

MOROCCO



ECONOMIC MONITOR

The Recovery is Running Dry

Spring 2022



Morocco Economic Update

The Recovery is Running Dry

Spring 2022



Middle East and North Africa Region

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LIST OF ACRONYMS

BAM	Bank Al-Maghrib	LP	Local Projections
CAPEX	Capital expenditures	MEF	Ministry of Economy and Finance
CCDR	Country Climate and Development Report	MENA	Middle East North Africa
COVID	Coronavirus Disease	MRE	Moroccan Resident abroad
CPI	Consumer Price Index	NDM	New Development Model
FAOSTAT	Food and Agriculture Organization	NPLs	Non-Performing Loans
FDI	Foreign Direct Investment	ONEE	National Office of Electricity and Drinking Water
FEVD	Forecast Error Variance Decomposition	OPEX	Operating expenses
GFCF	Gross Fixed Capital Formation	PMV	Plan Maroc Vert
GEP	Global Economic Prospects	PNE	National Water
GoM	Government of Morocco	SVAR	Structural vector autoregressive
HCP	High Commission of Planning	WB	World Bank

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The Morocco Economic Monitor is a semi-annual report from the World Bank economic team on recent economic developments and economic policies. This report presents our current outlook for Morocco given the recent COVID-19 developments. Its coverage ranges from the macro-economy to business environment and private sector development. It is intended for a wide audience, including policy makers, business leaders, financial market participants, and the community of analysts and professionals engaged in Morocco.

The Morocco Economic Monitor is a product of the Middle East and North Africa (MENA) unit in the Macroeconomics, Trade & Investment (MTI) Global Practice in the World Bank Group. The report was prepared by Javier Diaz-Cassou (Senior Economist, MTI), Amina Iraqi (Economist, MTI), Carole Megevand (Sector Leader) and Federica Marzo (Senior Economist, POV).

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EXECUTIVE SUMMARY

The Moroccan economy staged a strong recovery in 2021. With a real GDP growth rate of 7.9 percent, Morocco outperformed regional peers and recovered the output losses undergone during the first year of the pandemic. This rebound was sustained by an extraordinary agricultural season, solid manufacturing and agro-industrial export, and the recovery of domestic demand, partly fueled by a successful vaccination campaign, supporting macroeconomic policies and unprecedented levels of workers' remittances.

However, Morocco is once again suffering the impact of a string of adverse shocks. The beginning of the agricultural season has been unusually dry, and a poor cereal crop is to be expected for 2022. This coincides with a slowing of the global economy and rising international commodity prices, adverse trends that severely intensified following the Russian invasion of Ukraine. Importantly, these shocks have turned out to be mutually reinforcing given that the drought is forcing Morocco to import larger volumes of cereals at substantially higher prices due to the war. In this more adverse context, the economy could decelerate sharply in 2022, and we now project a growth rate of 1.3 percent in 2022.

Ongoing shocks are affecting fiscal and external balances. The public sector is cushioning the impact of the shocks through pre-existing price

subsidies and various *ad hoc* emergency measures. As a result, the budget deficit is on the rise, although Morocco still presents better fiscal indicators than most emerging markets and developing economies. Given that Morocco relies on imported fuels and cereals (particularly in dry years), net imports are also increasing markedly. In this context, we project the budget and the current account deficits to reach 6.4 and 5.2 percent of GDP in 2022, respectively. The risks posed by such twin deficits are mitigated by a comfortable stock of foreign exchange reserves, the solid structure of Morocco's public debt, and maintained good access to international financial markets.

Albeit somewhat more moderately than in other countries, Morocco is beginning to face intense inflationary pressures. Despite the cushioning impact of price subsidies, annual inflation reached 5.9 percent in April 2022. In combination with the drought and the economic slowdown, these price pressures are having significant social impacts on the poor and vulnerable. So far, the central bank is treating this price shock as temporary and has not revised the orientation of its accommodative monetary stance. If price pressures do not recede, the central bank may eventually be forced to raise interest rates. Although necessary to avoid a de-anchoring of inflation expectations, such a move would be procyclical, and further feed the stagflationary headwinds that the economy is beginning to face.

Recent droughts serve as a stark reminder of the exposure of the Moroccan economy to rainfall shocks. Large oscillations in rainfall levels contributed to amplify the 2020 recession and the 2021 recover and will once again slow growth in 2022. This report includes a special focus chapter on the macroeconomic impacts of droughts and water scarcity in Morocco, using part of the analysis that is included in a soon to be published World Bank diagnosis: the Country Climate and Development Report (CCDR). It emphasizes the importance that rainfall shocks have as a source of macroeconomic volatility in Morocco. In recent decades, however, droughts tended to be followed by strong rebounds,

and the recurrence of such shocks did not impede a solid long-term agricultural GDP growth. Going forward, climate change may turn water scarcity into a more permanent condition, which would have severe long-term impacts on the economy.

Infrastructure development is a necessary but not sufficient condition to cope with water scarcity. Historically, Morocco has relied on massive water storage and irrigation investments to cope with highly variable rainfall patterns. Such investments are more necessary than ever, but international experience suggests that to cope with water scarcity, “engineering solutions” need to be coupled by effective water demand management policies.



RÉSUMÉ ANALYTIQUE

L'économie marocaine a connu une forte reprise en 2021. Avec un taux de croissance du PIB réel de 7,9 pour cent, le Maroc a surpassé ses pairs régionaux et récupéré les pertes de production subies au cours de la première année de la pandémie. Ce rebond a été soutenu par une saison agricole exceptionnelle, des exportations manufacturières et agro-alimentaires solides, et la reprise de la demande intérieure, tirée, en partie, par une campagne de vaccination réussie, des politiques macroéconomiques favorables et des niveaux sans précédent des transferts des Marocains Résidents à l'Étranger (MRE).

Cependant, le Maroc subit une nouvelle fois l'impact d'une série de chocs négatifs. Le début de la campagne agricole a été exceptionnellement sec, et une mauvaise récolte céréalière est à prévoir pour 2022. Cette situation coïncide avec un ralentissement de l'économie mondiale et une hausse des prix internationaux des produits de base, tendances défavorables qui se sont fortement intensifiées après l'invasion de l'Ukraine par la Russie. Il est important de noter que ces chocs se sont avérés s'être renforcés mutuellement étant donné qu'avec la sécheresse le Maroc devrait importer des volumes plus importants de céréales à des prix sensiblement plus élevés, et ce, en raison de la guerre. Dans ce contexte très défavorable, l'économie pourrait décélérer fortement en 2022, et nous prévoyons désormais un taux de croissance de 1,3 pour cent en 2022.

Les chocs en cours affectent les équilibres budgétaires et extérieurs. Les subventions du secteur public et les diverses mesures d'urgence ad hoc adoptées atténuent l'impact des chocs. En conséquence, le déficit budgétaire est en hausse, même si le Maroc affiche encore de meilleurs indicateurs budgétaires que la plupart des économies émergentes et en développement. Étant donné que le Maroc dépend des importations de pétrole et de céréales (en particulier en cas de sécheresse), les importations nettes continuent de s'accroître fortement. Dans ce contexte, nous prévoyons que les déficits budgétaire et du compte courant atteignent respectivement 6,4 et 5,2 pour cent du PIB en 2022. Les risques liés à ces déficits jumeaux sont atténués par un stock confortable de réserves de change, la solide structure de la dette publique marocaine et le maintien d'un bon accès aux marchés financiers internationaux.

Le Maroc commence à faire face à des pressions inflationnistes intenses, mais de façon un peu plus modérée que dans d'autres pays. Malgré l'effet amortisseur des subventions des prix, l'inflation annuelle a atteint 5,9 pour cent en avril 2022. Avec la combinaison de la sécheresse et du ralentissement économique, ces pressions sur les prix ont des répercussions sociales importantes sur les personnes pauvres et vulnérables. Jusqu'à présent, la banque centrale considère ce choc des prix temporaire et n'a pas révisé l'orientation de sa politique monétaire accommodante. Si les

pressions sur les prix ne s'atténuent pas, la banque centrale pourrait être contrainte de relever les taux d'intérêt. Bien que cela soit nécessaire pour éviter un désancrage des anticipations d'inflation, une telle mesure serait procyclique et alimenterait davantage les vents contraires stagflationnistes auxquels l'économie commence à faire face.

Les récentes sécheresses ont rappelé avec force l'exposition de l'économie marocaine aux chocs pluviométriques. Les grandes oscillations des niveaux de précipitations ont contribué à amplifier la récession de 2020 et la reprise de 2021 et ralentiront de nouveau la croissance en 2022. Ce rapport comprend un chapitre spécial sur les impacts macroéconomiques des sécheresses et de la rareté de l'eau au Maroc, utilisant une partie de l'analyse qui est incluse dans un diagnostic de la Banque mondiale qui sera bientôt publié : le Rapport sur le climat et le développement des pays (CCDR). Il souligne l'importance des chocs pluviométriques comme

source de volatilité macroéconomique au Maroc. Au cours des dernières décennies, cependant, les sécheresses ont eu tendance à être suivies par de forts rebonds, et la récurrence de ces chocs n'a pas empêché une solide croissance à long terme du PIB agricole. À l'avenir, le changement climatique pourrait faire de la pénurie d'eau une condition plus permanente, ce qui aurait de graves répercussions à long terme sur l'économie.

Le développement des infrastructures est une condition nécessaire mais non suffisante pour faire face à la pénurie d'eau. Historiquement, le Maroc s'est appuyé sur des investissements massifs dans le stockage de l'eau et l'irrigation pour faire face à des modèles de précipitations très variables. Ces investissements sont plus que jamais nécessaires, mais l'expérience internationale suggère que pour faire face à la pénurie d'eau, les «solutions d'ingénierie» doivent être associées à des politiques efficaces de gestion de la demande en eau.

ملخص تنفيذي

بدأ المغرب في مواجهة ضغوط تضخمية شديدة ، ولكن بشكل أكثر اعتدالاً إلى حد ما من البلدان الأخرى. على الرغم من التأثير المخفف لدعم الأسعار ، بلغ التضخم السنوي 5.9 في المائة في أبريل 2022 مع مزيج من الجفاف والانكماش الاقتصادي ، فإن هذه الضغوط على الأسعار لها تأثير اجتماعي كبير على الفقراء والضعفاء. حتى الآن ، يعتبر البنك المركزي هذه الصدمة السعرية مؤقتة ولم يراجع موقف سياسته النقدية التيسيرية. إذا لم تخف ضغوط الأسعار ، فقد يضطر البنك المركزي إلى رفع أسعار الفائدة. على الرغم من أنه ضروري لتجنب عدم تسجيل توقعات التضخم ، إلا أن مثل هذا الإجراء سيكون مساهمة للدورة الاقتصادية وسيؤدي إلى زيادة رياح التضخم المصحوبة بالركود التضخمي التي بدأ الاقتصاد في مواجهتها.

