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# The Impact of COVID-19 on Tunisia's Economy, Agri-food System, and Households

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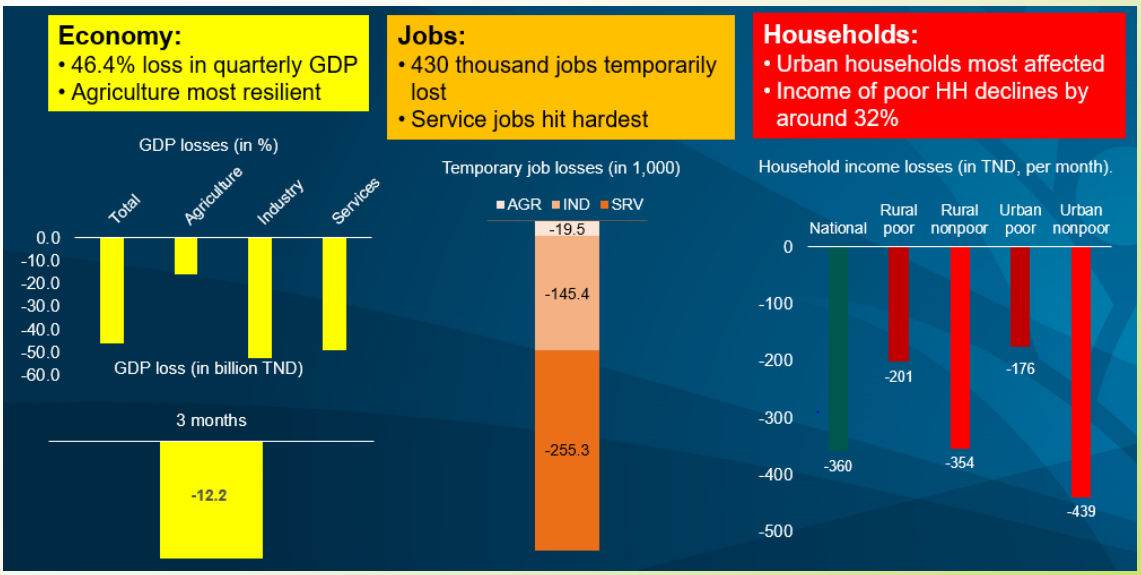



The COVID-19 crisis is expected to lead to a 46.4 percent decline in Tunisia's GDP during the 2nd quarter of 2020 (April to June). The industrial sector will be hit hardest, with output falling by 52.7 percent, followed closely by services (–49.0 percent) and agriculture (–16.2 percent). These high losses are a result of the complete lockdown imposed in the country to contain the pandemic.

Higher-income urban households will see the largest income losses, although lower-income urban households also will experience significant reductions in their income. As a policy response, social transfers towards poorer households will reduce the adverse welfare impact of these drops in household income.

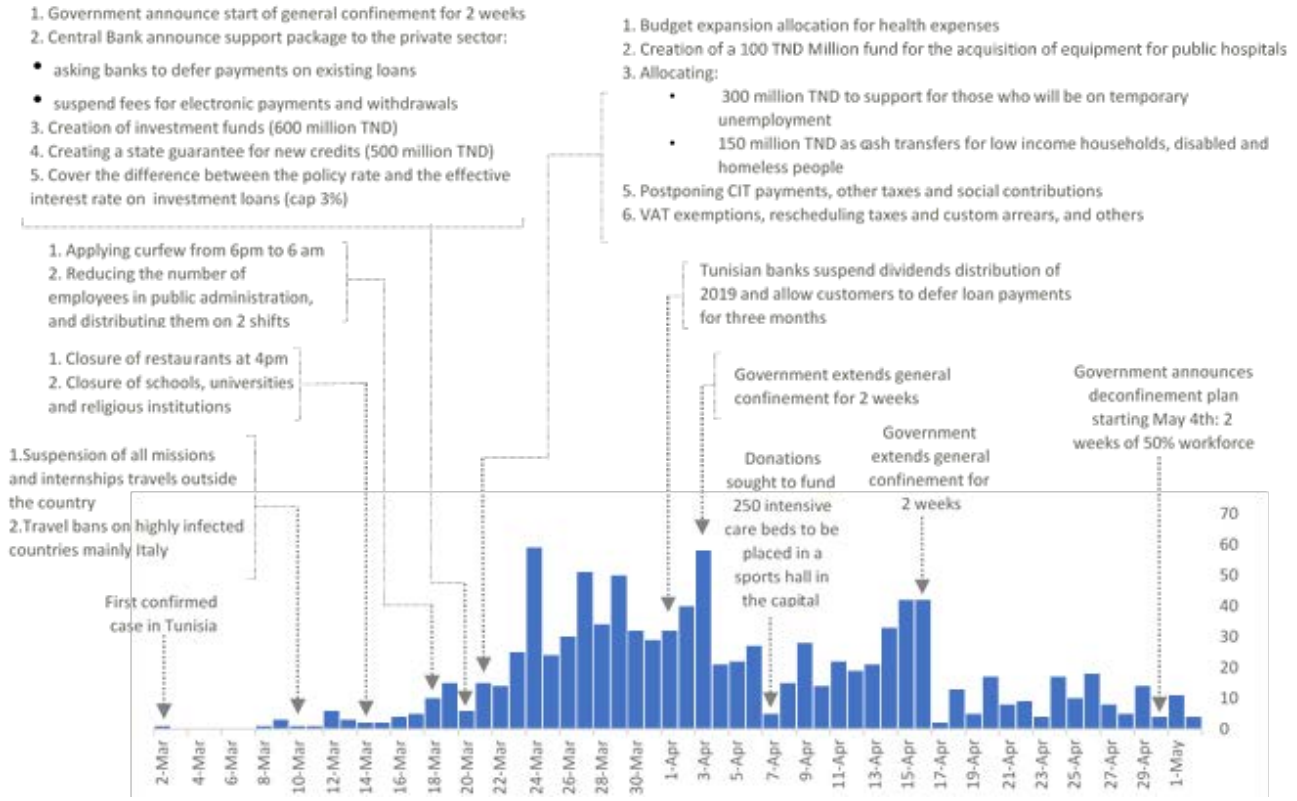
Government policies to support struggling businesses will allow economic activities to revive more rapidly when the lockdown loosens. Consequently, comprehensive planning by the Government of Tunisia to re-open the economy will be critical to reduce the pandemic's adverse impact on the country's economy in the longer-term, reducing losses of employment and income, especially in manufacturing and retail.

