MENA ECONOMIC UPDATE

APRIL **2022**

REALITY CHECK:

FORECASTING GROWTH IN THE MIDDLE EAST AND NORTH AFRICA IN TIMES OF UNCERTAINTY

WORLD BANK GROUP

WORLD BANK MIDDLE EAST AND NORTH AFRICA REGION

MENA ECONOMIC UPDATE APRIL 2022

Reality Check: Forecasting Growth in the Middle East and North Africa in Times of Uncertainty

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Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
COVID-19	Coronavirus Disease 2019
CPI	Consumer Price Index
CPIA	Country Policy and Institutional Assessment
DHS	Demographic and Health Surveys
EAP	East Asia and Pacific
ECA	Europe and Central Asia
EU	European Union
FAO	Food and Agriculture Organization
FCV	Fragile, Conflict and Violence-Affected states
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GEP	Global Economic Prospects
HICs	High Income Countries
HIV	Human Immunodeficiency Virus
IBRD	International Bank for Reconstruction and Development
ICU	Intensive Care Unit
IDA	International Development Association
IFPRI	International Food Policy Research Institute
IHSN	International Household Survey Network
IMF	International Monetary Fund
IPUMS	Integrated Public Use Microdata Series
LAC	Latin America and the Caribbean
LICs	Low Income Countries
LNG	Liquified Natural Gas
LOWESS	Locally Weighted Scatterplot Smoothing
MDG	Millennium Development Goals
MENA	Middle East and North Africa
MICs	Middle Income Countries
MICS	Multiple Indicator Cluster Surveys
MPO	Macro and Poverty Outlook
NA	North America
N/A	Not Available
NGOs	Non-Governmental Organizations
OEC	Oil-Exporting Countries
OIC	Oil-Importing Countries
OPEC	Organization of the Petroleum Exporting Countries
PMI	Purchasing Manager's Index
QE	Quantitative Easing
SA	South Asia
SCI	Statistical Capacity Indicator
SDDS	Special Data Dissemination Standards
SPI	Statistical Performance Indicator
SPR	Strategic Petroleum Reserve
SSA	Sub-Saharan Africa
SWIFT	Society for Worldwide Interbank Financial Telecommunication
UAE	United Arab Emirates
UCDP	Uppsala Conflict Data Program
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	United States
VAT	Value-added Tax
WDI	World Development Indicators
WEO	World Economic Outlook
WHO	World Health Organization
UHC	Universal Health Coverage
UNICEF	United Nations International Children's Emergency Fund
USAID	United States Agency for International Development
WDI	World Bank Indicators
WHO	World Health Organization

Foreword

The COVID-19 pandemic is entering its third year, with the possibility of future mutations of the virus. Global inflation has risen to historic levels. Climate change continues to wreak havoc with extreme weather events becoming ubiquitous worldwide. Persistent conflict and social unrest in the Middle East and North Africa (MENA) continue to create a sense of social instability. And now there is war in Ukraine, bringing with it economic ramifications for global energy, food and capital markets. To say that uncertainty rules the day is an understatement.

Managing uncertainty is a key challenge facing policymakers in MENA and around the globe. While not all risks can be mitigated before they materialize, the challenge does engulf a broad range of policy issues, from prudent macroeconomic policies to smart investments in public health systems.

The previous edition of our MENA Economic Update published in October 2021 by our Office of the Chief Economist for MENA, warned of the risks of being "overconfident" about our ability to respond to crises such as the current pandemic. In the case of public health, being prepared entails investing in disease surveillance, information sharing, and the capacity to absorb sudden increases in the number of patients in need of health care due to previously unexpected health calamities. If health systems get overwhelmed, the death toll can be devastating with commensurate economic losses.

This edition of the MENA Economic Update reminds us that we are not out of the woods yet with respect to COVID-19. Perhaps more importantly the authors put on the table another equally important challenge during uncertain times: the risk of being overly optimistic about our economies' prospects in the near term. It turns out that this challenge is complex, but the focus of the report is on a common instrument used to prepare for the near future, namely economic forecasts.

Like weather forecasts, projections of economic growth in the near future are rarely accurate. But as long as they are reasonably estimated, the authors tell us, they are invaluable tools for government financial planning and preparedness. If they turn out to be wildly over-optimistic, like overconfident public health postures, the consequences can be dire. The report cites existing academic literature that quantifies the risks of over-optimistic growth forecasts. I invite you to read it carefully.

In this context of global and regional uncertainty, this report focuses attention on various economic forecasts, including our own World Bank forecasts, the International Monetary Fund's forecasts, as well as private-sector forecasts for a large sample of countries, covering data dating back a decade. The report's candid analysis of the art of economic forecasting is, frankly, long overdue.

The future can be hard to predict, especially during times of extreme uncertainty such as the current war in Ukraine which is destabilizing grain and energy markets. It is the difficult job of forecasters to tell where the economic winds may blow, to warn of impending catastrophes, and how they can be avoided. Forecasts help governments and businesses to plan for the future. For example, growth forecasts provided the earliest indication of the true cost of the pandemic. Forecasters of growth in the MENA region have a particularly hard time with the high degree of growth volatility, amplified by exposure to commodity price shocks and ever-present conflict. The forecasters do the best they can with what information is available to them. Yet they are often ill-served by data opacity that is all too common in MENA.

The authors provide evidence indicating that over the last decade, growth forecasts in the MENA region have often been inaccurate and overly optimistic. I invite you to review the authors' findings with a critical eye; if they are right, we need urgent action to improve economic forecasting of the MENA region. Let me repeat, like weather forecasts, growth forecasts need not be perfect to be useful. However, overly optimistic growth forecasts can lead to economic contractions down the road. During times of uncertainty, it is important not to fall into a trap of overconfidence, as witnessed with health systems in the region during the pandemic. The region needs to be conservative with growth prospects and focus on this uncertainty by building resilience.

Thus, a key policy question is what can we do to enhance the precision of our economic forecasts, whether from the World Bank, the IMF or the private sector? An important finding of the report is that one way to improve forecasts is to provide forecasters with as much good quality information as possible. This message, the authors argue, is grounded in new statistical evidence, which should be of interest to our clients, academics and private sector. If the evidence proves robust, it is an unfortunate reality that data systems remain poor in the region and many economies in MENA are data deprived. They have lagged in their statistical capacity to generate data. Very few economies in the region have monthly data on unemployment and industrial production and countries in conflict are missing data for many years. Forecasting growth under these conditions is like a meteorologist predicting the weather with information gaps on temperature and humidity changes.

The report finds that with better data, growth forecasts are more accurate. The report proposes some practical ways to improve data systems that can help forecasters in the region. Increasing the frequency and quality of national accounts data can improve forecasts considerably. Consistent data are important for forecast accuracy and consistency can be achieved through better communication between ministries and national statistical offices. Technical assistance to governments can help improve the quality of national statistics, which in turn will improve the information that is fed into forecast models. For countries in conflict, alternative data sources such as information from satellites (for example, night lights data) are crucial, and the World Bank has an important role to play in facilitating access to these data.

As the future becomes even murkier with emerging threats, the focus should be to build resilience in the region, including through transparency. The World Bank is committed to helping improve data transparency across the region, with the ultimate objective of empowering policymakers, the private sector, and our fellow citizens to make the best possible decisions with the most accurate information available.

Ferid Belhaj
Vice President
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The World Bank


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INTRODUCTION AND OVERVIEW OF FINDINGS

Uncertainty is again clouding the prospects for the global economy. The unexpected war in Europe presents significant challenges to the world economy and to the Middle East and North Africa (MENA) region in particular. This shock has rippled across global commodity and capital markets during a time when uncertainty was already obscuring the economic prospects of the region. Chief among the sources of uncertainty that predate the war in Ukraine was the scientific uncertainty about the evolutionary path of the virus that causes COVID-19. The global scientific community is being tested by the prospects of future outbreaks and the severity of a disease that seems likely to mutate further.

Moreover, as the global economy reopens—in large part thanks to the advent of effective and safe vaccines—global inflation seems to have taken hold in forms previously unknown due at least in part to disruptions caused by the pandemic itself. An important consequence of uncertainty is that projections of short-term economic prospects are likely to be less precise—even as analysts, policymakers and enterprises continue to rely on forecasts to make decisions about fiscal spending, sovereign borrowing, productive investment, and social policies. Simply put, forecasting is most valuable when uncertainty reigns. But even during tranquil times, forecasts published by the World Bank, the International Monetary Fund (IMF), and private-sector analysts tend to grab media headlines, perhaps because they are so important to setting economic expectations. This edition of the World Bank's semiannual MENA Economic Update provides an empirical assessment of the precision and biases of the art of forecasting during the past decade.

Growth forecasts need not be perfectly accurate—and indeed they typically are not. Even a weather forecaster, with all the tools available, makes an accurate seven-day forecast only 80 percent of the time. A forecast of 10 days or longer is right only about half the time.[1] Yet, the importance of weather forecasts is hard to dispute.

It is also hard to question the importance of economic forecasts. This report asks whether there is scope to improve them, and the answer seems to be yes. A concerted effort to enhance the availability and accessibility of good quality data in the region can improve forecasts, which would permit governments to formulate policy based on more reliable information. The private sector also would be able to plan accordingly and take actions based on more accurate information. Importantly, the forecasts could help plot a path through the pandemic recovery and its aftermath.

The war in Eastern Europe is intensifying pandemic-related uncertainty in important ways. Inflationary pressures brought about by the pandemic are likely to be exacerbated by the conflict in Ukraine. Several countries in the MENA region rely on imports of wheat from the two countries, although the source of a country's food supply might not matter when global food prices are rising. The evolving rise in food prices and the higher risk of food insecurity are likely to hurt poor families the most, because the poor tend to spend a higher share of their household budget on food and energy than do rich households. In addition, tourism sectors that were already battered by the pandemic may suffer further from the conflict. The full extent of the consequences of the war are yet to be determined, but early signs point to a heightening of the economic difficulties already besetting many MENA economies. At the same time the COVID-19 pandemic continues to cast a shadow over the region. As the latest variant sweeps through MENA countries, governments grapple with a host of problems, especially the need to increase vaccination rates. Although the depth of the problems in a particular country can depend on the capacity of its public health system, broadly speaking, the region, like the rest of the world, is far from out of the woods.

1 https://scijinks.gov/forecast-reliability/

Vaccinations remain the effective path out of the pandemic. Vaccinated people generally have less severe illness, and lower hospitalization and death rates. Testing and social distancing also help curb the spread of the virus. The richer countries in the region have a wider range of tools to combat the virus in their arsenals—testing and vaccines. The poorer economies face tougher tradeoffs and some countries concede that the pandemic may have to run its course. On one end of the spectrum, the United Arab Emirates has a vaccination rate of 94 percent. On the other end are countries in conflict such as Yemen, which has a vaccination rate of 1.1 percent.

Like the rest of the world, the MENA region faces considerable uncertainty that stems not only from possible future COVID-19 variants, inflation, and the recent conflict in Ukraine, but also from a tightening of global monetary policy. The World Bank forecasts that economic growth in the region will be 5.2 percent in 2022, although that could end up being optimistic, as has been the pattern over the past decade. In the current context, rising oil prices are likely to contribute to uneven outcomes, improving prospects for oil exporters while lowering expected growth rates for oil importers. Inflationary pressures from supply-chain disruptions present additional downside risks.

During times of uncertainty, it is important to not be overconfident about the region's growth prospects. Indeed, in our previous MENA Economic Update in October 2021 we explored the adverse consequences of having been overconfident about the resilience of MENA public health systems in 2019, just before the pandemic. Analogous to disease surveillance and public-health preparedness, growth forecasts for the region serve as a significant signpost for policymakers to chart a path forward. They are a navigation tool through stormy waters. They can act as lighthouses, guiding economies towards recovery opportunities. For example, changes in growth forecasts published in April 2020 provided the first indication of the economic costs of the pandemic.

The focus of this report is to analyze these forecasts and recommend ways to improve them to serve the region's decision makers better. Over the past decade, growth forecasts in the MENA region have often been inaccurate and overly optimistic. Like weather forecasts, growth forecasts need not be perfect to be useful. However, overly optimistic growth forecasts can lead to economic contractions down the road. A key finding of the report is that the availability and accessibility of quality and timely information improves the accuracy of growth forecasts.

The prevalence of opaque data systems in the region is worrisome. As highlighted in the April 2020 MENA Economic Update, data transparency can provide significant gains for the region. The October 2021 MENA Economic Update highlighted how limited information health systems led to overconfidence in the region's ability to face the pandemic. This report showcases one additional way that the lack of data hinders progress in the region: it makes it more difficult for forecasters to accurately predict the performance of MENA economies.

Many economies in the MENA region are data deprived. They have lagged in their statistical capacity to generate information. The statistical capacity indicator (SCI)—a measure of the timely production of credible statistics in developing economies—declined between 2005 and 2019. The region also performs poorly on the statistical performance indicator (SPI)—a more comprehensive measure that also includes advanced economies. Only sub-Saharan Africa has a worse SPI score than the MENA region, even when high-income economies, such as the members of the Gulf Cooperation Council (GCC), are included. In fact, the SPI score of the GCC economies (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, the United Arab Emirates) is not higher than the region on average, and in trails some middle-income MENA economies.

This report takes the issue of data transparency beyond internationally comparable indicators of "statistical capacity" or "statistical performance." It utilizes a "mystery client" approach to assess the availability of and accessibility to GDP, industrial production, and unemployment data for 19 economies in the MENA region covered by the World Bank.[2] Of those 19 economies, 15 report quarterly data on GDP, although some lack information for the year 2020 entirely. Economies in conflict such as Libya and Yemen have outdated data, from 2014 and 2017 respectively. Only 10 of the 19 MENA economies report monthly or quarterly information on industrial production. For the remaining nine, information is not readily available. Only eight economies report quarterly unemployment data and none report data monthly. The benchmark country—Mexico—publishes unemployment data monthly.

Inadequate data systems in the MENA region may be leading forecasts astray. The analytical findings of the report show that the MENA region on average has more inaccurate and optimistic forecasts than the global average, regardless of whether the forecast is by the World Bank, the IMF, or private forecasters. The average forecast error (forecast minus realized growth)—using the World Bank's January Global Economic Prospects (GEP) forecast during 2010–2020—is 2.5 percentage points for the MENA region and 1.3 percentage points globally. That is, growth forecasts for the MENA region tended to be *more optimistic* than those for other regions. Forecasts in the MENA region also tended to be *more inaccurate* than those for the rest of the world. Between 2010 and 2020, again based on the World Bank January GEP forecasts, the average absolute forecast error for the MENA region is 3.3 percentage points compared to 2.5 percentage points globally. The availability and accessibility of credible information helps forecasters predict better. In fact, an important statistical result presented in this report suggests that poor data systems are correlated with more optimistic and inaccurate forecasts globally, particularly for the MENA region.

Two additional key messages emerge from the report. First, *volatility of growth in the MENA region reduces the accuracy of forecasts*. The greater the volatility, the tougher it is for forecasters to forecast. The exposure of the region to commodity price shocks contributes to growth volatility. The presence of states in conflict are another major contributor to the regional growth volatility. Another factor leading to inaccurate forecasts in conflict economies is that data systems are damaged by upheaval, which makes accurate information hard to come by. Pointedly, the correlation between poor data systems and inaccurate forecasts stands even after accounting for growth volatility and the presence of conflict.

Second, *the accuracy of growth forecasts varies by the type of forecaster*. World Bank forecasts during 2010–2020 tended to be more accurate on average than those from the IMF and from the private sector—both for the MENA region and for the rest of the world. The accuracy and optimism of forecasts are largely similar across international, regional and local forecasters. Regional forecasts exhibit considerable variation in accuracy, although on average they do not differ from international and local forecasters. Local forecasters might have better access to local information that could improve their growth forecasts, but they might also be easily influenced by, and connected to, governments, which could influence their growth forecasts. The finding suggests that the two opposing effects could offset each other.

The report illustrates a crucial channel through which poor data systems hurt the MENA region: imprecise forecasts hinder the ability of governments to plan effectively for what is to come. As part of the effort to understand the specific hurdles in forecasting, the report team held discussions with World Bank country economists in the MENA region. The economists cited numerous challenges. In some cases, data are scarce. In other cases, data are available in general, but important subcomponents are missing. Even when high frequency data are accessible, the information for the last

2 See Ekhator-Mobayode and Hoogeveen (2021) for a similar approach to evaluating microdata.

important quarter sometimes is missing, which hampers forecast accuracy. And at times, there can be data stoppages for no apparent reason. From these conversations, several policy implications emerged:

- Accurate and frequent national accounts data are essential to good forecasts.
- Technical assistance to governments to improve the accuracy of national accounts could substantially improve the accuracy of forecasts.
- For countries in conflict, alternative sources of data such as satellite-based data on night lights, are crucial, and the World Bank has a role to play in facilitating provision of such data.

The rest of this MENA Economic Update is structured as follows. Chapter I provides an overview of the macroeconomic situation in the region. Chapter I provides regional growth forecasts, focusing on the possible implications of the war in Ukraine. It updates the COVID-19 pandemic and looks at rising inflation. Chapter II explores the conceptual underpinnings of the accuracy of growth forecasts and explores the sources of growth forecast errors in the MENA region. Chapter III examines the implications of previous forecast errors for interpreting current growth forecasts amid the high level of uncertainty that stems from both ongoing shocks and potential new ones.

CHAPTER I. RECOVERY UNDER UNCERTAINTY

Chapter I Takeaways

- *The World Bank estimates that MENA's regional GDP expanded by 3.3 percent in 2021 and forecasts it to grow by 5.2 percent in 2022.*
- *In 2022, eleven out of 17 countries in the region will not be able to recover to their pre-pandemic standard of living.*
- *The recovery is expected to be faster for oil exporters than oil importers in the region as energy prices rose in 2021 and spiked after the onset of the Ukraine war.*
- *Forecasts for 2022 remain fluid due to uncertainty caused by the pandemic, the tightening of global monetary policy, and the Ukraine war.*
- *The region is facing considerable inflationary pressures due to global inflation associated with disruptions caused by the pandemic, commodity price inflation accelerated by the Ukraine war, and currency depreciations in some countries.*

The Ukraine war poses significant challenges to many economies in the MENA region. The ensuing food price rises are likely to increase food insecurity in the region. Tourism sectors, already battered by the pandemic, may yet again suffer from the conflict. However, net oil exporters in the region face improving prospects due to the rise in energy prices, although household budgets across the region will be strained because of the rise in both energy and food prices. The COVID-19 pandemic has yet to end. The MENA region recently witnessed a large spike of cases in February 2022, possibly driven by the new Omicron variant, but information emanating from the region remains unreliable. However, rising COVID-19 cases in Europe and China suggests that the MENA region (and the global economy) may not be out of the woods yet. The region's economic recovery remains uncertain due to the unpredictable course of the pandemic, the tightening of global monetary policy and, most recently, the Ukraine war.

I.1. The Ukraine War: Potential heterogenous impacts on the region adding to uncertainty

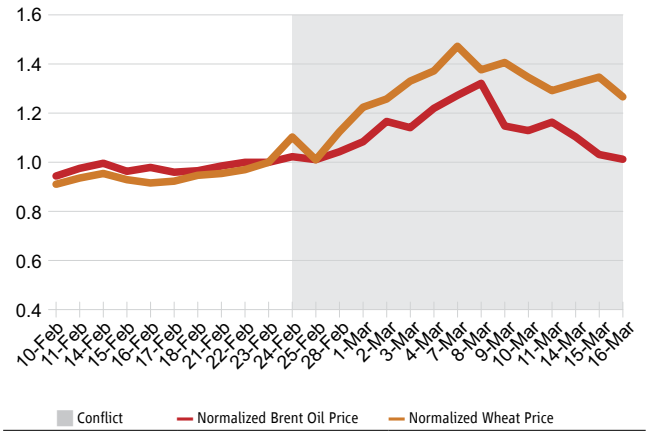
The large-scale Ukraine war in late February has rattled the global economy and further heighten uncertainty. Although the situation remains highly fluid, the human consequences are appalling.

Potential channels of impact on the global economy

The crisis has disrupted supply chains, further fueling global inflation that had already reached historic levels in 2021 and added turmoil in already tightening global capital markets. The magnitude and persistence of the shock is highly uncertainty, and likely very sensitive to how the crisis unfolds. According to the International Food Policy Research Institute (IFPRI), Russia and Ukraine together exported more than a third of global wheat exports during 2018–2020. The war caused wheat prices to jump significantly with much volatility (see figure I.1). Prices of other food commodities have also risen since the conflict, due to dramatic reduction in global supply of food from both Russia and Ukraine.

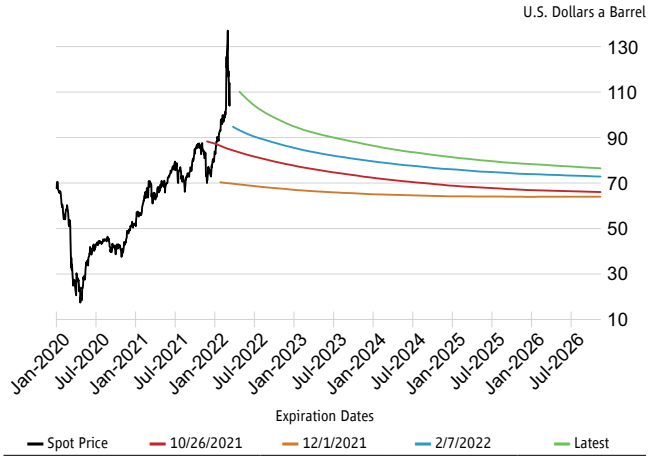
Russia is also a major exporter of energy and fertilizer, both of which are important inputs for the production of food commodities, and this further fuel food price hikes. This reduction in food supply accentuates an already difficult global supply chain due to the pandemic, which had already caused food price inflation in the region ahead of the war.

Figure I.1. Normalized Oil and Wheat Prices



Source: Based on data from Business Insider.
Notes: Brent oil price and wheat price are normalized to 1 on Feb 23, 2022 (one day before the invasion). Since prices can move in anticipation of the conflict, prices two weeks before the invasion are also included.

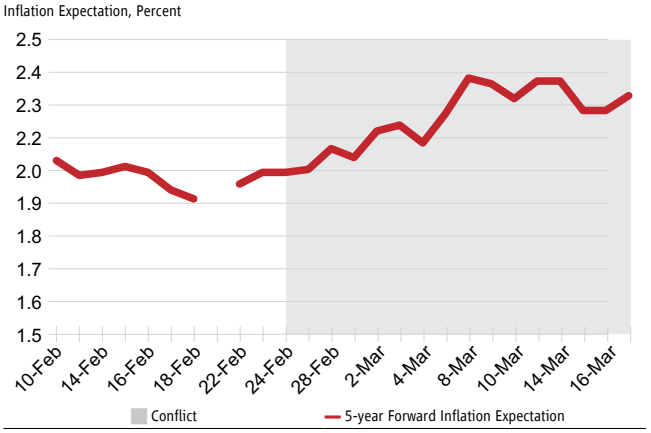
Figure I.2. Rising Oil Prices in the Short-Run Expected to Decline in the Long-Run



Source: World Bank MNA Chief Economist Office; and Bloomberg, L.P.
Notes: The black line is the spot price of Brent crude oil. The colored lines illustrate the futures prices of Brent crude oil on October 26, 2021, December 1, 2021, February 7, 2022, and the latest (March 18, 2022 in this version).

According to the International Energy Agency, Russia is the world's third largest oil producer behind the United States and Saudi Arabia, and the world's largest exporter of oil to global markets. In addition, 39 percent of OECD Europe's total oil product imports are from Russia. The disruption of production and shipping channels in the war zone added pressure to an already tight global energy market, yielding skyrocketing energy prices in early March. The brent crude oil price had already jumped significantly in the first week of the invasion (figure I.2), surpassing US$100 a barrel, a historic high since 2014. Natural gas prices also rose sharply. Although the potential for extreme oil price increases could be moderated by the release of the strategic reserves (SPR) by the US and other countries, oil prices are likely to be volatile, creating uncertainty for oil exporting countries if global energy production does not also rise to rebalance oil market supplies.

Figure I.3. Inflation Expectations Have Been Rising Since the Ukraine War Began



Source: Based on data from Federal Reserve Bank at St Louis.
Notes: Since prices can move in anticipation of the conflict, prices two weeks before the invasion are also included. February 21 data for inflation expectation is not available (the market was closed).

Inflation expectations are rising, fueled by rising commodity prices and strained supply bottlenecks. Figure I.3 shows the daily movements of the US 5-year forward inflation expectations. The inflation expectations rose from 2.05 percent on February 23, before the invasion, to 2.31 percent as of March 17. Although this expected inflation rate is still modest and well within the reach of the US Federal Reserve's target, the change in the inflation expectation is remarkably rapid.

If the continued rise accelerates, it may compel central banks to raise interest rates more forcefully than previously anticipated (see Cox, 2022). In fact, the Federal Reserve raised its policy rate by 25 bps in March 17 and is prepared to raise rates more aggressively in coming months (Timiraos, 2022), although it is not clear if this was previously planned prior to the onset of the conflict in Europe. In turn, tightening global financial markets with rising interest rates and lower access to credit could cause capital outflows and financial instability for many developing countries, especially those with elevated dollarized debt, current account deficits, or fiscal deficits. In fact, Egypt's central bank raised its policy rates on March 21 to reign in inflationary pressures and prevent further currency depreciations.