كانت موجات الجفاف الأخيرة تذكراً قوية بتعرض الاقتصاد المغربي لصدمة هطول الأمطار. ساعدت التقلبات الكبيرة في مستويات هطول الأمطار على تضخيم الركود في عام 2020 وانتعاش عام 2021 وستؤدي إلى إبطاء النمو مرة أخرى في عام 2022. يتضمن هذا التقرير فصلاً خاصاً عن الآثار الاقتصادية الكلية للجفاف ونذرة المياه في المغرب ، باستخدام بعض التحليلات التي تم تضمينها في تشخيص البنك الدولي الذي سيصدر قريباً: تقرير المناخ وتنمية الدولة (CCDR). ويسلط الضوء على أهمية صدمات هطول الأمطار كمصدر لتقلب الاقتصاد الكلي في المغرب. ومع ذلك ، في العقود الأخيرة ، كان الجفاف يتبعه انتعاش قوي ، ولم يمنع تكرار هذه الصدمات نموًا قويًا طويل الأجل في الناتج المحلي الإجمالي الزراعي. في المستقبل ، يمكن أن يجعل تغير المناخ ندرة المياه حالة أكثر ديمومة ، مع تداعيات خطيرة طويلة الأجل على الاقتصاد.

تطوير البنية التحتية شرط ضروري ولكنه غير كافٍ للتعامل مع ندرة المياه. تاريخياً ، اعتمد المغرب على استثمارات ضخمة في تخزين المياه والري للتعامل مع أمطار هطول الأمطار شديدة التباين. هناك حاجة إلى هذه الاستثمارات أكثر من أي وقت مضى ، ولكن الخبرة الدولية تشير إلى أنه معالجة ندرة المياه ، يجب دمج «الحلول الهندسية» مع سياسات إدارة الطلب على المياه الفعالة.

شهد الاقتصاد المغربي انتعاشاً قوياً في عام 2021. مع معدل نمو الناتج المحلي الإجمالي الحقيقي بنسبة 7.9 في المائة ، تفوق المغرب على نظرائه الإقليميين واستعاد خسائر الإنتاج التي تكبدها في السنة الأولى من الوباء. كان هذا الانتعاش مدعوماً بموسم زراعي استثنائي، وصادرات قوية للصناعات الغذائية والصناعية ، وانتعاش الطلب المحلي ، مدفوعاً جزئياً بحملة تلقيح ناجحة، سياسات اقتصادية كلية مواتية ومستويات غير مسبقة من التحويلات من المغاربة المقيمين بالخارج. ومع ذلك ، يعاني المغرب مرة أخرى من تأثير سلسلة من الصدمات السلبية. كانت بداية الحملة الزراعية جافة بشكل استثنائي ، ومن المتوقع حدوث محصول ضعيف للحبوب لعام 2022. يتزامن هذا مع تباطؤ الاقتصاد العالمي وارتفاع أسعار السلع الأساسية الدولية ، وهي اتجاهات معاكسة اشتدت بشكل حاد بعد غزوروسيا لأوكرانيا. من المهم أن نلاحظ أن هذه الصدمات تبين أنها تعزز بعضها البعض نظراً لأنه مع الجفاف ، سيتعين على المغرب استيراد كميات أكبر من الحبوب بأسعار أعلى بكثير بسبب الحرب. في هذا السياق غير المواتي للغاية ، يمكن أن يتباطأ الاقتصاد بشكل حاد في عام 2022 ، ونتوقع معدل نمو بنسبة 1.3 في المائة في عام 2022.

تؤثر الصدمات الحالية على الموازين المالية والخارجية. تخفف إعانات القطاع العام ومختلف تدابير الطوارئ المعتمدة من تأثير الصدمات. ونتيجة لذلك ، فإن العجز المالي آخذ في الارتفاع ، على الرغم من أن المغرب لا يزال يتمتع بمؤشرات مالية أفضل من معظم الاقتصادات الناشئة والنامية. نظراً لأن المغرب يعتمد على واردات النفط والحبوب (خاصة في حالة الجفاف) ، يستمر صافي الواردات في الزيادة بشكل حاد. في هذا السياق ، نتوقع أن يصل العجز المالي والحساب الجاري إلى 6.4 و 5.2 على التوالي في المائة من الناتج المحلي الإجمالي في عام 2022. ويتم التخفيف من المخاطر المرتبطة بهذين العجزين المزدوجين من خلال مخزون مريح من احتياطي النقد الأجنبي ، والهيكل القوي للدين العام المغربي و الحفاظ على الحفاظ على الوصول الجيد إلى الأسواق المالية الدولية.



RECENT ECONOMIC DEVELOPMENTS

Morocco staged a solid post-COVID rebound in 2021, recovering the output loss undergone in 2020. However, the economy began to face headwinds towards the end of the year, and high frequency indicators suggest that a significant slowdown is underway in 2022. This is mostly due to a combination of mutually reinforcing shocks: yet another severe drought and a surge in commodity prices intensified by the Russian invasion of Ukraine. These shocks are eroding fiscal and external balances, while triggering inflationary pressures long unseen in Morocco. Although existing price subsidies and ad hoc emergency measures are cushioning impacts, the drought, the economic slowdown, and ongoing price pressures could increase poverty and vulnerability.

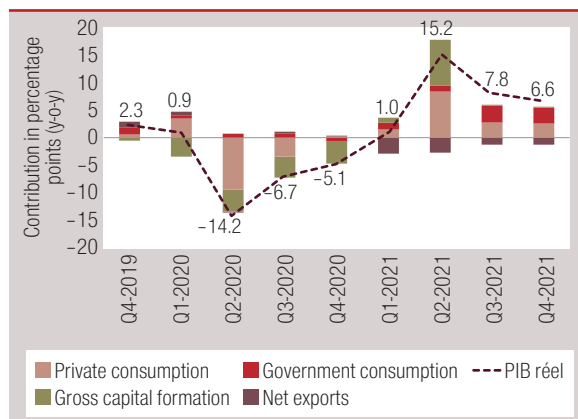
A Solid Post-COVID Economic Recovery is under Threat by New Adverse Exogenous Shocks

The post-COVID economic recovery that began in late 2020 gathered pace in 2021. After the 7.1 percent contraction undergone during the first year

of the pandemic, the recently published rebased national accounts statistics (Box 1) reveal that real GDP posted a 7.9 percent expansion in 2021. This recovery was sustained by the strong performance of the agricultural sector (+17.8 percent) thanks to an exceptional cereal crop (103 million quintals) following two years of drought. Growth was also pulled by domestic demand, as private consumption increased by 8.2 percent y-o-y, supported by continuing buoyant workers' remittances (Figure 1). The recovery of investment was solid (+15.3 percent y-o-y, with a surge in Q2-2021 +24.5 percent q-o-q), although gross capital formation has yet to return to pre-pandemic levels (Figure 2).

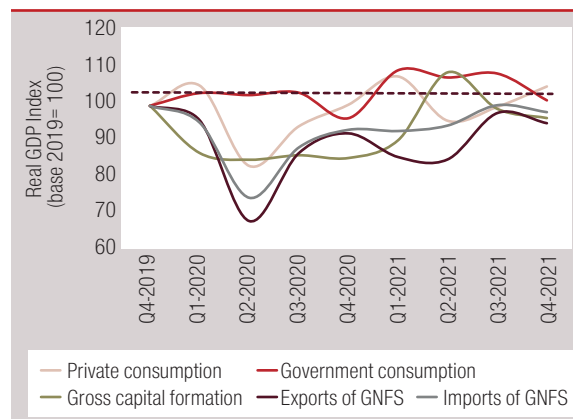
Post-COVID growth oscillations have been more pronounced in Morocco than in the rest of the region. The initial contraction that took place during the first year of the pandemic and the subsequent rebound have been larger than that observed on average in the MENA region, both for oil importers and oil exporters (Figure 3). This is due to a combination of structural, exogenous, and policy-related factors. First, Morocco has a large tourism sector and is more closely integrated with European markets than most of its regional peers, implying that economic activity

FIGURE 1 • The rebound of the Moroccan economy in 2021 has been driven by domestic consumption...



Source: HCP and World Bank staff calculations.

FIGURE 2 • but investment and services exports remain below pre-pandemic levels



Source: HCP and World Bank staff calculations.

BOX 1: REBASED NATIONAL ACCOUNTS

The national statistical institute (HCP) has recently rebased its national accounts statistics from 2007 to 2014, a change that has incorporated new data sources and methodologies to provide a more accurate picture of the size and composition of the Moroccan economy. This rebasing has resulted in some substantial changes in key macroeconomic aggregates. Most notably, 2014 GDP levels have been revised upwards by 8.2 percent, an increase that was particularly pronounced for the services sector: +14.8 percent, against +5.5 percent for the industrial sector and -3.9 percent for agriculture. On the demand side, private consumption was revised upwards by 11.2 percent, whereas gross capital formation was downgraded by 2.1 percent, with minor revisions for net exports.

The rebased national accounts result in significant modifications in key indicators that are usually presented as a share of GDP, such as the debt, budget, or current account ratios. These changes are incorporated in this report, explaining some divergences with previous editions. However, the quarterly rebased national account statistics are yet to be published, and to capture sub-annual macroeconomic dynamics, we still resort to the previous quarterly series (base year 2007).

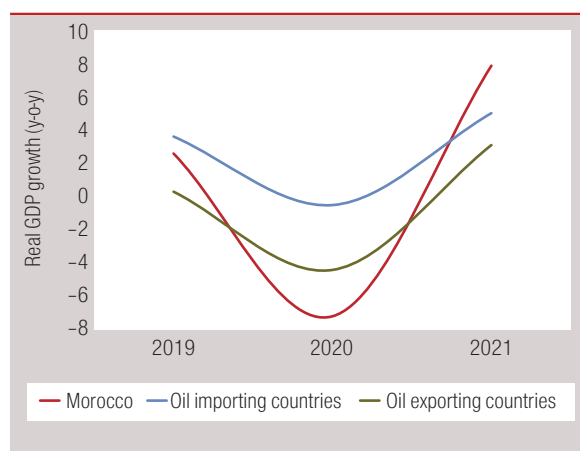
has been impacted by extreme swings in the EU's macroeconomic conditions. Second, the COVID-19 shock has been amplified by a series of weather-related shocks, to which the Moroccan economy is particularly exposed (see Special focus chapter).

Third, the supportive macroeconomic policies adopted following the pandemic outbreak and a successful vaccination campaign may have brought about a faster normalization of economic activity in Morocco.