## COVID-19 is interrupting economic activities in Tunisia

The COVID-19 pandemic quickly evolved from a health crisis to a large-scale global economic crisis. The International Monetary Fund (IMF) forecasts that the world will fall into recession in 2020 and, as a result, the prevalence of extreme poverty globally may increase by 0.7 percent (Mahler et al. 2020). As the virus now has reached almost all countries in the world, hundreds of billions of dollars are being mobilized to support companies and their employees and households. Europe and the US have launched large-scale support packages. International financial and development institutions have declared their willingness to support those developing countries that have limited fiscal space to fight COVID-19 and its harmful economic effects.

Like most of the world's countries, Tunisia is facing a new unfamiliar challenge. Tunisia's government quickly realized the critical health challenge of COVID-19 and took measures to contain the virus (See Appendix 1). Nonetheless, as of 1 May 2020, 998 cases had been recorded in the country, of which 41 died, 316 recovered, and 641 remain under treatment. Since the announcement of the first case on 2 March, the Tunisian government put in place a series of measures to mitigate the health, economic, and social effects on the Tunisian economy and the most vulnerable members of Tunisian society (Figure 1). The government on 22 March shut down the national borders, stopped non-essential activities, closed restaurants and cafés, and, for companies wishing to continue working, allowed them to only use 15 percent of their workforce. These exceptional measures have had a strong impact on economic activity.

### Figure 1: Tunisia – timeline of new COVID-19 cases and policy responses, 2020




Source: Authors, based on various sources.
Note: TND = Tunisian Dinar (TND 1.00 = USD 0.34); CIT = corporate income tax; VAT = value-added tax.

Such measures have had a positive impact on COVID-19 containment. Indeed, the current health situation, after more than a month of the containment measure being in place, is showing a drop in new infected cases. However, economically these measures are likely to continue to aggravate the economic recession with sharp reductions in production and interruptions to trade and supply chains. Thus, with the almost total shutdown of economic activities aside from essential

activities, such as groceries, bakeries, and health facilities, indirect secondary economic and social effects now are being seen in Tunisia, affecting both the macroeconomy and households.

The negative effect on the Tunisian economy will come via both demand and supply channels. On the one hand, containment measures and negative consumer and business sentiment will suppress demand. At the same time, the closure of some factories and disruption to supply chains is and will continue to create supply bottlenecks. Using a Social Accounting Matrix (SAM) multiplier model for Tunisia, we assess the COVID-19 impact on the Tunisian economy, sectors, employment, and household income. This multiplier model allows us to estimate the short-term direct and indirect effects of identified impact channels; and assessing the economy-wide effects of local demand and supply shocks associated with the restrictions imposed on the movement of people and on the economy.

## COVID-19 affects all sectors in the Tunisian economy

The assumptions of losses in economic activity used in this study are based on declarations by the authorities, the results of a recent business survey,[1] announcements by some business leaders, and the last IMF and World Bank outlook report for Tunisia. In addition, we have used economic data available for the first quarter of 2020, in particular those on foreign trade and on remittances. Note that these assumptions may change over time depending on the duration of restrictions on economic activities. These assumptions are brought into our analysis using the SAM multiplier model for Tunisia described later in this brief (See summary of assumptions in Appendix 2.)

**Agriculture** and agribusiness activities on the local market have been disturbed by the COVID-19 pandemic. When the first cases were identified in Tunisia, households started stocking basic food commodities, such as semolina, flour, sugar, oils, and dairy products. This resulted in short-term shortages. This significant level of stocking by households is reflected in a 26 percent increase in demand for wheat products, causing significant disruptions in distribution channels.

The supply of fruit also was adversely affected by the confinement and social distancing measures, as fruit farming is labor-intensive. Restrictions on movement of fruit farm workers sharply reduce fruit supply to local markets. Additionally, adequate stocks within the network of refrigerated storage units for fruit in Tunisia has reduced farmer incentives to collect fruit under current market conditions. For similar reasons, the supply of cattle to local markets is sharply reduced.

**Industry**: The industrial sector has been affected mainly through the textiles and clothing and the mechanical and electrical industries sub-sectors. With growth in these two sectors already having slowed last year, the global COVID-19 control measures amplified the fall in foreign demand for the output of these sub-sectors. According to a business leader's survey,[2] losses could attain 50 percent for textiles and clothing industries and 60 percent for mechanical and electrical industries. Respondents to this survey estimate that the loss of activity for the Tunisian industrial sector as a whole will be more than 50 percent.

**Services**:

- *Tourism* receipts fell by almost 30 percent, affected by the closure of international borders in March.[3] With the complete lockdown during the month of April, all foreign tourist bookings were cancelled leading to an estimate drop in Tunisia's tourism sector of 80 percent.[4]

[1] The business survey was done by the Institut Arabe des Chefs d'Entreprises and the Agency for the Promotion of Industry and Innovation.

