast for 2022 (as of Oct 2, 2022) is up by 1.0 percentage points (pps) relative to the forecast for 2022 released in February 2022. Lebanon has had the biggest decline in GDP forecasts, which are lower by -3.5 pps. Since the start of the Ukraine war, the 2022 estimated cumulative GDP-level impact has been positive for MENA overall, with an increase in forecasted growth by 1.0 pps. Oil producers (other than Yemen) and Egypt have benefited, while non-oil producers and Yemen have suffered. The most recent oil futures series points to a higher medium-term equilibrium price for oil compared to the series from end 2021. See [Macroeconomic Developments](#).
- The Monitor also presents information on vaccination efforts across MENA and how these compare to countries of similar levels of GDP per capita. See [COVID-19 Vaccination Tracker](#).
- Poverty impacts of the change in growth forecasts since February 2022 (the start of the war in Ukraine) are presented in the section on [Poverty and Social Impacts](#). Current concerns about food price inflation tend to ignore the period before the start of the Ukraine conflict. For most MENA countries, food prices had increased substantially even before the start of the war. However, for Morocco, Djibouti, Oman, and Saudi Arabia, most of the increase in food prices occurred after February 2022.
- [Insights from Academia](#) includes two new papers that study the impact on educational, health and economic outcomes for children exposed to pollution in utero in the United States as well as the impact of school closure due to the Covid-19 pandemic on children's learning in India.

¹ The editor for this edition is Ernest Sergenti, Senior Research Economist, Office of the Chief Economist for MENA. Rana Lotfi and Hoda Assem also contributed. Our thanks to Minh Cong Nguyen for providing the poverty estimates used to generate Table 3. This work is a product of World Bank staff using external data. The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of The World Bank, its Board of Executive Directors, or the governments they represent. The World Bank does not guarantee the accuracy of the data included in this work.



Table 1: Data and News Highlights:

Inflation Watch	
Egypt	Inflation rose to 15.2% y/y in August, from 14.5% y/y in July. The main drivers continue to be higher food and fuel prices, where non-seasonally adjusted food inflation reached 25% y/y and transport inflation reached 16.5% y/y in August. Seasonally adjusted m/m inflation accelerated to 0.8% in August (from 0.5% in July), driven by a weaker pound and seasonal effects on the food component.
Jordan	Inflation reached a 4-year high in August at 5.4% y/y before stabilizing in September. Housing and utility prices accelerated to 9.4% y/y in September, from 9.2% y/y in August. Food prices also rose to 3.1% y/y. Transportation remained stable at 6.9% y/y. Core inflation (excluding food and energy) fell to 4.5% y/y in September from 4.6% in August.
Qatar	Inflation accelerated to 6.0% y/y in September, from 4.8% in August, driven by the rise in housing and utility prices which rose by 10.7% y/y in September, up from 8.8% y/y in August and recreation and culture inflation, which rose to 35.6% y/y in September from 28.2% y/y in August. Food inflation fell to 4.1% y/y in September from 5.7% y/y in August.
KSA	Inflation rose to 3.1% y/y in September, the highest in 15 months, from 3.0% y/y in August. The main driver was the increase in food prices which rose to 4.3% y/y, from 4.0% y/y in August, driven by an increase in meat prices, 6.5% y/y. Housing and utilities inflation also increased for the seventh consecutive month, reaching 3.2% y/y in September from 2.5% y/y in August.
Regional Bond Issuances	
Egypt	The Central Bank fell short by about USD 200 million on selling domestic EGP bonds at its regular bond auctions on October 11 th and 18 th given weak demand from investors.
Morocco	Morocco will forego plans to issue USD foreign currency bonds this year due to the appreciation of the USD. Instead, it will draw on USD 1 billion from the IMF to help repay a USD 1.5 billion dollar-bond maturing in December.
KSA	Saudi Arabia sold USD 2.5 billion in 6-year sukuk bonds at 105 basis points above US Treasuries and USD 2.5 billion in 10-year conventional bonds at 150 basis points over US Treasuries.
Subsidies and Social Protection	
Egypt	Egypt raised the prices of unsubsidized bread by 50% to EGP 0.75 a loaf, while simultaneously cutting the size of bread loaves from 45 grams to 40 grams.
Jordan	The Government has fixed the prices of different types of bread until the end of 2023.
Lebanon	The Ministry of Energy hikes fuel prices again. Fuel prices have been on the rise after the central bank lifted the remaining fuel subsidies in mid-September due to the depletion of its FX reserves. Fuel importing companies must buy US dollars from the black market.
UAE	The “Unemployment Insurance Scheme” for federal government and private sector workers has come into force. The compensation will be paid monthly as 60% of the employee's subscription salary, with a maximum of AED 20,000 (USD 5,445) a month. It is for Emirati nationals and resident employees.



Miscellaneous	
Lebanon	The Lebanese pound depreciates further, trading at more than LBP 40,000 to the USD on October 18th on the black market.
Morocco	Morocco's Consumer Confidence Index (ICM) fell to 47.7 in Q3, down from 50.1 in Q2 and 65.5 from a year ago, the lowest level of the index since its inception in 2008.
Qatar	Qatar's population increased by 14% y-o-y at the end of August, with the number of women increasing by 21%, as Qatar prepares to host the World Cup in November.

Sources: National authorities, EmergingMarketWatch, Haver Analytics



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I. Macroeconomic Developments

This section provides updated consensus growth forecasts from Focus Economics, and updates on leading indicators that impact macroeconomic performance, with differential effects depending on the country's economic structure. This edition includes an update of oil and gas prices and future trends. It also includes an update of the purchasing managers' index, which signals recovery or contraction of economic activity, for those countries for which such data are available.

