

Final report

The impact of COVID-19 on Amhara National Regional State's economy

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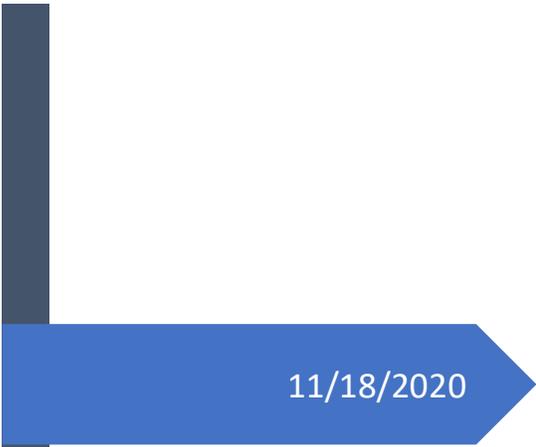


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Getachew Abegaz, Seneshaw Beyene and Tilahun Emiru

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List of Acronyms

Acronym	Meaning
ADF	African Development Fund
ANRS	Amhara National Regional State
ASCI	Amhara Saving and Credit Institution
CES	Constant Elasticity Substitution
COVID-19	Corona Virus Disease 19
CSA	Central Statistics Agency
EU	European Union
GDP	Gross Domestic Product
HCE	Household Consumption Expenditure
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
IOM	International Organization for Migration
IO Model	Input Output Model
NERD	National Emergency and Risk Plan
OECD	Organization for Economic Cooperation and Development
PSI	Policy Study Institute
SAM	Social Accounting Matrix
SNNP	Southern Nations, Nationalities, and Peoples
TFP	Total Factor Productivity
UNWTO	United Nations World Tourism Organization
SDG	Sustainable Development Goals
MDG	Millennium Development Goals

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1. Introduction

The novel coronavirus that was first discovered in Wuhan, China at the end of 2019 has triggered shockwaves that reverberated throughout the rest of the world. What was at first a health crisis quickly expanded its scope to become a trio of economic, social, and political crises. At the time this report is written, about 43 million people have contracted the virus and over 1.1 million people have died globally. Governments have taken measures to control the spread of the virus and to mitigate the wide-ranging consequences of COVID-19. These measures, while they have arguably had some success in terms of slowing the spread of the virus, have also led to some undesirable consequences on economies all around the world.

The first COVID-19 case in Ethiopia was detected on March 13, 2020. Upon this news, the Ethiopian government took several preventive measures that were aimed at making sure the virus does not spread uncontrollably and overwhelm health care facilities that are already working to their capacity. The goal of these measures, as is often said, has been to “flatten the curve.” All the same, the government has been taking economic and legal policy measures that aim to minimize the adverse economic and social effects of the virus as well as the government responses.

While most of the COVID-19 cases in Ethiopia are located in and around Addis Ababa, there is no region in the country that managed to stay clear from the spread of the virus and slowing down economic activity. Consequently, the first coronavirus case in Amhara National Regional State (ANRS) was discovered on March 27, 2020. The total number of cases in the region at the time this study was written was 5,604, with 3 lives lost. In addition to the responses by the federal government, with which the ANRS government has to abide by, the ANRS regional government also took its own measures. These include budget proclamation of Br 150 million, two-third of which was allocated to the health bureau for its day-to-day activities related to the pandemic.

Even though the number of cases in the region has not exploded as feared when the virus found its way to the region on March 27, 2020, keeping the spread of the virus low requires maintaining the preventive measures that have been put in place. As the virus itself as well as these

preventive measures will undoubtedly have serious negative economic consequences, it is, therefore, of first order policy significance to examine the impact of the pandemic on sectors and economic activities that have high linkages with the rest of the world and are highly vulnerable to external shocks such as the novel coronavirus.

To this purpose, this study examines the effect of the pandemic on carefully selected sectors – hotels and tourism, remittances and government finance in the ANRS. In addition to these, the study conducts a growth decomposition exercise to explore the effect of the pandemic on the region’s total factor productivity and ultimately its Gross Domestic Product (GDP). It will then conduct the effect of the negative shock on macroeconomic variables in a Social Accounting Matrices (SAM) based multiplier analysis.