[2] The survey of business leaders was done by the Institut Arabe des Chefs d'Entreprises.

[3] Central Bank of Tunisia. *Note sur l'évolution économique et monétaire.* April 21, 2020.

- *Transport* is the second most affected services sub-sector by the crisis. Despite the partial operation of freight transport, restrictions on passenger mobility led all modes of transport to close to a standstill. Economic losses are estimated at 60 percent.
- *Wholesale and retail trade* have been affected by the closure of businesses, except for food trade. Losses are estimated at 62 percent of turnover (IACE 2020).
- *Energy* consumption decreased, being affected by the closure of factories. The Ministry of Energy reported that consumption of petroleum products in March 2020 was 21 percent lower than in March 2019. Demand for electricity, natural gas, gasoline, diesel, and fuel oil in March 2020 compared to March 2019 declined by 28, 26, 74, 56, and 90 percent, respectively.[5]
- *Construction and other market services* are estimated to have seen a loss in activity of 47 percent and 58 percent, respectively (IACE 2020).
- *Education sector* institutions in aggregate have seen a loss in activity of 5 percent.
- *External trade* has sharply declined due to the shutdown of Tunisia's borders, particularly trade with France, Italy, Germany, and China. Overall exports and imports fell in March by 30 and 27 percent, respectively.[6] All sub-sectors involved in foreign trade recorded a decline – notably clothing and textiles with a 45 percent drop, mechanical and electrical industries with a 34 percent decline, other manufacturing industries with a drop of 30 percent, energy with a decline of more than 12 percent, and mining, phosphates, and derivatives seeing trade drop by 17.5 percent. For agriculture trade, the restriction imposed on imports of fresh products by European Union, which absorbs almost 80 percent of fresh produce (including fish) exported by Tunisian producers, has results in a significant drop in exports. For example, losses on fish exports in March were estimated at 652 metric tons, with a value of TND 13.3 million.[7]
- *Remittances* are estimated to have declined by 10 percent. This is a result of increased unemployment among Tunisian workers in foreign countries due to the global economic crisis and lack of access to health care, resulting in a surge of the repatriation of these workers from abroad. By mid-April, 9,000 Tunisians had been repatriated and a further 3,600 repatriation requests were in process, as announced by the Minister of Foreign Affairs.[8]
- *Social transfers* to economically vulnerable individuals and households are provided under the government social support program. The TND 2.5 billion program now aims to help contain the adverse economic, social, and health effects linked to the COVID-19 crisis. Providing new equipment to the health sector and directing social transfers to families in need has cost TND 950 million since January 2020. In addition, the government has guaranteed to the population a minimum income to ensure the means of subsistence and has set up a program to save jobs by paying for employers part of the social contributions they need to make for each of their employees. Fiscal and financial measures have also been instituted to provide economic support to small and medium-sized firms.

[4] African Manager. 2020. *Tunisie: le coronavirus fait pâlir un tourisme déjà fragile!.* URL: https://africanmanager.com/tunisie-le-coronavirus-fait-palir-un-tourisme-deja-fragile/. Accessed May 4, 2020.

[5] L'Economiste Maghrébin, « Impact du covid-19 sur la demande d'énergie », 25 April 2020

[6] Institut National des Statistiques (INS). Commerce extérieur à prix constant base 2015. Mars 2020

[7] Note de veille, Observatoire national de l'agriculture (ONAGRI), 23 March 2020. http://www.onagri.nat.tn/uploads/veille/note-veille-23032020.pdf

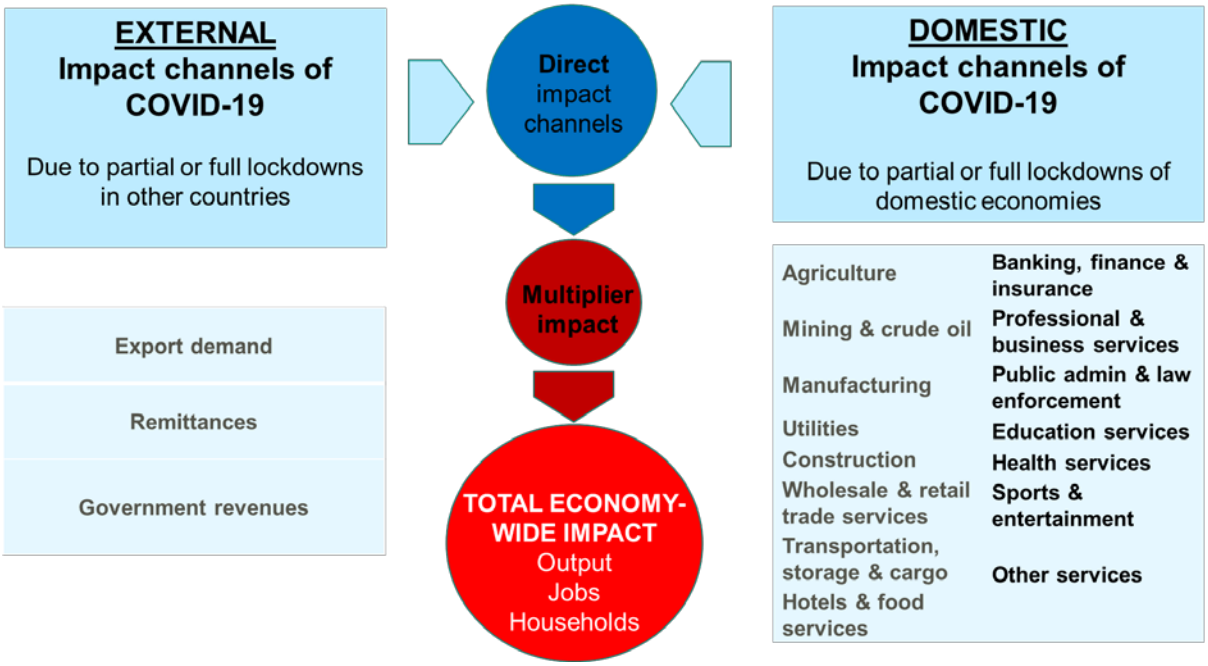
[8] These individuals are not only workers in foreign countries. As students and other Tunisians stranded outside the country are also being repatriated, this justifies our hypothesis of a 10 percent drop in remittances.