A. Private sector growth forecasts. Updated consensus growth forecasts by the private sector were released on October 4, containing information available through October 2. To assess the extent of the influence of global economic trends on the evolution of macroeconomic performance, this section evaluates the change in reported GDP growth for 2022 plus the impact of the changes on growth forecasts for 2023, compared to the forecasts made in February 2022 for 2022 and 2023.

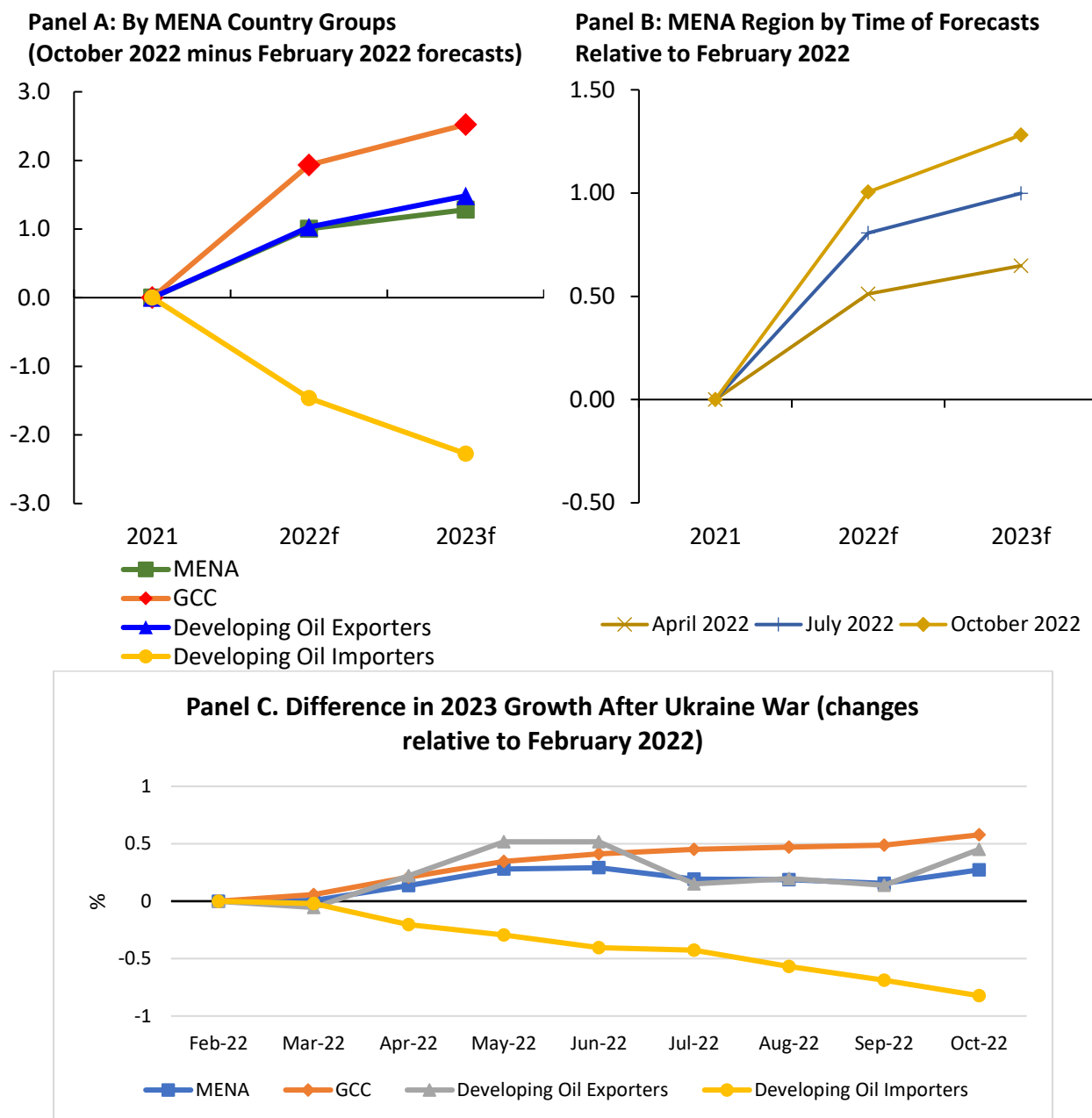
We find that the latest forecast of MENA's 2022 GDP level reflects an expected average rebound of 1.0 percentage points (pps) from 2021, relative to the year-2022 forecast made in February 2022 (see Panel A of Figure 1). The largest GDP-level rebound is for the GCC (1.9 pps higher than what was implied by the forecasts in February 2022), followed by Developing Oil Exporters (1.0 pps). Developing Oil Importers, by contrast, face a decline in 2022 forecasts relative to the year-2022 forecast made in February 2022 (-1.5 pps). These GDP-level changes can be interpreted as the expected macroeconomic impact since February 2022 as a percentage of 2021 GDP, reflecting the two-track impact of the war in Ukraine and of global commodity price trends.

Looking further at 2023, the latest forecasts suggest an average rebound of MENA's GDP level by 1.3 pps, relative to year-2023 forecasts made in February 2022 (Panel A of Figure 1). The highest rebound is observed for GCC, at 2.5 pps, whereas Developing Oil Exporters are forecasts to rebound by 1.5 pps, suggesting that current oil market gains will still have an impact well into 2023. By contrast, Developing Oil Importers see an expected decline in their GDP level of 2.3 pps.

In reviewing the evolution over time of the forecasts for 2022 and 2023, we see an improvement of forecasts from those made in April to July 2021 (Panel B of Figure 1), relative to the forecasts made in February 2022. Subsequently, the forecasts signaled a progressive acceleration in growth up to and including the forecasts made in October 2022. The GDP level upgrade forecasted for MENA in 2022, compared to the February 2022 forecasts, increased from 0.1 pps in March 2022 to 1.0 pps in October. For 2023, the GDP level upgrade increased from 0.1 pps in March 2022 to 1.3 pps in October.