However, real GDP is still below pre-pandemic trends. The 2021 rebound was sufficient for Morocco to recover the output loss undergone in 2020, and real GDP already surpasses 2019 levels by 0.2 percent. However, real GDP remained 6.8 percent below the October 2019 World Bank projection, suggesting that the rebound has not yet placed the Morocco back to pre-pandemic levels (Figure 4). Moreover, some key sectors of the economy are still far from having fully recovered, including the tourism industry, which still had to cope with a low number of international arrivals in 2021 (71 percent below the 2019 level).

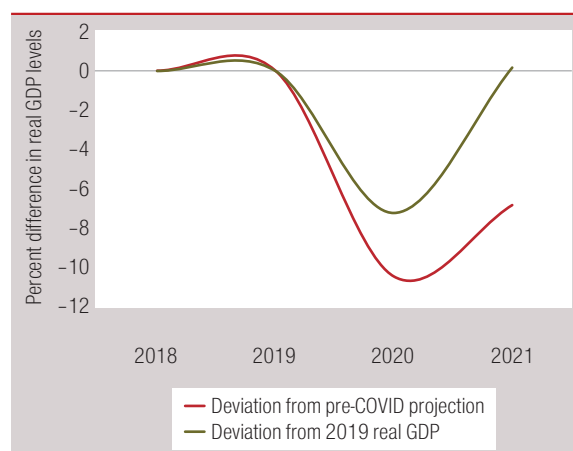
Morocco is once again suffering the impact of a string of adverse shocks. Towards the end of 2021, the economy began to face headwinds as the country went through one of the driest beginnings of the agricultural campaign in decades, threatening rainfed crops. This coincided with a slowing of the global economy and rising international commodity prices, adverse trends that severely intensified following the Russian invasion of Ukraine (Box 2). Importantly, these two shocks have turned out to be mutually reinforcing given that the drought is forcing

FIGURE 3 • Morocco outperformed the MENA region in 2021...



Source: GEP June, 2022, World Bank staff calculations.

FIGURE 4 • ...but GDP is still below pre-pandemic trends



Source: World Bank staff calculations.

Morocco to import larger volumes of cereals at substantially higher prices due to the war. As discussed later, this will weigh on the balance of payments, but also on growth, private consumption, and public finances.

Although national accounts statistics are yet to be published for 2022, high frequency indicators suggest that the economy is going through a significant slowdown. Among the indicators that

most clearly point to a turnaround are a plummeting household confidence index, which dropped by 53.7 points in the first quarter, its lowest level since 2008, and the evolution of cement sales, which decreased by 22.8 percent in the first four months of 2022 (Figure 5). The industrial production capacity utilization rate (TUC) has also been on a declining trend in 2022, dropping by 1.4 percent between December and March.

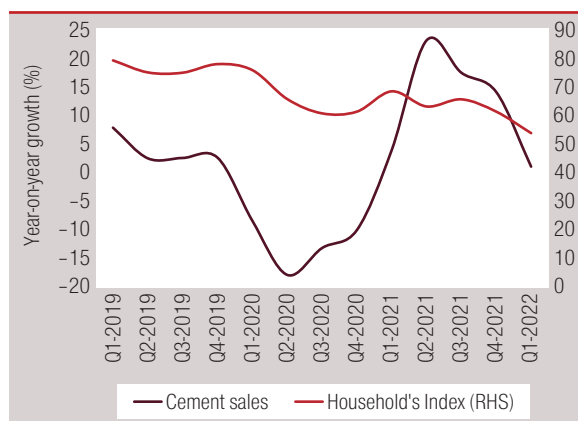
BOX 2: MOROCCO'S EXPOSURE TO THE IMPACTS OF THE WAR IN UKRAINE

The Moroccan economy has limited direct linkages with the Russian and Ukrainian economies. Both countries absorb only 1 percent of Morocco's exports, while tourism, remittances and FDI inflows remain weak. The exposure is higher on the imports side, as Ukraine and Russia supply about 14 and 6 percent of total grain imports, respectively. However, these figures remain substantially lower than in other regional peers such as Tunisia and Egypt. About 10 percent of Moroccan energy imports originate from Russia, well below imports from Spain (27.6 percent), United States (16.5), or Saudi Arabia (16.3 percent).

On the other hand, Morocco is heavily exposed to the indirect impacts of the war that are unfolding through commodity prices. Between 2010 and 2020 energy imports represented on average 19.8 percent of total imports and 8.3 percent of GDP. These averages hide important year-on-year fluctuations caused by the evolution of global market conditions. For instance, between 2011 and 2013 (with oil prices above US\$100 a barrel), energy imports got to represent more than 26 percent of total imports and almost 12 percent of GDP. Cereal imports have a much lower weight than energy in the balance of payments, representing on average 4 percent of total imports and 1.6 percent of GDP between 2010 and 2020.

Morocco's sovereign borrowing costs could also be impacted by the war, compounded by the effects that the anticipated changes in advanced economies' monetary policy stance are having in international financial markets. Between January 1st and June 14th, Morocco's EMBI increased by 20 basis points, while the 5-year CDS spread increased by 138 basis points and the 10-year CDS spread by 122 basis points. Although significant, these increases are substantially milder than in other regional peers. EMBI increased in Tunisia and Egypt by 1126, 45 basis points respectively. The 5-year and 10-year CDS spread rose by 316 and 200 basis points in Tunisia, and by 401 and 239 basis points in Egypt, suggesting that markets retain more appetite for Moroccan debt.

FIGURE 5 • High frequency indicators suggest that the economy is abruptly slowing



Source: HCP and World Bank staff calculations.

Fiscal Policy Is Focused on Cushioning the Impacts of the Twin Drought-Commodity Price Shock through Subsidies and Ad Hoc Emergency Measures

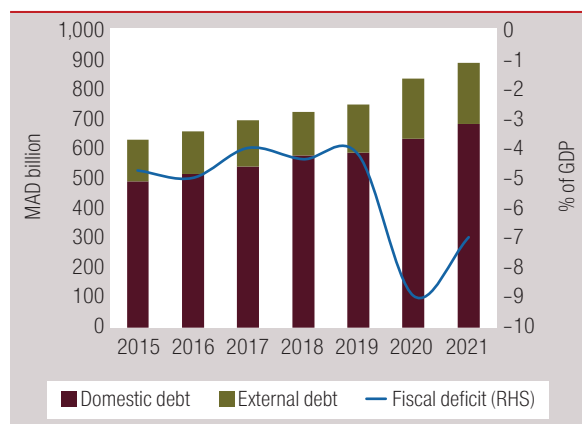
The fiscal deficit was starting to narrow in 2021 driven by a strong rebound in revenues, despite sustained higher spending. In line with economic activity, public revenue collection rebounded in 2021 by +11.6 percent y-o-y (2.3 percent higher than their level for 2019). Tax revenues recovered markedly (by 7.8 percent y-o-y, still 0.8 percent below 2019) despite the delayed effect of the 2020 recession on corporate income tax (-8.8 percent y-o-y). Personal income tax recovered from the effect of tax relief measures in 2020 (+10 percent y-on-y), while the gradual recovery in domestic demand led to a rebound in domestic value-added tax (VAT) (+3.8 percent) and excise taxes (+13 percent), as well as a solid growth in imports duties (+25.3 percent) and VAT on imports (+24.6 percent). However, the government maintained a strong spending stimulus to support the recovery (+8.8 percent increase in current spending), implying that the decline in the overall budget deficit was relatively modest: from MAD 82.3 to 70.9 billion (7.1 and 5.6 percent of GDP respectively). Such a deficit is high by historical standards but remains lower

than in the average emerging market economy (Figure 6). As most of the world, Morocco emerges from the pandemic with a much higher public debt burden (about 68.9 percent of GDP, against 60.3 percent of GDP in 2019), limiting the government's room for maneuver to respond countercyclically to current shocks (Figure 7). A Moroccan strength, however, is the solid structure of public debt, with 77 percent obligations dirham-denominated and issued domestically.

Higher global commodity prices are increasing spending pressures and risks in 2022. Through the compensation fund (*Caisse de Compensation*), Morocco subsidizes butane gas, wheat, and sugar prices. As the market price of these items rise due to ongoing shocks, the subsidies disbursed through the compensation fund are mechanically increasing. In the current context, this functions as an automatic stabilizer, supporting household's purchasing power, at the cost of increasing the budget deficit. Indeed, between January and April, total price subsidies were 103.5 percent higher than in the same period a year ago, and already amount to 73 percent of the amount that was originally budgeted for the entire year (about 1.2 percent of GDP). In fact, the government has recently doubled this budget allocation, to about 2.4 percent of GDP. In addition, given that electricity tariffs remain administered (also alleviating pressures on households), the public utility company ONEE is absorbing the impact of rising energy imports used for power generation. As a result, it will undergo large losses in 2022 estimated MAD 24.1 billion, as opposed to the profits it generated in the past two years (MAD 0.4 billion in 2021 and MAD 2.2 billion in 2020).

Some of the ad hoc emergency measures adopted by the authorities to mitigate the impacts of recent shocks on specific sectors are also generating additional public expenditures. Over the past months, various such emergency measures have been announced: (i) MAD 1 billion have been allocated to help transport companies cope with rising fuel prices; (ii) the tourism sector received MAD 2 billion from the budget to cope with the consequences of the border closure that was enacted following the OMNICROM variant of COVID-19 in late

FIGURE 6 • The budget deficit declined as a share of GDP, but public debt has increased markedly since the beginning of the pandemic outbreak...



Source: MEF and World Bank staff calculations.

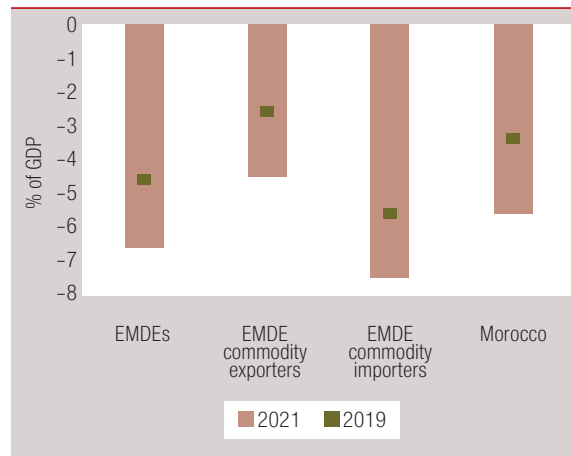
2021; (iii) the agricultural sector was allocated MAD 10 billion to cope with the drought, although only a fraction of that support will translate into actual public spending.¹ Overall, these additional expenditures amount to about 0.7 percent of GDP.