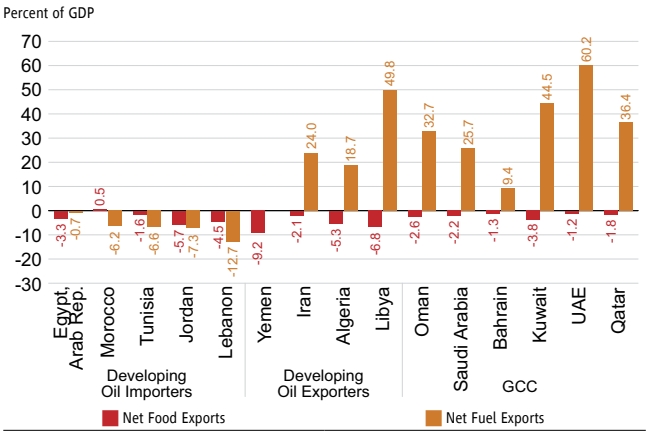
Potential channels of impact on the regional economy

The potential channels of impact on MENA can be characterized as direct impacts and indirect (knock-on) impacts.

Direct Impacts

Direct impacts refer to the first-round effects caused by changing prices, excluding potential responses by capital markets, governments, firms and households. Many MENA economies may be hit hard by the conflict due to rising food prices, increasing the risk of inflation and food insecurity. For example, the net import of food in Egypt is as much as 3 percent of GDP (see figure I.4), and the same indicator reads more than 9 percent for Yemen.

Figure I.4. MENA Countries are Mostly Net Food Importers and Many are Large Net Fuel Exporters



Source: World Development Indicators (for countries with available data).
Notes: A positive value indicates net exports. A negative value indicates net imports. Data are 2019, except Oman, Libya, Iran, Yemen (2018), Algeria (2017). Fuel exports data for Yemen is not available. Countries are ordered by ascending GDP per capita within each country group. Note that countries with data older than 2017 are excluded.

It is widely accepted that rising food prices, especially wheat prices, are likely to raise inflationary pressures and increase food insecurity in MENA countries. However, the overall impact will largely depend on the direct (first order) effects of price increases, attenuated by any government subsidy programs. The broader and longer-term welfare effects are likely to depend on the context of the specific MENA economy being considered.[3] The direct impacts are realized in the short run where, due to sticky production and consumption of food commodities, the welfare loss is large, stemming from increases in prices of wheat and grain. Many MENA countries with large tourism sectors may experience less revenue from tourism receipts induced by fewer tourists from Russia and Ukraine. For example, almost a third of Egypt's tourists are from either Russia or Ukraine (see Emam, 2022). The impact on tourism can be both direct (e.g., through travel disruptions) and indirect, through lower global demand (for example, due to rising oil prices).

3 As discussed in Lederman and Porto (2016), in the short run, households are unable to adjust consumption, production, and employment decisions unlike the medium-run where partial adjustment is feasible, and the long-run where there is much more flexibility. Changes in the responsiveness of domestic supply will depend on the elasticity of domestic supply of wheat. The first order effects are largely determined by budget and income shares. Poor households tend to spend a larger share of expenditures. However, poor households tend also to be dependent on commodities as a source of income, and thus the overall effect will depend on the net-consumer net-producer position. Furthermore, depending on "wage-price" elasticities, changes in relative prices can lead to shifts in sectoral demands for labor, with some households benefiting from increasing wages. The possibility of spillover effects and the likelihood of perfect price pass through from international to domestic markets will frame the overall effects of rising prices. However, while it is plausible that households can adapt through their consumption, production and employment decisions, these second order adjustments are likely to be small and thus dominated by the first order effects.

MENA oil exporters will likely benefit from higher energy prices through higher export receipts, improving the current account balances and fiscal balances. Fuel exports play a hugely important role in MENA countries (figure I.4). However, long-term expectation of oil prices remains low, constrained by the long-term shift away from oil (see figure I.2). Thus, the long-term challenges of declines in oil revenues remain front and center. Even in oil exporting economies, firms and households will face higher energy and food prices.

Trade balances in oil-importing countries are likely to deteriorate as they face higher oil prices. For countries with large subsidies, the rise in food and energy prices may lead to a higher burden on public expenditures. However, remittances from GCC countries will likely rise.

Indirect Impacts

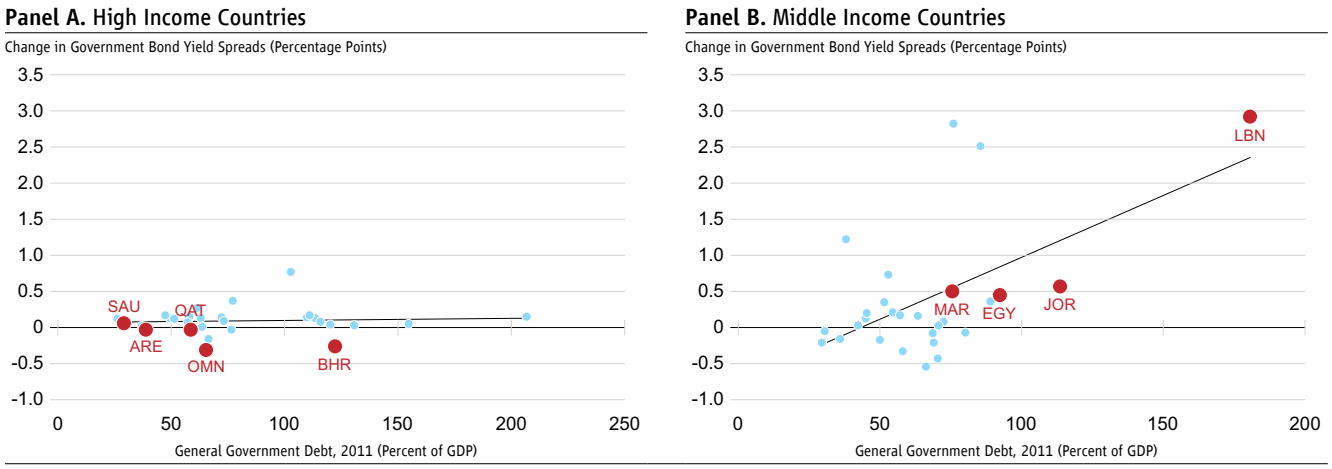
Indirect impacts, or knock-on effects, refer to ripple effects on other markets such as capital markets, as well as responses from governments, firms and households. The indirect impacts considered in this section include tightening of global monetary policy, social unrest, implications for food subsidies and reforms, and geopolitical concerns. In the long run, if governments could tap into grain and oil reserves, producers could produce more, or consumers could switch to alternative sources of food, even by a small amount, then the welfare loss could be attenuated.

In response to the rising inflation, monetary policy in major large economies such as the United States and the European Union, could be tightened faster than previously expected. Rising interest rates and more difficult access to credit could cause capital outflows and financial instability for many developing MENA countries, especially those with elevated debt levels—as Gatti and others (2021) point out, many are MENA oil importers. An indicator of financial instability is the bond spread—the difference in yields between a country's bond and benchmark bonds (such as German and US bonds). A rising bond spread implies that a country's bond is less attractive, as investors demand a higher yield (return). Figure I.5 shows rising bond spreads for many developing countries with elevated debt (Panel B), but not for advanced countries (Panel A).

Rising food prices may have far-reaching effects beyond increasing food insecurity. Existing evidence suggests that increases in international food prices in poor countries can lead to a significant increase in social unrest such as anti-government demonstrations, riots, and civil conflict and significant deterioration of democratic institutions (Arezki and Bruckner, 2014; Bellemare, 2015). Historically in MENA, increases in bread prices have also contributed to increased social unrest and conflict, which in turn can hurt growth. This link between food prices, conflict, and low growth poses a serious concern for the humanitarian crisis in Fragile, Conflict and Violence-Affected (FCV) states in MENA.

There may be substantial impacts on food subsidies and reforms. For some oil importers, food subsidies would be hard to maintain due to limited resources. Lebanon had already halted its food subsidy program as its fiscal position deteriorated. Tunisia is also facing challenges in maintaining its food subsidies. Rising oil prices could delay reforms, however, as subsidies might rise with global food and energy prices. For oil exporters, rising oil prices may reduce the pressure for reforms as oil revenues rise, thereby enhancing fiscal space to raise subsidies. Oil importers may face worsening fiscal balances as subsidies rise and structural fiscal reforms are stalled or reversed that may also delay much-needed bold reforms.

Figure I.5. Bond Spreads are Rising for Developing Countries with Elevated Debt



Source: Government Bond Yield Spreads from Bloomberg L.P., General Government Debt 2021 (% of GDP) from World Bank MPO Estimates (April 2022).
Notes: These graphs cover 57 countries, 30 High Income Countries and 27 Middle Income Countries. Change in Government Bond Yield Spreads is calculated as the difference between Long Term Spreads for 3/17/2022 and 2/23/2022 - Average of 8–11 Years to Maturity Bonds (from March 2022). For Euro Denominated Bonds, the Benchmark used is German Bonds. For Dollar Denominated Bonds, the Benchmark used is United States Bonds. Ukraine and Russia have been excluded from this analysis due to direct impact from the Ukraine conflict.

Yet the concern over food insecurity, poverty and social unrest is real. Ideally, an efficient policy response would be to enhance social protection programs such as direct cash transfers to poor and vulnerable families. But the suddenness of the price spike might inhibit policy response through the modernization of social protection systems. Morocco provides an example of an effective cash transfer policy response. The Tadamon cash transfer program in Morocco greatly exceeded its initial target of informal worker households, covering almost 80 percent of its population with one of the highest scale-up rates from pre-COVID-19 levels (Gentilini and others, 2021).

The ongoing war in Eastern Europe may have geopolitical implications in the region that are difficult to ascertain. For example, Russian intervention in Libya and Syria could be affected by the Ukraine war. On the back of the humanitarian crisis in Ukraine, this compounding shock could also divert humanitarian and development assistance from the region, especially in FCV countries such as Yemen and for existing Syrian-war refugees in Lebanon and Jordan. MENA has only 6 percent of the world's total population, while accounting for over 20 percent of the world's acutely food insecure people (Belhaj 2022). According to the Associated Press,[4] less than a third of funds requested was raised in a United Nations appeal for Yemen, while 161,000 people are likely to experience famine in Yemen in 2022.

The potential channels of impacts on MENA are summarized in table I.1. Panel A shows the direct impacts. The rising price of oil and food may improve trade and fiscal balances of oil-exporting countries, but it would still negatively affect consumers in these countries. Therefore, the impact of the war is heterogenous not only across countries, but also within countries. The fiscal balances of MENA oil importers are uncertain, depending on two opposing forces. On the one hand, oil importers can benefit from higher revenues from State-Owned Enterprises (SOEs) in the energy sector. On the other hand, subsidies and cash transfers could increase due to automatic stabilizers even though subsidy and transfer rates are unchanged. At the country level, the impact on capital flows could exert exchange-rate-depreciation pressure for food and energy importers.[5] In Panel B, the indirect impacts are summarized, comprising financial instability, social unrest, reform delays, and diversion of humanitarian assistance from MENA fragile states.

4 https://www.pbs.org/newshour/world/u-n-raises-1-3-billion-for-yemen-less-than-a-third-requested-in-effort-shadowed-by-ukraine-war
5 If a country adopts a fixed exchange rate regime, the price pass through from increases in international food and energy prices will be full (barring the effects of subsidies). If a country adopts a flexible exchange rate regime, the price pass through now also reflects the potential exchange rate depreciation, generating a stronger inflationary pressure.

Table I.1. Summary Impact of the Ukraine War on MENA

Panel A. Direct Impacts

	MENA Oil Exporters	MENA Oil Importers	MENA Food Importers
Country (Trade Balance)	+	-	-
Government Budget (Fiscal Balance)	+	? (Depends on energy SOEs)	- (Automatic stabilizers)
Firms (users of inputs of energy, wheat)	-	-	-
Households (food, energy, and product consumers)	-	-	-

Panel B. Indirect (Knock-On) Impacts

Effects on MENA	Sources
Financial instability in countries with high debt and debt in foreign currencies.	Faster than expected increases in global interest rates causes rising country-risk premia and currency depreciations
Heightened social unrest	Food and energy price hikes have been associated with social unrest
Potential delays or reversals of reforms in fiscal and social protection	Discretionary changes in fiscal expenditures (e.g., increases in subsidies) to counteract food and energy price increases
Diversion of humanitarian assistance away from MENA fragile states	Donors shift aid to Ukraine

I.2. The pandemic in MENA: Not out of the woods yet

The pandemic has passed the two-year mark since the first case was detected. This period has been marked by several waves of the pandemic led by different variants with differing transmissibility and severity. While vaccines have been an effective tool against the pandemic, it is unclear how many more variants the future holds in store, and how effective current vaccines and therapeutics will be for future variants. This uncertainty means that one thing is certain: the world is not out of the woods, and neither is the MENA region.

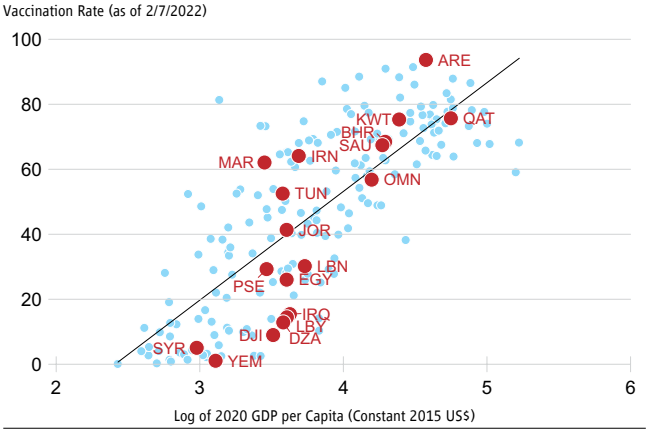
The number of confirmed COVID-19 cases accumulated to more than 400 million all over the world as of mid-March 2022 and is still on the rise as Omicron continues to spread. In the meantime, the number of known COVID-19 deaths has surpassed six million, according to data from Johns Hopkins University. Globally, the daily cases peaked at the end of January 2022, while the daily deaths remained well below its peak in early 2021. Daily reported cases in the US and Europe peaked during January 2022, at levels higher than in the rest of the world. Nonetheless, the reported number of cases, especially in the MENA region, should be read with caution, as the undercount ratio tends to be high in countries with low data transparency (Gatti and others, 2022).

The evolution of confirmed COVID-19 cases over time for MENA economies exhibit multiple waves since the beginning of the pandemic, indicating arrivals of new variants in the region. The last two waves had the highest peaks, possibly reflecting the Delta variant during mid-2021 and Omicron variant at the beginning of 2022. Note that COVID-19 surveillance across many MENA economies is limited, especially in Fragile, Conflict and Violence-Affected (FCV) states (FCV) due to the lack of administrative capacity. Thus, as previously stated, the reported number of confirmed cases is likely to significantly understate the true spread of the pandemic in MENA, especially in FCV economies. Nonetheless, the observed upticks in cases over the region match the timeframe of the emergence of the Delta and Omicron variants in neighboring countries.

Vaccines are an effective tool in building immunity against the pandemic. Around 11 billion vaccines have been administered worldwide, with high vaccination rates in high-income countries. For example, in England, only 4 percent of population 65+ have not been fully vaccinated. As a result of high vaccination rates and low severity of the Omicron variant, reported cases have risen but mortality rates have been low. In Britain, daily cases tripled during the peak of Omicron, but deaths were one-fifth and hospitalization rates were one-half of the peak in the winter of 2021 according to data from Johns Hopkins University. This contrasts with low-income and FCV countries, including more than half of developing MENA countries, where either vaccination rates are reported to be below 35 percent or reliable vaccination data is unavailable. Evidence from South Africa[6] and the US show that vaccines reduced both hospitalization and death rates, which help flatten the curve and relieve hospitals from being overburdened. Vaccination rates—the percentage of the population that has received a complete set of shots—varies considerably within the MENA region, according to World Bank MENA Crisis Tracker. While the GCC countries have some of the highest vaccination rates in the world, vaccination rates in the developing MENA countries remain much lower than countries of comparable income levels. The stark disparity is displayed by the 94 percent vaccination rate in United Arab Emirates and the 1.1 percent vaccination rate in Yemen, as of early February 2022. Widespread vaccination helps reduce hospitalizations in the GCC[7]. On the other hand, FCV economies have the lowest vaccination rates. The ICU admission data is less reliable or not reported in FCV economies, such as in Syria and Yemen.

Only a third of the developing MENA countries have higher vaccination rates than their income peers, led by Iran and Morocco, both of which have vaccinated more than 60 percent of their population. Figure I.6 presents vaccination rates in MENA countries with their income peers. The dotted line displays the linear trend between vaccination rate as of early February 2022 and each country's log of GDP per capita (for the year 2020). A country above the linear trend line indicates it outperforms its peers with similar levels of development. Almost all GCC countries, except for Oman, outperform their peers on vaccination rates, although Oman is not far behind its peers. GCC economies have prioritized vaccinations as the means to keep travel and tourism sector activity afloat. GCC economies have purchased vaccines at scale and have maintained a large stock of doses ready to be administered. On the other hand, countries such as Algeria and Iraq have only vaccinated around 15 percent of their populations. FCV countries such as Yemen and Syria still have vaccination rates in the single digits and are below their income peers.

Figure I.6. Vaccination Rates for Many MENA Countries are Below Income Peers



Sources: Vaccination Rate from Our World In Data, *People Fully Vaccinated per Hundred*, latest rate as of 2/7/2022. *GDP per Capita (constant 2015 US$)* 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.

A combination of continuous surveillance and vaccination efforts are needed for a stable recovery. Vaccines are likely to constrain the development of the pandemic by curbing the rise of new variants. The prevalence of vaccine shots also reduces the need for stringent lockdowns, thereby limiting scenarios where countries have to choose between containing the spread of the virus and incurring heavy

6 See, for example, research of vaccine effectiveness in South Africa at https://www.nejm.org/doi/full/10.1056/NEJMc2119270, and research in US at https://www.nytimes.com/2022/01/21/health/cdc-covid-booster-omicron.html

7 Qatar and Kuwait, both of which have more than three quarters of population vaccinated, have relatively low ICU admissions according to published official data.

economic costs. Thus, increasing vaccination rates is an important policy priority for the region as it is elsewhere. However, vaccinations alone may not be sufficient and must be coupled with a policy of vigilance through surveillance. This is due to a number of reasons. First, many economies are struggling to achieve high vaccination rates, and this can be due to inaccessibility as well as vaccine hesitancy. According to a World Bank survey (World Bank, 2022a), only 50 percent of respondents in Iraq were willing to take the COVID-19 vaccine when it is available as of January 2021, compared to as high as 84 percent in Vietnam during the same period. Lack of information on the stock of unused vaccines in the MENA region makes it difficult to determine which is the dominant factor. Second, breakthrough cases have been observed with the recent variants, underscoring the need for booster shots comprising an additional dose of the vaccines. One also cannot rule out the possibilty that different vaccines may be needed for future variants. Surveillance is key to inform on emergence of new variants, to assess effectiveness of the vaccines, and to ensure infected individuals isolate so as to curb further the spread of the virus.

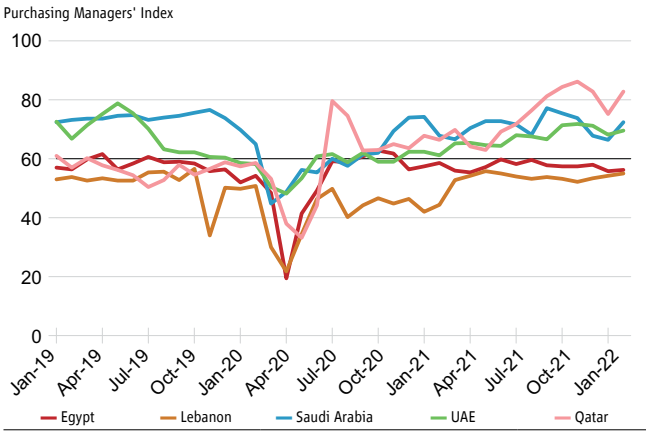
While the long-term effects of the COVID-19 pandemic is still being determined, the timeframe and severity of how the pandemic is likely to evolve is still uncertain. All of these factors create much uncertainty about the economic outlook, especially in countries that lag in vaccinations or have limited surveillance.

I.3. Economic Outlook: uneven recovery under uncertainty

Better growth prospects for oil exporters than importers

World Bank economists forecast the MENA region to grow by 5.2% in 2022 after a recovery of 3.3% in 2021 (see table I.2). The projected growth rate for 2022 is the fastest since 2016. The recovery appears to be uneven across different country groups. Oil exporters are expected to grow by 5.4% on the back of the recovery from the pandemic, the expected increase in oil output, and the elevated oil price. On the other hand, oil importers are expected to grow by 4.0%, lifted by expected high growth in Egypt, while the momentum of recovery significantly slows relative to 2021 in most of the other oil importing countries, due to expected increase in importing bills in food and energy commodities. Note that the GDP for Egypt is measured by fiscal year (from July to June), in contrast to other countries in the region. Thus, the full extent of the repercussions of the war in Europe on the 2022 calendar year may not be reflected. There are several downside risks for Egypt—it is a net importer of both fuel and food commodities, a destination for Eastern Europe tourists, and recently experienced a rise in key policy rates by 100 basis points in late March 2022. Egypt's growth prospects for the full calendar year may paint a different picture. As a net importer of both food and oil, the situation is especially worrisome in Lebanon, given systemic failures in governance and the external shocks both from the pandemic and the Ukraine war. The downward adjustment of economic growth in the US and EU also poses downside risks to the region that could lead to contraction in the region's trade partners.

Figure I.7. Uneven Recovery in the Private Sector



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

Table I.2. Growth, Current Account Balance and Fiscal Balance Forecasts

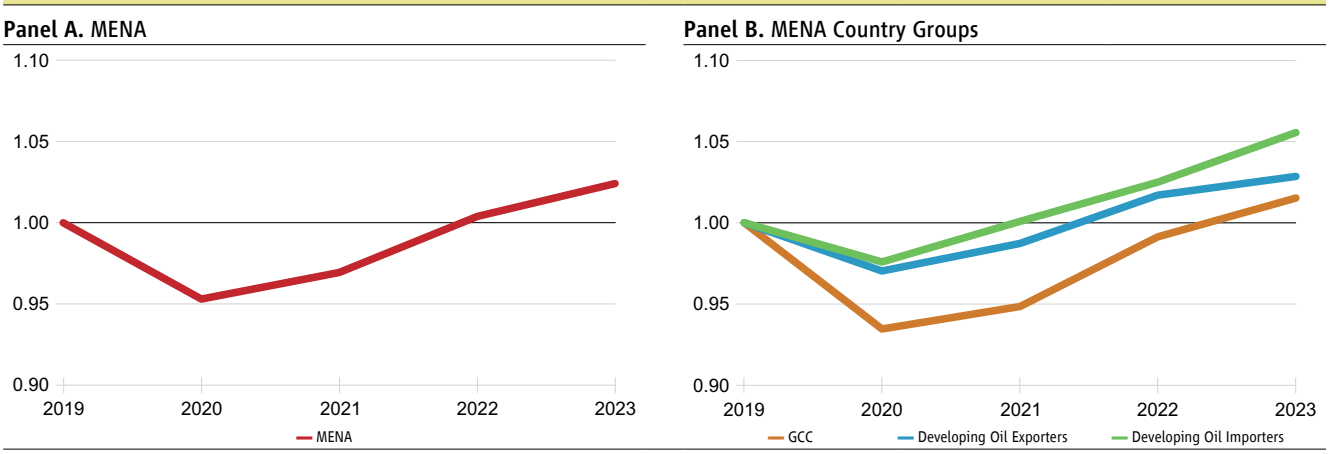
	Real GDP Growth *Percent*				Real GDP per capita Growth *Percent*				Current Account Balance *Percent of GDP*				Fiscal Balance *Percent of GDP*			
	2020	2021e	2022f	2023f	2020	2021e	2022f	2023f	2020	2021e	2022f	2023f	2020	2021e	2022f	2023f
MENA	**-3.1**	**3.3**	**5.2**	**3.5**	**-4.7**	**1.7**	**3.6**	**2.0**	**-1.5**	**3.3**	**8.3**	**6.5**	**-9.5**	**-3.3**	**3.0**	**1.4**
Middle-Income MENA	**-1.1**	**3.7**	**4.4**	**3.4**	**-2.8**	**2.1**	**2.8**	**1.8**	**-4.4**	**-1.2**	**0.4**	**-0.7**	**-7.8**	**-4.4**	**-2.0**	**-3.0**
Oil Exporters	**-3.6**	**3.1**	**5.4**	**3.3**	**-5.2**	**1.5**	**3.8**	**1.8**	**-0.8**	**5.5**	**12.1**	**9.8**	**-9.9**	**-2.3**	**5.7**	**3.7**
GCC	**-5.0**	**3.0**	**5.9**	**3.7**	**-6.5**	**1.5**	**4.5**	**2.4**	**0.9**	**6.6**	**14.5**	**12.5**	**-10.7**	**-2.5**	**7.1**	**5.2**
Qatar	-3.6	3.0	4.9	4.5	-4.8	2.8	4.5	4.2	-2.5	3.1	4.5	6.1	-2.1	-0.9	3.4	3.3
United Arab Emirates	-6.1	2.8	4.7	3.4	-7.3	1.7	3.7	2.5	6.0	6.8	13.7	11.8	-5.4	-0.5	4.4	5.0
Kuwait	-8.9	2.3	5.7	3.6	-10.2	0.9	4.5	2.5	20.8	25.9	42.4	39.5	-33.2	-11.4	13.0	5.9
Saudi Arabia	-4.1	3.3	7.0	3.8	-5.6	1.8	5.5	2.4	-2.3	5.2	14.0	11.1	-11.1	-2.1	9.1	5.9
Bahrain	-4.9	2.6	3.5	3.1	-8.3	-0.2	1.4	1.5	-9.3	4.3	4.6	3.4	-17.4	-10.7	-6.8	-5.6
Oman	-2.8	2.1	5.6	2.8	-5.3	-0.2	3.6	1.1	-11.9	-3.7	5.6	5.3	-16.1	-3.0	5.9	6.8
Developing Oil Exporters	**-1.3**	**3.4**	**4.7**	**2.8**	**-3.0**	**1.7**	**3.0**	**1.1**	**-5.4**	**2.6**	**6.5**	**3.5**	**-7.8**	**-1.8**	**2.5**	**0.2**
Iran, Islamic Rep.	3.4	4.1	3.7	2.7	2.1	2.8	2.5	1.5	-0.3	1.8	4.7	3.1	-6.3	-5.5	-3.7	-3.8
Algeria	-5.1	3.9	3.2	1.3	-6.8	2.0	1.3	-0.6	-12.6	-2.8	4.7	-0.2	-12.0	-3.5	0.7	-0.8
Iraq	-8.6	1.3	8.9	4.5	-10.6	-1.0	6.3	2.1	-5.5	8.0	9.6	6.6	-6.1	4.2	10.6	6.0
Developing Oil Importers	**-0.8**	**4.2**	**4.0**	**4.5**	**-2.4**	**2.6**	**2.4**	**3.0**	**-3.5**	**-4.8**	**-6.3**	**-5.2**	**-7.9**	**-7.0**	**-7.1**	**-6.6**
Egypt, Arab Rep.	3.6	3.3	5.5	5.0	1.6	1.4	3.6	3.2	-3.1	-4.6	-6.0	-5.0	-7.9	-7.4	-7.9	-7.3
Tunisia	-9.2	2.9	3.0	3.5	-10.2	1.9	2.0	2.6	-6.1	-6.5	-7.6	-7.2	-9.4	-7.7	-6.3	-5.6
Jordan	-1.6	2.0	2.1	2.3	-2.5	1.4	1.8	2.2	-8.1	-10.6	-9.1	-6.5	-7.3	-6.0	-4.0	-3.5
Morocco	-6.3	7.4	1.1	4.3	-7.4	6.1	-0.1	3.1	-1.5	-2.6	-5.5	-4.0	-7.6	-6.0	-6.2	-5.8
West Bank and Gaza	-11.3	7.0	3.7	3.2	-13.5	4.4	1.2	0.8	-12.3	-8.2	-8.5	-9.2	-7.5	-5.8	-4.5	-3.7
Djibouti	0.5	4.3	3.3	5.2	-1.0	2.8	1.8	3.6	11.6	-1.1	-3.3	-1.7	-1.7	-1.8	-2.8	-2.4
Memorandum																
Lebanon	-21.4	-10.5	NP	NP	-21.0	-9.8	NP	NP	-9.3	-18.1	NP	NP	-3.3	-1.0	NP	NP

Source: Authors' calculations based on data from the World Bank Macro and Poverty Outlook, April 2022.
Notes: e=estimate, f=forecast and NP=not presented. Data are rounded up to a single decimal. Data for Egypt correspond to its fiscal year (July-June). Fiscal balance for Jordan refers to the central government. Regional and sub-regional country groups are represented by weighted averages of their respective group of countries. In the calculation of the aggregates: GCC comprises Qatar, UAE, Kuwait, Saudi Arabia, Bahrain and Oman; Developing Oil Exporters comprises Iran, Algeria and Iraq; Developing Oil Importers comprises Egypt, Tunisia, Jordan, Morocco, West Bank and Gaza and Djibouti; Middle Income MENA comprises Developing Oil Exporters and Developing Oil Importers; Oil Exporters comprises Developing Oil Exporters and GCC; and MENA comprises Developing Oil Exporters, Developing Oil Importers, and GCC. Lebanon is not included in the aggregates calculation, and is thus listed in the memorandum, due to availability of historical data but not forecasts. Libya, Yemen, and Syria are not included in the table due to lack of data.