Since the outbreak of the war in Ukraine, forecast 2023 growth has been revised upwards several times (Panel C of Figure 1). The impact on countries in the region has not been uniform, mimicking the pattern of forecast recovery growth rates. Not surprisingly, the GCC and Developing Oil Exporters are forecast to benefit from increased oil prices, as their expected growth rates have been upgraded by 0.6 and 0.5 pps, respectively. In contrast, Developing Oil Importers are coping with the terms-of-trade shock, with a 0.8 pp downgrade. For MENA as a whole, forecasted 2023 growth is 0.3 pps higher in October relative to the February 2022 forecasts.

Figure 1. Uneven Recovery Relative to February 2022 (Start of Ukraine War)

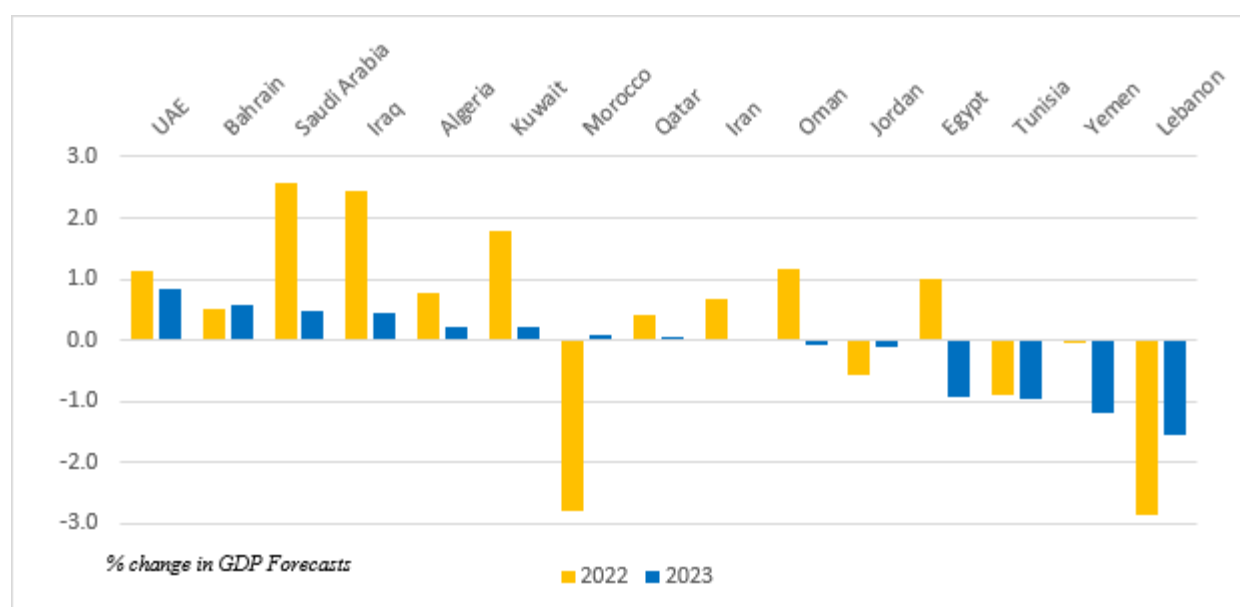


Sources: World Bank Staff calculations based on data from Focus Economics.

Notes: “GCC” includes Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and UAE. “Developing Oil Exporters” includes Algeria, Iran, Iraq, and Yemen. “Developing Oil Importers” includes Egypt, Jordan, Lebanon, Morocco, and Tunisia. “MENA” includes countries in all three groups. 2022 Egypt data are adjusted fiscal year estimates: a weighted average of the year-over-year Q3 and Q4 growth rates for fiscal year 2022 and forecast growth for the first half of fiscal year 2023 (July 2022 to December 2022).

Figure 2 presents consensus expected GDP-growth changes by private sector forecasters for each country. As expected, private sector forecasters have revised upwards their year-2022 growth estimates for the oil exporters except for Yemen (no change) and for Egypt (whose exports of oil enable it to benefit from higher oil prices despite being a net oil importer). As noted above, Developing Oil Importers excluding Egypt have suffered since February 2022. Lebanon has had the biggest total downgrade for 2022 and 2023, an outcome reflecting persistent internal political strife. For the GCC, GDP gains in 2022, due to the windfall from surging oil prices, are expected to slow in 2023. For the rest of the MENA countries, forecasted GDPs for 2022 reflect near zero growth or persisting recessions.

**Figure 2. GDP Growth Forecasts Relative to the Start of the War in Ukraine:
Expected GDP-Growth Changes by Country in 2021 and 2022**



Source: World Bank Staff calculations based on data from Focus Economics.

Note: 2022 Egypt data are adjusted fiscal year estimates: a weighted average of the year-over-year Q3 and Q4 growth rates for fiscal year 2022 and forecast growth for the first half of fiscal year 2023 (July 2022 to December 2022). 2023 Egypt data are calculated similarly: a weighted average of the fiscal year 2023 and fiscal year 2024 forecasts.

B. Oil and Gas price trends are key determinants of macroeconomic performance in MENA. Rising oil prices tend to boost growth in the region's oil exporters and constrain growth in its oil importers, similarly for natural gas exporters and importers. As such, trends in the price of oil and gas futures can be an early signal of future growth prospects.