Ongoing Shocks are also Eroding Current Account Balances, Although External Buffers Remain Comfortable

As imports rebounded, the temporary upturn of the current account that took place during the first year of the pandemic began to reverse in 2021.

Merchandise exports posted a robust expansion of 24.3, while that of services was more moderate (+6 percent) due the weak performance of the tourism sector. This turnaround in exports, however, could not offset the increase in imports that is taking place as energy prices surge and domestic demand recovers. Indeed, the value of energy imports increased by 51.6 percent in 2021, contributing to widen the trade deficit in goods by 25 percent (13.9 percent of GDP in 2021 compared to 12.8 percent of GDP in 2020). The dynamism of remittances, which reached a historical high of 7.3 percent of GDP (surpassing 2020 and 2019 by 36.8 and 43.5 percent respectively), softened

FIGURE 7 • ...Morocco's public finances still look stronger than in average emerging economies



Source: Ha, Kose, and Ohnsorge (2021); International Monetary Fund; Kose et al. (2021); World Bank. World Bank.

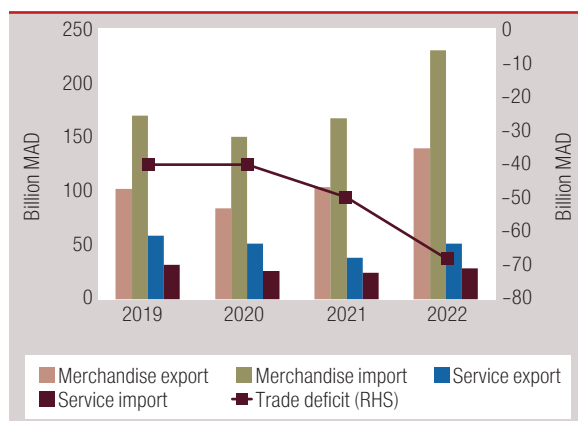
the impact of the trade deficit on the current account, which closed with a deficit of 2.3 percent of GDP.

These trends are intensifying in 2022.

Data for the four months of 2022 indicates that the merchandise trade deficit is widening as a still solid growth of exports (+34.2 percent y-o-y) is not offsetting the surge in imports (+37.8 percent y-o-y) that results from higher commodity prices. Energy (+116.1 percent y-o-y) and food imports (+25.3 percent y-o-y) comprised almost a third of Morocco's total imports between January and April 2022. On the other hand, the services trade surplus is improving fast (+72.5 percent y-o-y) as tourism begins to stage a stronger recovery (Figure 8).

¹ The Emergency drought is designed around three axes: (i) protection of animal and plant capital and management of water scarcity, (ii) agricultural insurance and the easing of the financial burdens on farmers and professionals, (iii) financing of market supply operations wheat and fodder market, as well as the financing of innovative investments in irrigation. The largest part will be financed by central government around MAD 6 billion (0.5 percent of GDP) and the remainder by other institutions: Around MAD 4.12 billion (0.3 percent of GDP), in particular (MAD 3 billion) from Hassan II Fund and (MAD 1.12 billion) will be covered by farmers.

FIGURE 8 • Surging imports are fueling an increase in the trade deficit (Jan-April)...



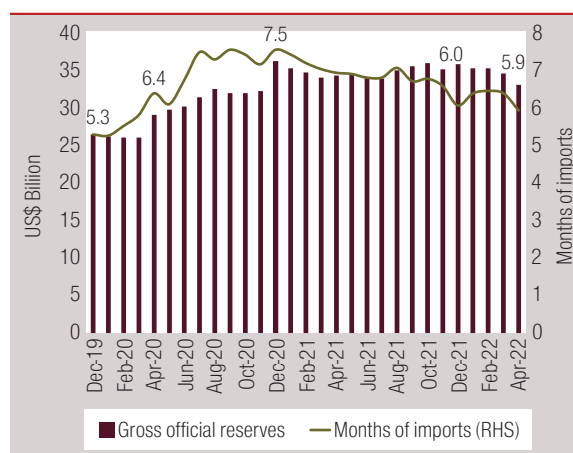
Source: Exchange office and World bank staff calculations.

The upward trend in the dollar value of foreign exchange reserves has reversed, but Morocco retains a comfortable cushion to cope with the balance of payment pressures induced by ongoing shocks. Between April 2020 and the end of 2021, the stock of foreign exchange reserves increased from US\$26.4 billion to more than US\$35 billion. The reversal of this trend in 2022 (Figure 9) is mostly due to a valuation effect, as the dollar value of reserves has decreased in line with the appreciation of the US dollar that is taking place in anticipation of an abrupt change in the Federal Reserve's monetary policy stance. With a robust increase in FDI (+20.5 percent in 2021) and good access to international financial markets and bilateral and multilateral loans, Morocco has had ample leeway to finance its current account deficit.

Inflationary Pressures are Widening in Food and Transport Prices

Inflation has picked up but remains better contained than in most other countries. Headline inflation averaged just 0.7 percent in 2020 and remained stable until mid-2021. In the third quarter of 2021, however, price pressures began to emerge primarily because of rising commodity prices, and inflation ended up averaging 1.4 percent over the entire course

FIGURE 9 • ...but foreign exchange reserves still provide a comfortable cushion



Source: Bank Al-Maghrib and World bank staff calculations.

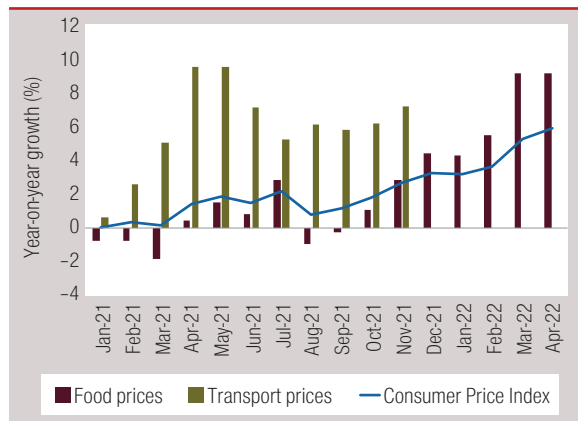
of the year. These forces intensified in 2022, especially after the beginning of the war in Ukraine, and the consumer price index (CPI) reached a 5.9 percent y-o-y increase at end April, its highest rate since 2008. Price pressures are particularly pronounced for food and transport, with CPI increases of 9.1 percent and 12.4 percent y-o-y respectively (Figure 10). Core inflation increased in recent months to 5.5 percent y-o-y in April 2022. However, when compared with other economies (both advanced and EMDEs), Morocco's inflation remains relatively low, which may reflect the cushioning impact of the energy and food subsidies discussed above (Figure 11).

Bank al Maghrib so far considers that price shocks will be temporary and has therefore not reviewed the orientation of its monetary policy. The central bank projects inflation to normalize in 2023 and has opted not to increase its policy rate for the time being, which has remained at a historical low of 1.5 percent since June 2020.

The Labor Market also Staged a Strong Recovery in 2021, but Ongoing Shocks are Having Markedly Adverse Social Impacts

Morocco's labor market performed strongly during the 2021 recovery. Last year, the Moroccan

FIGURE 10 • Morocco is undergoing significant price pressures, particularly for food and transport...



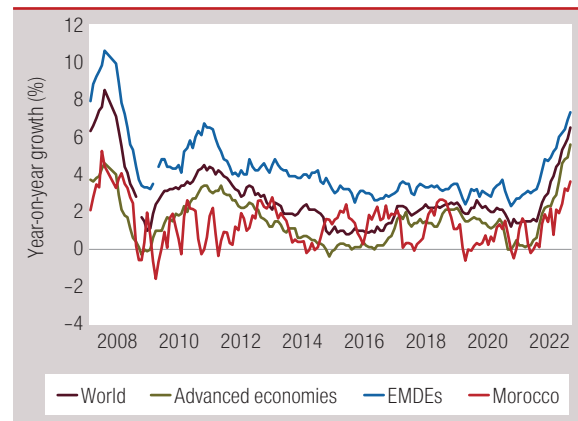
Source: Consensus Economics and World Bank.

economy added 230 thousand jobs (1.9 percent of total jobs at the end of 2020), recovering 53 percent of the jobs that were lost during the first year of the pandemic. These oscillations have been particularly pronounced in rural areas, where 295 thousand jobs were lost in 2020 (against 137 thousand jobs lost in urban areas), while 130 thousand were created in 2021 (100 thousand in urban areas). Given that rural economic activities have been less disrupted by the sanitary protocols adopted to cope with the pandemic than urban ones, there is ground to argue that these swings in employment were more affected by the droughts that have taken place over the past years than by the pandemic crisis and subsequent recovery.

The latest rainfall shock is once again triggering job losses in rural areas. According to the latest available labor market statistics, 148 thousand rural jobs were lost during the first quarter of 2022 (258 thousand if compared with the 2021Q1), while 90 thousand urban jobs were created (56 thousand when compared with March 2021). This suggests that the dry beginning of the 2021–22 agricultural campaign is again having a pronounced impact on rural livelihoods.

Despite considerable economic growth over two decades, Morocco has not significantly reduced informal employment. Informality in

FIGURE 11 • ...however, Inflation remains better contained than in other economies...



Source: HCP and World Bank staff calculations.

Morocco decreased from 82.7 per cent in 2008 to 77.8 percent in 2018. GDP per capita has more than doubled, but informality declined only slightly by about 10 percentage points between 2000 and 2018, a -0.64 percent annualized rate of reduction. This occurred in a period of steady economic growth averaging about 4.3 percent per year, and 3 percent per year per capita. Informal employment-to-growth elasticity over the 2000 to 2018 has therefore been a very low estimated 0.10.

Poorer households are being disproportionately affected by price inflation, which could lead to an increase in poverty and vulnerability.

The lowest deciles of the income distribution direct a larger share of their consumption basket to items that have been particularly prone to undergo intense price pressures in recent months. As a result, and as confirmed by the microsimulations summarized in Box 3, ongoing price pressures could push a non-negligible number of Moroccan households below the poverty and vulnerability line. Moreover, most poor households nowadays reside in rural areas in Morocco and are also suffering the effects of the drought and the job losses described above. This will add another layer of pressure on many rural households' welfare levels, which were only beginning to recover from the impact of the pandemic and the 2019–20 drought.

BOX 3: MICROSIMULATIONS ON THE DISTRIBUTIONAL IMPACT OF INFLATIONARY PRESSURES

Using data from the latest available household survey (2013/14), the *subsim* model was used to simulate the impact that ongoing price changes are having on household welfare. This analysis was also conducted to shed light on the cushioning impact that existing subsidies may be having. The magnitude of the direct and indirect impacts caused by inflation depends on the structure of households' consumption, the weight of the different goods in their budget, the degree of product use in the various sectors of the economy. As shown below, the weight of subsidized goods in households' consumption baskets is higher for the lower deciles of the income distribution.