The private sector recovery also appears to be uneven among MENA countries. The Purchasing Managers' Index (PMI) provides monthly data that tracks changes in economic activity in the private sector. A PMI value above 50 indicates an expansion, while a value below 50 indicates a contraction on a month-to-month basis. The line chart in figure I.7 shows continuous expansion in economic activity in the GCC countries including Saudi Arabia, UAE, and Qatar since early 2021, while developing economies such as Egypt and Lebanon have been deteriorating each month instead of recovering from previous contractions. For the UAE, the non-oil PMI reached a more-than-two-year high by the end of 2021, reflecting continuous expansion during the Expo 2020 event. Egypt's PMI dropped to a nine-month low in January, and remained below 50 in February, reflecting a contraction in the private sector, while the current growth is led by economic activities in the public sector.

Changes in real GDP per capita are arguably a more accurate measure of changes in living standards. Growth in real GDP per capita for MENA is expected to recover to 3.6 percent in 2022 following a modest recovery of 1.7% in 2021. This growth is uneven among the country groups. The GDP per capita of GCC countries is expected to rise 4.5% in 2022 but will not be able to recover to pre-pandemic level until 2023 (figure I.8). The corresponding figure is 3.0% for developing oil exporters, which will lift the living standards back to pre-pandemic levels. For developing oil importers, GDP per capita is expected to grow by 2.4% in 2022, recovering back to its level in 2019. The situation is worrisome for FCV countries including Lebanon and Yemen, given their GDP per capita will be significantly below their 2019 levels. Among all 17 countries in table I.2 and Yemen, 11 of them will not be able to recover to its pre-pandemic level by the end of 2022, as measured by GDP per capita.

Figure I.8. GDP per Capita Between 2019 and 2023



Source: World Bank Macro and Poverty Outlook, April 2022 and World Bank staff calculations.

Current account, fiscal account, and public debt

The current account balance is projected to improve by 5 percentage points to 8.3% in 2022 for MENA in aggregate. The fiscal balance is forecasted to be in surplus for 2022 (see table I.2).

Expected high oil prices and alleviation of OPEC output restrictions are boosting the current accounts and fiscal balances of oil exporters. The current account balance in 2022 is expected to improve by 7.9 percentage points for GCC countries and 3.9 percentage points for developing oil exporters. Fiscal balances are also expected to improve for the region's oil

exporters from 2021. In contrast, the increase in burden on importing bills of food and energy commodities is expected to worsen both current account deficits and fiscal deficits in oil importing countries in aggregate.

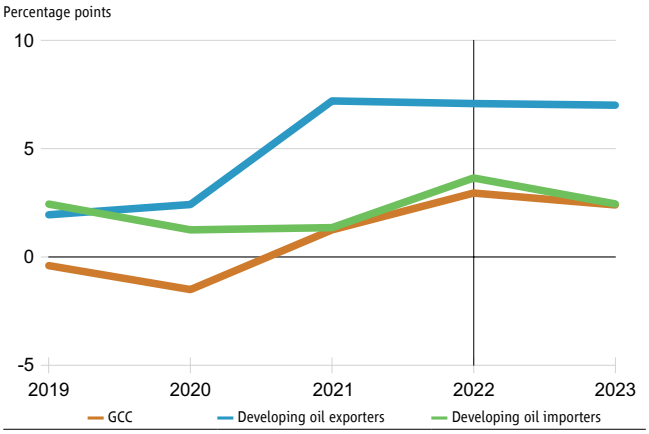
The pandemic raised public debt levels by around 10 to 15 percentage points across the board in 2020. The war poses additional challenges to debt sustainability. Bahrain has the highest public debt in GCC countries, increasing to 123% of GDP amid small improvements in the fiscal deficit. Lebanon also has high public debt, with 3-digit debt as a percentage of GDP. Egypt, Jordan and Tunisia have more than 80% public debt as a share of GDP. Rising public debt pushes economies into a challenging public finance situation.

Rising inflation

As previously discussed, inflation was already elevated earlier this year due to the mismatch between rising demand, emerging from the easing of pandemic-related restrictions, and continuing disruptions in supply. Since the Ukraine war began, global inflation has been rising due to a sudden tightening in commodities market, especially in oil and food commodities.

Conflict has caused many of the past high-inflation episodes in the MENA region (see box I.1). The World Bank expects inflation to rise above the 2021 levels for a majority of MENA economies (see figure I.9 and table I.3). The situation in Lebanon is a particular concern given rising prices.[8]

Figure I.9. Median Inflation by MENA Country Groups



Source: World Bank, Macro Poverty and Outlook, April 2022.
Notes: The aggregates are represented by the median observation of the country group.

Box I.1. A History of High Inflation in MENA 1970–2020

Conflict has been a significant source of extreme inflation in the MENA region. As discussed below, a majority of high inflation periods were caused by wars. Twenty-three episodes of inflation in MENA are observed in the available data in the World Development Indicators (WDI) over the period 1970 to 2020. Of these, 6 episodes were of "extreme" inflation reaching above 50% a year, one of which being hyperinflation of up to 450% in a single year; 10 episodes were of "elevated" inflation between 20% and 30% a year (elevated); and 7 episodes were of "moderately high" inflation between 10% and 20% (see table BI.1 below).

Inflation in MENA stemmed from real economy factors driving a substantial wedge between supply and demand of goods and services, typically a result of conflict and its aftermath. Inflation is eased as the conflict or external event resolves.

The Iran-Iraq war (1980–88), Iraq invasion of Kuwait (1990), 1991 Gulf War, and the US invasion of Iraq (2002), resulted in adverse supply shocks that drove *extreme inflation* (over 50%) in Yemen (1991–96), Iraq (1991–96; 2002–06), Iran (1991–2019), and Syria (1985–88). Lebanon's ongoing inflation episode since 2019 results from financial and economic collapse due to government default on Euro-denominated bonds, currency collapse of up to

continued on next page

8 Note Lebanon is not included in the analysis due to unreliable data for 2022.

Box I.1 continued

90% of value in 2019, the underlying the political crisis; the economic collapse-induced inflation was exacerbated by supply shocks owing to the COVID pandemic supply chain disruptions and the massive 2021 explosion at the Port of Beirut (Anchal, 2021; Hubbard, 2021; World Bank, 2021).

Conflict-induced supply shocks and associated oil price hikes also underpinned many of the other inflation episodes in MENA. This includes the *elevated inflation* (between 20% and 30%) experienced in the GCC (Oman, Qatar, the UAE) during the 2000s, which corresponded with the US Invasion of Iraq; in oil exporting countries (Saudi Arabia, Bahrain, Libya, Iran, and Algeria) in the 1970s due to the Arab-Israeli war, Iran revolution, Oil Embargo and associated oil supply and the two oil price shocks of the decade; and in Iran and Algeria in the 1980s due to the Iran-Iraq War and associated oil production and oil price shocks. Al Rasasi & Banafea (2015) find that oil supply shocks have a positive and significant effect on industrial production and inflation in Saudi Arabia. This is because the oil supply shock increases oil prices and oil revenue, which raise government spending, aggregate demand, and hence Industrial Production and inflation.

Inflation in Egypt (1979–96; 2007–08; 2016–17) is characterized as mainly a political and social phenomenon more so than economic, viewed as being a consequence of successive class-related social conflict and its suppression by the authorities that disrupted economic activity and production (Lawson, 1985). In the 2010s the destabilizing socio–political event was the 2011 Arab Spring.

Table BI.1. MENA Inflation Episodes 1970–2020: Driven by Conflict or Other Exogenous Factors

	1970s[1]	1980s[2]	1990s[3]	2000s[4]	2010[5]
GCC					
	KSA 1974–76; >25%			OMN 2005–08; >10%	
	BHR 1974–76; >20%			QAT 2003–08; >15%	
				ARE 2007–09; >10%	
Developing Oil Exporting Countries					
	LBY 1977–78; 30%	SYR 1985–88; >10–60%	YMN 1991–96; >10–60%		
	IRN 1975–84; >10–28%	IRN 1986–90; >10–30%	IRN 1991–2019; >10–50%		
	DZA 1975–81; >25%	DZA 1988–96; >10–30%			
			IRQ 1991–96; >100–450%	IRQ 2002–06; >19–53%	
Oil Importing Countries					
		EGY 1979–96; 10–25%		EGY 2007–08; 10–18%	EGY 2016–17; 10–30%
	MAR 1974; 17%	DJI 1986; 17%			
	JOR 1974; 19%	JOR 1988–89; 25%			LBN 2020; >80%

Notes: Color coding of inflation episodes: RED: extreme inflation >50%, of which 1 hyperinflation 80–450% (6 episodes); ORANGE: elevated inflation rising to between 20% and 30% (10 episodes); YELLOW: moderately high inflation rising to between 10% and 20% (7 episodes). Conflict or other exogenous events during each decade: 1) 1973 Arab-Israeli War; Saudi Arabia's and OPEC's Oil Embargo of US and Israeli allies, resulting in the 1st oil price shock and production cuts (1973); 2nd oil price shock due to high global demand (1978–79); Iran revolution (1978–79). 2) 1980–88: Iran-Iraq War (with Syria supporting Iran). 3) 1991 Gulf War. 4) US invasion of Iraq. 5) 2011 Arab Spring uprisings in Tunisia, Libya, Egypt, Yemen, Syria, and Bahrain.
Source: Based on data from the World Development Indicators website accessed on February 24, 2022.

Table I.3. Inflation and its Forecasts in the MENA Region

	Inflation *Percent*			
	2020	2021e	2022f	2023f
GCC	**-1.5**	**1.2**	**3.0**	**2.4**
Qatar	-2.6	1.0	4.0	2.8
United Arab Emirates	-2.1	0.2	2.2	1.9
Kuwait	2.1	3.4	3.6	2.8
Saudi Arabia	3.4	3.1	2.0	1.8
Bahrain	-2.3	-0.6	2.5	2.7
Oman	-0.9	1.5	3.4	2.1
Developing Oil Exporters	**2.4**	**7.2**	**7.1**	**7.0**
Iran, Islamic Rep.	36.4	40.7	37.6	34.8
Algeria	2.4	7.2	7.1	7.0
Iraq	0.6	6.0	3.3	3.0
Developing Oil Importers	**1.2**	**1.4**	**3.7**	**2.5**
Egypt, Arab Rep.	5.7	4.5	10.0	9.0
Tunisia	5.6	6.5	6.5	6.5
Jordan	0.3	1.3	3.3	2.5
Morocco	0.7	1.4	4.0	1.8
West Bank and Gaza	-0.7	1.2	2.8	2.4
Djibouti	1.8	1.2	2.0	2.0

Sources: World Bank Macro and Poverty Outlooks, April 2022.
Note: e=estimate, f=forecast and NP=not presented. Sub-region aggregates are represented by median observation. Data are rounded up to a single digit. Data for Egypt correspond to its fiscal year (July–June). Lebanon, Libya, and Yemen are not included in the aggregates due to extreme values, whereas Syria is excluded due to lack of data.

Many MENA countries will see further food price increases and will be at risk of food insecurity. Food price inflation was already an issue in the region. Figure I.10 shows how food prices changed compared to pre-pandemic levels. Djibouti, Lebanon, Syria and Yemen saw sharp increases in food prices across the board. Food and energy price increases disproportionately hurt the poor because they spend larger shares of their expenditure on food and energy.[9] In 2021, the UN estimated that 24 million Yemenis (83 percent of the population) were afflicted by food insecurity.[10] The Ukraine war may exacerbate the severity of food insecurity in these countries. Many of the vulnerable population disproportionately afflicted during the past two years will be pushed into poverty. The population living in poverty in the MENA region will increase by 9 million between pre-pandemic levels and the end of 2022.[11] Public assistance could help to mitigate the impact.

In summary, the MENA region is experiencing an uneven recovery under a high uncertainty scenario, clouded by geopolitical risks, the ongoing pandemic, and the still emerging economic repercussion of the Ukraine war. Oil exporters appear to be recovering faster as oil prices soar, yet a majority of MENA developing economies may face a slower recovery with downside risks from rising commodity prices. Furthermore, increasing food prices on top of rising energy prices may have heterogenous negative effects within countries by hurting poor households disproportionately, depending on the policy responses. Finally, economies with pre-existing fiscal and debt vulnerabilities are already facing negative repercussions from the changing landscape of global capital markets.

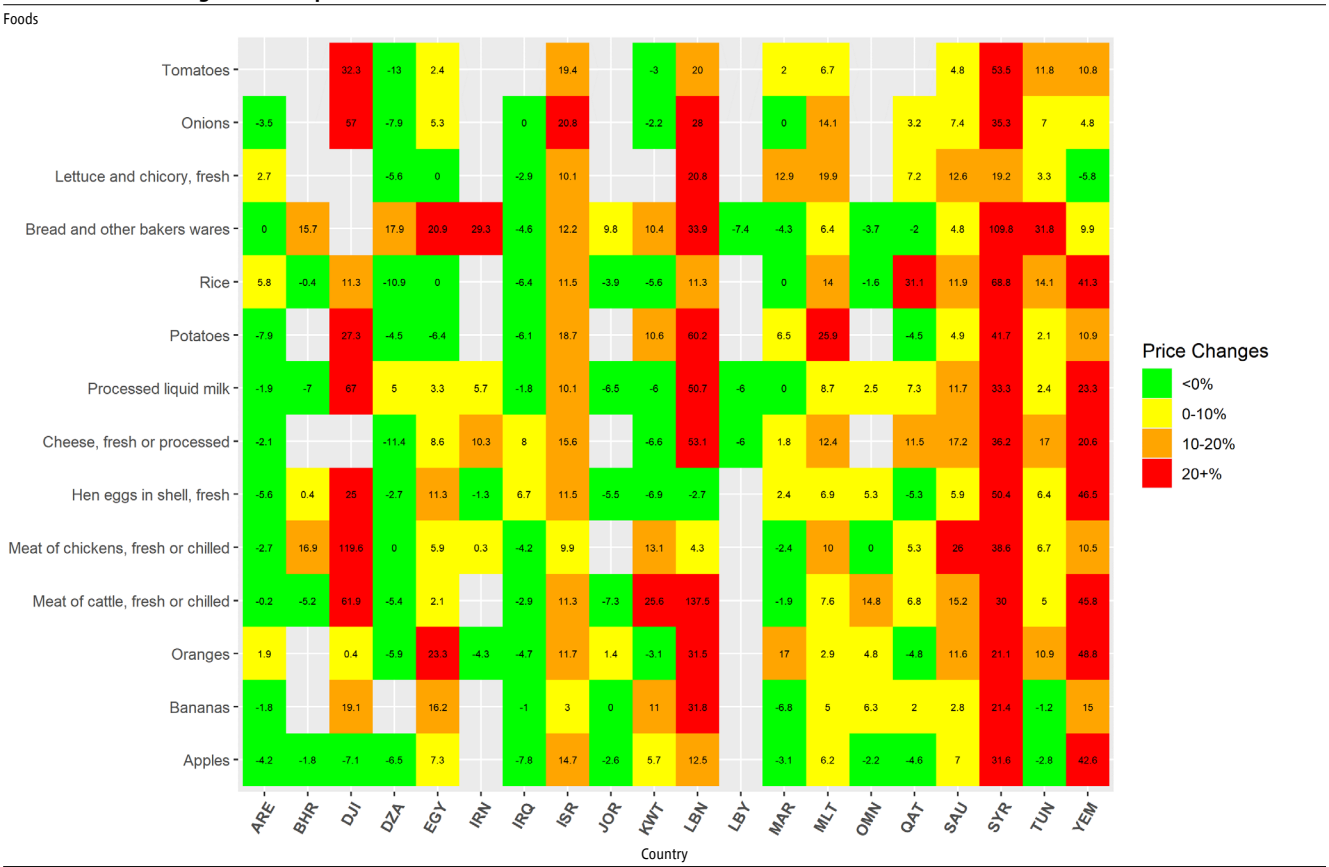
9 For example, thanks available data in Tunisia, Hoogeveen and Lopez-Acevedo (2021) show that poor households in Tunisia spend a higher budget share on food than rich households do. Based on the 2015 Household Budget Survey, the poorest decile spent 39% of their household expenditure on food while the richest decile spent 27%.

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

11 This is measured by number of people living under $5.50 poverty line in 2022, compared to the same measure in 2019.

It is important to note that the economic forecasts presented in this chapter are subject to a high degree of uncertainty due to the current global environment. Economic forecasts generally tend to be more imprecise in bad than good years. Growth forecasts, like weather forecasts, need not be perfectly accurate to be useful. The accuracy and the potential biases of growth forecasts for the world and the MENA region is the subject of analysis of chapter II.

Figure I.10. Food Price Inflation in MENA Between February 14, 2020 and February 3, 2022



Source: World Bank (2022b).

CHAPTER II. FORECASTING GROWTH WHEN DATA ARE OPAQUE

Chapter II Takeaways

- *Growth forecasts are important for economic planning, especially during a pandemic that generates considerable uncertainty. Overly optimistic forecasts can lead to economic contractions by stimulating overly ebullient behavior.*
- *The Middle East and North Africa (MENA) has more optimistic and inaccurate growth forecasts (that is, those with larger absolute forecast errors) than other region, regardless of the level of income and the type of forecaster.*
- *Data transparency reduces growth forecast inaccuracy and optimism, especially in the MENA region.*
- *Improvements in the overall data ecosystem matter, not just the elements related to GDP growth.*
- *GDP growth forecast errors are larger for economies with higher growth volatility—heightened by conflict, by exposure to commodity shocks, and by country size. These conditions are accentuated in the MENA region.*
- *GDP growth forecast errors vary by forecaster: The World Bank has more accurate forecasts than those from the IMF and the private sector, consistent with findings of other studies.*

Introduction

The COVID-19 pandemic amplified uncertainty across the Middle East and North Africa (MENA). Short-term growth forecasts have been vital for tracking the impact of the pandemic and the likely trajectory of the recovery—which assists authorities in ascertaining the economic costs of the pandemic and charting the way forward. The stringency of the pandemic response—including lockdowns and mandates to slow the spread of the virus—has been based in part on predictions of how well economies would likely perform. Even in non-crisis periods, growth forecasts provide an estimate of how an economy is likely to shape up.

Economic forecasts matter for government decisions. They are inputs to the formulation of policies that aim to safeguard and advance economies. Accurate forecasts enhance the possibility of timely and targeted interventions. Growth forecasts affect decisions regarding a host of policies related to spending and debt. Research has shown that overly optimistic forecasts can hurt an economy in the long run. They initially lead to short-run increases in output as bullish governments and businesses increase borrowing and spending. But within a few years the debt load spawns economic contractions (Beaudry and Willems, 2022).[12] This idea is not new. The idea that macroeconomic fluctuations can arise due to difficulty in forecasting was raised by Arthur Pigou as long ago as 1927.

12 Using the IMF's WEO data, Beaudry and Willems (2022) found that overestimating annual growth by 1 percentage point over three years reduces real GDP growth three years after that by about 1 percentage point on average. To put this into perspective, our calculation from Beaudry and Willems (2022) data shows that between 1990 and 2013, the average three-year-ahead growth forecast errors driven by the optimism bias of IMF's staff for 18 MENA countries is about 0.4 of a percentage point. They imply that the optimism bias reduced annual GDP growth between 1993 and 2016 in MENA by about 0.4 of a percentage point on average.

Growth forecasts are used by a wide array of stakeholders. They may guide international organizations such as the World Bank and the International Monetary Fund (IMF) in adapting and setting up lending programs. The private sector may use forecasts to tailor investment strategies or reassess country debt sustainability and debt ratings. Surprises in growth forecast releases tend to move financial markets (Campbell and Sharpe 2009; Clements and Galvão 2017). Firms with more optimistic views of their future production prospects tend to be highly leveraged (Jochem and Peters 2017). Misallocation of resources from over-optimism or pessimism at the firm-level can hurt society's economic well-being (Bachman and Elstner, 2015).

Growth forecasts cannot—and need not—perfectly predict the future. But gross and systematic errors in forecasts may lead policymakers and the private sector astray. Growth forecasts tend to be particularly inaccurate for the MENA region. The accuracy of forecasts is captured by the absolute forecast error—the absolute value of the difference between the actual and predicted value. For instance, the absolute forecast error for GDP growth is the absolute difference (that is, without reference to a positive or negative sign) between actual GDP growth for a certain period and the GDP growth that was predicted for that period.[13] For 2010–2020, the absolute forecast error for growth in MENA was 3.3 percentage points for the World Bank's January *Global Economic Prospects* (GEP) forecasts and 3.5 percentage points for the IMF's January *World Economic Outlook* (WEO) forecasts.

While the COVID-19 pandemic may have created a unique challenge for forecasters, there are several longstanding characteristics of the MENA region that have perennially led to erroneous forecasts. Most relevant is the challenge of low data capacity and transparency in the MENA region (Arezki and others 2020; Ekhator-Mobayode and Hoogeveen 2021). These data problems impede sound analyses and policymaking, hurting growth in the process (Lederman and Islam 2020). This report focuses on growth forecasts, which are strongly affected by data capacity and transparency and are important to both policymakers and the World Bank's operational programs. The chapter seeks to unpack the relationship between growth forecast errors and their determinants, and better understand the sources of larger forecast errors in MENA compared with other regions.

In addition to data capacity and transparency, this report also analyzes other sources of inaccuracy of growth forecasts for the region. The sources of inaccurate forecasts include vulnerability to commodity shocks and the prevalence of conflicts—both conditions that affect the MENA region and create a uniquely challenging environment for forecasters. Importantly, the analysis shows that MENA's data challenges are a significant predictor of inaccuracies in forecasting. As a result, the region is ill-served by inaccurate forecasts, and those forecasts may have consequences for charting a pathway to a better future.

This chapter of the report consists of three sections. The first explores the conceptual underpinnings of the determinants of forecast errors, and why they may matter for the MENA region. The second explores patterns and trends of the forecast errors globally and in the MENA region. The third investigates the empirical relationship between the forecast errors and such factors as data transparency and growth volatility.

13 For the purpose of this report, same-year or current-year GDP growth forecasts are used. "Current-year" forecasts are those made for a period in the same year: for example, when a forecast for 2020 is made in a specific month in 2020. Current-year forecast errors for 2020, for example, are calculated as the forecasted growth for 2020, calculated in 2020, minus the actual 2020 growth rate (which is published in 2021).