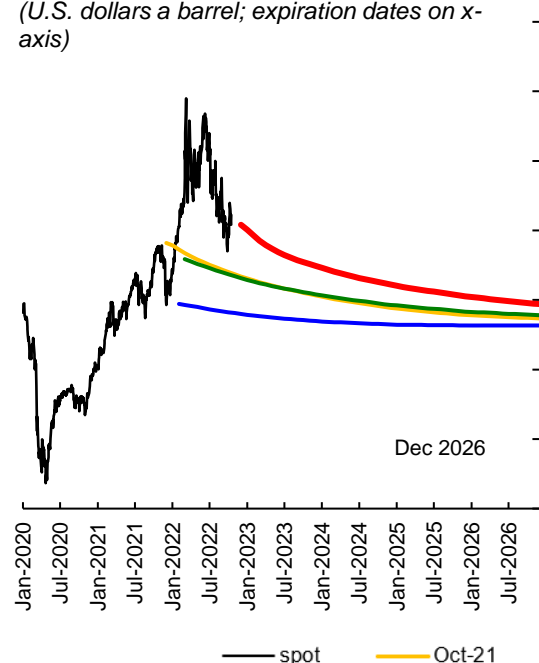
The price of Brent crude had been on a rising trend from mid-2020 to mid-2022, though prices have fallen in recent weeks. On October 14, 2022, Brent traded at \$91.63 per barrel, a 6% decrease from the previous week. The futures curve still points to a higher medium-term equilibrium price for oil. The latest futures curve indicates a slight increase in price to around \$91 a barrel by end 2022, followed by a slow convergence to around \$69 a barrel over the next four years (Figure 3, Panel A).

A similar upward trend is also observed for Natural Gas after a stable first half of 2020, though prices have stabilized to some extent in recent weeks. On October 14, 2022, gas traded at \$6.45 per 10,000 MMBtu, a 4% decrease from the previous week. However, the futures curve still points to a higher medium-term equilibrium price for gas, compared with the end of 2021. The latest futures curve indicates a slight increase in price to around \$7 a unit by end 2022, followed by a slow convergence to around \$5 a unit over the next four years (Figure 3, Panel B).

Figure 3. Oil Prices—Rising in the Short-Run but Expected to Decline in the Long-Run

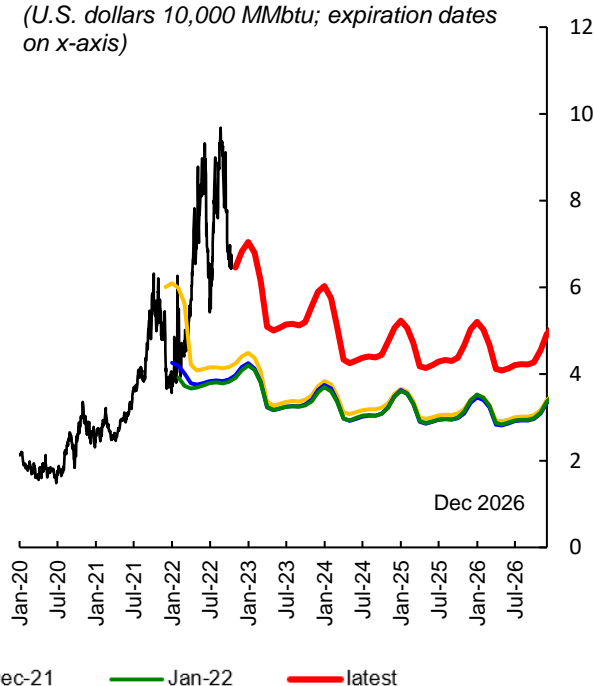
Panel A. Brent Crude Oil Prices

(U.S. dollars a barrel; expiration dates on x-axis)



Panel B. Natural Gas Prices

(U.S. dollars 10,000 MMBtu; expiration dates on x-axis)

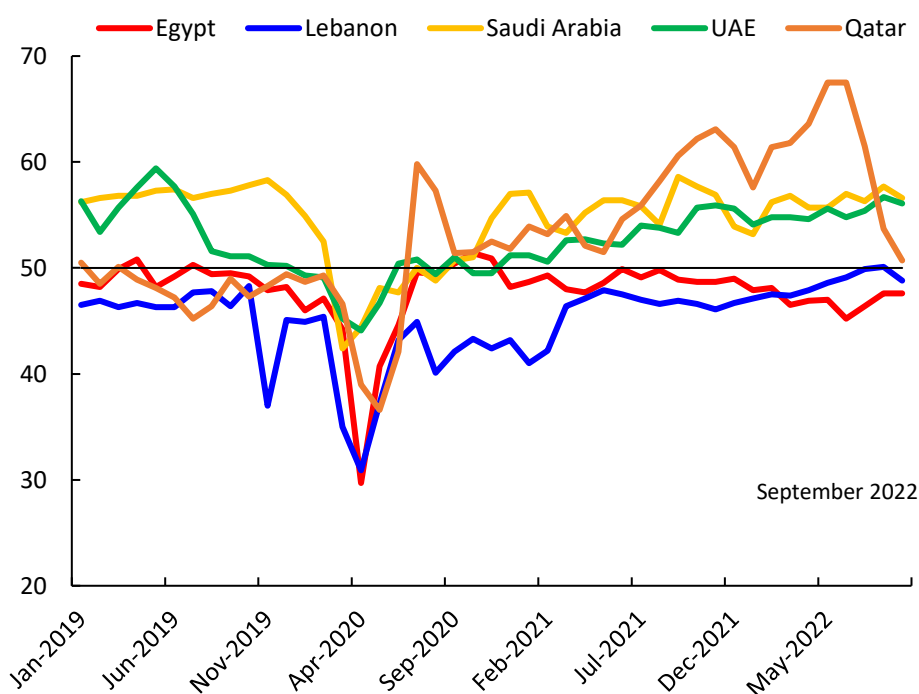


Source: World Bank MNA Chief Economist Office; and Bloomberg, L.P.