Two scenarios are simulated in this exercise. A first one in which the price levels registered during the first three months of the year persist throughout 2022, and a second one in which an additional 10 percent price increase materializes. In the first scenario, the headcount poverty rate increases from 2.3% in 2021 to 3.4%, and the share of vulnerable people increases by 1.3 p.p. In the second scenario, poverty increases to 4 percent, and the share of vulnerable people increases by 3.1 p.p. Inequality (proxied by the GINI index) rises in both scenarios, from 39.5 to 39.7 and 40.2 respectively. Illustrating their cushioning impacts, the simulated increase in poverty is larger in the absence of existing subsidies, rising from 3.1 percent in 2021, to 5 in scenario 1 and to 6.7 percent in scenario 2.

OUTLOOK AND RISKS

Outlook

The agricultural sector is set to contract sharply in 2022. Cereal production is now projected at 32 million quintals for 2022, a 69 percent drop from last year. Although Spring crops may have been boosted by more favorable climatic conditions in recent months, such a reduction in cereal production will result in a contraction of agricultural value added of about 15 percent. This will adversely affect rural households' incomes and consumption, while increasing Morocco's reliance on imported cereals.

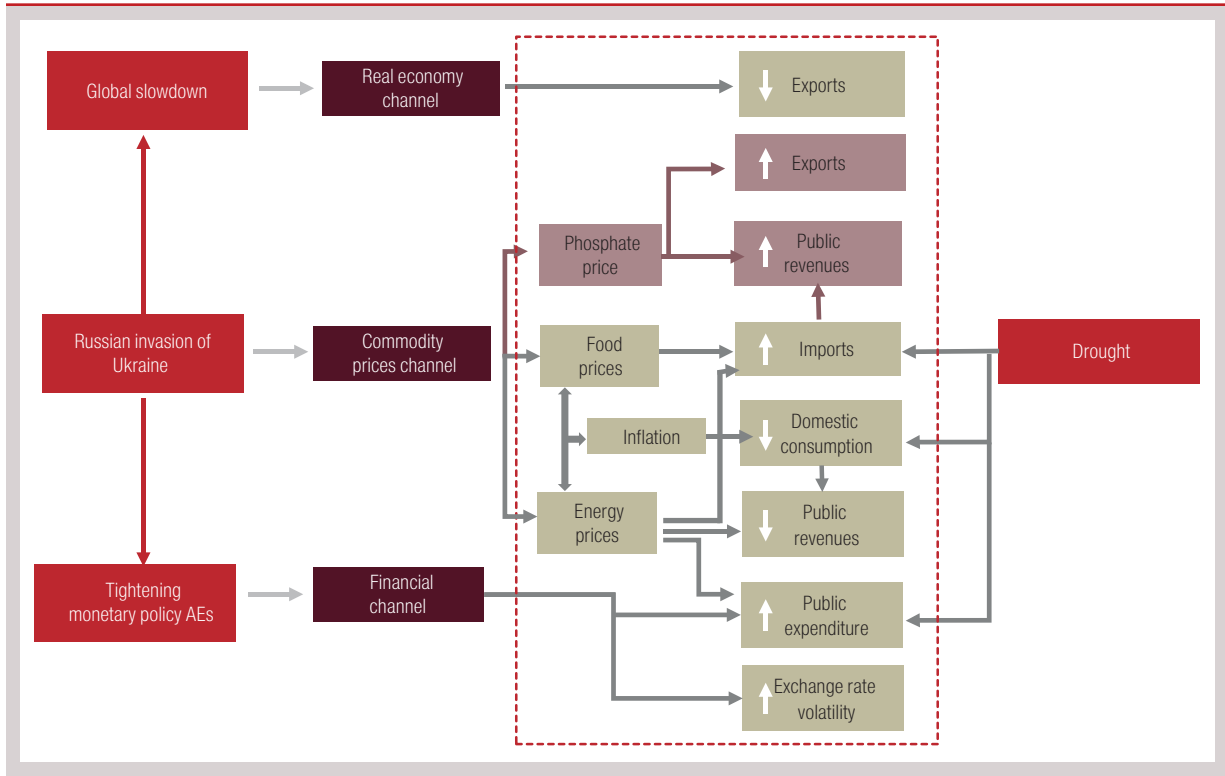
The destabilizing shocks that are unfolding globally are set to continue feeding price pressures, with knock-on effects on consumption and on external and fiscal balances. Although higher phosphate exports will cushion impacts, Morocco is very dependent on energy and food imports, and is thus heavily exposed to the effects of soaring commodity prices.² This is resulting in a more challenging macroeconomic environment in which inflation erodes household's purchasing power, net imports increase markedly, and higher price subsidies lead to a further deterioration of the

budget deficit (Figure 12). These impacts are likely to be compounded by other unfolding shocks, like the slowdown that is now predicted for the global economy, and a potentially abrupt tightening of the monetary policy stance in advanced economies.

In this context, we expect real GDP growth to slow to 1.3 percent in 2022, followed by a 4.3 percent expansion in 2023 as agricultural output normalizes and global shocks begin to subside. The mutually reinforcing nature of the shocks that the Moroccan economy is undergoing because of the drought and the spillovers from the war in Ukraine will result in a comparatively large growth downgrade (Figure 13). This will further increase real

² Energy prices are expected to rise by more than 50 percent in 2022 before easing in 2023 and 2024. The price of Brent crude oil is expected to average \$100 a barrel in 2022, its highest level since 2013 and 42 percent above 2021. Non-energy prices, including agriculture and metals, are projected to increase by almost 20 percent in 2022 and should also moderate in the following years. Wheat prices are forecast to increase by 43 percent compared to 2021, reaching an all-time high in nominal terms this year. (World Bank Commodities Price Forecast – April 26, 2022).

FIGURE 12 • Tracing the transmission channels of multiple shocks



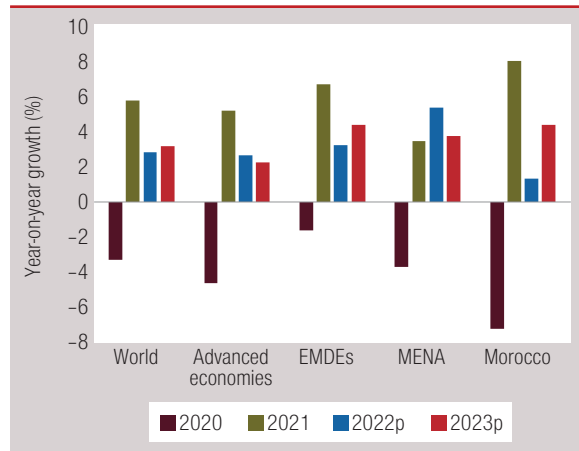
GDP's deviation from pre-pandemic trends and may disproportionately affect the poor and vulnerable in the current inflationary context. As cereal production bounces back to average levels, economic growth is expected to accelerate to 4.3 percent in 2023, beyond the expansion that is now projected for the MENA region, the world economy, and advanced countries, and in line with the projection for emerging and development economies.

The budget deficit is expected to increase in 2022, and to remain above 5 percent of GDP over the projection period. A solid recovery of corporate income tax collection and the windfall profits obtained by the national phosphate company OCP will support the budget. However, ongoing shocks are exerting intense pressures on public spending, most notably on price subsidies, and we expect the budget deficit to increase to 6.4 percent of GDP in 2022. The deficit is subsequently projected to enter a declining trend, albeit a slow one. This is due to the fiscal impact of the health and social protection reform that is beginning to be implemented, the financing sources of which

have not yet been fully identified. As a result, the debt to GDP ratio will stabilize at around 73 percent of GDP. A better fiscal outcome would materialize if Morocco was to accelerate the implementation of a planned tax reform, the broad principles of which have already been enacted in a Framework Law approved in mid-2021.

The current account deficit is expected to widen to 5.2 percent of GDP in 2022 before narrowing over the medium term. Although manufacturing exports could be adversely impacted by the global slowdown, phosphates and services (tourism) exports are set to gain substantial dynamism in 2022. However, this will be insufficient to offset the surge in energy and food imports that is being caused by higher commodity prices and a poor cereal crop. Therefore, the current account deficit is projected to widen markedly this year. Over the remainder of the forecast period, it should narrow gradually as the impact of current shocks fades away, sustained by a normalization of imports and the continued dynamism of tourism receipts and manufacturing

FIGURE 13 • Growth projections



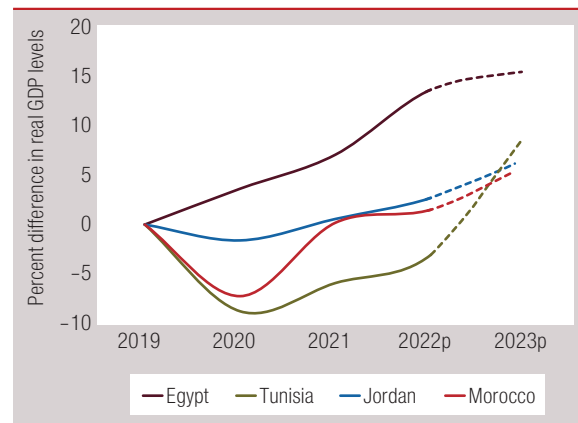
Source: GEP June, 2022, and World bank staff calculations.

exports. Net FDI flows are expected to remain stable over the medium term, covering a substantial portion of Morocco's external financing needs. The remainder will be met with official debt and, potentially, foreign exchange reserves.

Risk to the Macroeconomic Outlook

Given the nature of the shocks that are unfolding globally, the uncertainty that surrounds the above projections is particularly pronounced, and the resilience of the economy could be further put to the test. Among the key global risks that could materialize, a protracted war in Ukraine could push commodity prices even higher for a prolonged period of time; the changing cycle in the monetary policy of advanced economies could trigger more or less localized episodes of financial instability in emerging and developing economies, many of which already find themselves in a situation of debt distress; a new and more disruptive variant of the COVID-19 virus cannot yet be discarded; climate-related natural hazards are becoming increasingly frequent both in advanced and developing economies. A further deterioration of the global economic outlook could reduce exports, tourism receipts, and FDI, adversely affecting Morocco's external position. Tighter global financial conditions would hinder Morocco's ability to access external finance and/or increase the cost

FIGURE 14 • Deviation of real GDP from 2019 levels



Source: GEP June, 2022, and World bank staff calculations.

of covering its fiscal and external gross financing needs.

If inflationary pressures turn out to be more persistent than currently anticipated, the central bank could be forced to raise interest rates.