II.1. The conceptual underpinnings of forecast errors

Researchers have long explored the accuracy of macroeconomic forecasts. The key questions they have debated include whether forecasts are unbiased or efficient, whether they depend on the type of forecaster, and whether they are affected by significant economic events such as recessions, by the level of economic development, and by the forecast horizon.

The early literature made the case that forecasts for a range of economic variables in the United States were unbiased (Brown and Maital 1981, Keane and Runkle 1990) because on average, the forecast errors were zero (Keane and Runkle 1990; Loungani 2001). More recent studies have questioned whether those forecasts are indeed unbiased. Loungani (2001) found that growth forecasts for a broad set of countries are biased: specifically, on average, forecast errors are positive (optimistic), and are more so for developing countries. Ho and Mauro (2016) also uncover optimism bias and find that the bias is greater the longer the forecast horizon.

Nordhaus (1987) made the case that growth forecasts may be inefficient because they do not contain all the information available at the time they are made. Nordhaus found forecasts to be weakly inefficient—that is, forecast revisions were significantly correlated with each other. That suggests that forecasters hold on to prior views for far too long, even as relevant new information emerges. This sluggishness of revisions in growth forecasts has been documented by more recent studies (Loungani and others 2013). The difficulty in predicting recessions even as they are emerging can also be related to behavioral factors—forecasters may be reluctant to incorporate either good or bad news (Loungani 2001; An and others 2018).

The degree of forecast errors may differ by type of forecaster. The literature is inconclusive on how forecast errors vary by government, international institutions, and private forecasters. Nordhaus (1987) found that the correlation between forecast revisions—a measure of forecast stickiness—were highest (stickier) for international agencies (institutional forecasts) and lowest for professional (private) forecasters. Morikawa (2020) found that economic growth forecasts are less upwardly biased for academic researchers than professional forecasters in private institutions and governments. However, the disparity between private and international institutional forecasts is not confirmed by other studies. An and others (2021) investigated short-term growth projections from all major institutions and the private sector and found that there is a high degree of collinearity across the forecasts—across institutions and the private sector, the forecasts made at a given time period for a given country and year tend to be similar. Once recessions are removed from the analysis, the forecasts are unbiased (that is, zero forecast errors on average).

Forecast errors may also vary by the level of a country's economic development, although research findings differ. Earlier findings by Loungani (2001) suggested that the magnitude of the errors tends to be larger for developing than for industrialized countries. Using a set of 29 macroeconomic variables, Eicher and others (2019) found larger forecast biases and inefficiency in low-income economies. However, no systematic differences in forecast stickiness between advanced and emerging economies were found by Loungani and others (2013).

The literature has identified several ways through which forecasting errors may manifest. One approach to probing the determinants of forecast errors is to organize them conceptually into four categories: lack of information; structural volatility; exogenous shocks; and forecaster capacity and bias.

Lack of information: Forecasts are as good as the information supporting them. Successive forecasts improve as more information is made available. Thus, the closer a forecast is to a particular event, the more accurate it becomes because more information is baked in. Forecasters face greater challenges when data are scarce or available at low frequency. Eicher and others (2019) found large forecast errors in developing economies and proposed that lower quality data may be responsible—as are larger shocks, which are discussed below.

Structural volatility: Countries may be exposed to internal and external factors that induce larger-than-anticipated economic changes. Such exposure increases the volatility of economic growth, which makes it more difficult to forecast accurately. Commodity-price and external-debt-financing shocks are prominent sources of such volatility. Several institutional factors could also lead to macroeconomic volatility. Growth in countries that frequently face conflict and social upheaval may be harder to forecast accurately, given the large macroeconomic effects of conflict (Novta and Pugacheva 2021). Smaller economies may be more volatile than larger economies because they are more vulnerable to shocks. Volatility is hard to anticipate and incorporate in forecasting models, leading to larger forecast errors. Developing economies, which might be less diversified and depend on the vagaries of commodity prices, may be exposed to large shocks that can cause large forecast errors (Eicher and others 2019).

Exogenous external shocks: Unanticipated natural disasters or global shocks, such as the COVID-19 pandemic, may cause significant forecast errors. A sudden, large external shock whose effects are unknown can lead to incorrect forecasts across the board. The inability to account for these typically adverse shocks due to uncertainty of the effects can result in optimistic forecasts. Some evidence of this was observed at the onset of the COVID-19 pandemic—these resulted in conflicts between forecasts and policy prescriptions. For example, Sandefur and Subramanian (2020) found that early in the pandemic growth forecasts by international organizations appeared to suggest the effect of the COVID-19 shock would be muted, while the international organizations themselves pushed for broad policy action to address what they perceived as the substantial pandemic impact.

Forecaster capacity and bias: The accuracy of forecasts may depend on characteristics specific to a forecaster. Forecasting models may be incorrect—also called model uncertainty (Beckman 1992). Forecasting models may underestimate fiscal multipliers in their assumptions (Blanchard and Leigh 2003). Some forecasters could be systematically optimistic or pessimistic (Beaudry and Willems 2022). Some forecasters may have channels of communication with policymakers. If an economy grows above the long-term trend for a short period, it may trigger exuberant optimism among policymakers that feeds back into forecaster models, yielding a policy optimism bias. Alternatively, it may be that an optimism bias occurs because forecasters are unable to forecast recessions (An and others 2021). Furthermore, conflicts of interest may arise when there is a business relationship between forecasters and governments. Institutions that have government clients or central banks that have little independence are susceptible to making forecasts biased in favor of appeasing clients. There is a sizeable literature that has explored the effects of conflicts of interest. In financial markets, studies have shown that such conflicts have led to biases in equity analysts' stock recommendations and earnings forecasts (Malmendier and Shanthikumar 2007; Hong and Kacperczyk 2010). Conflicts of interest also arise in credit rating agencies when they must rate their customers (Mathis and others 2009; Griffin and Tang 2012). Fabo and others (2020) showed that central bank papers report larger effects on output and inflation from quantitative easing (QE) than do papers by academic economists. Central bankers who report larger QE effects on output are found to have more favorable career outcomes, indicating considerable involvement of bank management in the research process. These biases are somewhat reduced because professional forecasters are also influenced by a desire to protect their reputations.

Across these four broad categories, the Middle East and North Africa (MENA) region faces longstanding issues that accentuate the difficulties in forecasting. These include lack of information due to data opacity, conflict, and exposure to commodity price volatility. The latter two can be characterized together as "structural volatility." The Statistical Capacity Indicator (SCI)—which measures the timely production of credible statistics, a proxy for the degree of information forecasters may have in their arsenal (see box II.1)—shows that in aggregate, the developing economies in the MENA region have the lowest score. Moreover, the score has been falling over time. Public debt reporting standards, as well as measures used to characterize labor markets, are not up to international standards (Arezki and others 2020). With limited or imprecise data, forecasters have fewer inputs to load into their models, which reduces the accuracy of their forecasts.

Several economies in the region are periodically in conflict. The MENA region accounted for 68 percent of global battle-related deaths from 2013 to 2017 (World Bank 2020). Yemen has the world's largest humanitarian crisis, with about 80 percent of its population in need. The cumulative GDP losses in Syria through 2017 are estimated to be four times Syria's GDP in 2010. When conflict occurs, information systems are often discontinued or destroyed and data become scarce. Forecasting under such conditions can be trying.

Finally, the direct or indirect dependence of MENA economies on commodities makes them vulnerable to strong fluctuations in commodity prices. Many MENA economies are major and highly concentrated oil exporters and significant food importers. The ensuing macroeconomic volatility is associated with larger forecast errors as models face difficulty in accommodating wild swings.

Forecasters and their errors have been much studied in the economics profession. In the next section, recent global data on growth forecast errors are analyzed to uncover patterns of forecast errors in MENA and beyond, relating them to the interplay of data opacity, growth volatility, conflict, and exposure to commodity shocks.

Box II.1. Statistical Capacity Indicator

The World Bank's Statistical Capacity Index (SCI) is a measure of data transparency (see box II.2). The overall SCI score is based on a diagnostic framework to assess the capacity of national statistical systems over time. The framework has three dimensions: source data; methodology; and the periodicity and timeliness of socioeconomic indicators. A composite score for each dimension and an overall score combining all three dimensions are derived for each country on a scale of 0–100. A score of 100 indicates that the country meets all criteria. Each dimension is evaluated on criteria based on metadata information obtained from the World Bank, International Monetary Fund, United Nations, the UN Educational, Scientific and Cultural Organization (UNESCO), and the World Health Organization (WHO). The SCI is collected by the World Bank's Data Group.

The overall SCI score is the average of the three sub-indicators calculated for each dimension (see table BII.1). The source data dimension reflects whether a country conducts data collection activity in line with internationally recommended frequency (periodicity), and whether data from administrative systems are available and reliable for statistical estimation purposes. This dimension covers the micro-data aspect of data transparency that is essential because microdata are at the foundation of a country's data system. Specifically, the criteria used are the frequency of population and agricultural censuses and of poverty- and health-related surveys, and completeness of vital registration system coverage. A country can achieve a perfect score if it has conducted at least one population census in the past

continued on next page

Box II.1 continued

10 years, one or more agricultural censuses in the past 10 years, three or more health surveys in the past 10 years, and has a complete vital registration system.

The statistical methodology dimension measures a country's ability to adhere to internationally recommended standards and methods. This aspect assesses guidelines and procedures used to compile macroeconomic statistics and for social data reporting and estimation practices. This dimension measures the quality of the data system. Under the assumption that international guidelines provide the benchmark for ideal data systems, adherence to such standards implies that the quality of data systems meets well-established standards. Countries are evaluated against a set of criteria such as use of an updated national accounts base year, use of the latest balance of payments manual, the external debt reporting status, an updated consumer price index, an updated industrial production index, updated import/export prices, an accounting basis for reporting government financial data, vaccine reporting to WHO (discrepancy between WHO and government estimates), subscription to the IMF's Special Data Dissemination Standard, and enrollment data reporting to UNESCO). Each criterion has equal weight.

The periodicity and timeliness dimension measures the availability and frequency of key socioeconomic indicators, of which nine are indicators of Millennium Development Goals (MDG). This dimension attempts to measure the extent to which data are made accessible to users through transformation of source data into timely statistical outputs. The frequency of the main indicators considered, each receiving equal weight, includes: an income poverty indicator; a child malnutrition indicator; a child mortality indicator; an immunization indicator; an HIV/AIDS indicator; a maternal health indicator; a gender equality in education indicator; a primary-school completion indicator; an access to water indicator; and a GDP growth indicator.

Table BII.1. Subcomponents of the Statistical Capacity Indicator

Dimension	Definition
Statistical Methodology (scale: 0–100)	Measures a country's ability to adhere to *internationally recommended standards and methods*. This aspect is captured by assessing guidelines and procedures used to compile macroeconomic statistics and social data reporting and estimation practices.
Source Data (scale: 0–100)	Reflects whether a country conducts *micro data collection* activity in line with internationally recommended frequency and whether *data from administrative systems* are available and reliable for statistical estimation purposes.
Periodicity and Timeliness (scale: 0–100)	Measures the *availability and periodicity of key socioeconomic indicators*, of which nine are Millennium Development Goals (MDG) indicators.

Several studies have used the SCI to evaluate the quality of data systems and investigate its relationship with other macroeconomic variables (Devarajan 2013; Kubota and Zeufack 2020; Islam and Lederman 2020). Nevertheless, the SCI has limitations. It covers only developing economies and is available from 2004 to 2020. The availability of data at high frequencies (quarterly and monthly) is largely not considered. For microdata, it does not consider establishment and labor force surveys. It also does not include a measure of openness in terms of online access to data. Its successor, the Statistical Performance Indicators (SPI)—launched in 2021 in the World Report on Data for Better Lives—deals with many of these drawbacks. The SPI measures the capacity and maturity of national statistical systems by assessing the use of data, the quality of services, the coverage of topics, the sources of information, the infrastructure and availability of resources. The SPI covers both developing and advanced economies. However, the SPI is available only for a limited period, 2016-2019. Furthermore, the SPI is still in development, with measurement pending for some elements in its conceptual framework. The correlation between the SCI and SPI is 0.86 for the sample of overlapping developing economies and time periods. The main findings of this chapter largely stand whether the SCI or the SPI is used.

Box II.2. Transparency and the Statistical Capacity Indicator

The evolution and widespread use of the word "transparency" in governance can be largely attributed to supranational and non-governmental organizations. In the early 1990s, Peter Eigen, a former World Bank manager, established Transparency International to address corruption. The organization's mission is to study the effects of corruption on citizens and advocate policy reforms in global institutions to address corrupt practices. "Integrity International" and "Honesty International" were considered as names for the organization, but "transparency" won out because was understood to convey the notion of "openness" (Ball, 2009).

Subsequently, the term "transparency" spread across the World Bank, the Organisation for Economic Co-operation and Development, and in U.S. congressional directives to the International Monetary Fund. Academicians adopted the term "transparency" and formalized its meaning, especially in the field of international studies. Finel and Lord (1999) defined transparency as comprising "*the legal, political, and institutional structures that make information about the internal characteristics of a government and society available to actors both inside and outside the domestic political system. Transparency is increased by any mechanism that leads to the public disclosure of information, whether a free press, open government, hearings, or the existence of nongovernmental organizations with an incentive to release objective information about the government.*" Mitchell (1998) used this definition: "*Transparency constitutes the demand for information, the ability of citizens to obtain information, and the supply and actual release of information by government and NGOs.*"

The World Bank's Statistical Capacity Index (SCI) goes beyond its name by capturing many of the elements of transparency consistent with the definitions above (see box II.1). The availability and regular publication of micro and macro data as well as whether production of such data adheres to international standards goes to the heart of "openness," the ability of citizens to learn information from the government. The measure goes beyond statistical capacity—the SCI score of highly competent statistical offices can be penalized if they do not publish statistics. The SCI captures transparency by using data-centric, objective, and verifiable measures—and is unique in that it is not dependent on perceptions of transparency by survey respondents, as is typically the case in many transparency indicators. The SCI can be interpreted as a statistical or data transparency index.

II.2. The sources of forecast errors in MENA

This section analyzes trends of the MENA region's GDP growth forecast errors and explores the important sources of errors discussed in the previous section—data opacity, growth volatility that is exacerbated by conflict and commodity shocks, and different types of forecasters. GDP forecast errors are defined as the annual forecasted GDP growth less realized GDP growth over 2010–20.[14]

The nature of GDP growth forecast errors in MENA

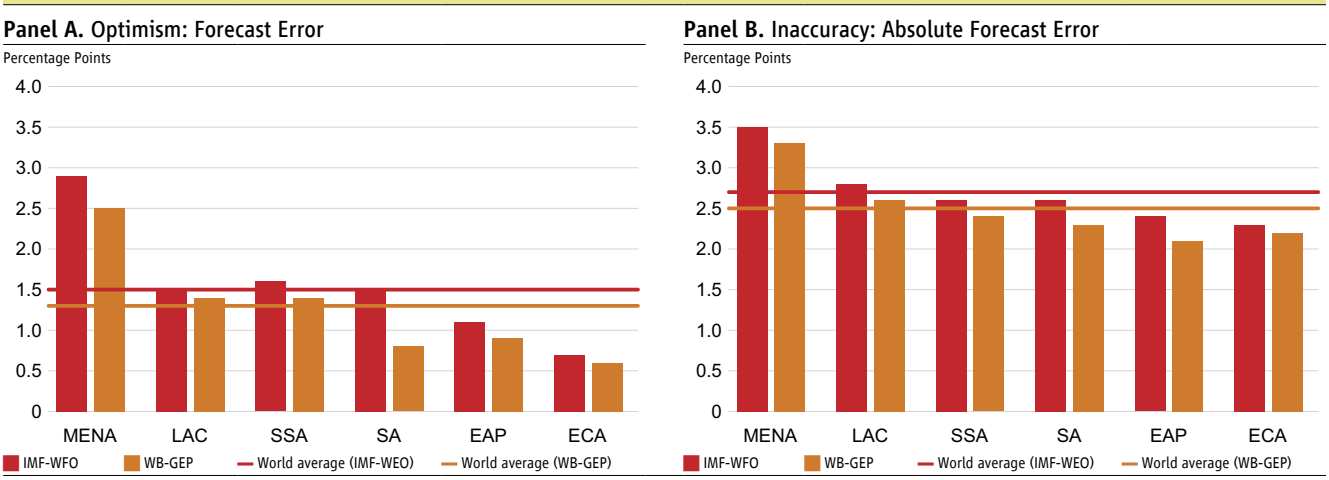
The data drawn for the analysis are largely from the same-year growth forecasts made in January by the IMF's *World Economic Outlook* (WEO) and the World Bank's *Global Economic Prospects* (GEP). These are provided for developing economies. Growth forecasts by international institutions are widely used by authorities to assess economic prospects,

14 The scope of this report includes only GDP growth forecast errors. GDP growth forecast errors are important because they provide the overall sense of an economy. Furthermore, GDP is the denominator for most indicators, making it important for a range of forecasts of other economic indicators. See Flores and others (2021) for research on public debt forecast errors and Easaw and Golinelli (2021) for inflation forecast errors. See box II.3 for information on inflation forecast errors. This report also uses same-year short-term forecasts. Short-term forecasts tend to be the most accurate; forecast accuracy tends to decline the farther out it is from the period being forecast (Ho and Mauro 2016). Short-term growth forecasts tend to attract considerable attention from the policymakers, the media, and other stakeholders.

benchmark their own projections, and are also used by private-sector forecasters (Genberg and Martinez 2014; Genberg, Martinez, and Salemi 2014; Beaudry and Willems 2022).[15] Note that the conceptual discussions apply to all types of forecasters. Later in the section, private sector forecasts are analyzed separately.

Globally, between 2010 and 2020,[16] the average forecast error—the difference between forecast growth and realized growth—is 1.3 percentage points for the January GEP forecasts and 1.5 percentage points for the January WEO forecasts. When 2020 is excluded, the global average forecast error is 0.4 of a percentage point for the January GEP forecasts and 0.7 of a percentage point for the January WEO forecasts. The MENA region on average had the largest forecast errors among all global regions between 2010 and 2020 (see figure II.1, Panel A). The MENA region growth forecast errors average 2.5 percentage points for the January GEP forecasts and 2.9 percentage points for the January WEO forecasts. These are quite large given that the MENA average growth rate for this period was only 1 percent. Taking the average of the January GEP forecasts over 2010–20, 77.8 percent of MENA economies have a higher forecast error than the average of the rest of the world. The positive forecast errors are indicative of an optimism bias—institutional forecasters tend to predict higher growth rates than are realized. So, for lack of a better term, we refer to forecast errors as the degree of "optimism bias."[17] Optimism bias is consistent across all regions, although it is largest in the MENA region.

Figure II.1. January Growth Forecast Errors by Region and Institution (2010–2020)



Source: Authors' calculations based on the International Monetary Fund's *World Economic Outlook* (WEO) and the World Bank's *Global Economic Prospects*.
Notes: The figure displays the forecast errors (Panel A) and absolute forecast errors (Panel B) of the IMF's *World Economic Outlook* and the World Bank's *Global Economic Prospects* in January. Forecast errors are calculated as the forecasted GDP growth rates minus realized GDP growth rates. Absolute forecast errors are calculated as the absolute value of the forecast errors. The figure is constructed based on a common sample of 141 countries (largely developing economies) collected in January for each year between 2010 and 2020. The MENA region includes both GCC and non-GCC countries.

For the absolute forecast errors, all errors are restricted to their positive values, which removes the direction of the bias. Globally, the absolute forecast error is 2.5 percentage points for the January GEP forecasts and 2.7 percentage points for the January WEO forecasts. It is also the largest for the MENA region (see figure II.1, Panel B). We refer to absolute forecast errors as the "inaccuracy" of the forecasts. Between 2010 and 2020, the average absolute forecast error for

15 Evidence on the importance of WEO forecasts has been summarized in Beaudry and Willems (2022). About 88 percent of country authorities strongly agree with the statement that that they "consider the WEO's projections to be the benchmark for assessing economic prospects." Furthermore, 64 percent of country authorities strongly agreed with the statement that they "use WEO forecasts to check the accuracy of their own forecasts," while 75 percent strongly agreed that "WEO forecasts are valuable inputs to the economic policy process in their country."

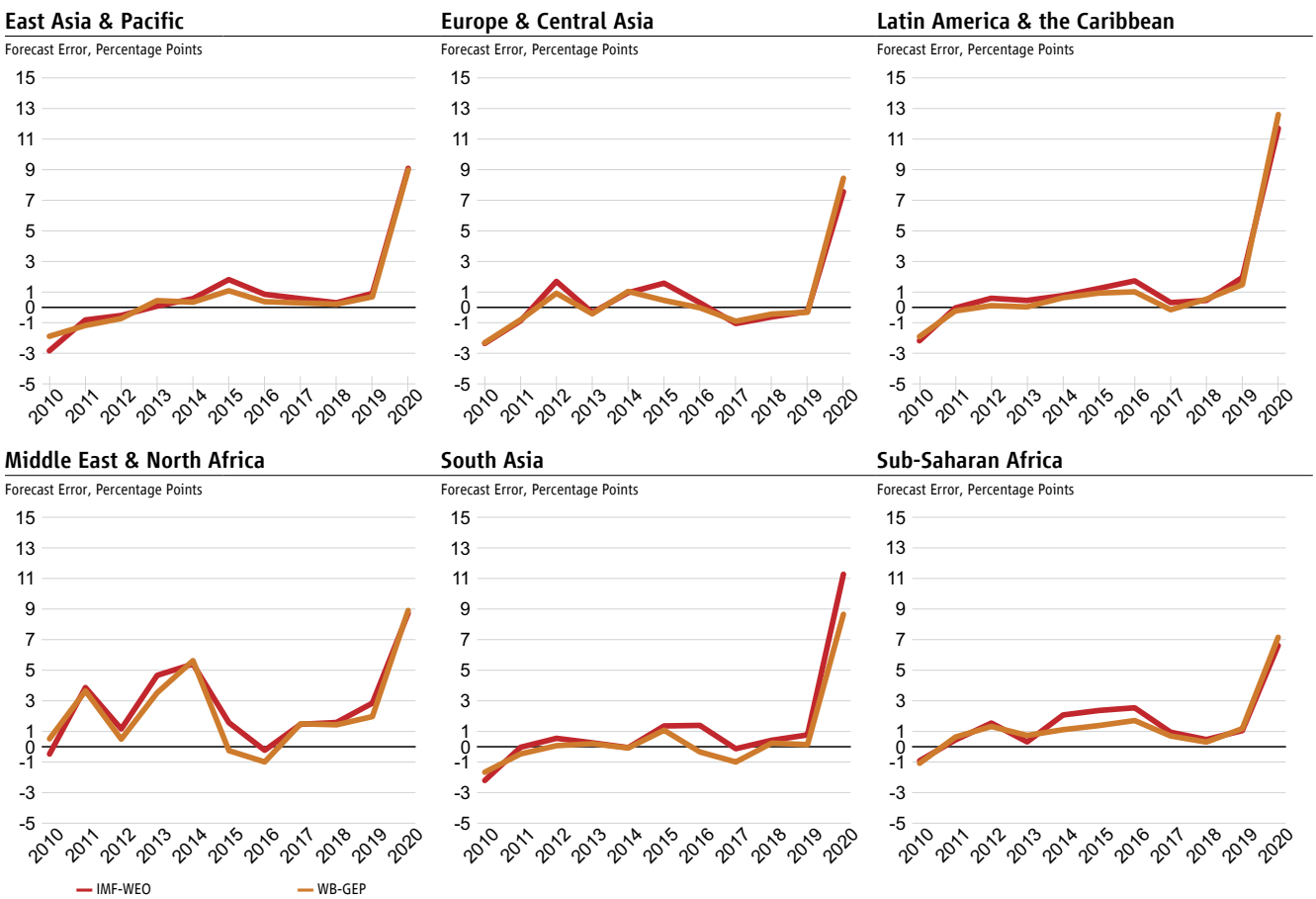
16 The analysis focuses analyses on 2010–2020 because systematic World Bank January GEP forecast data are only available for this period. For the MENA Gulf Cooperation Council economies (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates), data are available from 2015. The WEO forecasts have only April and October forecasts for the 1990s. During 2010–2020, there were significant events in the region—including the Arab Spring, major oil shocks, and instability in a few economies. These are accounted for as best as possible later on in the empirical analysis.

17 Forecast errors can be the result of factors other than optimism bias, such as unforeseen shocks.

the MENA region was 3.3 percentage points for the January GEP forecasts and 3.5 percentage points for the January WEO forecasts. Between 2010 and 2020, using the January GEP forecasts, on average half of MENA economies had a larger absolute forecast error than the average of the rest of the world. Both simple (unadjusted) and absolute forecast errors appear not to vary systematically by a country's level of income. The MENA region stands out with its high forecast errors, which are not dependent on the level of development. Both panels in figure II.1 indicate that growth forecasts from the IMF's WEO are slightly more optimistic and more inaccurate than growth forecasts from the World Bank's GEP, for all regions. Note that the panels are constructed from a common sample of the IMF's WEO and World Bank's GEP, so the findings are not driven by differences in the sample composition. These results are confirmed by more rigorous econometric estimations outlined in Section II.3 and the Appendix.