The study provides us with several insightful results. First, from our analysis of the most recent data on ANRS tourism, that covers the pandemic period, we interestingly observe that the tourism sector’s performance, both in terms of number of tourists and revenue, has not experienced significant loss due to the COVID-19 pandemic. The observation about aggregate tourism, however, does not hold for the different subcomponents of tourism. In particular, international tourism has experienced a sharp decline as a result of COVID-19 pandemic. This is alarming since the revenue per tourist from international tourism is orders of magnitude higher than revenue per domestic tourist. We also find that the performance of domestic tourism is predominantly driven by touristic travels related to religious holidays and religious sites. As most religious events had already taken place by the time the pandemic started, most of the domestic tourism revenue has already been obtained. Thus, the fact that domestic tourism increased despite the pandemic is a consequence of the seasonality of tourism revenues, and the effect of the pandemic will likely be felt on next year’s tourism data.

Second, the hotel sector is among most severely affected sectors due to the COVID-19 pandemic. Studying the monthly hotel revenue data before and after the pandemic in three major cities – Bahir Dar, Gondar, and Lalibela – we observed that the virus has been devastating to star-rated hotels in these three cities. The revenue for March, the month the first COVID-19 case was

discovered in Ethiopia, was just 11% of the pre-March average for hotels in Bahir Dar. In Lalibela and Gondar, the March revenue was only 20% and 34%, respectively, of the pre-pandemic average. For the overwhelming majority of the hotels, the monthly revenue during the pandemic is not even enough to cover employee wages and bank repayment obligations.

Third, international remittance is another economic variable that could potentially experience a significant negative hit due to COVID-19 pandemic. In the ANRS region, more than a third of a million people rely on international remittances to finance their food and non-food expenditure, stressing the importance of remittance flows to the region. Households in the region rely on international remittances to support their incomes, finance their investment in cottage and small-scale enterprises, and to cover health and education expenditures. Estimates by the World Bank show that remittance inflows to Sub-Saharan Africa will decline by 23% in 2020, and a decline in this critical source of household income could exert a substantial negative effect on the income and welfare of households in the ANRS region. The majority of recipients of international remittances in ANRS live in rural areas. However, in terms of the share of remittance in financing household consumption, urban recipients are highly dependent on international remittance compared to their rural counterparts. Our estimates show that a decline in remittances affects all households in the region by decreasing their consumption expenditure by up to 2%. The reduction in household consumption expenditure of urban recipients is higher (2.6%) than rural recipients (1.1%).

Fourth, COVID-19 also poses a huge challenge to government finances. Virus containing and mitigation measures require significant financial outlays. Furthermore, expenses related to social protection, especially in urban areas, require substantial resources. Nevertheless, looking at the revenue data obtain from ANRS, it is difficult to observe the effect of the pandemic on the region's revenue. The total value of tax revenue collected did not show any decline due to COVID-19. Tax revenues from wages and salaries, which constitute more than 50 percent of total tax revenues, showed a sharp increase during the year. However, there has been a modest decline in indirect taxes – the sharpest decline (21%) was seen in tax on tax revenue from value added on goods. Furthermore, tax revenues collected on profits of individual businesses (which

constitutes 15% of total tax revenue) showed a marginal decline. Our estimations show that in 2020/21, the pandemic leads to a modest reduction in the growth rate of tax revenues in the region (4 percentage points). This effect will, however, become substantially higher if the virus spreads more or the region experiences a more serious second wave of the virus.

We also conducted two exercises that attempt to quantify the effect of the pandemic on region's GDP growth and a set of carefully selected sectors. First, we conducted a growth accounting exercise to break down the region's GDP into total factor productivity (TFP) and factor inputs. This helped us obtain a measure of TFP for the region on which the effect of COVID-19 will be felt. On average, total factor productivity accounts for 0.6%-2% of ANRS GDP. Given that the region recorded one of its lowest growth rates in 2019, the negative effect of COVID-19 on the region's TFP and ultimately GDP will have an added significance. In our scenario analysis, we show that the region's TFP and real GDP growth rate could decline to 0.5% and 1.6% in the worst-case scenario, leading to a near standstill in already slowing down GDP growth.