Much attention has been devoted recently to the possibility that the world economy may be entering a period of stagflation.³ Some of the macroeconomic dynamics observed in Morocco are comparable to the stagflation headwinds that are being discussed elsewhere, as the recent rise in inflation coincides with an abrupt economic slowdown. If current price pressures persist, the central bank may eventually revise the accommodative orientation of monetary policy adopted since the beginning of the pandemic outbreak. While this may be needed to avoid a de-anchoring of inflation expectations, it would not be costless for the Moroccan economy, as it would contribute to the ongoing deceleration while tightening financial conditions both for the public and the private sectors. Despite the magnitude of recent shocks, Moroccan banks present sound financial indicators, but the stock of non-performing loans already stands at 8.8 percent of credit (April 2022),

³ See the World Bank's latest Global Economic Prospects Report (June 2022) for an in-depth analysis on the resemblance between the current international conjuncture and the stagflation era of the 1970s.

TABLE 1 • Morocco selected economic indicators, 2019-2025

	2019	2020	Estimated	Projected			2025
			2021	2022	2023	2024	
Real Economy							
(annual percent change, unless otherwise indicated)							
Real GDP	2.9	-7.2	7.9	1.3	4.3	3.5	3.7
Agricultural GDP	-5.0	-8.1	17.8	-15.0	12.0	4.8	4.6
Non-Agricultural GDP	3.8	-7.1	6.8	3.9	3.3	3.5	3.6
Industry	4.1	-5.2	6.8	3.3	3.4	3.4	3.6
Services	3.9	-7.9	6.4	4.3	3.6	3.7	3.9
Private Consumption	2.2	-5.6	8.2	1.8	4.4	3.9	3.7
Government Consumption	4.8	-0.5	5.6	3.9	2.6	2.5	2.4
Gross Fixed Capital Investment	1.7	-10.0	9.3	5.5	5.7	4.7	4.7
Exports, Goods and Services	5.1	-15.0	8.7	9.2	11.3	10.4	13.9
Imports, Goods and Services	2.1	-11.9	11.8	14.2	10.7	9.0	13.3
Unemployment rate (ILO definition, in percent)	9.2	11.9	12.3	–	–	–	–
Inflation (average CPI, in percent)	0.2	0.7	1.4	5.3	2.3	1.9	2.0
Fiscal accounts							
(in percent of GDP)							
Expenditures	27.2	34.1	29.0	29.9	28.9	28.9	28.2
Revenues, including all grants	23.8	27.0	23.5	23.6	23.5	23.7	23.4
Budget Balance	-3.4	-7.1	-5.6	-6.4	-5.5	-5.2	-4.9
Central Government Debt	60.3	72.2	68.9	72.1	72.9	72.7	72.4
Selected Monetary accounts							
(annual percent change, unless otherwise indicated)							
Broad Money	3.8	8.5	5.2	–	–	–	–
Interest (key policy interest rate)	2.3	1.5	1.5	–	–	–	–
Balance of payments							
(in percent of GDP, unless otherwise indicated)							
Current Account balance	-3.4	-1.2	-2.3	-5.2	-4.0	-3.7	-3.4
Imports, Goods and Services	-42.0	-38.1	-42.1	-46.4	-44.4	-43.9	-43.0
Exports, Goods and Services	34.2	30.8	33.0	34.9	35.3	35.5	35.7
Foreign Direct Investment	0.6	0.8	1.2	1.3	1.5	1.5	1.5
Gross official reserves (bln US\$, eop)	26.4	36.0	35.6	35.0	35.3	35.7	36.1
In months of imports	6.9	7.1	6.0	6.0	6.1	6.5	6.8
Exchange rate (average)	9.6	9.5	–	–	–	–	–
Memo items							
Nominal GDP (in billion dirhams)	1240	1152	1284	1370	1462	1543	1632

and banks' balance sheets could further deteriorate in an environment of higher interest rates.

The long-term performance of the Moroccan economy could be boosted by the structural reforms that have been announced in recent years, but a loss of momentum could also weaken potential growth. Morocco stands out as a country that has seized the recent crises as an opportunity to launch a reformist effort that crystallized in the New Development Model (NDM) announced about a year ago. So far, reforms have centered primarily on the health, social protection, and education sectors, as the authorities are determined to improve key public services both in terms of access and quality. Progress

has been slower in other critical areas, such as the reinforcement of the competition framework to level the playing field for smaller firms and new entrants in key markets, the modernization of the large SOE sector, or the operationalization of the Mohammed VI Strategic Investment Fund. The successful implementation of these reforms could increase potential growth, which will be critical for Morocco's GDP to gradually return to pre-pandemic trends and thus place the country on a more solid development pathway going forward and strengthen its resilience against new shocks. A failure to implement them, however, could further reduce the potential growth of the Moroccan economy, which has been on a declining trend for most of the past decade.

SPECIAL FOCUS ON THE ECONOMICS OF DROUGHTS AND WATER SCARCITY IN MOROCCO

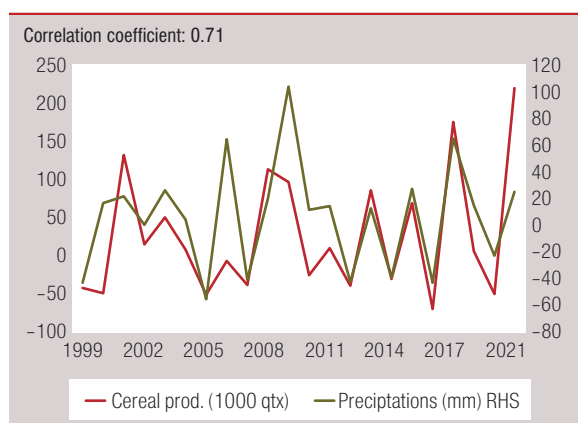
This special focus chapter summarizes part of the analytical work that has been produced for the Morocco Country Climate and Development Report (CCDR), a soon-to-be-published core World Bank diagnosis. It focuses on the impacts of rainfall shocks on the Moroccan economy, which have been rendered increasingly apparent by a recent succession of droughts: three in the past four agricultural campaigns. Although the agricultural sector contributes to a moderate share of GDP and modern irrigation systems have been successfully expanded over past decades, erratic rainfall levels remain an important source of macroeconomic volatility in Morocco, a trend that climate change could be intensifying. Coping with water scarcity has long been a governmental priority and massive infrastructure investments are still planned for that purpose in the decades to come. However, international experience suggests that, when not paired with strong demand management policies, “engineering” solutions alone may not

succeed at curbing pressures on increasingly scarce water resources.

Morocco is among the world’s most water-stressed countries, a problem that is expected to worsen in the decades to come. Between 1960 and 2020 the per capita availability of renewable water resources has decreased from 2,560 m³ to about 620 m³ per person per year, placing Morocco in what is considered a situation of structural water stress (below 1,000 m³), fast approaching the absolute water scarcity threshold of 500 m³ per person per year. This challenge is set to aggravate with climate change, given the evapotranspiration caused by projected increases in mean annual temperatures (by 1.5° C to 3.5°C by mid-century) and an anticipated decrease in precipitations (by 10–20 percent, which could reach 30 percent in some regions). In this context, droughts may be becoming more frequent, and gradually converge to a quasi-permanent condition.

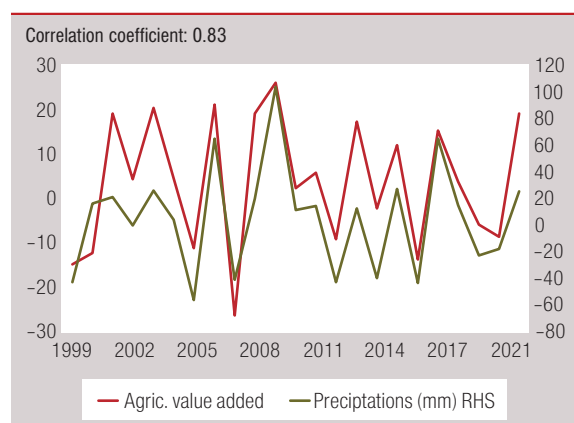
Despite these challenging climatic conditions, Morocco has been able to sustain a solid

FIGURE 15 • Cereal production and rainfall (% change)



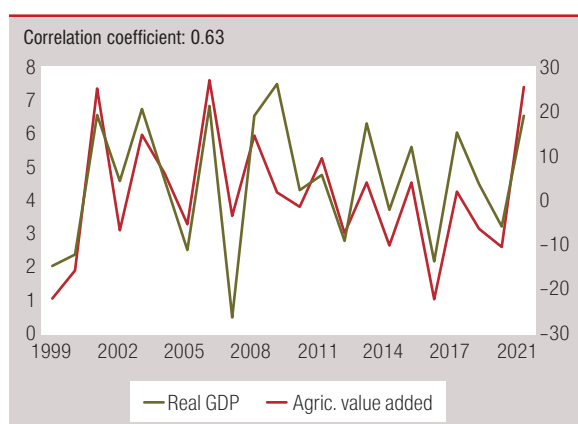
Source: Authors' calculations.

FIGURE 16 • Agriculture value added and rainfall (% change)



Source: Authors' calculations.

FIGURE 17 • Agriculture value added and GDP (% change)



Source: Authors' calculations.

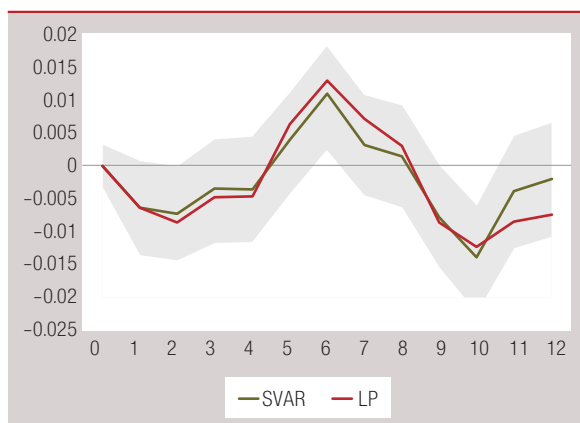
long-term agricultural growth thanks to the deployment of water infrastructure and the support to irrigated crops. Since the late 1960s, the Kingdom has built more than 120 large dams, leading to a tenfold increase in total water storage capacity. In addition, the agricultural strategy implemented between 2008 and 2018 (the *Plan Maroc Vert*, PMV) contributed to massively expand irrigated areas, supporting a re-composition of agricultural output in favor of higher value-added crops. As a result, agricultural GDP roughly doubled in real terms, averaging a yearly expansion of 5.7 between 2008 and 2021. This also

allowed Morocco to become a major exporter of fruits and vegetables (in particular, tomatoes, citruses, and green beans), which contribute to about 22 percent of total merchandise exports.