Figure II.2 presents the trends of the regional average forecast errors for the period 2010–2020. There is little indication that forecasts have improved over time, whether they emanate from the IMF or the World Bank. This remains the case when the time horizon is pushed to 1990 using the IMF's April and October WEO data (see figure X2 in Appendix II.1). For the period 2010–2020, the magnitude of the forecast errors for MENA has generally been much larger than for other regions. The forecast errors were strikingly large for all regions during 2020 when the COVID-19 pandemic began. This

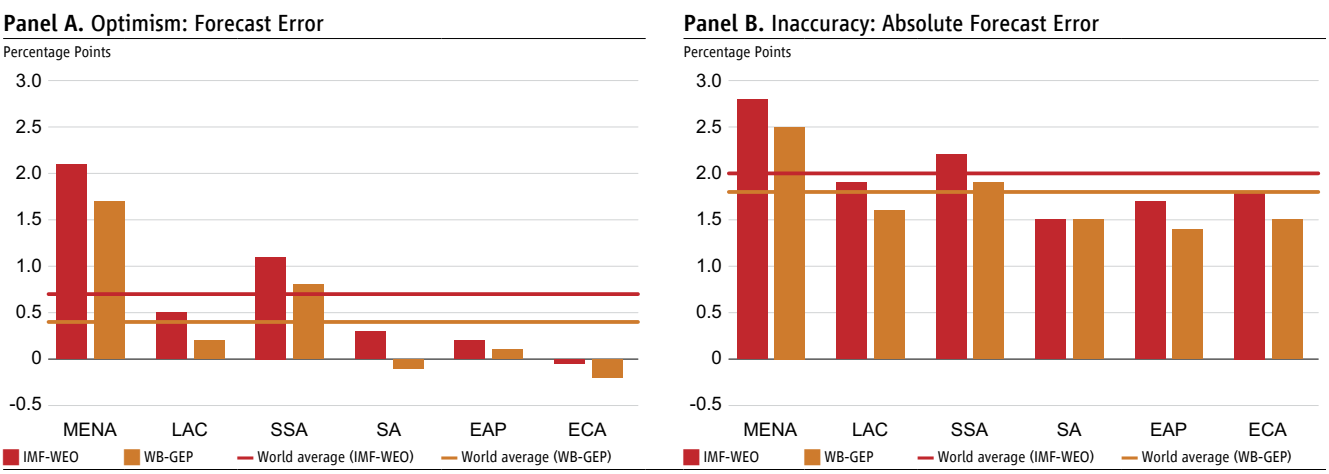
Figure II.2. Forecast Errors over Time by Region and Institution



Source: Authors' calculations based on the International Monetary Fund's *World Economic Outlook* and the World Bank's *Global Economic Prospects*.
Notes: The figure displays forecast errors of the January WEO and GEP. Forecast errors are calculated as the forecasted GDP growth rates minus realized GDP growth rates. Absolute forecast errors are calculated as the absolute value of the forecast errors. The figure is calculated based on a common sample of 141 countries (largely developing economies) collected in January for each year between 2010 and 2020. The MENA region includes both GCC and non-GCC countries.

was to be expected because the pandemic was an exogenous shock that had widespread effects on economic activity—for example, through largely unforeseen lockdowns. While the pandemic on average raised forecast errors considerably in 2020, growth forecast errors remain large for the MENA region even if the year 2020 is excluded—forecast errors reached 1.7 percentage points for the January GEP forecasts and 2.1 percentage points for the January WEO forecasts (see figure II.3).

Figure II.3. Pre-Pandemic January Forecast Errors and Absolute Forecast Errors by Region and Institution (2010–2019)



Source: Authors' calculations based on the International Monetary Fund's *World Economic Outlook* and the World Bank's *Global Economic Prospects*.
Notes: The figure displays the forecast errors (Panel A) and absolute forecast errors (Panel B) of the IMF's World Economic Outlook and the World Bank's Global Economic Prospects in January. Forecast errors are calculated as the forecasted GDP growth rates minus realized GDP growth rates. The figure is constructed based on a common sample of 141 countries (largely developing economies) collected in January for each year between 2010 and 2019 to exclude the distorting effects of the first pandemic year. The MENA region includes both GCC and non-GCC countries.

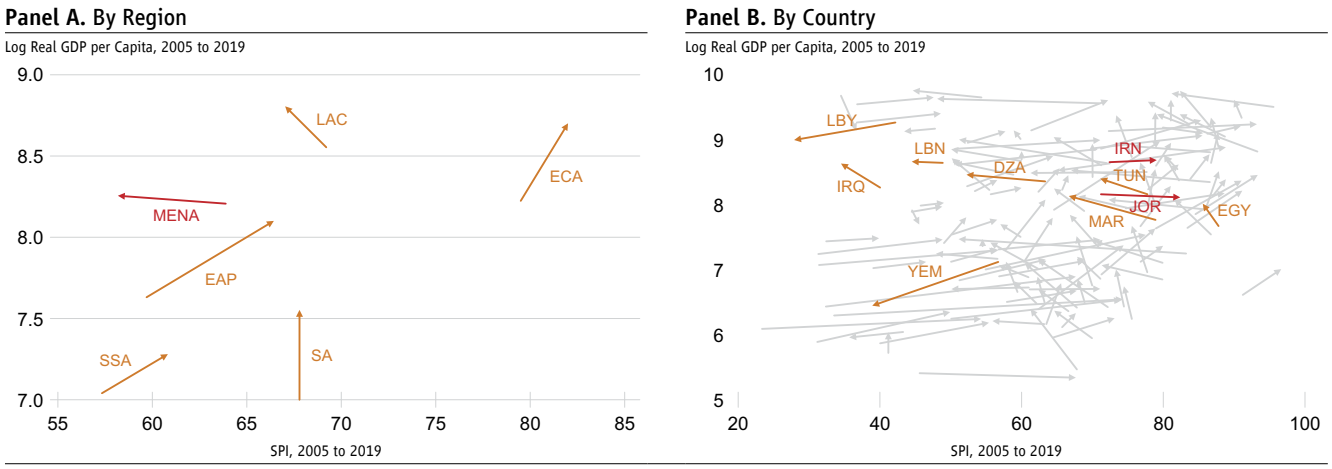
The timing of forecasts also matters. Figure X3 in Appendix II.1 shows that forecast errors for the year tend to fall in magnitude and increase in precision as the forecasting month shifts from January to October. Figure X2 compares IMF's April forecast errors with IMF's October forecast errors from 1990 to 2020 and finds that October generally is lower. As the forecasting date approaches the end of the year, forecasters have more information and can thus more accurately forecast growth for that year.

Large forecast errors in the MENA region are likely attributable to data opacity and structural volatility from conflict and commodity shocks. Forecaster type also affects the extent of forecast errors and bias. These are explored in detail.

Data opacity

Many economies in the MENA region are data deprived. They have lagged in their statistical capacity to generate data (Arezki and others 2020). Figure II.4 displays the movements in SCI and the log of GDP per capita both by region and for each MENA economy between 2005 and 2019. The statistical capacity indicator SCI declined between 2005 and 2019 (see figure II.4, Panel A). The developing-MENA region had the lowest score of all the developing regions of the world in 2019, largely the result of data opacity. Figure II.4 Panel B shows that statistical capacity declined for all the MENA economies in the sample, except for Iran and Jordan. Clearly, the presence of conflict plays a sizeable role in damaging data systems—evidenced by the drops in the SCI for Libya and Yemen. Figure X1 in Appendix II.1 provides detailed time trends of the SCI indicator for each MENA economy. Precipitous drops in the data ecosystem are observed for Syria and Yemen, while Libya experienced a gradual decline. Egypt and West Bank and Gaza exhibit better performance in the region.

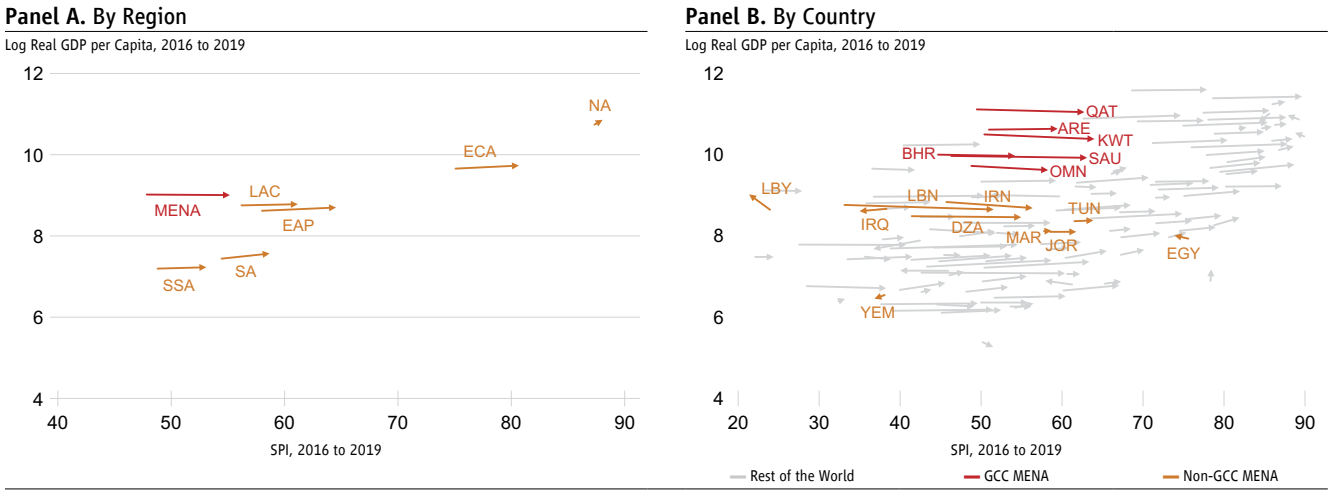
Figure II.4. Changes in SCI and GDP per Capita (2005 to 2019)



Source: Authors' calculations based on the World Bank's *Statistical Capacity Index* and the World Bank's *World Development Indicators*.
Notes: The figure is constructed based on a sample of 132 developing countries between 2005 and 2019. The MENA region includes the developing countries only (excluding the GCC, Israel and Malta). The country sample is not consistent across the years. Data from West Bank and Gaza is available only from 2009. Data for Djibouti is missing for 2005. Syria is not included in Panel B due to the unavailability of its GDP per capita data in constant U.S. dollars.

The alternative index, the Statistical Performance Indicators (SPI), is a broader and more sophisticated measure of national statistical systems that also includes developed economies but is available only for 2016–19 (see box II.1). For the sample of overlapping developing economies and time periods for both indicators, the two indices capture broadly similar information on the countries' statistical capacities. As shown in figure II.5, Panel A, the MENA region has a low SPI score as well, only performing better than the sub-Saharan Africa region when both developing and advanced economies are included. The Gulf Cooperation Council (GCC) economies (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates) do not perform much better than the MENA region average with regard to the SPI score, and in cases trail some non-GCC MENA economies (see figure II.5, Panel B).

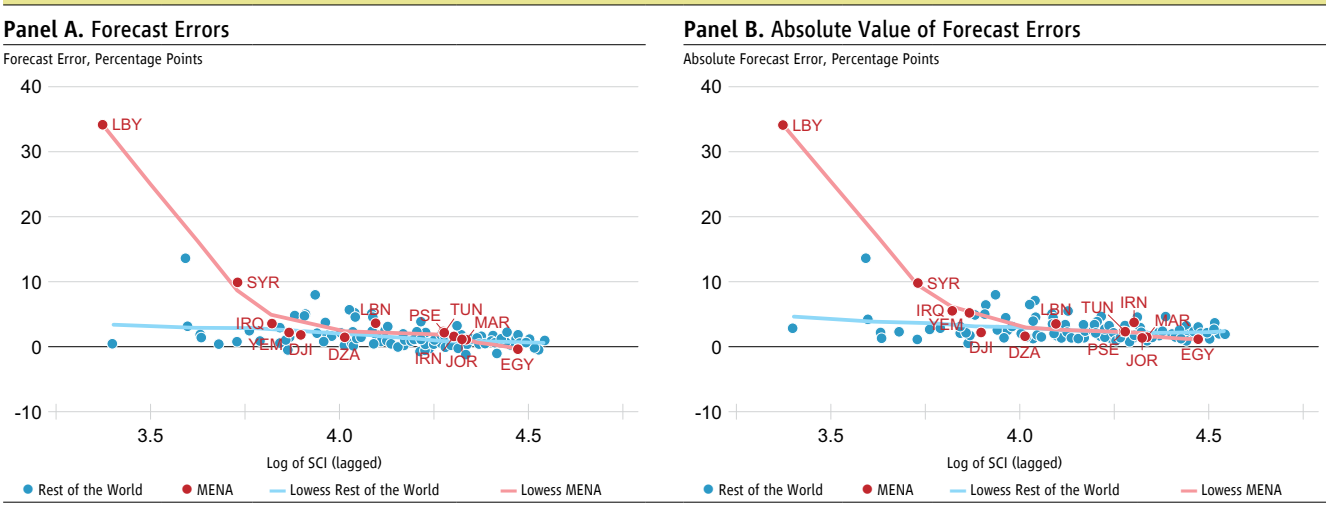
Figure II.5. Changes in SPI and GDP per Capita (2016 to 2019)



Source: Authors' calculations based on the World Bank's *Statistical Performance Indicators*.
Note: There are 161 developed and developing countries in the sample.

Forecast errors tend to be larger for economies with weaker data systems. Weak data systems are characterized by scarce data, low-frequency data, or data of poor quality. Figure II.6 presents the correlation between the SCI and both the simple and absolute forecast errors for a cross-section of 133 economies with data available in 2020.[18,19] The figure shows that lower SCI scores are correlated with higher forecast errors. In other words, growth forecasts for countries with weaker data systems are on average more optimistic and more inaccurate. This is particularly true for the MENA region, where the relationship between the SCI and forecast errors is steeper—the results are strongly influenced by conflict-affected economies, such as Libya and Syria, whose data capacities have been severely weakened because of conflict. Removing all fragile and conflict-situation country-year pairs flattens the relationship between forecast errors and the SCI, although the line remains steeper for the MENA region than the rest of the world.[20]

Figure II.6. Forecast Errors and Data Capacity (SCI)



Source: Authors' calculations based on the World Bank, *Global Economic Prospects*, January issues 2010–2020 and the World Bank's *Statistical Capacity Index*.
Notes: The figure displays the correlation between the forecast errors and the Statistical Capacity Index using LOWESS smoothing. The forecast errors are calculated based on forecasted and realized GDP growth rates and are based on a sample of 133 developing countries between 2010 and 2020. The MENA region excludes the GCC economies (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates).

Forecasting models are largely constrained by the granularity and timeliness of available data. Monthly or quarterly information is essential to obtaining more accurate forecasts. While the SCI does capture the quality of the data ecosystem to a large extent, it does not necessarily encompass the extent and availability of high-frequency data. Table II.1 presents the availability of high-frequency data on GDP, industrial production, and unemployment for 19 economies in the MENA region. The date of the most recent data available is also indicated. This information is compiled from the websites of various statistical offices or data portal initiatives, central banks and ministries of planning, economy, or finance across the MENA region. The findings are benchmarked against Mexico, which serves as a good comparator for the MENA region because it is an upper-middle-income economy with a well-functioning data ecosystem. Of the 19 economies in the MENA region, 15 report quarterly data on GDP. Some economies lack information for the year 2020 entirely. Economies in conflict such as Libya (2014) and Yemen (2017) have outdated data. Only 10 of the 19 MENA economies

18 The correlation is presented by locally weighted scatterplot smoothing (LOWESS). The advantage of LOWESS is that it does not require the imposition of a functional form for the relationship between two variables.
19 Figure II.6 largely includes developing economies. However, the correlation between SPI (which is global in coverage) and forecast errors shows similar results.
20 The FCV countries are defined according to the World Bank's classification. "Fragile Situations" have either a harmonized average Country Policy and Institutional Assessment (CPIA) country rating of 3.2 or less, or the presence of a United Nations and/or regional peacekeeping or peace-building mission during the past three years. This list includes only IDA eligible countries and non-member or inactive territories/countries without CPIA data. IBRD countries with CPIA ratings below 3.2 do not qualify on those grounds, because of non-disclosure of IBRD countries' CPIA ratings. IBRD countries that are included qualify only by the presence of a peacekeeping, political or peace-building mission, and their CPIA ratings are thus not indicated here.

have monthly or quarterly information on industrial production—for the remaining nine economies, information is not readily available. Only eight economies report quarterly unemployment data, while none have monthly data. The benchmark country, Mexico, reports unemployment data monthly. A caveat is that the table does not consider quality. For example, definitions of unemployment may be inconsistent with international standards (Arezki and others 2020).

Table II.1. MENA Macro Data Availability (as of January 2022)

Countries	GDP Data	GDP Data latest (calendar year)	Industrial Production Index Data	Industrial Production Index latest (calendar year)	Unemployment Data	Unemployment Data latest (calendar year)
Algeria	Quarterly	Q2 2021	Quarterly	Q3 2021	Semi-Annually	May 2019
Bahrain	Quarterly	Q3 2021	n/a	n/a	Only Census	2020
Djibouti	Annually	2018	n/a	n/a	n/a	n/a
Egypt	Quarterly	Q3 2021	Monthly	September 2021	Quarterly	Q3 2021
Iran	Quarterly	Q3 2021	Quarterly	Q3 2021	Quarterly	Q3 2021
Iraq	Quarterly	Q2 2021	Quarterly	Q2 2021	Only 2 years	2016
Jordan	Quarterly	Q3 2021	Monthly	October 2021	Quarterly	Q3 2021
Kuwait	Quarterly	Q4 2020	n/a	n/a	Annually	2021
Lebanon	Quarterly	Q4 2019	n/a	n/a	only census	2018–2019
Libya	Annually	2014	n/a	n/a	Labor force survey	2013
Morocco	Quarterly	Q3 2021	Quarterly	Q3 2021	Quarterly	Q3 2021
Oman	Quarterly	Q3 2021	n/a	n/a	Annually	2020
Qatar	Quarterly	Q3 2021	Monthly	November 2021	Quarterly	Q2 2021
Saudi Arabia	Quarterly	Q3 2021	Monthly	November 2021	Quarterly	Q3 2021
Syria	Annually	2019	n/a	n/a	Annually	2019
Tunisia	Quarterly	Q3 2021	Monthly	September 2021	Quarterly	Q3 2021
United Arab Emirates	Quarterly	Q2 2020	n/a	n/a	Annually	2020
West Bank and Gaza	Quarterly	Q3 2021	Monthly	November 2021	Quarterly	Q3 2021
Yemen	Annually	2017	n/a	n/a	only census	2013
MENA Total: 19	**Quarterly: 15/19**		**Monthly or Quarterly: 10/19**		**Quarterly: 8/19**	
Mexico	**Quarterly**	**Q3 2021**	**Monthly**	**October 2021**	**Monthly**	**November 2021**

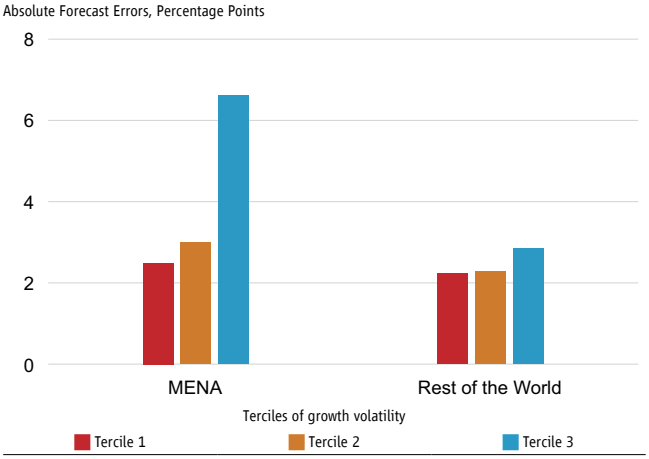
Sources: Country statistical office websites; government data portal websites; central bank websites and Ministry of Planning/Economy/Finance websites.
Notes: n/a means information is not readily available. All data accessed as of January 2022. This table is not exhaustive, it has only surveyed country Statistical Office Websites, Government Data Portal Websites, Central Bank Websites and Ministry of Planning/Economy/Finance websites. Third-party websites were excluded from this survey. The table has been updated and verified by World Bank country economists. Mexico was selected as a comparator because it is an upper-middle-income economy with a well-functioning data ecosystem.

The lack of data at the macro-level is also reflected in the availability of micro-level data. This is documented by Ekhator-Mobayode and Hoogeveen (2021) for 20 MENA countries (including Malta). Census and survey data are often out of date. Only 13 of the 20 countries are current on their population census and nine out of 20 are up to date on their economic census. Only five of the 20 countries carried out an establishment survey recently and about half are up to date on their health, labor force, and consumption surveys. Furthermore, public accessibility of microdata is limited. Of the 140 potential microdata sets explored (seven data categories in 20 countries), 78 had been collected and 22 were accessible. Moreover, about a third of these 22 datasets were not accessible through the website of the National Statistics Office but had to be found on international microdata repositories, such as the World Bank, International Household Survey Network (IHSN) microdata library, IPUMS, Eurostat, Demographic and Health Surveys (DHS), and Multiple Indicator Cluster Surveys (MICS).

Structural Volatility

Economies with volatile growth rates are harder to forecast because models struggle to account for wild fluctuations. Unexpected large shocks produce greater forecast errors due to the possibility of diverging future states of the world. Figure II.7 shows that higher absolute forecast errors tend to be associated with countries that exhibit higher growth volatility. The relationship is more pronounced (steeper) for the MENA region relative to the rest of the world, indicating a stronger relationship between forecasting errors and growth volatility. In MENA, a combination of exports concentrated in commodities and country conflicts, occasions larger growth volatility, which in turn increases the difficulty of accurately forecasting GDP growth.

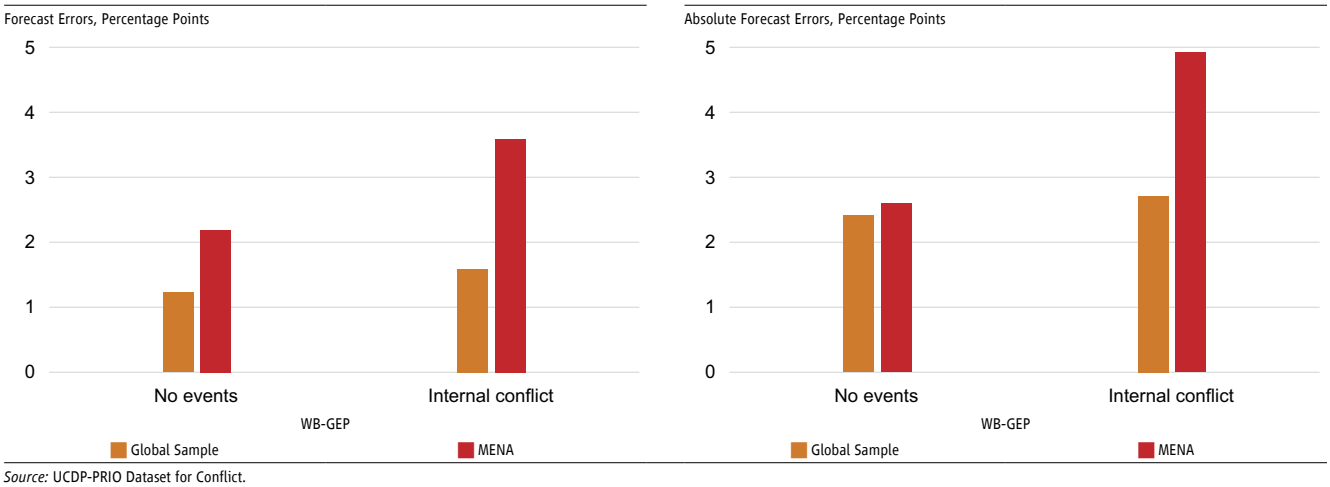
Figure II.7. Absolute Value of Forecast Errors per Tercile of Growth Volatility (2010–2020)



Source: Author's calculations based on the World Bank's *Global Economic Prospects*, January issues 2010–2020.
Notes: The figure displays the distribution of the mean of forecast errors across growth volatility terciles (terciles 2 and 3 indicating successively higher growth volatility). Terciles are calculated based on the full sample. The absolute value of forecast errors is based on forecasted and realized GDP growth rates. Growth volatility is calculated as the lagged 10-year rolling-window standard deviation. The figure is based on a sample of 140 developing countries over 2010–2020. The MENA region excludes the Gulf Cooperation Council economies (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates).

Conflicts: Conflicts usually substantially hurt economic growth. Armed conflicts disrupt economies considerably. Physical and human capital are destroyed. Funds are diverted from productive uses. There is considerable dissaving and disruption of internal social dynamics. Moreover, when conflict occurs, as it does at an outsized level in the MENA region, data capacity is severely weakened—and the extent of the damage is difficult to measure. Consequently, growth is volatile and forecast errors are likely to be larger. The MENA region accounted for 68 percent of global battle-related deaths from 2013 to 2017 (World Bank, 2020). As shown in figure II.8, economies experiencing conflicts tend to exhibit larger forecast errors. This is particularly accentuated in the MENA region, where countries in conflicts have larger forecast

Figure II.8. Conflicts and Growth Forecast Errors, MENA vs the World

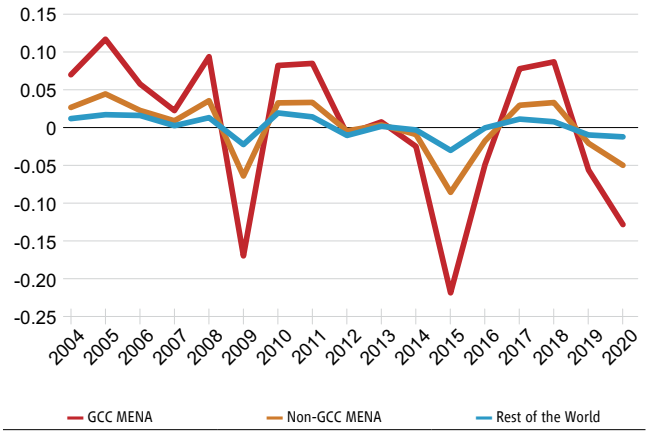


Source: UCDP-PRIO Dataset for Conflict.
Notes: Vertical axes show forecast errors (Panel A) and absolute forecast errors (Panel B) in percentage terms. No Events=Observations with no Internal conflict (or start of conflict), as well as no large natural disasters. Internal conflict=A year with an occurrence of internal conflict. Internal conflict encompasses both intrastate conflict and international conflict that occurs within a state.

errors than other developing economies. Within the MENA region, countries characterized as fragile and affected by conflict and violence (FCVs) have more inaccurate and optimistic forecasts than MENA countries that are not FCVs (see figure X4). When FCV economies are excluded, MENA's forecast accuracy increases to a level comparable with the global average. However, even when FCVs are excluded, the growth forecasts are far more optimistic in the MENA region than in the rest of the world. The seismic effects of conflicts in the MENA region have been well documented in the literature (Ianchovichina and Ivanic 2016; Devadas and others 2021).