We then relied on a more systematic SAM-based Multiplier analysis technique and the latest SAM developed for Ethiopia to analyze the possible economic impacts of COVID-19 on the ANRS economy. It is to be noted that the sectoral analyses we conducted in sections 2, 3 and 4 are partial equilibrium analyses. Section 5 then conducted an analysis of the impact of the pandemic on the GDP of ANRS taking the virus as a negative total factor productivity shock. The SAM-based multiplier analysis is a general equilibrium analysis focusing on the impact through three carefully chosen channels: export, remittances, and trade & tourism. This analysis yielded in results that are qualitatively in line with the results obtained hitherto. Our results show that the impact of the shocks through the three channels vary significantly. The shocks on remittances are found to have the biggest effect on the economy followed by the shocks on trade & tourism while the shocks through the export channel seem to result in the least effect on the regional economy. Our results of the combined effects of the three channels show that, in the absence of any policy responses and as compared to a no-COVID-19 situation, the ANRS economy experiences a GDP loss of up to 2.5 percentage points if the pandemic stays for a year. Splitting the GDP cost of the pandemic by sectors, the agriculture sector seems to be affected the most, experiencing a loss

of about 2.9 percentage points. This translates into relatively less income for the rural households that face an income loss of about 2.9 percentage points. The urban households experience a loss of about 2.7 percentage points. Nonetheless, further categorization of the households into poor and non-poor reveals significant welfare implications with the urban poor facing up to 3.5 percentage points loss in their income.

The rest of this study is organized as follows. Section 2 examines the impact of COVID-19 on tourism sector and hotel sector in ANRS. Section 3 quantifies the potential effect of COVID-19 on remittances, consumption and ultimately on household welfare. Section 4 studies the revenue and expenditure impact of COVID-19 in ANRS. Section 5 conducts a standard growth decomposition exercise to estimate the effect of COVID-19 on ANRS total factor productivity and gross domestic product. Section 6 conducts a SAM-based multiplier analysis to study the effect of COVID-19 on key macroeconomic variables. Section 7 summarizes responses by the federal and regional government. Lastly, section 8 provides concluding remarks, policy recommendations and coping mechanisms for coronavirus-like shocks.

2. Hotel and Tourism

The hotel and tourism sectors are among the sectors that are highly susceptible to an external shock such as the COVID-19 pandemic. With government-imposed travel restrictions, social distancing measures and isolation, international tourist travels sharply decline. The effect of these measures will be reflected not only on travels but also on other sectors that have strong linkage with the tourism sector such as the hotel sector.

According to the Organization of Economic Cooperation and Development (OECD), international tourism in 2020 was estimated to fall by 60% if recovery started in July, by 75% if recovery started in September, and by 80% if recovery started in December.¹ When this report was written at the end of October 2020, many countries are still in the middle of the pandemic, although some countries had remarkable success in terms of containing the spread of the virus. With COVID-19

¹ Stacey, Jane (2020).

vaccines yet in clinical trials, countries are likely to face a second wave of the pandemic. Hence, OECD's worst case prediction seems to be the more realistic scenario at this point in time.

In Ethiopia, a study by Deloitte consulting estimates that the hospitality sector alone, a subsector within the services sector that includes hotels, travels and tours, accounts for 2.2 million jobs, about 8.3% of total employment, and 6.7% the GDP.²³ Given the sharp decline in international tourism, jobs in these sectors will be under an elevated risk of tumbling. The tourism sector also generated USD 3.6 billion (in current prices) in revenues in 2019, and this revenue will decline in 2020 owing to the sharp fall in international travel (Deloitte, 2020).

The demand for international tourism services is already significant with substantial untapped potential. The number of international tourists that arrive as well as the revenue receipts from the sector have shown steady rise since the turn of the millennium (see Table 1 below). In 2018, revenue from the sector was equivalent to 46% of the total export revenue in the same year, indicating that the sector plays a pivotal role in terms of filling the current account gap.