Note: The black lines indicate the spot prices of Brent crude oil and of 1st Generic Natural Gas, in each panel separately. The colored lines illustrate the futures prices of Brent crude oil and Natural Gas on, respectively, October 26, 2021, December 1, 2021, January 7, 2022, and the latest (October 14, 2022, in this version).

C. The Purchasing Managers' Index (PMI) is another leading indicator of short-term economic performance. It tracks monthly changes in private sector economic activity. A PMI value above 50 indicates an expansion on a month-to-month basis, while a value below 50 indicates a contraction. Figure 4 shows the uneven recovery among MENA countries. GCC countries (Saudi Arabia, UAE, and Qatar) are above the 50-threshold. Moreover, all countries besides Egypt witnessed a decrease in September – a 3-point drop for Qatar, a 1.3 drop for Lebanon, a 1.1 drop for Saudi Arabia and a 0.6 point drop for the UAE. Egypt's PMI has remained the same compared to the previous month, reflecting a slow and steady recovery in the private sector since June – but remains below 50. Lebanon's had been on an upward trend since the beginning of 2022, before this month's downgrade, breaking the 50-threshold in August. Saudi Arabia and the UAE have also been on an upward trend since the beginning of 2021.

Figure 4. Uneven Recovery in Private Sector
Purchasing Managers' Index



Source: Bloomberg, L.P.

Note: Markit PMI for whole economy, seasonally adjusted, retrieved through Bloomberg.

II. COVID-19 Vaccination Tracker

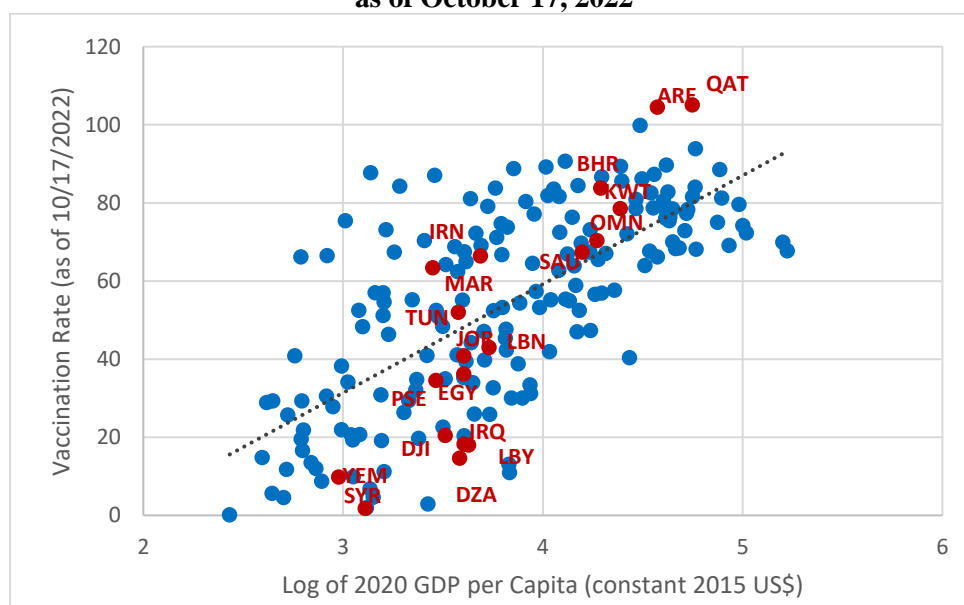
Missing Data Alert. Currently, most MENA countries do not provide readily accessible historical or recent data on the number of deaths (due to any cause). As vaccination opportunities are becoming ubiquitous, the share of the vaccinated, along with information on hospitalizations, has emerged as the key indicator of the severity and spread of the disease. As data on hospitalization are currently only available for advanced economies, we present just the main vaccination statistics.

Vaccination Tracker as of October 17, 2022

Countries in the MENA region have mixed performances regarding the vaccine rollout in 2021-22. Gulf countries such as Qatar, the UAE, and Bahrain lead the region in the percent of the population vaccinated with 105.1%, 104.6%, and 83.8%, respectively (Table 2). Data on vaccine doses administered has been inconsistent across the region. While most MENA countries have been consistently updating their vaccination numbers, other countries have been slow to release updated figures. Nonetheless, for all countries the weekly progression on vaccinations has been very slow.

MENA vaccination performance compared to income peers varies across countries. In Figure 5, after plotting the rate of fully vaccinated people against log 2020 GDP per capita (constant 2015 USD), developing MENA countries, such as Algeria, Djibouti, Egypt, and Jordan, and the FCS countries (Iraq, Libya, Syria, and Yemen) fall behind global peers, while the GCC performs better than global peers. Furthermore, Morocco, Iran, and Tunisia are doing relatively well compared to their income peers.

**Figure 5: Vaccination Rate and GDP per Capita: MENA vs Income Peers
as of October 17, 2022**



Sources: Vaccination Rate from Our World in Data (<https://www.worldometers.info/coronavirus/>), *People Fully Vaccinated per Hundred*, latest rate as of 10/17/2022. *GDP per Capita (constant 2015 USD)* from World Bank Development Indicators (WDI).

Note: Sample includes 196 countries (of which 19 in MENA). GDP per capita is for year 2020, except for Syria, Greenland, Isle of Man and San Marino for year 2019, and Yemen, Aruba, Faroe Islands, Liechtenstein, New Caledonia and South Sudan for years 2010 to 2018.