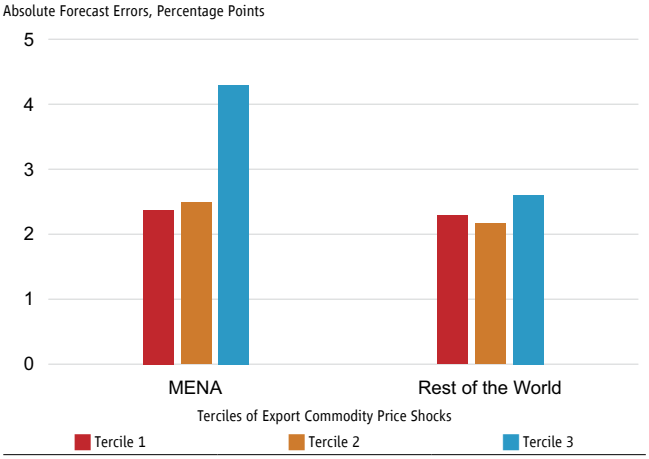
Commodity shocks: Many economies in the MENA region are oil exporters and food importers. For example, fuel accounted for more than 70 percent of the United Arab Emirate's exports in 2019 (Gatti and others 2021). This makes MENA economies susceptible to swings in commodity prices, which leads to increased volatility in economic growth. Figure II.9 shows that the volatility of the export commodity price index, a measure that captures both the fluctuations in international commodity prices and country exposure to commodity exports.[21] Although GCC countries are most susceptible, even the non-GGC MENA economies experience larger commodity price volatility than the rest of the world. The volatility of commodity prices raises the difficulty of forecasting growth in countries exposed to commodity exports such as oil. Figure II.10 shows that countries with higher terciles of commodity price shocks also have larger forecast errors. This is accentuated for the MENA region.

Figure II.9. Export Commodity Price Shocks



Source: Authors' calculations based on data from Gruss and Kebhaji, 2019.
Notes: Export commodity price shocks capture both the exposure to commodity exports and the fluctuations of international prices. The figure is constructed based on a sample of 180 developed and developing economies between 2004 and 2020. GCC=Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates.

Figure II.10. Absolute Forecast Errors and Terciles of Export Commodity Price Shocks (2010–2020)



Source: Authors' calculations based on the World Bank's *Global Economic Prospects*, January issues, 2010–2020.
Notes: The figure displays the correlation between the absolute forecast errors and the export commodity price shocks across commodity price shock terciles (terciles 2 and 3 indicating successively higher commodity shocks). Terciles are calculated based on the full sample. The absolute value of forecast errors is calculated based on forecasted and realized GDP growth rates. The figure is based on a sample of 137 largely developing economies.

21 Export commodity price shocks capture both the exposure to commodity exports and the fluctuations of the international prices. The formular of commodity price shocks for country c is calculated by:

$$\sum_{i=1}^{45} \Delta \log(p_i) \times \frac{export_{i,c}}{GDP_c}$$

where $\Delta \log(p_i)$ is the log change in price of commodity i; $(export_{i,c})/(GDP_c)$ is the average (export revenue/GDP) of commodity i since 1962 until 2020. This ratio captures the dependence or exposure of country c to the export revenue of commodity i. The dataset covers 45 key commodities such as energy (including crude oil and natural gas), agricultural raw materials, food, and metals (see Gruss and Kebhaij, 2019).

Forecaster Type

The accuracy of forecasts may differ by the type of forecaster. Government and institutional forecasters may have access to different sets of information than do private forecasters. The forecasting models may differ as well. As discussed earlier, growth forecasts by the IMF tend to be less accurate and more optimistic than those from the World Bank. Local private forecasters may have access to more information than regional forecasters. However, local forecasters may be more susceptible to influence from governments. In the next section, the relationship between forecaster types and forecast errors is explored in detail.

The scope of this report is limited to GDP growth forecast errors. It is possible that other forecast objects are subject to similar considerations. See box II.3 for a discussion of inflation forecast errors. This is particularly relevant currently, in view of concerns about how rising inflation in 2021 will play out in 2022 and beyond, with potentially severe effects for socioeconomic outcomes.

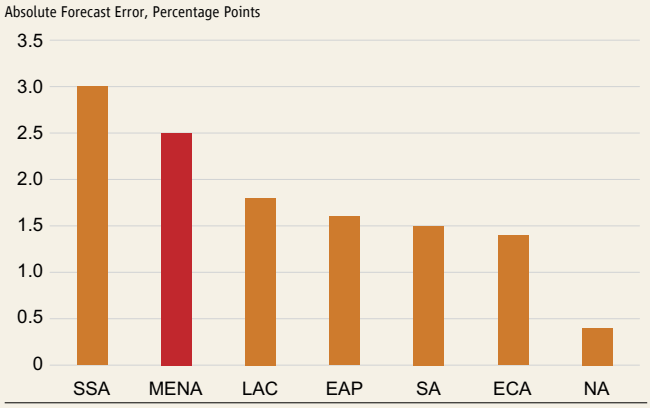
Box II.3. Forecast Errors in Real Output Growth and Inflation

Studies have explored forecast errors in inflation (Easaw and Golinelli 2021), which have received considerable attention recently because of the disruptions brought about by the COVID-19 pandemic and the ensuing rise in prices. While there is insufficient space for a comprehensive discussion of inflation forecasts, a few points are discussed in this box.

First, inflation forecast errors follow a pattern similar to growth forecast errors. The errors are largest for sub-Saharan Africa and the Middle East and North Africa; they are smallest for North America (see figure BII.3). The findings are consistent with the notion that inflation forecast errors are largest for low- and middle-income countries and smallest for high-income countries. Second, absolute inflation forecast errors in the MENA region are higher than in any other region save sub-Saharan Africa.

The correlation between absolute forecast errors for growth and inflation are low overall, but higher for the MENA region than the rest of the world. The correlation coefficient for the whole sample (1999–2020) is 0.16. It is 0.29 for the MENA region and 0.13 for the rest of the world—statistically significant at the 1 percent level for all cases. The low correlations indicate that inflation forecast errors have limited influence on growth forecast errors.

Figure BII.3. Inflation Absolute Forecast Errors Across World Regions (1999–2020)



Source: Authors' calculations based on the International Monetary Fund's *World Economic Outlook*.
Notes: The chart is based on same-year forecasts for 191 countries (developed and developing) from 1999 to 2020. Values that are above 100 or below minus 100 are considered outliers and are removed.

II.3. The role of growth volatility and data transparency in forecast errors

This section employs econometric techniques to explore the strength of the relationship between growth forecast errors and key variables such as data opacity, growth volatility and forecaster type, while accounting for several factors. The empirical specifications are detailed in Appendix II.2. Growth forecast errors are analyzed for three samples: (i) the World Bank's GEP January forecasts (2010–2020); (ii) the IMF's WEO January forecasts (2010–2020); and (iii) the Consensus/Focus Economics private forecasts (2015–2020).

The findings are presented in table X1 in Appendix II.1. The dependent or outcome variable is the absolute growth forecast error (in other words, the inaccuracy of the forecasts). A key variable of interest is the SCI, the proxy capturing the extent of data opacity. Other variables include the log of real GDP per capita, commodity price shocks, internal conflicts, country size measured by total population, and whether the economy is experiencing an economic boom (details provided in Appendix II.2). Year fixed effects (dummy variables capturing the effect of each year of the time period) are included to account for global shocks that are common to all countries in any given year. Results for the World Bank GEP sample are presented in column 1. Column 2 presents the regression results for the IMF WEO sample, and column 3 presents the results for the Consensus/Focus Economics private forecaster sample. Columns 4 through 6 replicate columns 1 through 3, inclusive of the interaction between SCI and the MENA regional dummy variable (that is, comparing the effects of SCI on forecast errors for the MENA region versus the rest of the world). Columns 7 through 9 replicate columns 1 through 3 with the inclusion of growth volatility as an additional independent variable (a covariate).

The results in table X1 (columns 4 through 6) indicate that the MENA region has higher absolute forecast errors than the rest of the world, confirming the previous unconditional[22] evidence that growth forecasts for MENA are the most inaccurate among world regions. Even after accounting for several covariates, the coefficient for the MENA region dummy variable is positive and statistically significant, at least at the 10 percent level across all three samples. This suggests that the MENA region has higher absolute forecast errors than the rest of the world even after accounting for other factors. Similar findings are obtained in table X2 in which the dependent variable is the simple growth forecast error—here, the MENA region dummy is also positive, indicating growth forecasts in MENA are more optimistic compared to the rest of the world.

Growth forecasts are more accurate in countries with better data ecosystems. The quality of the data ecosystem (SCI) is negatively correlated with the absolute growth forecast errors (table X1). This is consistent across World Bank, IMF, and private sector's forecast errors. The coefficient of private-sector forecasters is statistically insignificant at the 10 percent level but retains a large magnitude despite a small sample size. Forecasters have more and better information in countries with better data ecosystems, leading to lower forecast errors. The coefficient of the interaction between SCI and the MENA region dummy is negative and statistically significant for all three samples (columns 4, 5 and 6), implying that the relationship between the SCI and absolute forecast errors is stronger for the MENA region. Previous analysis linked data quality and data transparency to better economic outcomes in MENA (Arezki and others 2020). The accuracy of growth forecasts is yet another dimension that would benefit from better data ecosystems in the developing MENA region.

22 That is, when no other factors are accounted for.

The quality of the data ecosystem remains a strong predictor of forecast accuracy even after accounting for growth volatility, despite both being interrelated across all three samples (see table X1, columns 7, 8 and 9). The exclusion of country-year pairs in fragile, conflict and violence-affected (FCV) situations weakens the relationship between data capacity and forecast accuracy but does not obviate it. In other words, the relationship between data and the ability to forecast accurately holds strongly for FCV countries. As expected, data capacity in many FCV countries is severely weakened. In addition, the relationship between SCI and the absolute forecast errors largely stands even if the first year of the pandemic, 2020, is excluded from the sample.[23]

The coefficient of growth volatility, measured as the standard deviation of GDP growth (lagged rolling 10-year average), is positive and statistically significant at the 1 percent level across three samples (see table X1, columns 7, 8, and 9). As expected, countries experiencing larger growth volatility have larger absolute forecast errors. Commodity price shocks and internal conflict shocks are positively correlated with larger absolute forecast errors. This is consistent with the hypothesized relationships between unexpected shocks and forecast errors. Absolute forecast errors are smaller after economic booms, measured as the economic growth above the previous 10-year median, with coefficients that are statistically significant for both the IMF and the Consensus/Focus Economics samples. This is consistent with the finding that forecasters have a harder time predicting recessions (Eicher and others 2019). The level of development has no statistically significant bearing on the accuracy of forecasts. A persistent finding is that small countries (proxied by population size) have larger absolute growth forecast errors. However, this might reflect the tendency of small countries to be more open and thus vulnerable to shocks that cause volatility. When growth volatility is accounted for, the relationship between country size (population) and absolute forecast errors is no longer statistically significant (see table X1 columns 7–9).

Table X2 replicates table X1, with the simple (unadjusted) forecast errors as the outcome variable, to capture optimism or pessimism bias. Countries with better data ecosystems (SCI) tend to have less optimistic growth forecasts. This finding is statistically significant across international institutions' forecast errors (see table X1, columns 1 and 2). The role of good data ecosystems in reigning in overly optimistic forecasts is more pronounced in the MENA region (columns 4 through 6). The relationship between the SCI score and forecast errors holds even after considering growth volatility (columns 7 through 9).

The findings that better data ecosystems reduce forecast optimism may have several plausible interpretations, one of which is that forecasters tend to be wildly optimistic when data is scarce, and better data ecosystems serve as a check. A similar finding was uncovered regarding health systems in the MENA region—lack of data meant governments were overly optimistic about the performance of their healthcare services (Gatti and others 2021).

Alternative measures of transparency

Certain elements of the data ecosystem may matter more for forecasting growth than others. To test this, the SCI index is deconstructed into three subcomponents: (i) directly related to GDP forecasting; (ii) indirectly related through the macroeconomic framework; and (iii) other elements of the data ecosystem including the periodicity of micro and macro indicators, which capture overall quality of the data ecosystem. Direct elements include the periodicity of GDP growth data, import and export price indices, the industrial production index, and the updating of base years for national accounts

23 These findings are not presented in this report but are available upon request.

and the consumer price index. The indirect elements related to the macroeconomic framework comprise standards for external debt reporting, government finance accounting, updated balance of payments manual, and subscription to the IMF's Special Data Dissemination Standards (SDDS). Regression results show that of the three subcomponents, the "other elements" of the data ecosystem, are statistically significantly correlated with lower absolute forecast errors and simple forecast errors, while the direct and indirect elements are not (see table X3 in Appendix II.1). This finding implies that for countries to improve their forecasting accuracy, the whole data ecosystem needs to be upgraded, not just certain elements of it. A limitation of this finding is that there is far less variation in the direct element of the SCI indicator, which may explain the lack of statistical strength.

The estimations are replicated using an alternative index—the Statistical Performance Indicators (SPI)—which, as detailed above, is more comprehensive than the SCI and incudes developed as well as developing economies. Yet the SPI is available for a shorter period (2016–2019) than the SCI (2004–2020). Table X4 presents the findings for the SPI indicator using a sample that includes developing economies and the GCC (countries covered by the World Bank GEP forecasts). The findings largely mirror those with the SCI—improvements in data transparency are positively correlated with forecast accuracy and reduce forecast optimism. However, the findings for forecast optimism are statistically significant, while the findings for forecast accuracy are not. This could be attributable to the small sample size determined by the time coverage of the SPI. The results indicate that the positive effects of good data ecosystems on reducing forecast errors also persist when GCC economies are part of the sample.

Forecast errors vary by forecaster type

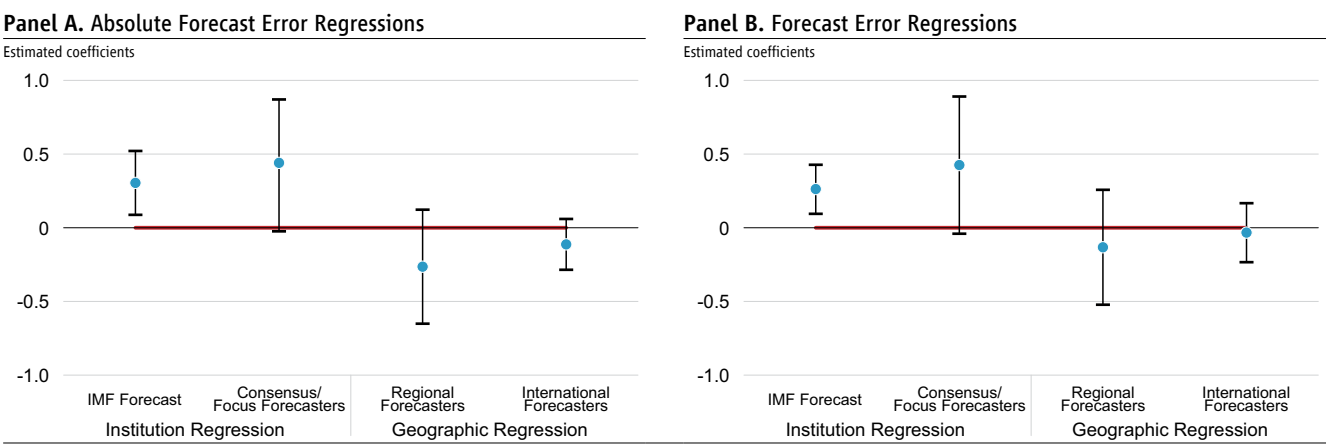
This section explores differences in the forecast errors according to the type of forecaster, whether (i) institutional or (ii) geographic. In the institutional characterization, the types are: World Bank forecasts; IMF forecasts; and Consensus/Focus Economic forecasts, which include mainly private forecasters. Box II.4 summarizes the growth forecast process for the IMF WEO and World Bank GEP. The geographical characterization distinguishes between international, regional, and local forecast types based on the proximity of the forecaster's headquarters to the country whose GDP is being forecasted. Local forecasters are those whose headquarters are in the same country of the GDP forecast. Regional forecasters are located in the same region but not in the country of the GDP forecast. International forecasters are those that are not in the region of the country whose GDP is being forecasted.

The relationship between forecast errors and forecaster type is more rigorously explored by accounting for several factors. The specification employed for the regressions is similar to the base specification in table X1, columns 1 through 3 (see Appendix II.3 for details). Note that forecasts of all available individual private sector forecasts are included. The coefficients from the regressions are plotted in figure II.11. The Institution Regression of Panel A compares the IMF and private sector's accuracy with the World Bank's (the omitted category). The Geographic Regression of Panel A compares the regional and international forecasters' accuracy with local forecasters (the omitted category). Panel B retains the same structure but provides the results for forecast optimism.

IMF forecasts are consistently more optimistic and less accurate than World Bank forecasts. Consensus/Focus Economics forecasts are also more optimistic and less accurate than the IMF and World Bank forecasts. However, the Consensus/Focus Economics forecast coefficients are statistically insignificant, reflecting a large variation in the views of private-sector forecasters.

The accuracy and optimism of forecasts are largely similar across international, regional and local forecasters. Regional forecasts exhibit considerable variation in accuracy, although on average they do not differ from international and local forecasters. Local forecasters might have better access to local information that could improve their growth forecasts. But they might also be easily influenced by and connected to governments, which could influence their growth forecasts. The finding suggests that the two opposing effects could be offsetting each other.

Figure II.11. Forecast Errors by Geographical and Institution Type



Source: Authors' calculations based on the Consensus/Focus Economics, the International Monetary Fund's *World Economic Outlook* (WEO) and the World Bank's *Global Economic Prospects* (GEP).
Notes: This figure shows the results of two separate regressions for forecasters classified according to their types (institutions); and classified according to geography (see Appendix II.3). In the institution regressions, the three categories are GEP, WEO and Consensus/Focus Economics forecasts that largely include private forecasters. World Bank is the omitted category. In the geographic regressions, the international, regional, and local categorization is based on the proximity of the forecaster's headquarters to the country being forecasted. Local forecasters are those whose headquarters are in the same country that is being forecasted. Regional forecasters are those whose headquarters are in the same region as the country being forecasted (but not the same country). International forecasters are those that are outside the region of the country being forecasted. In geographical regressions, "local forecasters" is the omitted category. Bars represent 90 percent confidence intervals. 16.6 percent of forecasts in the sample are by local forecasters. 17 percent of forecasts in the sample are by regional forecasters. 66.4 percent of forecasts in the sample are by international forecasters. There are a total of 218 local forecasters, 93 regional forecasters, and 107 international forecasters in the sample.

Box II.4. How the IMF and the World Bank Make Their Forecasts

Growth forecasts from both the *World Economic Outlook* (WEO) of the International Monetary Fund (IMF) and the World Bank's *Global Economic Prospects* (GEP) combine top-down and bottom-up approaches. The top-down approach entails the production of aggregate forecasts for key large economies—such as the United States and the European Union—and a set of forecasts for a few crucial global variables such as oil prices. At the IMF, the aggregate forecasts are produced by the WEO team. At the World Bank, the aggregate forecasts are produced by the GEP team. The bottom-up approach entails the production of forecasts by country economists factoring top-down aggregate forecasts to their country-specific forecasts. Each country economist uses whatever forecast methods and information she or he judges to be most appropriate for the country in question.

After country economists submit their first set of forecasts, an iterative process begins. Growth forecasts from each country economist are first discussed and evaluated within the corresponding regional department. At the IMF they are also discussed with the WEO team just as are World Bank country economist forecasts are discussed with the Bank's GEP team. Discussions at both institutions cover similar issues—such as the potential spillovers from large economies and impact of commodity price shocks on a country. The forecasts are then aggregated and checked. At the IMF, the WEO team also provides and contrasts their top-down country-specific forecasts (based on high-frequency data) with the bottom-up forecasts. Both the WEO and GEP teams and country economists hold discussions to resolve any differences and discrepancies. At both institutions, country economists have the final say about growth forecasts for the countries for which they are responsible.

Sources: Genberg and others (2014) and discussions with the WEO and World Bank country economists.

Conclusion: The Perils of Data Opacity

Data opacity is holding back the MENA region on multiple fronts. It prevents the region from reaching its growth potential. On the health front, it has debilitated the region's response to the COVID-19 pandemic. And it also hinders foresight and planning because forecasts veer far from what actually happens. The benefits of a good data ecosystem are manifold, and governments in the region should embrace an evidence-based approach to policymaking (Arezki and others 2020; Islam and Lederman 2020).

Upgrading data ecosystems is likely to improve forecasts. In particular, the overall data ecosystem is important, not just those elements related to forecasting. Transparency of information builds trust and can lessen political upheaval and conflict, both of which affect the accuracy of forecasts. More important, improvements in the data ecosystem can reduce forecast optimism. There is evidence that overly optimistic forecasts result in economic contractions due to the buildup of public debt (Beaudry and Willem 2022). Optimism and overconfidence may be more prevalent in the absence of good quality data. Evidence of this has been seen in the health systems in the MENA region, which judged themselves better prepared to deal with a health crisis than they turned out to be (Gatti and others 2021).

Forecasters in the MENA region face the substantial challenge of volatile growth. Commodity price shocks and the presence of conflict contribute to volatility, which makes it harder to forecast growth in the region. Conflict particularly can destroy data systems. Political influence may also play a prominent role in hampering forecasts. Local forecasters are far less accurate than regional and international forecasts. Local forecasters may have access to more information, but they are also susceptible to influence. The analysis here finds that even after accounting for growth volatility, commodity shocks, conflict, and political institutions, data transparency is a significant determinant of the accuracy of growth forecasts.

Besides improving the broad data ecosystem, governments in the region should also consider specific steps that could improve forecasts. World Bank country economists across the MENA region report several challenges they face in forecasting growth. In some cases, data were scarce. In other cases, data were available but important subcomponents were missing. Even when high frequency data were accessible, information for that last important quarter was missing, which hampered forecasts. And at times, there would be data reporting stoppages for no apparent reason. Country economists across the MENA region have made the following recommendations to improve growth forecasts. First, increasing the frequency and quality of national accounts data can improve forecasts considerably. Second, consistent data are important to forecasts, and consistency can be achieved through better communication between ministries and national statistical offices. Third, technical assistance to governments can help improve the quality of national statistics, which in turn will improve the information that is fed into forecast models. Fourth, for countries in conflict, alternative data sources such as information from satellites (for example, night lights data) are crucial and, in this regard, the World Bank can play an important role in facilitating access to such data.

CHAPTER III. REALITY CHECK: UNCERTAINTY AROUND 2022 GROWTH FORECASTS

Chapter III Takeaways

- *The 2022 growth forecasts for MENA economies have been fluid since previously published October 2021 and January 2022 forecasts, indicating improving growth expectations for oil exporting economies and worsening expectations for oil importers.*
- *Changes in growth forecasts are common due to the advent of new information on economic performance and global trends. Like the outbreak of the pandemic in early 2020, the explosion of the war in Ukraine is yet another vivid example of unexpected shocks that shape expectations about growth prospects, but with important differences in the magnitude of the bounds of uncertainty and the direction of the changes in the forecasts.*
- *Substantial uncertainty remains around the latest forecasts, with bounds of uncertainty varying across countries depending on their characteristics including the extent of data availability and transparency.*

Chapter I discussed the World Bank's latest growth forecasts for 2022 across the MENA region. Chapter II highlighted challenges in forecasting growth. Econometric techniques were employed to link growth forecast uncertainty with data transparency, growth volatility, conflict, commodity shocks and other global trends. This chapter concludes by exploring the implications of the findings of the determinants of forecast uncertainty discussed in chapter II on the forecasts presented in chapter I.

Chapter III proceeds in stages. First, is a comparison of the growth forecasts for 2022 published in October 2021, January 2022, and the most recent vintage of forecasts discussed in chapter I (April 2022). Next, the chapter illustrates how uncertainty affects the forecasts, by putting the January and April 2022 forecasts for the year 2022 in the context of the uncertainty that reigned in past years, and by focusing on three different scenarios of uncertainty around each forecast. More specifically, the three scenarios of uncertainty around the current forecasts correspond to country-specific uncertainty that was present in 2019 (a relatively tranquil year), the extreme uncertainty that reigned in 2020 due to the unexpected outbreak of the pandemic, and the typical (or median) uncertainty for each country during the past decade or so. The chapter concludes by emphasizing that the uncertainty surrounding the year 2022 will probably be less severe than in 2020, yet with a pronounced systematic difference between oil exporters and oil importers.

III.1. Fluid 2022 growth forecasts since October 2021

Historical evidence on forecasting suggests that more recent vintages of forecasts end up being more accurate. This is generally true, because as time goes by forecasters have more recent information available about the prospects for future growth. However, in times of uncertainty, unexpected economic shocks materialize that the forecasters could not have incorporated in any of the forecast update iterations. A prime example was the outbreak of the global pandemic in 2020. The pandemic swept through the world in 2020 and could not have been captured in the January forecasts of that year. Another example is the war in Ukraine that broke out in February 2022. Thus, there is value in comparing the

evolution of World Bank forecasts now with the last two published forecasts, namely the October 2021, January 2022, and April 2022 forecast vintages (see table III.1) as discussed in chapter I.