## Assessing short-term COVID-19 impacts with SAM multiplier models

Social Accounting Matrix (SAM) multiplier models are ideally suited to measuring short-term direct and indirect impacts of unanticipated, rapid-onset demand-side economic shocks, such as those caused by the COVID-19 pandemic. At the heart of the multiplier model is a SAM, an economy wide database that captures resource flows associated with all economic transactions that take place in the economy, usually over the course of a financial year. As such, the SAM represents the structure of the economy at a point in time, showing the relationships between actors, i.e., productive activities, households, government, and foreign institutions, in terms of how they interact and transact via commodity and factor markets. The SAM multiplier model provides a mechanism for estimating the effects of an external shock – typically an exogenous change in final demand for goods and services – on sectoral and national production, factor incomes (wages or rents), and household incomes on the basis of the production, employment, and consumption relationships captured in the SAM database.

Apart from the direct production effect in the sector affected by the demand change, other sectors are affected indirectly via changes in demand for intermediate inputs that are defined by input-output relationships. The resulting changes in the levels of production or composition of employment could lead to further changes in household consumption demand. The strength of the multiplier model lies in the fact that the multiple rounds of these indirect effects are fully estimated. The more detailed the SAM is in terms of the activities, commodities, and factor and household accounts it includes, the more refined the SAM multiplier analysis will be for analyzing the direct and indirect impact pathways and distributional effects of the external shock.

**Figure 2: Conceptual framework of the SAM multiplier model for the Tunisian economy**




Source: Kamali et al. (forthcoming).

There are external and internal impact channels. External channels include exports and remittances, while the domestic impact channels depend on full or partial lockdown measures (Figure 2). These domestic impact channels might provoke negative effects due to, for example, the closure of restaurants, factories, and commercial shopping centers. In addition, they might also induce positive outcomes, especially, in the case of COVID-19, with regards to the communication and health-related sectors. In the SAM multiplier model, a closure of restaurants, for example, is modeled as a 100 percent loss of restaurant output. Similarly, if textile factories are operating with

two shifts instead of three, we assume a reduction of about 30 percent in the output of the textile sub-sector.

Both the external and domestic impact channels induce a direct impact on economic activity. However, there also are several rounds of indirect effects. For example, with restaurants and hotels sharply reducing their demand for food, both food producers and food processors will see a significant drop in demand for their products, adversely affecting their economic performance. These are the multiplier effects that are captured by our economywide SAM multiplier model.

The short-run analysis period assumes that all technical input-output relationships, the input choices of producers, and the consumption patterns of households do not (yet) change in response to the simulated shock. While such behavioral responses are captured in general equilibrium models, the anticipated short-term nature of the COVID-19 shock and the likelihood that the economy will return to a "business-as-usual" state once the crisis dissipates makes the SAM multiplier framework a more appropriate tool for analyzing this particular shock. (see Breisinger et al. 2009; Round 2003.). Consistent with the short-term nature of the analysis, we assume that households, the government, savings-investments, and international trade are exogenous to the operations of the model.

The Tunisia multiplier model is based on a SAM developed jointly by Tunisia's Institut Tunisien de la Compétitivité et des Etudes Quantitatives (ITCEQ) and the International Food Policy Research Institute (IFPRI). It should be noted that the development of the SAM took more than a year to complete. While the SAM for Tunisia is based on a 2015 base-year, multiplier results from 2019 are applied to national accounts, household income, and population data to permit an assessment of the likely impacts of COVID-19 in 2020. This note uses an extended version of the SAM multiplier model that allows for capturing sector-level impacts and any seasonality in those impacts (Thurlow 2020).