Table 2. COVID-19 Vaccinations as of October 17, 2022

Country	% of the population vaccinated	Cumulative COVID-19 vaccine doses administered	Update Date
Algeria	14.7%	15.27 million	September 12
Bahrain	83.8%	3.47 million	October 16
Djibouti	20.5%	267,794	October 10
Egypt	36.2%	98.91 million	September 29
Iran	66.5%	154.53 million	October 09
Iraq	18.0%	19.26 million	September 22
Jordan	40.9%	10.06 million	August 21
Kuwait	78.6%	8.22 million	October 11
Lebanon	43.0%	5.79 million	October 10
Libya	18.3%	3.72 million	October 02
Morocco	63.4%	55.29 million	October 11
Oman	67.4%	7.11 million	September 27
Qatar	105.1%	7.54 million	October 11
Saudi Arabia	70.4%	67.84 million	September 27
Syria	9.8%	4.71 million	September 22
Tunisia	52.1%	14.83 million	September 06
UAE	104.6%	24.92 million	June 20
West Bank & Gaza	34.6%	3.74 million	August 09
Yemen	1.8%	1.07 million	September 28

Source: Data on vaccination from Our World in Data (<https://ourworldindata.org/covid-vaccinations>).

III. Poverty and Social Impacts

The uncertainty of the magnitude of economic growth shocks (both positive and negative), as well as the uncertainty of the distribution of their effects on household per capita consumption, imply that any estimate of the expected percent changes in poverty due to changes in growth rates relies on restrictive assumptions. Table 3 presents estimates of expected percent changes in poverty headcounts for 8 developing MENA economies. It shows the estimated impact by applying poverty-rate-to-growth elasticities² to changes in GDP forecasts obtained from Focus Economics. The elasticities are based on the assumption that the economic shock is “inequality-neutral,” which means that they rely on the assumption that all households are impacted by a constant proportion of the GDP shock equal to 0.85. Table 3 presents the impact of the change of GDP forecasts for 2022 on poverty since February 2022 (the start of the Ukraine war).

Since February 2022, growth forecasts for the year 2022 for developing oil exporters have increased, while they have declined for developing oil importers. This translates into substantial changes in the estimated number of people living in poverty. For Iraq, where the 2022 growth forecast has increased by 2.5 percentage points since February, the poverty headcount is expected to fall by around 12 percent, using the lower middle-income poverty rate of \$3.65 per-day in 2017 dollars (measured in purchasing power parity, or PPP). With an initial poverty headcount of 1.0 million, this translates into a 120,000 reduction in the number of people living below the lower middle-income poverty line. By contrast, for Morocco, with a 2.8 percentage point decline in 2022 consensus growth forecasts, the poverty headcount using the lower middle-income threshold is expected to increase by 7.4 percent or by 200,000 persons. For Egypt, with a -1.1 percentage point decline in consensus growth forecasts for fiscal year 2023, arguably a better gauge of the impact of the Ukraine war on growth, the poverty headcount using the lower middle-income threshold is expected to increase by around 2.5 percent or by close to 400,000 persons.

As mentioned, the estimates of the impact of growth shocks on the number of poor people presented in Table 3 relies on the weak assumption that the impact is “inequality neutral.” Yet, it is likely that some individuals or households will be more severely impacted than others. Across the region, those at risk of falling into poverty from a negative growth shock are probably self-employed, informal sector workers who lack social protection, and individuals working in sectors directly hit by the shock. Migrant workers—for example in GCC countries—are excluded from safety nets available to citizens. In addition, growth shocks can affect some industries more than others, which implies that the economic risk of individuals depends on their sector of employment. For example, hard-hit sectors during the COVID-19 pandemic included tourism, retail, textile, and garment industries, particularly salient for the economies of Lebanon, Tunisia, Morocco, and Egypt. Thus, the estimates of the expected increases in the number of poor people from a negative growth shock need to be interpreted carefully.

² The estimates of the increase in the number of poor people relative to the counterfactual scenario of no change in growth are based on simulations. The results are sensitive to the pre-shock distribution of household consumption per capita. Moreover, the distribution of per capita consumption at the bottom tail (low levels of per capita consumption) is flat, and thus the poverty elasticity with respect to GDP shocks are lower.

Table 3. Estimates of Increases in Poverty Headcounts based on Private-Sector Consensus Growth Forecasts since February 2022

Country Group	Country	Change in forecasts (percentage points)	% Change in Poverty Headcount Due to Expected GDP Losses from the Crisis					
			International poverty rate (\$2.15 in 2017 PPP)		Lower middle-income poverty rate (\$3.65 in 2017 PPP)		Upper middle-income poverty rate (\$6.85 in 2017 PPP)	
		2022	Initial Poverty Headcount (in millions)	% Change in Poverty Headcount	Initial Poverty Headcount (in millions)	% Change in Poverty Headcount	Initial Poverty Headcount (in millions)	% Change in Poverty Headcount
Developing Oil Importers	Morocco	-2.8	0.3	7.1	2.7	7.4	13.3	4.6
	Jordan	-0.6	--	--	0.0	3.1	0.4	2.5
	Tunisia	-0.9	--	--	0.3	3.1	2.2	1.7
	Lebanon	-3.5	--	--	--	--	0.5	5.1
	Egypt*	-1.1	1.5	5.4	15.7	2.5	69.5	1.3
Developing Oil Exporters	Iraq	2.5	--	--	1.0	-12.3	10.0	-5.8
	Algeria	0.8	--	--	1.3	-2.9	14.3	-1.6
	Iran	0.6	0.6	-2.0	3.6	-1.6	18.0	-1.0

Source: MNACE and MNA Data Lab Staff calculations based on data from Focus Economics, country-specific poverty-GDP elasticities from MNA Data Lab.

Note: Countries are in ascending order of 2020 GDP per capita (PPP, current U.S. dollars). Change in poverty headcount estimates present changes in poverty headcounts calculated using country-specific poverty-GDP elasticities. If a country had negligible pre-pandemic poverty rates (the number of poor people as a share of the population) at low poverty-line thresholds, the absolute change in poverty rates can also be negligible, notably the case for Algeria, Iraq, Jordan, Lebanon, and Tunisia when using the international poverty rate. *Forecasts for Egypt are based on data from its 2023 fiscal year, which runs from July 2022 to June 2023.