Table III.1 contains the three vintages for the 2022 growth forecasts for MENA countries in the first three columns. The last two columns of the table show the differences between the January 2022 and the October 2021 vintage, and the April 2022 and the January 2022 vintage, respectively. Improvements are expected between the October 2021 and January 2022 vintages because global economic conditions were improving prior to the full force outbreak of the Omicron variant and international capital market conditions were accommodative (see Chapter I). In the January 2022, World Bank economists either kept their growth forecasts unchanged (in case of most oil exporters) or adjusted upward their 2022 growth forecasts (except for Djibouti[24]) in comparison to the October 2021 vintage of growth forecasts.

Table III.1. Comparison of Vintages of 2022 Real GDP Growth Forecasts since October 2021

	2022 Real GDP Growth Forecasts Percent				
	October 2021 Vintage	January 2022 Vintage	April 2022 Vintage	January 2022 GEP minus October 2021	April 2022 minus January 2022
GCC					
Qatar	4.8	4.8	4.9	0.0	0.1
United Arab Emirates	4.6	4.6	4.7	0.0	0.1
Kuwait	5.3	5.3	5.7	0.0	0.4
Saudi Arabia	4.9	4.9	7.0	0.0	2.1
Bahrain	3.2	3.2	3.5	0.0	0.3
Oman	3.4	3.4	5.6	0.0	2.2
Developing Oil Exporters					
Iran	2.4	2.4	3.7	0.0	1.3
Algeria	1.8	2.0	3.2	0.2	1.2
Iraq	7.3	7.3	8.9	0.0	1.6
Developing Oil Importers					
Egypt	5.0	5.5	5.5	0.5	0.0
Tunisia	3.5	3.5	3.0	0.0	-0.5
Jordan	2.2	2.3	2.1	0.1	-0.2
Morocco	3.2	3.2	1.1	0.0	-2.1
West Bank & Gaza	3.3	3.4	3.7	0.1	0.3
Djibouti	5.6	4.3	3.3	-1.3	-1.0

Source: Authors' calculations from World Bank Global Economic Prospects January 2022 Report (WB), Macro and Poverty Outlook October 2021 and April 2022 Database.

The April 2022 growth forecasts are likely affected by the unexpected shock of the onset of the war in Ukraine in comparison to the January 2022 forecasts. The pattern of the adjustment is clear: the 2022 real GDP growth rate for oil exporters have been adjusted upward across the board due to elevated oil prices and stronger oil output. Furthermore, growth would accelerate as higher hydrocarbon revenue permits increased public investment, including in the energy sector. In contrast, growth rates for oil importers have been adjusted downward due to expected rising importing bills for energy and food commodities. West Bank and Gaza is the only oil importing country that has been adjusted upward in

24 Djibouti is facing rising debt vulnerability and is affected by conflict in neighboring Ethiopia.

the April 2022 growth forecast in comparison to the January 2022 vintage. There is no change in 2022 growth forecasts between the January vintage and the April forecast for Egypt. Note that the GDP growth forecast for Egypt is for its fiscal year from July 2021 to end-June 2022. All other countries in the table report calendar year growth. Thus, the full extent of the anticipated effects for the 2022 calendar year are not incorporated in the forecasts for Egypt to the same extent as for the other countries, since most of the fiscal year was already baked in by the end of February. However, the downside risks remain—Egypt is a net importer of both fuel and food commodities, a destination for Eastern European tourists, and recently implemented a rise in key monetary policy rates by 100 basis points in late March 2022. Thus, Egypt's growth prospects for the 2022 calendar year may paint a different picture than that of other oil importers.

The following subsection discusses how the vintages of the January 2022 forecasts, and the April 2022 forecasts can be interpreted with caution in the context of economic, particularly global, uncertainty.

III.2. Bounds of uncertainty around growth forecasts for 2022

This wide range of possibilities speaks to the degree of uncertainty in forecasting. Forecasters do the best they can with the best information available when the forecasts were being produced. A key limitation in the MENA region is the lack of publicly-available high-frequency data, as discussed in chapter II. It is worth noting that the analysis herein excludes some conflict economies in the MENA region as they lack recent growth forecasts altogether.

As a first preliminary step, the analysis compares the uncertainty that was present in 2019 with that of 2020.

Following the econometric model presented in chapter II table X4, the model's estimates of the band of uncertainty and biases for each country in 2019 are presented in figure III.1 Panel A. The solid vertical columns represent the real GDP growth forecasts for 2019 that were published in January of that year.[25] The intervals around the solid vertical columns are based on the predicted absolute forecast errors.[26] The upper bound of uncertainty is constructed as the addition of the predicted absolute forecast error to the 2019 January growth forecast. The lower bound is the subtraction of the predicted absolute forecast error from the 2019 GEP January growth forecast. The diamond represents the adjusted growth rate after the subtraction of the predicted forecast error from the January 2019 forecasted growth. The short horizontal bar in the figure marks the realized GDP growth rate for year 2019, as recorded in the World Bank's *Global Economic Prospects* report of January 2021.

For almost all countries[27], the January growth forecasts (solid vertical columns) appear to be higher than the realized growth (horizontal bar), which imply optimistic growth forecasts across the board. The adjusted forecasts of the GDP growth based on the predicted forecast errors (the diamonds) are adjusted downward relative to the January forecasts and are closer to the realized growth for all the MENA countries in the sample.[28]

25 For Egypt the solid vertical column shows the June 2018 GEP forecast as the fiscal year in Egypt begins in July and ends in June.

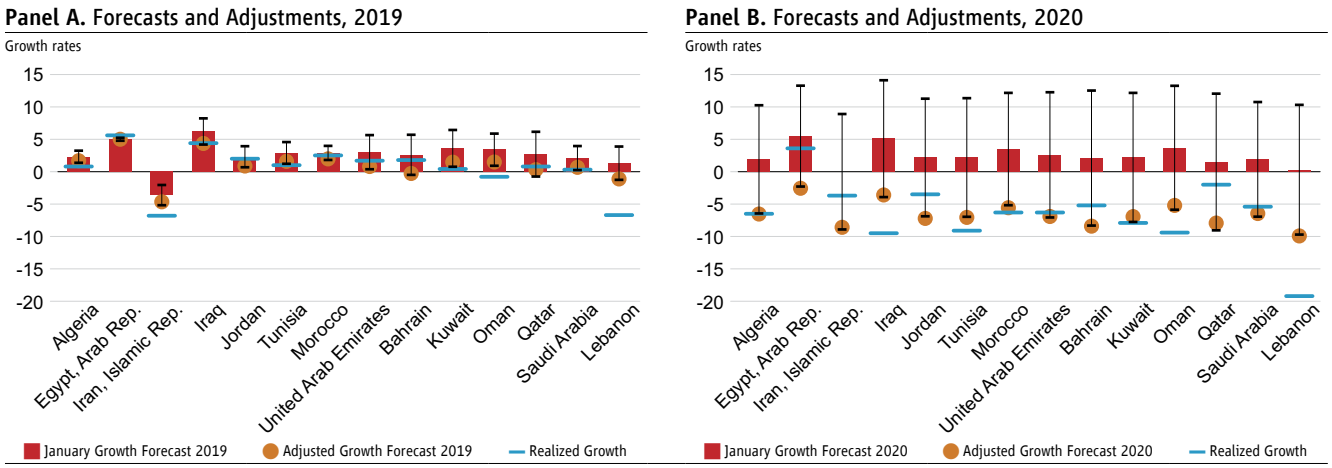
26 This is the predicted value of the regressions in chapter 2 with absolute forecast errors as the dependent variable.

27 Egypt is the only country in 2019, whose realized growth for year 2019 is higher than GEP January forecast. The gap is small though, by 0.6 percentage points.

28 The findings are quite similar whether the MENA regional dummy variable is excluded from the econometric estimations of forecast errors. The implication is that there are unobservable MENA-specific variables that make it hard to forecast growth in the MENA region, but these do not substantially affect the forecasts with the observable variables explaining much of the variation in the forecast errors. The magnitude of the coefficient of the MENA region dummy is 0.39 for the Forecast Error Regressions and 0.25 for Absolute Forecast Error regressions.

The same approach is repeated for the year 2020. In this scenario, in-sample forecast error predictions, and both forecasted and realized growth rates, are compared for the year 2020. The findings are presented in figure III.1 Panel B. For all countries, the January growth forecast was much higher than the realized growth, indicating overly optimistic growth forecasts across the board. Compared to Panel A, the forecast intervals in Panel B are much larger, reflecting the large and unexpected global shock of the pandemic in 2020. The realized growth rates for 9 of 14 economies still falls within the bounds of uncertainty indicated by the lower and upper bounds. Moreover, the adjusted forecast growth based on the predicted forecast errors for 2020 (the diamonds) are closer to the realized growth, compared to the 2020 January forecasts. Although the bands of uncertainty and the error corrections are larger in 2020 than in 2019, both sets of estimates suggest that accounting for several factors increases the accuracy and reduces the optimism of growth forecasts.

Figure III.1. Forecasts and Adjustments for GDP Growth in 2020



Source: Authors' calculations from World Bank Global Economic Prospects, January 2019 and January 2020.
Note: Adjusted growth forecasts for most countries are obtained by the subtraction of the predicted forecast errors from the January GEP GDP growth forecasts. For Egypt, June GEP growth forecasts are used because of fiscal year considerations (July to June) – it is the only country in the MENA region that provides GDP for the fiscal year instead of the calendar year. The intervals are calculated using in-sample predicted absolute forecast errors for 2019 (panel A) and 2020 (panel B), respectively. Predicted absolute forecast errors for 2019 are added and subtracted from January GEP 2019 growth forecast to obtain the upper and lower bounds of the interval for 2019 (panel A). This is repeated for the year 2020 (panel B). The underlying regressions for the predicted forecast error are the same as in chapter II with the inclusion of a MENA region dummy variable. Findings do not change with the inclusion or exclusion of the MENA regional dummy variable. The R-square of the regression ranges from 0.49 to 0.53. Roughly about 50 percent of variation in the forecast errors are explained by the observable covariates. The Countries excluded from these figures are also excluded from regressions analysis. West Bank and Gaza does not have data on export commodity shocks. Real GDP per capita data (constant 2010 US$) is unavailable for Djibouti. January GEP growth forecasts for 2019 and 2020 are missing for Libya, Syria and Yemen.

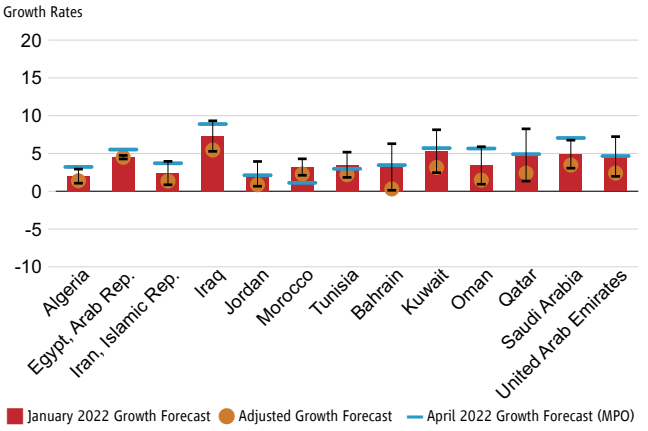
The breakout of the Ukraine crisis pushes the region into another year of uncertainty stemming from unanticipated events. To demonstrate different scenarios of plausible economic growth rates for the year 2022, the discussion considers three different scenarios for adjusting the January 2022 growth forecasts. The first scenario assumes 2022 will play out as 2019, characterized by low uncertainty. The adjustments to growth forecasts in this scenario are based on the 2019 predicted forecast errors and absolute forecast errors. The results from applying this set of forecast uncertainty are shown in figure III.2 Panel A. The second scenario assumes 2022 will play out as in 2020, the year of the pandemic-induced extreme uncertainty (hopefully an unlikely scenario for 2022). The results from applying this set of forecast errors are shown in figure III.2 Panel B.

The third scenario is presented in figure III.2 Panel C. This scenario depicts the forecast uncertainty bounds under the assumption that 2022 will turn out to be a typical (median) year drawn from data covering last 5 to 11 years (depending on each country's data availability on forecasts from the past). In this scenario, the typical or median of historical forecast errors is used to make the adjustments, instead of using predictions of forecast uncertainty from the regression

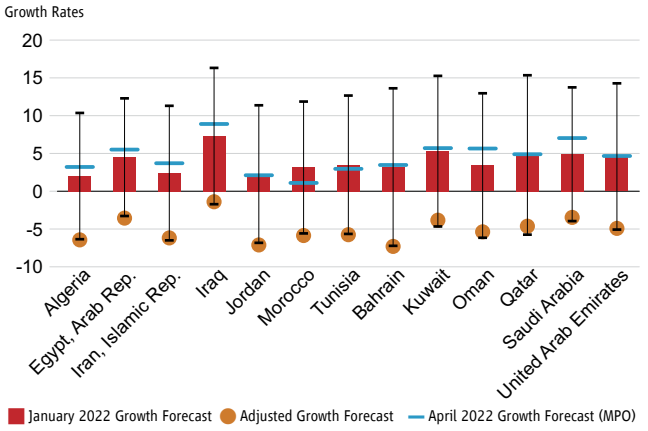
model.[29] The adjustments for Panel C are as follows. The median of forecast errors between 2010–2020 are obtained for each country. The adjusted growth is the January 2022 forecast error minus the median forecast error. The median of the absolute forecast errors between 2010 and 2020 are added to and subtracted from the January growth forecasts to create the upper and lower bounds.[30]

Figure III.2. Forecasts and Adjustments for GDP Growth in 2022

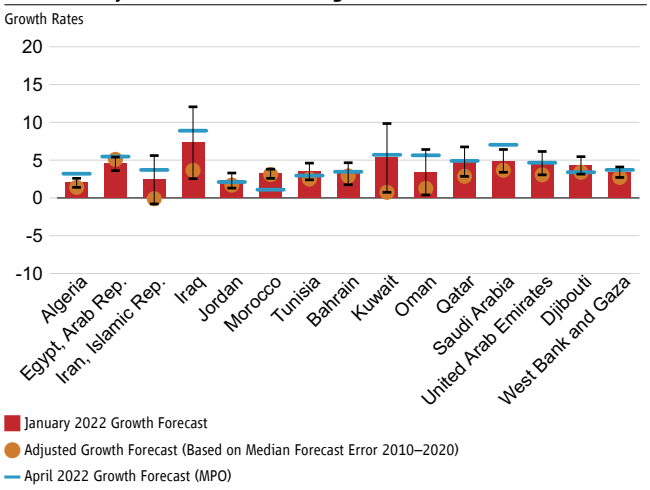
Panel A. Adjustments to 2022 growth forecasts using 2019 Predictions



Panel B. Adjustments to 2022 growth forecasts using 2020 Predictions



Panel C. Adjustments to 2022 using Historical Forecast Errors



Source: Authors' calculations from World Bank Global Economic Prospects Report (WB) and Macro Poverty Outlook April 2022 Database.
Notes: January 2022 growth forecasts are from the January 2022 GEP, except for Egypt where the June 2021 GEP forecasts for 2022 are used because of fiscal year considerations (July to June). Egypt is the only country in the MENA region that provides GDP for the fiscal year instead of the calendar year. Adjusted growth forecasts are obtained by the addition of the predicted forecast errors to the January 2022 GEP GDP growth forecasts. In panel A, 2019 predicted forecast errors are applied. In panel B, 2020 predicted forecast errors are applied. In Panel C, the median forecast errors for 2010–2020 are applied. The intervals are calculated using in-sample predicted absolute forecast errors for 2019 (panel A) and 2020 (panel B) and the median absolute forecast error for 2010–2020. Predicted absolute forecast errors are added and subtracted from January GEP 2022 growth forecast to obtain the upper and lower bounds of the interval. The underlying regressions for the predicted forecast error are the same as in chapter II with the inclusion of a MENA region dummy variable. Findings do not change with the inclusion or exclusion of the MENA regional dummy variable. Countries excluded from these figures are also excluded from regressions analysis. West Bank and Gaza does not have data on export commodity shocks. Real GDP per capita data (constant 2010 US$) is unavailable for Djibouti. January GEP growth forecasts for 2019 and 2020 are missing for Libya, Syria and Yemen. The sample includes an unbalanced panel of countries. The number of observations in 2010–2020 range per country: 11 for Algeria, Egypt, Iran, Morocco and Tunisia; 10 for Iraq; 6 for Djibouti, Oman, West Bank and Gaza and Saudi Arabia; And 4 for the UAE, Bahrain, Kuwait and Qatar. Lebanon, Libya, Syria and Yemen and excluded from this chart due to lack of 2022 growth forecasts.

29 The adjustment using the median (or any) historical forecast errors has the advantage that it is not constrained by the data requirements of the regression model that includes many covariates. Only information on the magnitude and direction of forecast errors is used. On the other hand, it is difficult to understand what is behind a country's unconditional forecast error from the past.

30 Results from a similar exercise utilizing the 75th percentile of forecast errors between 2010–2020 are available upon request. Findings are closer to the 2020 scenario in panel B.

The bounds of uncertainty and optimism of the growth forecasts for 2022 will largely depend on whether 2022 turns out to be a tranquil year or an atypical one with a large, unexpected shock. The comparison between Panel A and Panel B unsurprisingly indicates that the 2022 growth forecast intervals for the atypical 2020 year are much larger than those of the tranquil 2019. Furthermore, the adjusted growth forecasts for 2022 based on predicted forecast errors, are far more pessimistic in the abnormal year scenario than in the tranquil year. In the scenario of the abnormal year presented in Panel B of figure III.2, January growth forecasts appear in positive territory, clouded with a large forecast interval, that flips into negative territory once the growth rates are adjusted by the predicted forecast errors. Panel C provides the scenario where 2022 would play out as a typical year during 2010–2020. In this case, the median adjusted growth is closer to but more upwardly biased than scenario A, but far less than scenario B.[31]

The current growth forecasts discussed in chapter I are presented in all three panels of figure III.2. They are largely within the intervals of uncertainty. Comparisons between the April growth forecast and the January 2022 growth forecasts provide an early indication of how the Ukraine war is expected to shape the growth prospects of MENA. The effects of the Ukraine war are forecasted to have heterogenous effects across the region. For oil exporting countries in the region, the current growth forecasts are higher than the January forecasts. For oil importers, the growth forecasts have been revised downwards modestly in the current forecasts relative to the January forecasts.

In conclusion, there is much uncertainty in growth forecasting, especially in abnormal years, and historical errors in forecasting may not be able to provide precise indications of adjustments for current and future forecasts. The advent of previously unexpected events with large economic consequences will undoubtedly continue to shape economic expectations about the future. Forecasters, no matter their talents or institutional affiliations, cannot possibly predict the unpredictable. However, systematic errors historically observed in forecasting growth in the MENA region point to the importance of making economic data publicly available in real time. The bounds of the adjusted growth rates presented in the chapter, are narrower with better data transparency (holding everything else constant). The perennial challenges in the region that contribute to volatility will always create a challenging environment for forecasters. But access to reliable data can be a key step that improves forecasts amidst ongoing challenges. Simply put, forecasts based on reliable and timely information tend to be more accurate and less optimistic. This is a challenge that can be overcome with limited fiscal costs. It is worth the effort.

31 The growth adjustment based on the 75th percentile for forecast errors between 2010–2020 was also considered. The 75th percentile adjusted growth shows a more downward adjustment than scenario A (2019) and is somewhat closer to Scenario B.

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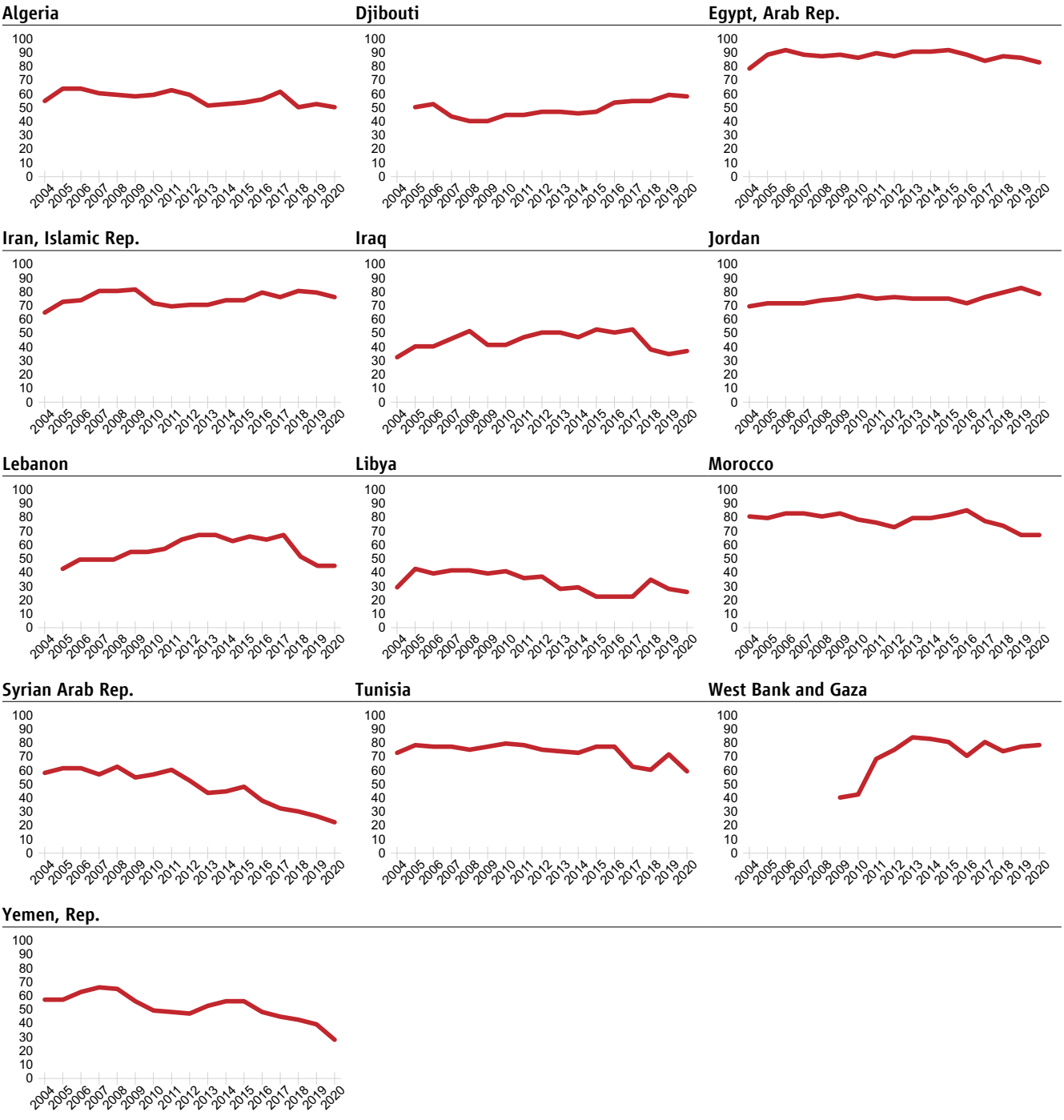
Appendices

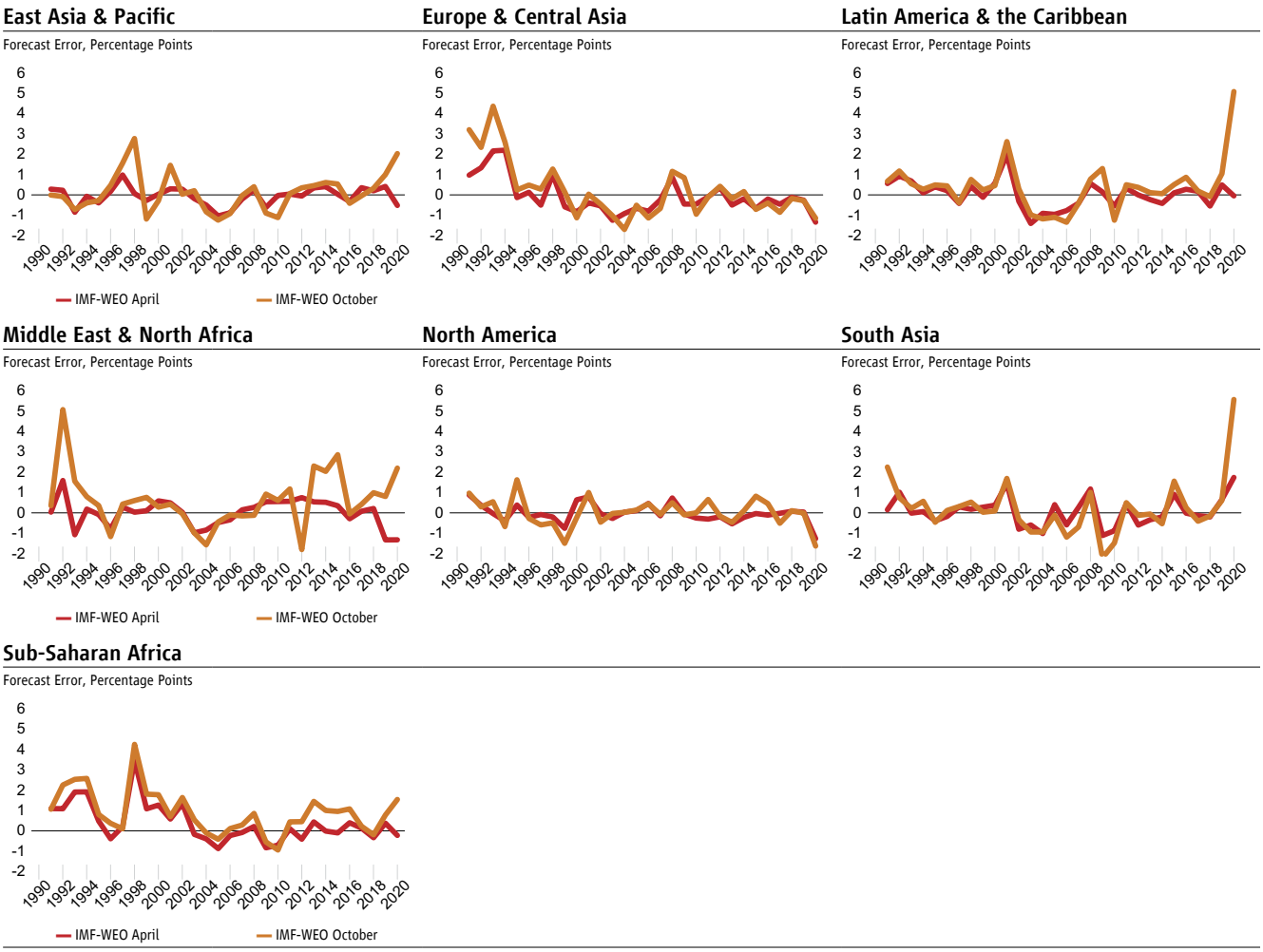
Appendix II.1. Definitions, Regression Tables and Figures

Figure X1. Statistical Capacity Index over Time by MENA Country



Source: World Bank, *Statistical Capacity Index*.