## Simulating the economic impacts of COVID-19

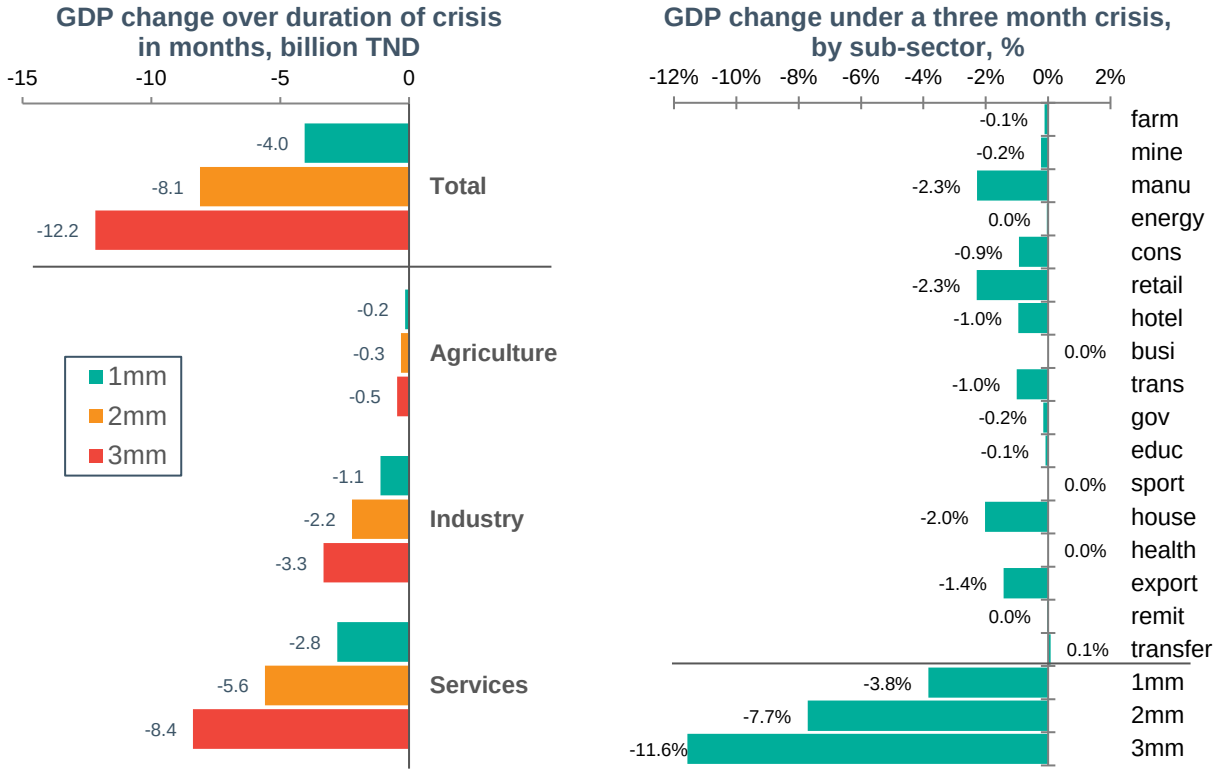
The model simulation considers the yearly effect of the crisis if both the crisis and its accompanying restrictive economic policies last for one, two, or three months starting from March 2020. The temporal choice of the length of crisis is compatible with the different phases of the containment and recovery measures decided by the Tunisian authorities. (See Appendix 3 for the planned schedule of lockdown measures to contain COVID-19 in Tunisia.)

### *Impact on economic output (GDP)*

The left side of Figure 3 presents the impact of COVID-19 pandemic on economic output (GDP) for the one, two, and three month (mm) duration scenarios in the absence of any policy responses. For a one month full lockdown of economic activity, the loss to the economy is estimated at 3.8 percent of annual GDP, or TND 4 billion, compared to a contraction of annual GDP of 4.3 percent estimated by the IMF.[9]. Under the two and three month crisis duration scenarios, the Tunisian economy will lose 7.7 and 11.6 percent of its annual GDP, respectively, or TND 8.1 billion and TND 12.2 billion, respectively. With a previous forecast of annual GDP growth for 2020 for the Tunisian economy of 2.2 percent (World Bank 2020), these estimates indicate that Tunisia is facing economic recession in the absence of any policy responses. Compared to the second quarter of 2019, the Tunisian economy will see a reduction in GDP of 46.4 percent in the second quarter of 2020.

[9] International Monetary Fund (IMF). 2020. *IMF Executive Board Approves a US$745 Million Disbursement to Tunisia to Address the COVID-19 Pandemic*. URL: https://www.imf.org/en/News/Articles/2020/04/10/pr20144-tunisia-imf-executive-board-approves-a-us-745m-disbursement-address-covid19-pandemic, accessed May 14, 2020.

**Figure 3. Impact of COVID-19 crisis on output in the Tunisian economy**




Source: COVID-19 Tunisia multiplier model

Based on the SAM model simulation, the agriculture sector is shown to be the economic sector least affected with an annual projected GDP decline of TND 0.5 billion (Figure 3, left). This lower impact reflects in part the continuing need for food by the population even though agricultural markets are seeing much lower activity. However, the agri-food system, including agriculture, food processing, and affiliated services, leads to an annual GDP decline of 2.5, 5.0, and 7.5 percent over the one, two, and three months crisis duration simulations, respectively (Table 1).

**Table 1: COVID-19 impact on Tunisia's agri-food system, percent change in annual GDP by length of crisis**

| Crisis period | Total | Agriculture | Processing | Affiliated services |
|---|---|---|---|---|
| **One month** | -2.5 | -1.3 | -1.1 | -6.6 |
| **Two months** | -5.0 | -2.7 | -2.2 | -13.4 |
| **Three months** | -7.5 | -4.0 | -3.4 | -20.1 |