However, rainfed crops continue to be predominant in terms of cultivated areas and exhibit an extreme variability linked to erratic precipitations. The policies described above have increased the contribution of irrigated crops to more than half of total agricultural value added. However, rainfed areas still represent close to four fifths of total cultivated areas and contribute to more than 40 percent of agricultural value added in average years. Cereals, and in particular wheat, constitute the most important rainfed crop both in terms of value and of relevance for food security. Evidencing the comparatively large variability of wheat production in Morocco, the coefficient of yield variation for that crop reached 0.34 between 2000 and 2020, against 0.23 in Tunisia, 0.18 in Algeria and Spain, 0.11 in France and 0.06 in Turkey (calculations based on FAOSTAT data).⁴ Such fluctuations are mostly linked to the level and temporal distribution of precipitations across the agricultural season. This is illustrated in the high correlation between changes in rainfall, cereal production and agricultural value

⁴ The coefficient of yield variation is defined as the standard deviation of a given crop expressed in volumes divided over its mean.

FIGURE 18 • Rainfall shocks impulse-reaction functions for GDP (SVAR and LP)



Source: Authors' calculations.
 Note: The gray area is the confidence intervals of the SVAR at 95 percent.

added (Figures 15 and 16), the significant knock-on effects of which on the overall growth rate of the economy can be appreciated in Figure 17.

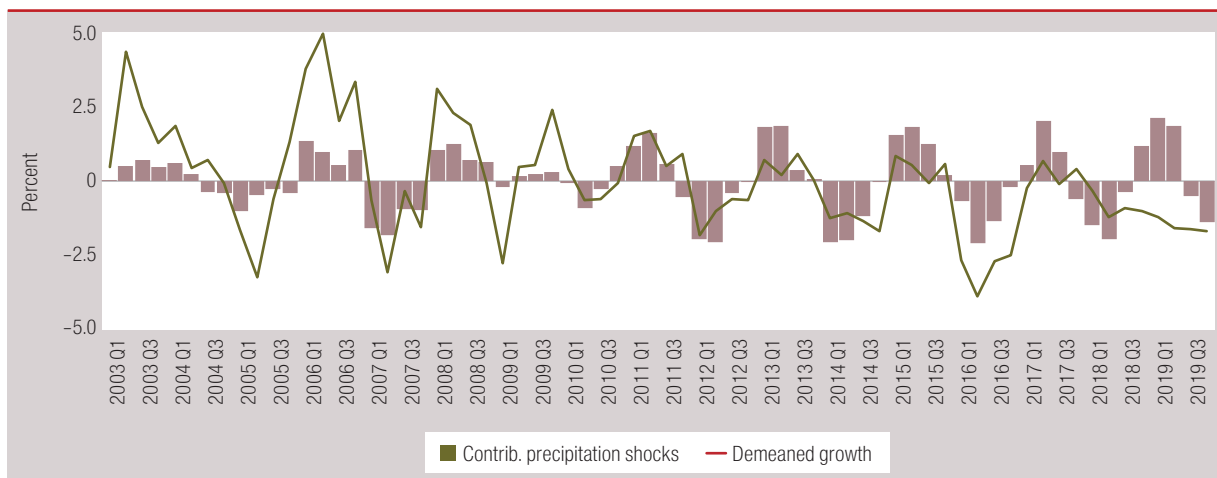
An econometric analysis confirms that erratic rainfall still constitutes an important and persistent source of macroeconomic volatility in Morocco. This section resorts to various econometric specifications applied to trace out the impulse reaction function of real GDP to rainfall shocks.⁵ As can be seen in Figure 18, even marginal reductions

in rainfall levels trigger “stop-and-go” oscillations in economic activity that continue to be felt more than two years after the shock, and which unfold in three stages: (i) the impact is initially negative, peaking two quarters after the shock; (ii) as agricultural output rebounds from a low base, that response turns positive 6 quarters after the shock; (iii) finally, the rebound dilutes two agricultural seasons after the shock, resulting in another deceleration of GDP growth. The Forecast Error Variance Decomposition (FEVD) of the SVAR regressions can be interpreted as a proxy of the contribution of rainfall shocks to Morocco’s business cycle fluctuations: on average over the medium-term, rainfall shocks explain close to 37 percent of the variance of Morocco’s GDP forecast error, which is substantially higher than the weight of agricultural value added over GDP (around 13 percent on average over the past decade). Figure 19 further illustrates the weight of rainfall shocks as a driver of quarterly demeaned GDP growth fluctuations over recent years.

Morocco’s exposure to rainfall shocks has been particularly apparent in recent years, amplifying the already large fluctuations undergone by

⁵ See methodological appendix for more information on the Structural Vector Autoregressions (SVAR) and Local Projections (LP) that were used in this exercise.

FIGURE 19 • Historical decomposition of the annual variation of GDP (SVAR)



Source: Authors' calculations.
 Note: The gray area is the confidence intervals of the SVAR at 95 percent.

the economy in the context of the COVID-19 pandemic. As emphasized in previous chapters, both the contraction undergone during the first year of the pandemic and the rebound that took place in 2021 were substantially larger in Morocco than on average in the MENA region and the world.⁶ This was in part due to a number of idiosyncratic factors, including the weight of the Moroccan tourism industry, the stringency of the social distancing measures imposed to cope with the pandemic, or the success of the vaccination campaign. However, it is also explained by the fact that COVID-19 pandemic was compounded by a rainfall shock: in 2019 and 2020 Morocco underwent two consecutive years of drought, followed by a strong agricultural campaign in 2021. To illustrate the relevance of this second shock, a counterfactual growth rate is computed for the Moroccan economy assuming that agricultural value added had followed historical patterns: the 2020 contraction would have reached 4.5 percent only (as opposed to 6.3 percent), whereas the 2021 expansion would have been limited to 5.9 percent (as opposed to an estimated 7.4 percent).⁷

As evidenced in 2022, Morocco's reliance on imported grains can also increase the exposure of the economy to international shocks.

As elsewhere in the MENA region, wheat flour is a key staple in the Moroccan diet and, when domestic production falters, the country is forced to import larger volumes of cereals. This will be the case in 2022 given the abnormally low levels of precipitations that were registered during the months that are most critical for cereal production. However, a compounding factor in 2022 is that a poor crop will coincide with a surge in global food prices triggered by the Russian invasion of Ukraine, which will substantially affect the value of the required imports, with significant impacts on the current account deficit (see chapters 1 and 2).

In the longer-term, the Moroccan economy could find it harder to rebound from droughts, as water scarcity becomes a more permanent condition. The channels through which droughts (shocks) and water scarcity (long-term stressor) impact the economy are different but could reinforce each other. Indeed, the “stop-and-go” pattern that has been described above could be altered with the combination of more frequent and prolonged droughts

and a structural decline in water resources. Under that scenario, Morocco would struggle to recover the agricultural output losses undergone in dry years. A recent World Bank publication uses a Computable General Equilibrium model to simulate the impact that a permanent reduction in the water supply could have on the Moroccan economy.⁸ According to these simulations, under extreme conditions, water scarcity could lead to a drop in a permanent real GDP that could reach as much as 6.5 percent.

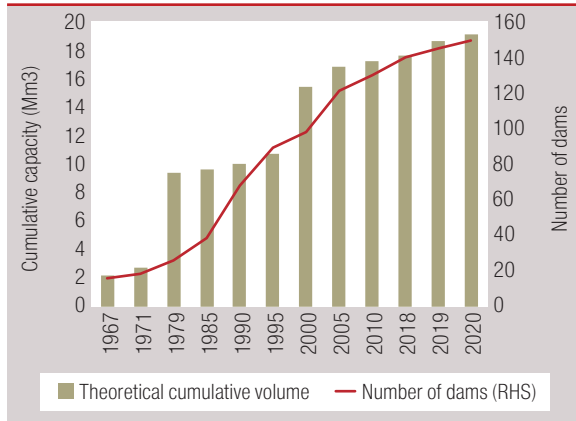
The government intends to continue relying on an ambitious infrastructure development plan to minimize the impact of droughts and water scarcity on the Moroccan economy. The 2050 National Water Plan (*Plan National de l' Eau*, PNE) envisages infrastructure investments worth about US\$ 40 billion to minimize the gap between projected water demand and supply over the decades to come. It includes projects to increase water mobilization by about 4.6 billion m³/year by 2050, mostly through the construction of new dams and interconnections. It also contemplates projects to contain demand growth through the modernization of water-saving irrigation techniques and the reduction of losses in the transport and distribution of potable water. Ultimately, the PNE intends to avoid, or at least minimize, the rationing of water supply to the various sectors of the Moroccan economy,

⁶ The 6.3 real contraction registered in Morocco in 2020 contrasts with the 3.7 contraction registered on average in the MENA region, -1.6 for emerging markets and developing economies, -1.3 for middle income countries, or -3.7 for the world as a whole. Instead, Morocco outperformed these various groups in 2021, expanding by an estimated 7.4 percent (3.4 in MENA, 6.6 in Emerging and Developing economies, 6.8 in middle income countries and 5.7 percent in the world).

⁷ This counterfactual is constructed assuming that after 2019 agricultural value added continues expanding at its historical long-term rate of 5.4 percent (geometric mean 2009–2019). These calculations still use the 2007 base year national accounts data.

⁸ Taheripour, Farzad; Tyner, Wallace E.; Haqiqi, Iman; Sajedinia, Ehsanreza. 2020. *Water Scarcity in Morocco: Analysis of Key Water Challenges*. World Bank, Washington, DC. © World Bank

FIGURE 20 • Evolution of water storage capacity

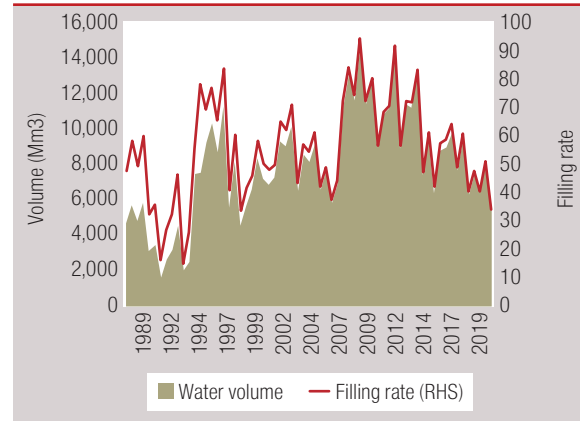


Source: National Water Plan (PNE).