Food Price Changes

Negative economic shocks pose considerable risks to already vulnerable populations. Food price increases disproportionately hurt the poor because they spend larger shares of their expenditure on food. In 2021, the UN estimated that 24 million Yemenis (83 percent of the population) were afflicted by food insecurity.³ In addition, in the wake of the war in Ukraine, MENA countries are coping with higher food prices, which could exacerbate the severity of food insecurity depending on country policy responses.

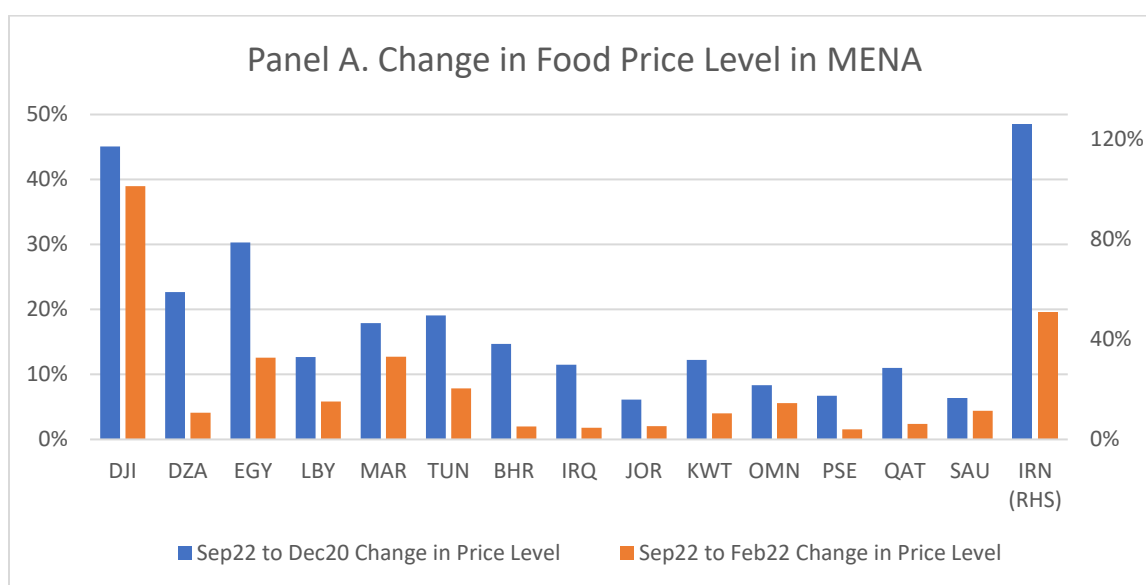
Figure 6 Panel A shows the changes in price levels since December 2020 (post-COVID-19 recovery) and since February 2022 (the start of the Ukraine war). Panel B presents the same analyses just for Lebanon, which witnessed very large increases in food prices.

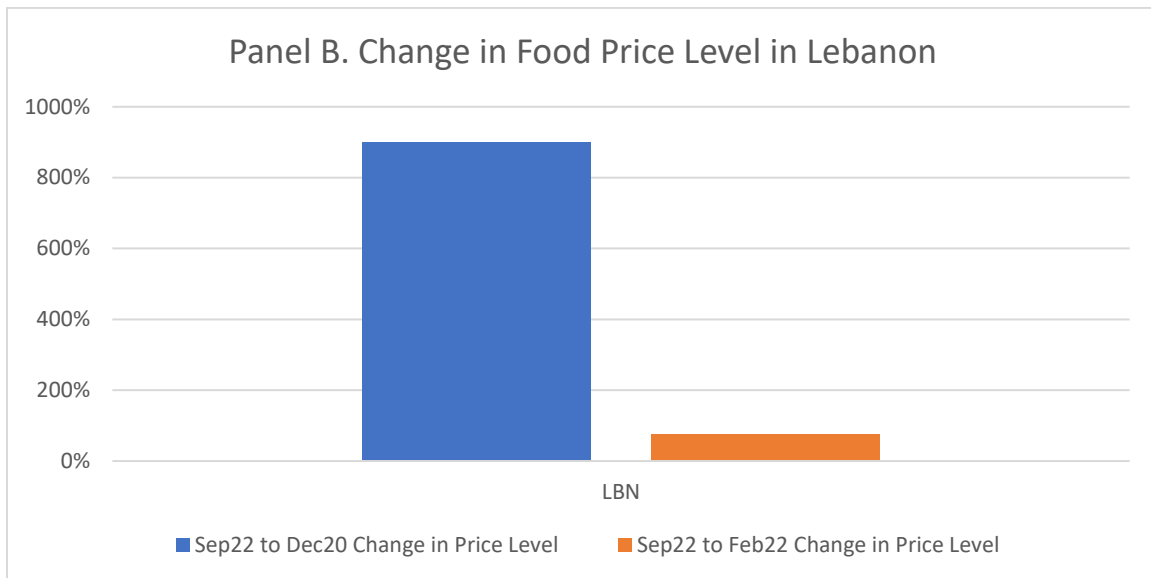
³ <https://www.worldbank.org/en/news/opinion/2021/09/24/mena-has-a-food-security-problem-but-there-are-ways-to-address-it>.

As is evident from the figure, for most MENA countries, food prices had increased substantially even before the start of the war in the Ukraine. For some economies (notably Algeria, Bahrain, Iraq, Iran, Lebanon Kuwait, the Palestinian Territories, Tunisia, and Qatar), most of the increase in prices between December 2020 and September 2022 occurred before the start of hostilities in Ukraine. For some others (Djibouti, Morocco, Oman, and Saudi Arabia), over 50% of the increase occurred after the Ukraine war.