Source: COVID-19 Tunisia multiplier model

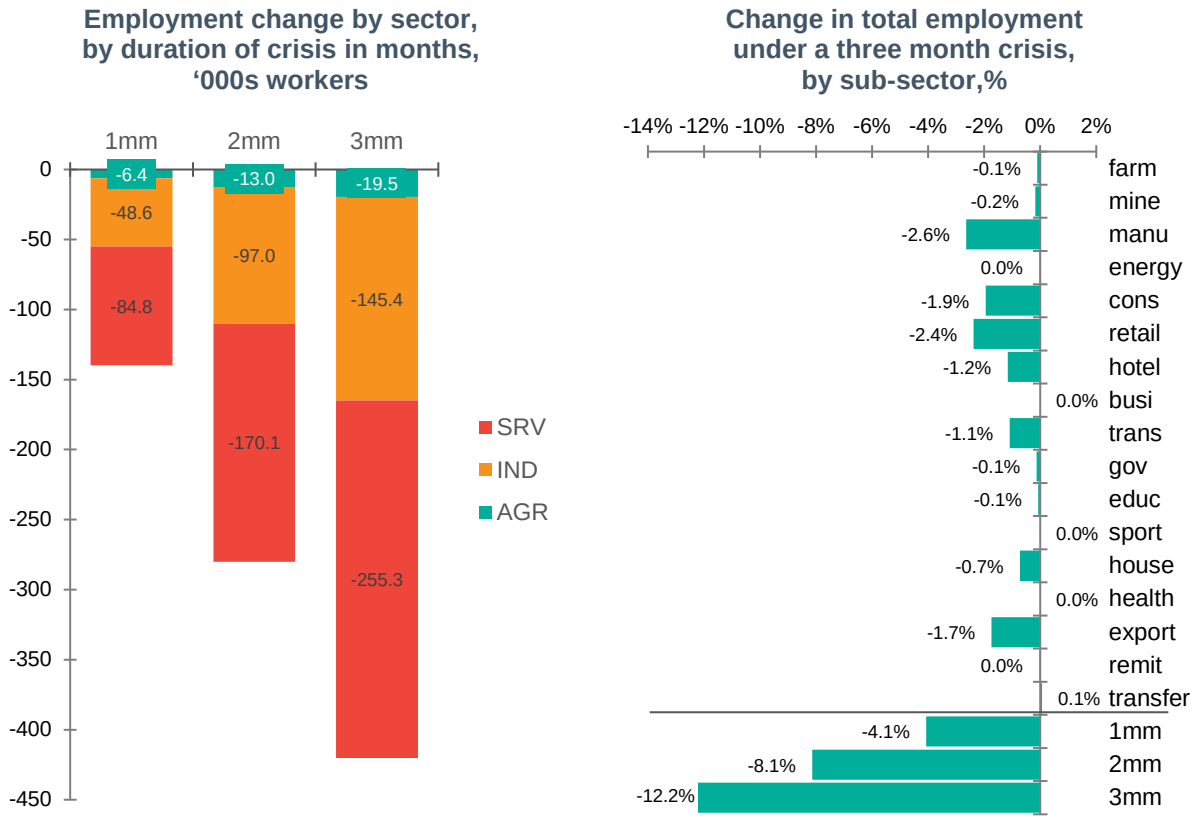
The industrial sector is more sharply affected with factory closures, declines in trade flow, restrictions on the availability of imported raw materials, and a drop in Tunisian exports overall. Manufacturing firms account for the major share of the decline in the economic performance of the industrial sector, showing a 2.3 percent decline of total annual GDP with a crisis duration of three months (Figure 3, right). Construction contributes approximately 0.9 percent to the annual GDP decline, while mining and energy have an insignificant share in the decline.

The services sector accounts for the dominant share of the projected annual GDP decline with TND 5.6 billion and TND 8.4 billion decreases over the two and three month crisis duration scenarios, respectively (Figure 3, left). Retail represents 2.3 percent of the total annual GDP decrease for the three-month scenario, while hotels represent 1.0 percent (Figure 3, right).

### *Impact on employment*

Lower economic activity resulting from the COVID-19 crisis negatively affects employment. Current employment will reduce by 4.1, 8.1, and 12.2 percent over the one, two, and three month crisis duration scenarios, respectively (Figure 4, right). The total number of jobs lost is estimated at 143,000, 287,000, and 430,000 over the one, two, and three month crisis duration scenarios, respectively (Figure 4, left).

**Figure 4. Impact of COVID-19 crisis on employment in Tunisia**




Source: COVID-19 Tunisia multiplier model

Looking at losses of jobs by sector, the employment loss in the services sector mirrors the magnitude of its loss in output (GDP) – an expected 255,000 jobs will be lost in services over 2020 if the crisis lasts for three months (Figure 4, left). The principal sub-sectors contributing to this are retail, which will see a loss in workers of 2.4 percent; hotels, 1.2 percent; and construction, 1.9 percent. Employment loss in the industrial sector is also significant. The manufacturing sub-sector will see employment contract by 2.6 percent if the crisis lasts for three months. Employment losses within the agriculture sector, in comparison to those in the services and industrial sectors, will be relatively minor.

### *Impact on household income*

Incomes of all households in Tunisia are expected to decline, affected by reduced production and output due to the lockdown. At national level, households will lose on average 5.7 and 8.6 percent of their annual income under the two and three month crisis duration scenarios, respectively (Table 2). Households that are employed in manufacturing and retail will see the largest average household income declines across sub-sectors – both are expected to experience a 1.7 percent drop in average total annual income under the three month crisis duration scenario (Figure 5, left).