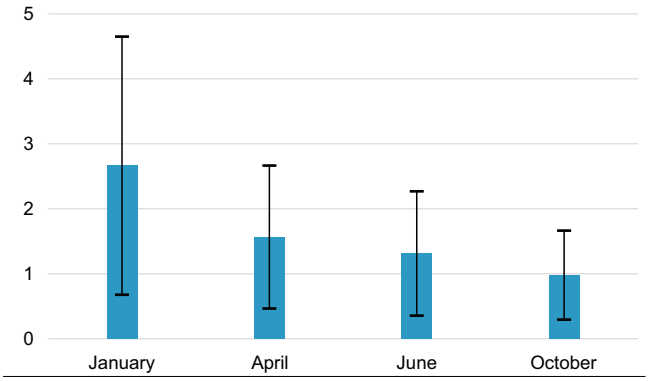
Figure X2. Long Run Regional Forecast Errors



Source: Authors' calculations based on the International Monetary Fund's *World Economic Outlook*.

Figure X3. Absolute Forecast Errors by Month

Mean and Standard Deviation, Percentage Points

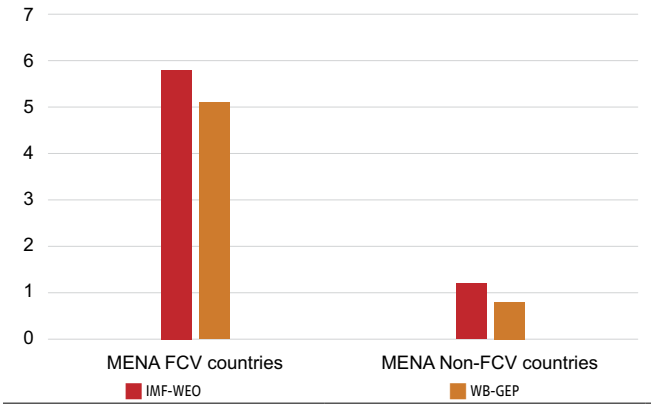


Source: Authors' calculations based on the International Monetary Fund's *World Economic Outlook*.
Notes: Forecast errors from the January, April, June and October Forecasts, from 2010 to 2020. The 125-country sample is defined by the World Bank's *Global Economic Prospects*. Upper (lower) bound is defined as half a standard deviation above (below) the mean.

Figure X4. January Growth Forecast Errors for MENA's FCV Countries and Non-FCV Countries

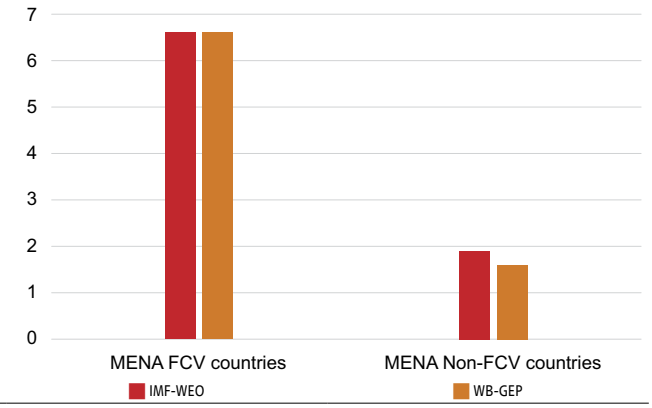
Panel A. Optimism: Forecast Error (2010–2019)

Percentage Points



Panel B. Inaccuracy: Absolute Forecast Error (2010–2019)

Percentage Points



Source: Authors' calculations based on the International Monetary Fund's *World Economic Outlook* and the World Bank's *Global Economic Prospects*.

Table X1. Determinants of Absolute Growth Forecast Errors

Y = Absolute Value of Forecast Errors	Base Model			With MENA Dummy & Interaction with SCI			With Growth Volatility		
	WB-GEP (2010–20)	IMF-WEO (2010–20)	Consensus/ Focus Economics (2015–20)	WB-GEP (2010–20)	IMF-WEO (2010–20)	Consensus/ Focus Economics (2015–20)	WB-GEP (2010–20)	IMF-WEO (2010–20)	Consensus/ Focus Economics (2015–20)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Log of SCI (lagged)	-2.348*	-2.580**	-2.550	-0.962*	-1.231**	0.550	-1.493**	-1.697***	-2.447
	(1.277)	(1.148)	(1.829)	(0.577)	(0.526)	(0.823)	(0.617)	(0.555)	(1.741)
MENA region dummy variable				54.242*	51.995**	38.411***			
				(30.404)	(25.373)	(13.321)			
MENA * log of SCI (lagged)				-12.691*	-12.127**	-8.790***			
				(7.138)	(5.945)	(3.097)			
Growth Volatility (lagged)							0.396***	0.409***	0.284***
							(0.144)	(0.114)	(0.079)
Log of GDP per capita (lagged)	0.318	0.310	-0.166	0.142	0.133	-0.160	0.142	0.127	-0.237
	(0.206)	(0.207)	(0.434)	(0.123)	(0.139)	(0.318)	(0.099)	(0.113)	(0.358)
Absolute value of export commodity prices	2.222	4.793	9.420	-2.470	0.210	2.250	-1.156	1.301	6.948
	(4.650)	(5.286)	(9.931)	(6.235)	(5.335)	(8.734)	(4.049)	(4.833)	(10.376)
Internal Conflicts Shocks dummy	0.458	0.295	0.617	0.095	-0.069	0.229	0.082	-0.094	0.156
	(0.336)	(0.355)	(0.419)	(0.203)	(0.250)	(0.366)	(0.198)	(0.224)	(0.395)
Log of Total Population (lagged)	-0.171***	-0.149**	-0.244**	-0.200***	-0.179***	-0.198*	-0.111*	-0.087	-0.130
	(0.059)	(0.067)	(0.109)	(0.051)	(0.061)	(0.099)	(0.056)	(0.060)	(0.098)
Boom Dummy = 1 if Above Median Growth (lagged)	-0.183	-0.329*	-0.749***	-0.238	-0.378**	-0.655**	-0.179	-0.325*	-0.630**
	(0.181)	(0.168)	(0.262)	(0.186)	(0.161)	(0.249)	(0.197)	(0.171)	(0.241)
Constant	11.943***	13.169***	18.201**	8.142***	9.541***	3.985	7.712***	8.795***	15.722**
	(3.973)	(3.796)	(8.428)	(2.343)	(2.529)	(2.801)	(2.114)	(2.131)	(7.123)
Number of observations	1,242	1,242	326	1,242	1,242	326	1,242	1,242	326
R2	0.341	0.313	0.481	0.385	0.355	0.519	0.412	0.390	0.495
Adjusted R2	0.333	0.304	0.463	0.376	0.346	0.499	0.403	0.381	0.476
Number of Countries	*126*	*126*	*56*	*126*	*126*	*56*	*126*	*126*	*56*

Source: Authors' calculations based on the Consensus/Focus Economics, the International Monetary Fund's *World Economic Outlook* and the World Bank's *Global Economic Prospects*.
Notes: Statistical significance level 0.01 - ***; 0.05 - **; 0.1 - *. Robust standard errors clustered at the country level. Regressions include year fixed effects. The reference year is 2015. Columns (1), (4) and (7) 'samples' refer to World Bank GEP January Forecasts sample from 2010 to 2020, covering 126 countries. This common sample is used to define the Columns (2), (5) and (8) samples, for IMF WEO January Forecasts from 2010 to 2020. Columns (3), (6) and (9) samples refer to Consensus January Forecasts and Focus Economics January Forecasts for the MENA Region, from 2015 to 2020, covering 56 countries, and are not forced to be a common sample with WB-GEP and IMF-WEO. All regressions include year fixed effects. Log of SCI (lagged) is the lagged log of Statistical Capacity Indicator, MENA Region dummy is a dummy equal to 1 when the country is a MENA country, MENA*Log Lagged SCI is the interaction between the MENA Region Dummy and the Lagged Log of SCI, Growth Volatility (Lagged) is the lagged rolling 10-year standard deviation of realized growth rates, Log of GDP per capita (lagged) is the lagged log of GDP per capita in constant 2010 US dollars, Absolute value of export commodity price shocks is a variable capturing both exposure to commodity exports and the fluctuations of the international prices, Internal Conflicts is a dummy variable for internal conflict country-year pairs—as defined using the UCDP-Prio Dataset, Log of Total Population (lagged) and Boom Dummy if Above Median Growth (lagged) is a lagged dummy variable for economic booms if growth is greater than or equal to the previous 10-year median growth.

Table X2. Determinants of Forecast Errors

Y = Forecast Errors (Forecast Growth minus Realized Growth)	Base Model			With MENA Dummy & Interaction with SCI			With Growth Volatility		
	WB-GEP (2010–20)	IMF-WEO (2010–20)	Consensus/ Focus Economics (2015–20)	WB-GEP (2010–20)	IMF-WEO (2010–20)	Consensus/ Focus Economics (2015–20)	WB-GEP (2010–20)	IMF-WEO (2010–20)	Consensus/ Focus Economics (2015–20)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Log of SCI (lagged)	-3.310***	-3.410***	-2.672	-1.857***	-1.891***	1.023	-2.425***	-2.529***	-2.486
	(1.259)	(1.181)	(2.035)	(0.680)	(0.671)	(0.860)	(0.708)	(0.698)	(1.933)
MENA region dummy variable				49.219	50.095*	41.722***			
				(31.500)	(25.459)	(14.359)			
MENA * log of SCI				-11.414	-11.551*	-9.582***			
				(7.380)	(5.962)	(3.291)			
Growth Volatility (lagged)							0.357**	0.356**	0.216*
							(0.159)	(0.139)	(0.113)
Log of GDP per capita (lagged)	0.346*	0.324	-0.362	0.137	0.097	-0.419	0.164	0.144	-0.431
	(0.201)	(0.201)	(0.465)	(0.130)	(0.137)	(0.350)	(0.120)	(0.125)	(0.434)
Export Commodity Price Shocks	5.412	2.734	-6.220	7.565*	4.980	-2.715	4.934	2.258	-5.597
	(3.444)	(4.481)	(9.256)	(3.928)	(4.025)	(9.453)	(3.363)	(4.982)	(9.537)
Internal Conflicts Shocks dummy	0.320	0.229	0.347	-0.069	-0.194	-0.147	-0.035	-0.124	-0.030
	(0.342)	(0.364)	(0.549)	(0.241)	(0.263)	(0.470)	(0.248)	(0.263)	(0.488)
Log of Total Population (lagged)	-0.111**	-0.113*	-0.184	-0.151***	-0.159***	-0.133	-0.062	-0.065	-0.097
	(0.050)	(0.060)	(0.120)	(0.047)	(0.059)	(0.112)	(0.059)	(0.062)	(0.105)
Boom Dummy = 1 if Above Median Growth (lagged)	-0.198	-0.526***	-0.671*	-0.229	-0.551***	-0.570	-0.187	-0.515***	-0.578
	(0.207)	(0.194)	(0.378)	(0.211)	(0.187)	(0.359)	(0.213)	(0.191)	(0.350)
Constant	14.230***	15.810***	18.889*	10.464***	11.991***	2.431	10.078***	11.676***	16.613*
	(3.912)	(3.770)	(10.188)	(2.493)	(2.597)	(3.569)	(2.433)	(2.531)	(8.707)
Number of observations	1,242	1,242	326	1,242	1,242	326	1,242	1,242	326
R2	0.381	0.359	0.485	0.412	0.393	0.522	0.426	0.403	0.492
Adjusted R2	0.373	0.351	0.467	0.403	0.384	0.502	0.418	0.395	0.473
Number of Countries	*126*	*126*	*56*	*126*	*126*	*56*	*126*	*126*	*56*

Source: Authors' calculations based on the Consensus/Focus Economics, the International Monetary Fund's *World Economic Outlook* and the World Bank's *Global Economic Prospects*.
Notes: Statistical significance level 0.01 - ***; 0.05 - **; 0.1 - *. Robust standard errors clustered at the country level. Regressions include year fixed effects. The reference year is 2015. Columns (1), (4) and (7) samples' refer to World Bank GEP January Forecasts sample from 2010 to 2020, covering 126 countries. This common sample is used to define the Columns (2), (5) and (8) samples, for IMF WEO January Forecasts from 2010 to 2020. Columns (3), (6) and (9) samples refer to Consensus January Forecasts and Focus Economics January Forecasts for the MENA Region, from 2015 to 2020, covering 56 countries, and are not forced to be a common sample with WB-GEP and IMF-WEO. All regressions include year fixed effects. Log of SCI (lagged) is the lagged log of Statistical Capacity Indicator (WB), MENA Region dummy is a dummy equal to 1 when the country is a MENA country, MENA*Log Lagged SCI is the interaction between the MENA Region Dummy and the Lagged Log of SCI, Growth Volatility (Lagged) is the lagged rolling 10-year standard deviation of realized growth rates, Log of GDP per capita (lagged) is the lagged log of GDP per capita in constant 2010 US dollars, Absolute value of export commodity price shocks is a variable capturing both exposure to commodity exports and the fluctuations of the international prices, Internal Conflicts is a dummy variable for internal conflict country-year pairs—as defined using the UCDP-Prio Dataset, Log of Total Population (lagged) and Boom Dummy if Above Median Growth (lagged) is a lagged dummy variable for economic booms if growth is greater than or equal to previous 10-year median growth.

Table X3. SCI Sub-Indicators as Regressors for Forecast Errors

Y = Outcome Variable	Absolute Value of Forecast Errors	Forecast Errors
	WB-GEP (2010–2020)	
	(1)	(2)
Log of SCI: GDP Direct (lagged)	-0.461	-0.380
	(0.303)	(0.328)
Log of SCI: GDP Indirect (lagged)	-0.050	-0.266
	(0.241)	(0.284)
Log of SCI: Other Data Ecosystem Other (lagged)	-1.104*	-2.026***
	(0.647)	(0.744)
Growth Volatility (lagged)	0.396***	0.354**
	(0.144)	(0.160)
Log of GDP per capita (lagged)	0.169	0.163
	(0.119)	(0.134)
Absolute value of export commodity prices	-1.355	
	(4.003)	
Export Commodity Price Shocks		4.737
		(3.294)
Internal Conflicts Shocks dummy	0.076	-0.058
	(0.197)	(0.248)
Log of Total Population (lagged)	-0.097*	-0.053
	(0.056)	(0.058)
Boom Dummy = 1 if Above Median Growth (lagged)	-0.187	-0.181
	(0.198)	(0.216)
Constant	0.326	-1.284
	(1.864)	(2.001)
Number of observations	1,240	1,240
R2	0.414	0.427
Adjusted R2	0.404	0.418
Number of Countries	*126*	

Source: Authors' calculations based on the World Bank's *Global Economic Prospects* (GEP).
Notes: Statistical significance level 0.01 - ***; 0.05 - **; 0.1 - *. Robust standard errors clustered at the country level. Regressions include year fixed effects, and the reference year is 2015. The WB-GEP 2010–2020 sample is used for the absolute growth forecast errors and forecast errors. GDP Direct refers to SCI Sub-Indicators that directly capture quality and periodicity of GDP numbers, capturing production or capacity utilization (real side of the economy. GDP Indirect refers to variables that have an indirect bearing on calculation of GDP numbers and are therefore related to the framework of the economy. Other Data Ecosystem refers to general indicators of the data ecosystem. All regressions include year fixed effects. Growth Volatility (Lagged) is the lagged rolling 10-year standard deviation of realized growth rates, Log of GDP per capita (lagged) is the lagged log of GDP per capita in constant 2010 US dollars, Absolute value of export commodity price shocks is a variable capturing both exposure to commodity exports and the fluctuations of the international prices, Internal Conflicts is a dummy variable for internal conflict country-year pairs—as defined using the UCDP-Prio Dataset, Log of Total Population (lagged) and Boom Dummy if Above Median Growth (lagged) is a lagged dummy variable for economic booms if growth is greater than or equal to the previous 10-year median growth.

Table X4. SPI and Growth Forecast Errors

Y = Outcome Variable	Base Model		With Growth Volatility	
	Forecast Error	Absolute Forecast Error	Forecast Error	Absolute Forecast Error
	WB-GEP (2016–2019)			
	(1)	(2)	(3)	(4)
Log of SPI (lagged)	-2.106*	-0.929	-2.082*	-0.878
	(1.090)	(1.142)	(1.135)	(1.160)
Growth Volatility (lagged)			0.020	0.123
			(0.107)	(0.084)
Log of GDP per capita (lagged)	0.542***	0.372*	0.540***	0.383**
	(0.165)	(0.190)	(0.169)	(0.182)
Export Commodity Price Shocks	11.103*		11.110*	
	(5.854)		(5.839)	
Absolute value of export commodity prices		-2.166		-4.070
		(8.255)		(7.649)
Internal Conflicts Shocks dummy	0.146	0.073	0.138	0.038
	(0.346)	(0.292)	(0.353)	(0.293)
Log of Total Population (lagged)	-0.334***	-0.439***	-0.332***	-0.421***
	(0.099)	(0.089)	(0.103)	(0.092)
Boom Dummy =1 if Above Median Growth (lagged)	-0.184	-0.231	-0.183	-0.230
	(0.449)	(0.420)	(0.447)	(0.421)
Constant	9.340**	9.347**	9.166**	8.422**
	(3.720)	(3.683)	(4.102)	(4.032)
Number of observations	487	487	487	487
R2	0.525	0.484	0.525	0.486
Adjusted R2	0.516	0.474	0.515	0.475
Number of Countries	*124*	*124*	*124*	*124*

Source: Authors' calculations based on the World Bank's *Global Economic Prospects*.
Notes: Statistical significance level 0.01 - ***; 0.05 - **; 0.1 - *. Robust standard errors clustered at the country level. Regressions include year fixed effects. The reference year is 2017. Columns (1) through (4) samples refer to World Bank GEP January Forecasts sample from 2016–2019, covering 124 countries. The sample mostly comprises developing economies plus the GCC. This sample is determined by the availability of World Bank GEP data. All regressions include year fixed effects. Log of SPI (lagged) is the lagged log of Statistical Performance Indicator, Growth Volatility (Lagged) is the lagged rolling 10-year standard deviation of realized growth rates, Log of GDP per capita (lagged) is the lagged log of GDP per capita in constant 2010 US dollars, Absolute value of export commodity price shocks is a variable capturing both exposure to commodity exports and the fluctuations of the international prices, Internal Conflicts is a dummy variable for internal conflict country-year pairs—as defined using the UCDP-Prio Dataset, Log of Total Population (lagged) and Boom Dummy if Above Median Growth (lagged) is a lagged dummy variable for economic booms if growth is greater than or equal to the previous 10-year median growth.

Appendix II.2. Estimating the Relationship between Statistical Capacity and the Magnitude of GDP Growth Forecast Errors

The relationship between statistical capacity and the magnitude of forecast errors is explored using two models across three different samples of forecasters. The first sample is from the World Bank's *Global Economic Prospects* January Forecasts (GEP), the second sample is from the International Monetary Fund's *World Economic Outlook* January Forecasts (WEO). Both samples cover the same 126 countries from 2010 to 2020. The third sample is the Consensus/Focus Economics Forecasts, covering 56 countries from 2015 to 2020. A panel model is estimated using the absolute value of forecast error of current year forecasts as the outcome variable regressed on the lagged log of statistical capacity and other covariates as presented in equation (AII.2.1):

$$AbsFcstErr_{i,t} = \alpha + \beta_1 LogSCI_{i,t-1} + \beta_2 LogGDPpc_{i,t-1} + \beta_3 AbsLogExpPrices_{i,t} + \beta_4 InternalConflict_{i,t-1} + \beta_5 LogPop_{i,t-1} + \beta_6 Boom_{i,t-1} + \tau_t + \varepsilon_{i,t} \quad (AII.2.1)$$

where the dependent variable is the absolute value of forecast errors (*AbsFcstErr*), defined as forecasted growth minus actual growth. A negative forecast error signifies that forecasted growth was below actual growth. The main regressor is the log of lagged statistical capacity (*LogSCI*), as measured by the World Bank Statistical Capacity Indicator (SCI). Other explanatory variables include log lagged GDP per capita (*LogGDPpc*); the absolute value of log change in export commodity prices (*AbsLogExpPrices*), which captures both exposure to commodity exports and the fluctuations of the international prices); an internal conflict dummy (*InternalConflict*) which is as defined using the UCDP-Prio Dataset); lagged log of total population (*LogPop*) and lagged dummy variable for economic booms (*Boom*, a dummy variable if growth is greater than or equal to previous 10-year median growth). Finally, τ_t is the year fixed effect, and $\varepsilon_{i,t}$ is the error term. In an additional specification growth volatility, which is measured as the standard deviation of growth over the preceding 10 years, is included.[1] Many other explanatory variables—such as institutions, polity, informality, and natural disasters—were considered but, because they have smaller explanatory power, were not included to keep the model as simple as possible.

Alternatively, equation A1 is re-estimated with *simple forecast error* as the outcome variable (*FcstErr*) to analyze forecast optimism and pessimism. An additional adjustment is that the lagged log of change in export commodity prices (*LogExpPrices*) is used in equation AII.2.2 instead of its absolute value in equation A1.

$$FcstErr_{i,t} = \alpha + \beta_1 LogSCI_{i,t-1} + \beta_2 LogGDPpc_{i,t-1} + \beta_3 LogExpPrices_{i,t} + \beta_4 InternalConflict_{i,t-1} + \beta_5 LogPop_{i,t-1} + \beta_6 Boom_{i,t-1} + \tau_t + \varepsilon_{i,t} \quad (AII.2.2)$$

Across all specifications and samples, the results show a negative relationship between statistical capacity and the magnitude and sign of forecast errors.

1 Note that country fixed effects are not included in these estimations largely because the statistical capacity indicator has limited variation over time.

Appendix II.3. A Comparison of Forecaster Types

The type of forecaster may influence the magnitude of forecast errors or the optimism of forecasts. To take this into account, dummy variables are created to account for the different categorizations of forecasters.

Institutional Categorization Regression

Forecasters are divided into three categories based on the source of the forecast errors. These include the IMF (WEO dataset), the World Bank (GEP dataset) and private forecasters (Consensus/Focus Economics datasets). January GDP growth forecasts are used for the analysis across all forecaster types. Private forecasts are obtained from two sources. Forecasts for the MENA region are obtained from Focus Economics, while the private forecasts from the rest of the world are source from the Consensus Economics dataset. Equations (AII.2.1) and (AII.2.2) (Appendix II.2) are altered to include them as follows:

$$AbsFcstErr_{i,t,f} = \alpha + \beta_1 LogSCI_{i,t-1} + \beta_2 LogGDPpc_{i,t-1} + \beta_3 AbsLogExpPrices_{i,t} + \beta_4 InternalConflict_{i,t-1} + \beta_5 LogPop_{i,t-1} + \beta_6 Boom_{i,t-1} + \beta_7 IMF\_Dummy_f + \beta_8 Consensus\_Dummy_f + \tau_t + \varepsilon_{i,t} \quad (AII.3.1)$$

$$FcstErr_{i,t,f} = \alpha + \beta_1 LogSCI_{i,t-1} + \beta_2 LogGDPpc_{i,t-1} + \beta_3 LogExpPrices_{i,t} + \beta_4 InternalConflict_{i,t-1} + \beta_5 LogPop_{i,t-1} + \beta_6 Boom_{i,t-1} + \beta_7 IMF\_Dummy_f + \beta_8 ConsFocus\_Dummy_f + \tau_t + \varepsilon_{i,t} \quad (AII.3.2)$$

where i is for country; t is for year; and f is for forecaster. A dummy is created for IMF forecasts (*IMF_Dummy*) and Consensus/Focus Economics-sourced forecasts (*ConsFocus_Dummy*). World Bank-sourced forecasts are the omitted comparison category (to avoid multicollinearity).

Geographic Categorization Regression

Individual forecasters are also categorized based on their geographic proximity to the countries they are forecasting. This proximity is determined by the location of the headquarters of the forecaster. The three categories are *Local* (the headquarters country is the same as the country being forecasted), *Regional* (the headquarters country is in the same region as the country being forecasted, based on the World Bank regional categorization) and *International* (if the headquarters country and the country being forecasted are not geographically related using Local or Regional definitions). The World Bank and the IMF forecasts are classified as International. Equations AII.3.1 and AII.3.2 are altered as follows: The IMF and Consensus dummy variables are replaced by dummy variables created for regional forecasters (*Regional_Dummy*) and for the international forecasters (*Intl_Dummy*). Local forecasters is the comparison category that is excluded from the regressions.

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REALITY CHECK: FORECASTING GROWTH IN THE MIDDLE EAST AND NORTH AFRICA IN TIMES OF UNCERTAINTY

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