In terms of magnitudes, the following countries witnessed the highest increase in food prices since December 2020: Lebanon (900%), Iran (126%) and Djibouti (45%). For the rest of MENA, food price increases ranged from 6% (Saudi Arabia) to 30% (Egypt). The highest food price increases since February 2022 are Lebanon (76%), Iran (51%), and Djibouti (39%), whereas the increases for the rest of the MENA countries range from 2% (Qatar and the Palestinian Territories) and 13% (Egypt and Morocco).

Figure 6. Food Price Changes Relative to December 2020 and February 2022, as of September 2022





Source: FAO Food Prices Monitoring and Nowcasting - FAO Data Lab and World Bank Staff Calculations

Note: Countries are ordered in ascending 2020 GDP per capita (Constant 2015 USD). Changes in price levels are the percentage change of Food CPI between September 2022 and December 2020 and September 2022 and February 2022. Food CPI level for September 2022 is imputed by applying FAO Nowcast Food Y-o-Y Inflation for September 2022 to Historical FAO Food CPI level for September of 2021.

IV. Insights from Academia

1. [Can Pollution Cause Poverty? The Effects of Pollution on Educational, Health and Economic Outcomes](#)
By Claudia Persico

Although pollution is widespread, there is little evidence about how it might harm children's long run outcomes. Using the detailed, geocoded data from the United States that follows national representative cohorts of children born to the National Longitudinal Survey of Youth respondents over time, the author compares siblings who were gestating before versus after a Toxic Release Inventory site opened or closed within one mile of their home. She finds that children who were exposed prenatally to industrial pollution have lower wages, are more likely to be in poverty as adults, have fewer years of completed education, and are less likely to graduate high school.

2. [Covid-19 Learning Loss and Recovery: Panel Data Evidence from India](#)
By Abhijeet Singh, Mauricio Romero, and Karthik Muralidharan

This paper uses a panel survey of ~19,000 primary-school-aged children in rural Tamil Nadu to study 'learning loss' after COVID-19-induced school closures, and the pace of recovery after schools reopened. Students tested in December 2021 (18 months after school closures) displayed learning deficits of $\sim 0.7\sigma$ standard deviations in math and $\sim 0.34\sigma$ standard deviations in language compared to identically-aged students in the same villages in 2019. Two-thirds of this deficit was made up within 6 months after school reopening. Further, while learning loss was regressive, the recovery was progressive. A government-run after-school remediation program contributed $\sim 24\%$ of the cohort-level recovery, and likely aided the progressive recovery.

3. [Real-Time Inequality](#)
By Thomas Blanchet, Emmanuel Saez & Gabriel Zucman

This paper constructs high-frequency and timely income distributions for the United States. It develops a methodology to combine the information contained in high-frequency public data sources—including monthly household and employment surveys, quarterly censuses of employment and wages, and monthly and quarterly national accounts statistics—in a unified framework. This allows the authors to estimate economic growth by income groups, race, and gender consistent with quarterly releases of macroeconomic growth, and to track the distributional impacts of government policies during and in the aftermath of recessions in real time. They test and successfully validate their methodology by implementing it retrospectively back to 1976. Analyzing the Covid-19 pandemic, they find that all income groups recovered their pre-crisis pretax income level within 20 months of the beginning of the recession. Although the recovery was primarily driven by jobs rather than wage growth, wages experienced significant gains at the bottom of the distribution, highlighting the equalizing effects of tight labor markets. After accounting for taxes and cash transfers, real disposable income for the bottom 50% was 20% higher in 2021 than in 2019 but fell in the first half of 2022 as the expansion of the welfare state during the pandemic was rolled back. All estimates are available at <https://realtimeinequality.org> and are updated with each quarterly release of the national accounts, within a few hours.

4. [An efficient unemployment rate \(\$u^* = \sqrt{uv}\$ \) as the best marker of full employment](#)

By Pascal Michailat & Emmanuel Saez

Most governments are mandated to maintain their economies at full employment. The authors propose that the best marker of full employment is the efficient unemployment rate, u^* . We define u^* as the unemployment rate that minimizes the nonproductive use of labor—both jobseeking and recruiting. The nonproductive use of labor is well measured by the number of jobseekers and vacancies, $u + v$. Through the Beveridge curve, the number of vacancies is inversely related to the number of jobseekers. With such symmetry, the labor market is efficient when there are as many jobseekers as vacancies ($u = v$), too tight when there are more vacancies than jobseekers ($v > u$), and too slack when there are more jobseekers than vacancies ($u > v$). Accordingly, the efficient unemployment rate is the geometric average of the unemployment and vacancy rates: $u^* = \sqrt{uv}$. The authors compute u^* for the United States between 1930 and 2022. They find for instance that the US labor market has been over full employment ($u < u^*$) since May 2021.

5. [Quantifying War-Induced Crop Losses in Ukraine in Near Real Time to Strengthen Local and Global Food Security](#)

By Klaus Deininger, Daniel Ayalew Ali, Nataliia Kussul, Andrii Shelestov, Guido Lemoine, & Hanna Yailimova

This paper uses a 4-year panel (2019–2022) of 10,125 village councils in Ukraine to estimate direct and indirect effects of the war in Ukraine on area and expected yield of winter crops. Satellite imagery is used to provide information on direct damage to agricultural fields; classify crop cover using machine learning; and compute the Normalized Difference Vegetation Index (NDVI) for winter cereal fields as a proxy for yield. Without conflict, winter crop area would have been 9.14 rather than 8.38 mn. ha, a 0.75 mn. ha reduction, 86% of which is due to economy-wide effects. The estimated conflict-induced drop in NDVI for winter cereal, which is particularly pronounced for small farms, translates into a 15% yield reduction or an output loss of 4.2 million tons. Taking area and yield reduction together suggests a war-induced loss of winter crop output of 20% if the current winter crop can be harvested fully.