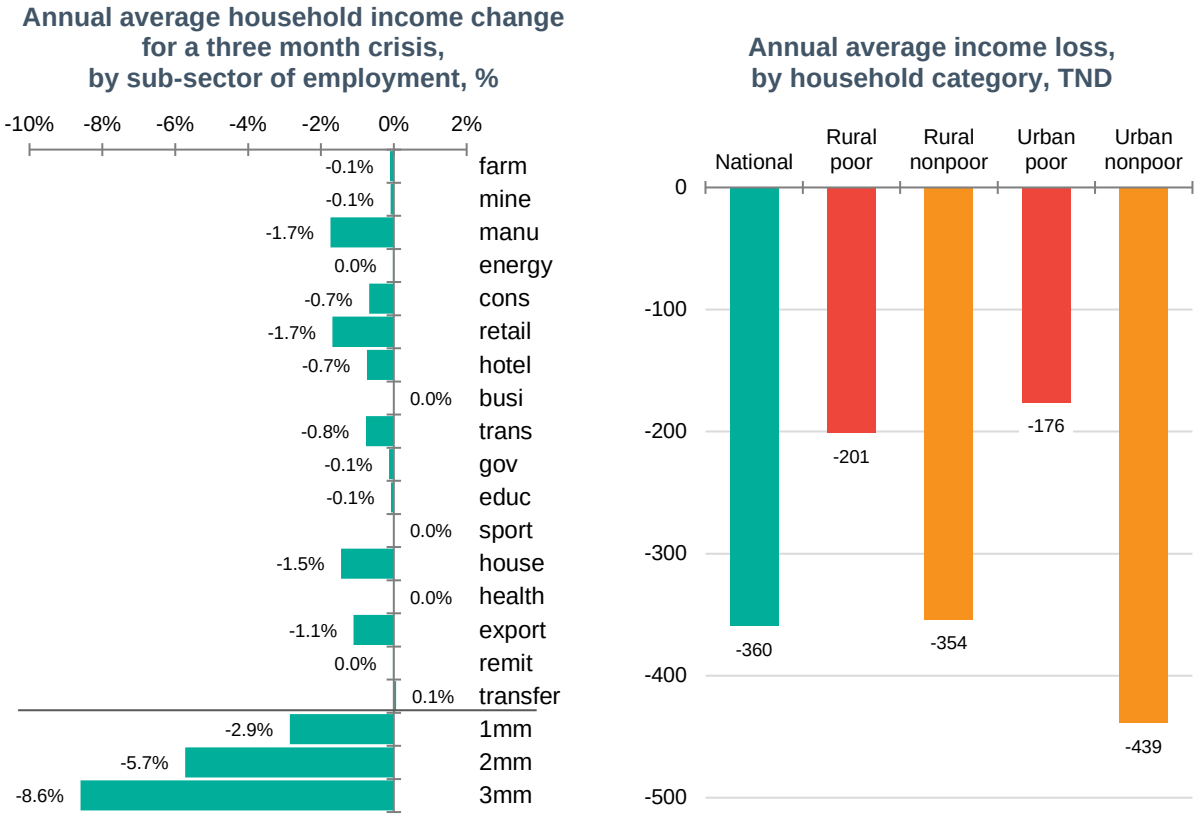
### Table 2. COVID-19 impact on household income in Tunisia, percent change in employment by length of crisis

| Crisis period | National | Rural | Urban |
|---|---|---|---|
| **One month** | -2.9 | -2.6 | -2.9 |
| **Two months** | -5.7 | -5.2 | -5.9 |
| **Three months** | -8.6 | -7.8 | -8.9 |

Source: COVID-19 Tunisia multiplier model

Urban household income losses are of greater magnitude than those of rural households. The SAM model simulation of the economic effects of a crisis lasting three months shows that urban households will on average see their incomes drop 8.9 percent, while rural households will experience a decline of 7.8 percent (Table 2). Similarly, non-poor households in rural and urban areas will experience a higher absolute loss in income compared to poor households. Rural poor households are estimated to experience an average total income loss of TND 201, while urban poor households will lose TND 176 of their current average income (Figure 5, right). The losses for non-poor households are TND 354 for the rural non-poor and TND 439 for the urban non-poor.

### Figure 5. Impact of COVID-19 crisis on income for Tunisian households




Source: COVID-19 Tunisia multiplier model

The asymmetry in income losses between both urban and rural households and between poor and non-poor households can be explained by the fact that major losses of income due to the economic lockdown primarily will be seen in sectors based in urban areas and providing higher incomes, such as manufacturing, trade, and tourism. While agricultural production, which is the dominant economic activity in rural areas, is not so strongly and directly affected by the lockdown, although agricultural production and marketing process are affected by reduced levels of demand and the sharp fall in transportation availability.

## Conclusion

The assessment of the economic impact on the Tunisian economy of supply and demand shocks caused by the containment measures applied to slow the spread of COVID-19 shows significant effects. The effect of the containment measures put in place by the Tunisian authorities – with 6 weeks of general confinement with full lockdown of economic activity and 6 weeks of partial lockdown – costs a loss of growth to the economy that is estimated at 3.8 percent if the crisis duration is one month and 11.6 percent if three months, equivalent to TND 4.0 and 12.2 billion, respectively.

Employment losses are estimated at 143,000 jobs for a one-month crisis and 430,000 for a three month crisis. Year-on-year change in total employment will be 12.2 percent less compared to 2019. Household income will decrease on average by 2.9 percent for a one month crisis and 8.6 percent for a three month crisis. Greater absolute losses in income are seen for households resident in the urban areas of Tunisia. Impacts for households involved in agriculture and other components of the food system of Tunisia are less severe than for households whose members are working in other sectors of the economy. Most of the economic damage due to COVID-19 will occur in the non-farm components of the Tunisian economy and mainly result from falling consumer demand. While higher income and urban households face the largest absolute income losses, lower income and rural households will also see their incomes decline significantly and may find it more difficult to cope with these losses in income

The level of social protection required to fully offset income losses for poor households is likely to be prohibitive, especially given falling government revenues from reduced economic activity. Therefore, gradually continuing to fully open the economy again will be critical for avoiding permanent job losses and increases in poverty across Tunisia. The re-opening of the economy and related government support to sectors may also provide new opportunities for fostering sustainable economic transformation.

However, faced with the magnitude of the effects of COVID-19, the containment measures put in place by the Tunisian government in the context of a fragile macroeconomic situation and with the fall in tax revenue linked to the lockdown of activity, the authorities will need to mobilize additional resources. Given the global scope of the health crisis and the magnitude of its economic effects, the world must work together to re-open trade, tourism and help those countries, such as Tunisia, that need support in order to weather this unprecedented crisis.

## References


Breisinger, C., M. Thomas, and J. Thurlow. 2009. *Social Accounting Matrices and Multiplier Analysis: An Introduction with Exercises.* Food Security in Practice Technical Guide no. 5. Washington, D.C.: IFPRI.