But continuing to increase storage capacity may not be enough to effectively cope with water stress. Although Morocco has roughly doubled its water storage capacity since the mid-90s (Figure 20), the actual volume of water stored in the country's main dams has been on a declining trend for the most of the past decade (Figure 21). In fact, the overall filling rate reached a critically low level of about 33 percent earlier this year, posing a threat to water security in some of Morocco's basins (in particular, Souss-Massa, Tensift, and Moulouya), and prompting the authorities to adopt various emergency measures. In this context, resorting to desalination, wastewater reuse and rainwater harvesting has become a priority, and the PNE includes a portfolio of such projects that could mobilize close to 1.6 billion m³ per year. However, nonconventional water resources are an expensive option both in terms of OPEX and CAPEX, and hence may require a more active participation of the private sector, which may not materialize unless the structure of water tariffs is revised. In addition, desalination plants are energy intensive, and hence require concomitant power generation investments. Moreover, nonconventional water mobilization is not environmentally neutral.⁹

Counterintuitively, the widespread adoption of water saving technologies may have increased pressures on water resources. As already mentioned, the agricultural strategy implemented since the late 2000s (PMV) successfully promoted the adoption of modern on-farm irrigation equipment,

FIGURE 21 • Actual water stored in main dams



Source: Ministry of Equipment and Water.

more than tripling the cultivated areas under drip irrigation. The assumption behind this effort was that, by increasing water productivity, such irrigation technologies could help expand agricultural output while contributing to conserve the country's scarce water resources. In practice, while the first objective was achieved, modern irrigation technologies may have altered cropping decisions in ways that increased rather than decreased the total quantity of water consumed by the agricultural sector beyond sustainable levels. A consequence of this trend has been the overexploitation of underground water reservoirs, a worrisome outcome given their traditional cushioning role for Moroccan farmers to cope with climatic shocks. The literature refers to this counterintuitive impact of water saving technologies as the *Jevons paradox*, which occurs when "technological progress or government policy increases the efficiency with which a resource is used, but the falling cost of use increases its demand, negating the efficiency

⁹ The environmental impact of the energy required by desalination plants can be offset if generated from renewable sources, as planned in Morocco. However, desalination also generates brine that is disposed in the ocean, potentially degrading coastal and marine ecosystems.

¹⁰ For a comprehensive recent review of the literature, see Pérez Blanco, Hrast Essenfelder and Perry (2020), "Irrigation Technology and Water Conservation: A Review of the Theory and Evidence". August 2020 Review of Environmental Economics and Policy 14(2):216–239.

gains".¹⁰ In this context, there is growing international awareness about the limitations of policies that focus on the adoption of modern irrigation techniques to conserve water.¹¹

In this context, “engineering solutions” should be paired by demand management policies to support rural livelihoods while ensuring a sustainable use of water. Morocco’s New Development Model (NDM) already calls for policy reforms to reflect the true value of water resources and incentivize more efficient and rational uses. It also emphasizes the need for more transparency on costs all along the water chain, from mobilization to consumption and treatment. A revision of water pricing could indeed be a crucial requirement to incentivize a more rational use of what is clearly an increasingly scarce resource and for cost recovery. This may be

particularly important for irrigation purposes, which consume close to four fifth of total water inflows. Another mechanism that Morocco could explore is a system of tradable quotas, which could provide the flexibility that is needed for the optimal allocation of water amongst users. A more active monitoring use of groundwater is also a priority to cope with its over-exploitation. For such measures to be implemented, a governance reform may also be required, as already emphasized by the NDM, which called for the unbundling of the water and electricity branches of ONEE among other actions.

¹¹ The Jevons paradox occurs “when”. Bauer, Diana; Papp, Kathryn (March 18, 2009). “Book Review Perspectives: The Jevons Paradox and the Myth of Resource Efficiency Improvements”.

TECHNICAL ANNEX: LOCAL PROJECTIONS AND SVAR ECONOMETRIC SPECIFICATIONS

We used a structural vector autoregressive model and local projections model to understand the effect of the rainfall shocks on the gross domestic product of Morocco. We estimated a model with annually growth of average quarterly of precipitation (R_t) and GDP_t in the period 2001q1–2019q4. Both methodologies allow estimate the impulse-response function (IRF) to know the reaction of the Moroccan GDP to unexpected changes in rainfall.

Following Jordà (2005) and Plagborg-Møller & Wolf (2021) as it is done with vector autoregressions (VAR), the local projections can represent formally as

$$y_{t+h} = \alpha_h + \theta_{yx,h} x_t + \gamma'_h r_h + \sum_{l=0}^p A_{h,j} Y_{t-l} + u_{h,t} \quad (1)$$

Where y_{t+h} is the GDP at time $t+h$, x_t is the precipitations variable, and the r_t is the vector of control variables (EURO GDP and Food International Price). $u_{h,t}$ is the projection residual and α_{hp} , $\theta_{xy,lp}$, $A_{h,j}$ is the projection coefficients. We are interested of the coefficient $\theta_{xy,h}$, that it is the point estimation of LP impulse response

function that describe the effect of erratic rainfall on the output of Morocco at horizon h .

Following Kilian & Lütkepohl (2017) and Rubio-Ramírez et al. (2010), the SVAR can represent as:

$$A_0 Y_t = A_+ X_t + \varepsilon_t \quad (2)$$

Where $Y_t = [R_t \text{ } GDP_t]$ is the vector of the n endogenous variables, $X_t = [Y_{t-1} \dots Y_{t-p} \text{ } 1]$ is the vector of k ($n \times p$) explanation (lagged) variables, ε_t is the vector of n structural shocks with Normal distribution $N(0, I_n)$. A_0 and $A_+ = [A_1 \dots A_p \text{ } C]$ are the matrix of structural parameters for $j = 0, \dots, p$, n is the number of endogenous variables, p is the number of lags (selected with Akaike Information Criterion), T is the sample size. We ordered first the rainfall and then the macroeconomic variable to identify the structural shocks on SVAR model (recursive identification), since that the precipitations are not affected by macroeconomic variables in the short-term.

For the SVAR model, we use different tools of the SVAR that allow the interpretation of the estimated results. First, we obtain the impulse-response function that explain the effect of the

precipitation shocks on GDP at time h . Formally, we can define the IRF as:

$$\Theta_h(A_+, A_0) = (A_0^{-1} J^{ph} J),$$

$$F = \begin{bmatrix} A_1 A_0^{-1} & I_n & \dots & 0 \\ \vdots & \vdots & \dots & \vdots \\ A_{p-1} A_0^{-1} & 0 & \dots & I_n \\ A_p A_0^{-1} & 0 & \dots & 0 \end{bmatrix} \quad (3)$$

$$J = \begin{bmatrix} I_n \\ 0 \\ \vdots \\ 0 \end{bmatrix}$$

Where θ_h is a $n \times n$ matrix and its element θ_{ijh} represent the response of i th endogenous variable to j th structural shock at time h (Rubio-Ramírez et al., 2010).

Since the stationary condition of the endogenous variables and the matrix A_0 is invertible, we used the moving average representation to explain the GDP (demeaned) as a function of structural shocks (historical decomposition):

$$GDP_t = \sum_{s=0}^{t-1} \Theta_R^{GDP}(s) \times \varepsilon_{R,t} + \Theta_{GDP}^{GDP}(s) \times \varepsilon_{GDP,t} \quad (4)$$

With the equation (4) we can (historically) decompose the fluctuations of the annually growth of the GDP

between the shocks of precipitation $\varepsilon_{R,t}$ and output $\varepsilon_{GDP,t}$, where $\Theta_j^i(s)$ represents the response of i th endogenous variable to j th structural shock at time s (impulse-response function).

We also used the forecast error variance decomposition (FEVD) to obtain the percentage of participation of precipitation shocks on fluctuations of the gross domestic product. For this purpose, we estimated the squared cumulative effect of rainfall on GDP (squared impulse response function) up to horizon h . In addition, we obtained the forecast error covariance matrix (minimum squared prediction error) at horizon h , that it is the sum up of the contribution of the precipitation and output shocks. Formally, the FEVD can expressed as:

$$FEVD_{GDP,R,h} = \frac{\sum_{s=0}^{h-1} (\theta_R^{GDP}(s))^2}{[\sum_{s=0}^{h-1} (\theta_R^{GDP}(s))^2] + [\sum_{s=0}^{h-1} (\theta_{GDP}^{GDP}(s))^2]} \quad (5)$$

For more econometric details, see the book of SVAR writing by Kilian & Lütkepohl (2017), and Jordà (2005), Montiel Olea & Plagborg-Møller (2021) and Plagborg-Møller & Wolf (2021) as it is done with vector autoregressions (VAR for LP methods).

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Morocco's Growth and Employment Prospects: Public Policies to Avoid the Middle-Income Trap	March 2019	Policy Research Working Paper

SUMMARY OF SPECIAL FOCUSES FROM THE LATEST MOROCCO ECONOMIC UPDATES

FALL 2021 MEU: “Policy Pathways to Accelerate Morocco’s Economic Growth”

The New Development Model (NDM) sets ambitious objectives, the materialization of which would require a quantum leap in economic growth. To embark on a growth trajectory consistent with the ambitions of the NDM, the sustained implementation of a cross-cutting policy agenda will be key. The historical account presented in this report demonstrates that episodes of accelerated growth such as that envisaged by the NDM have been rare but not unprecedented in the World Economy. To achieve it, Morocco will have to overcome its overreliance on capital accumulation as its main source of growth. Rather, various simulations suggest that doubling per capita GDP by 2035 will require the Kingdom to markedly increase the contributions of productivity, labor, and human capital formation to economic growth. This will only be possible if the NDM translates into sustained and multi-faceted structural reforms.

Spring 2021 MEU: “COVID-19, Inequality, and Jobs in Morocco”

Beyond the aggregate effects of the COVID-19 pandemic, it is becoming clearer that the economic consequences of the crisis are being unequally distributed. The large and unequal socio-economic impact of the crisis were partly mitigated by the extensive cash transfer programs rolled out during the lockdown period. In Morocco as elsewhere, poorer segments of the population have been more exposed to the health and economic consequences of the pandemic. As a result, the incidence of poverty has increased after several years of sustained social progress and is not expected to return to pre-pandemic levels until 2023. A peculiarity of the Moroccan case is that the policy response to the crisis has been effective at cushioning the income reduction that a large proportion of poorer households would have suffered in the absence of the widespread emergency cash transfers that were rolled out during the lockdown period. However, these measures were

temporary in nature, and a more structural approach will be needed to ensure that the benefits of the post-COVID recovery will be evenly distributed. The sweeping social protection and health insurance reforms the Kingdom is embarking on are responding to such necessity. Further, the long-term challenges

that characterize Morocco's labor markets may need to be addressed, namely, its insufficient capacity to create new jobs even when the economy is growing, high inactivity especially among the young and the female population, and slowly declining levels of informality.



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