IACE (Institut Arabe des Chefs d'Entreprises). 2020. *L'impact du covid19 sur les entreprises tunisiennes*. Tunis: IACE.

Kamali, A., M. Karara, C. Breisinger, M. Raouf, and M. Wiebelt. forthcoming. *COVID-19 and the Egyptian economy: Impact of slowing domestic activity on economic sectors, jobs, and households*. MENA Regional Program Policy Note. Cairo: International Food Policy Research Institute.

Mahler, D.G., C. Lakner, R.A. Castaneda Aguilar, and H. Wu. 2020. *The impact of COVID-19 (Coronavirus) on global poverty: Why Sub-Saharan Africa might be the region hardest hit*. Washington, DC: International Monetary Fund.

Round, J. 2003. "Social accounting matrices and SAM-based multiplier analysis." In: *Techniques and Tools for Evaluating the Poverty Impact of Economic Policies,* Bourguignon F. and L. A. Pereira da Silva, eds. Washington, D.C. and Oxford: World Bank and Oxford University Press.

Thurlow, J. 2020. *A standard multiplier model for COVID-19 assessments*. Unpublished SAM multiplier model (available upon request). Washington, DC: International Food Policy Research Institute.

World Bank. 2020. *Tunisia COVID-19 response project*. Washington, DC: World Bank. https://projects.worldbank.org/en/projects-operations/project-detail/P173945?lang=en&tab=overview, accessed April 27, 2020.

# Appendices

## Appendix 1. Policy measures taken in Tunisia to contain COVID-19 transmission and mitigate the economic effects, March 2020 to present

| Sector | Measures | Size or cost of measures |
|---|---|---|
| **Health policies** | Expansion of health budget to provide equipment for public hospitals; building new health facilities; importing of testing kits | TND 100 million |
| **Social protection interventions** | Cash transfers for low-income, disabled, homeless, temporary unemployed because of the COVID-19 | TND 150 million allocated for low-income households (those with annual incomes below TND 1,000), the disabled, and the homeless.<br>TND 300 million allocated for unemployment benefits. |
| **Fiscal policies** | Postponing payments of corporate income tax, other taxes, and social contributions.<br>Increase in value-added tax (VAT) exemptions; changes in VAT refund procedures, including reimbursement acceleration.<br>Rescheduling taxes and custom arrears. | |
| **Monetary policy** | Relief for interest on loans, reduction of interest rate (rate reduced by 100 basis points).<br>Suspension of electronic banking fees.<br>Arrangements for debt restructuring and deferment of payments. | TND 600 million for the creation of an investment fund<br>TND 500 million as a state guarantee for new credits. |
| **Foreign aid** | Donations and loans from countries and institutions to fight COVID-19, including from the European Union, Italy, China, the World Bank, the IMF, and Jordan. | EUR 300 million grant;<br>USD 20 million grant;<br>USD 745 million loan |

## Appendix 2: Overview for Tunisia of commodity-level and sub-sector loss estimates due to COVID-19 – SAM multiplier model assumptions

| Commodity | Output share affected, % | Export shock, % | Commodity | Output share affected, % | Export shock, % |
|---|---|---|---|---|---|
| **Farming** | | | Other foods | zero | zero |
| Wheat and barley | zero | zero | Animal feed | zero | zero |
| Other cereals | zero | zero | Beverages | zero | zero |
| Other oilseeds | zero | zero | **Manufacturing** | | |
| Other roots | –10 | zero | Tobacco processing | zero | zero |
| Other vegetables | zero | zero | Textiles | –50 | –45 |
| Other fruits | –10 | –10 | Paper products & publishing | –50 | zero |
| Other crops | zero | zero | Petroleum products | zero | zero |
| Cattle | –10 | zero | Fertilizers and herbicides | –10 | zero |
| Raw milk | zero | zero | Other chemicals | –10 | –20 |
| Poultry | zero | zero | Non–metal minerals | –50 | –30 |
| Eggs | zero | zero | Metals and metal products | –60 | –30 |
| Other livestock | zero | zero | **Energy and utilities** | | |
| **Forestry** | zero | zero | Electricity, gas and steam | –20 | zero |
| **Capture fisheries** | –10 | –10 | Water supply and sewage | zero | zero |
| **Mining** | | | **Services** | | |
| Crude oil | –20 | –10 | Construction | –47 | zero |
| Other mining | –20 | –20 | Wholesale & retail trade | –62 | zero |
| **Food Processing** | | | Transportation & storage | –60 | –50 |
| Meat processing | zero | zero | Accommodation | –80 | –70 |
| Fish & seafood processing | zero | zero | Information & communication | zero | zero |
| Dairy | zero | zero | Finance and insurance | zero | zero |
| Fruit & vegetable processing | zero | zero | Public administration | –5 | zero |
| Fats and oils | zero | zero | Education | –5 | zero |
| Other grain milling | zero | zero | Health and social work | zero | zero |
| Sugar refining | zero | zero | Other services | –58 | –10 |

## Appendix 3: Lockdown measures instituted or scheduled in Tunisia to contain COVID-19 in the first six months of 2020

| January | February | March | | April | May | June | |
|---|---|---|---|---|---|---|---|
| Full month | Full month | 1st half | 2nd half | Full month | Full month | 1st half | 2nd half |
| No lockdown | | | Full lockdown (started 22 March) | | Partial lockdown | | No lockdown |
| | | | Cessation of activity for non-essential sectors; restriction of economic activity to 15 percent of workforce | | 50 percent recovery of economic activities | 75 percent recovery of economic activities | 100 percent recovery of economic activities |

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