Table 1: International Tourist Arrivals (in '000) and tourism revenues (share of exports) in Ethiopia, 2005-2018

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Arrivals	227	330	358	383	427	468	523	597	681	770	864	871	933	849
Revenue	27.6	29.1	29.8	33.9	32.6	30.9	34.3	33	36.6	33	37.9	36.2	37.7	46.5

Source: World Development Indicators. Arrivals denotes the number of tourists that arrive every year, and it is in thousands. Revenue denotes receipts, and it is expressed as a share of exports

2.1. Impact of COVID-19 on Tourism in ANRS

A cursory look at the tourism statistics might lead one to conclude that COVID-19 has had no significant effect on tourism in ANRS. The number of tourist arrivals and the tourism revenue for the region in 2019/20 have increased by 20% and 4% respectively from their value in 2018/19 (look at Table 2 below). However, the disaggregated data indicate that the tourism sector has

² <https://www2.deloitte.com/tz/en/pages/finance/articles/impact-of-covid19-on-ea-economies.html>

³ World Travel and Tourism Council, Ethiopia: 2020 Annual Research – Key Highlights, <https://wtcc.org/Research/Economic-Impact> The contribution to GDP also factors in the travel sector, not just tourism.

been affected by the COVID-19 pandemic. In 2019/20, the number of international tourists has declined by about 17% and the revenue from international tourism has fallen by 20%. Nevertheless, the number of domestic tourists and the revenue from them increased by 20% and 19% respectively to hide the effect of COVID-19 on aggregate tourism.

Table 2: ANRS Tourist Arrivals and Tourism Revenue

Sector	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number of tourists (in millions)										
Domestic	1.3	2.0	6.2	6.7	8.1	8.9	9.5	12.6	11.7	14.1
International	0.1	0.1	0.2	0.4	0.2	0.2	0.1	0.3	0.2	0.2
Total	1.4	2.2	6.3	7.0	8.3	9.1	9.6	12.9	11.9	14.2
Revenue (in millions of birr)										
Domestic	92.8	236.5	460.5	773.4	1104.7	1339.2	1157.8	1398.7	1552.3	1849.4
International	135.7	197.0	374.0	563.2	557.0	562.2	506.4	983.1	955.3	760.1
Total	228.4	433.5	834.5	1336.6	1661.7	1901.3	1664.2	2381.9	2507.6	2609.5

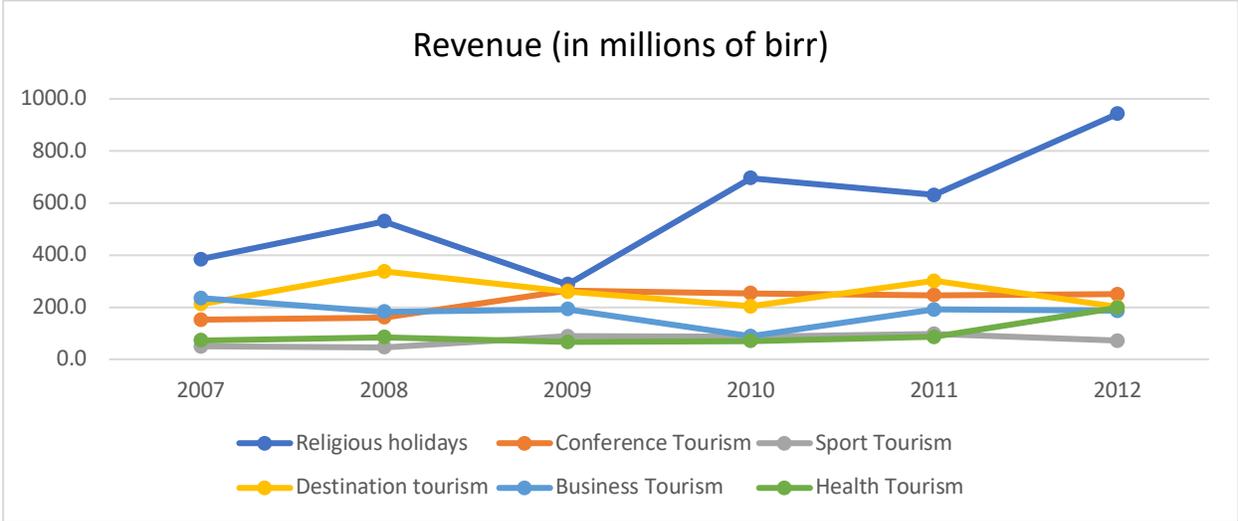
Source: ANRS tourism bureau.

Breaking domestic tourism into its subcomponents also reveals another critical insight. The increase in domestic tourists and domestic tourism revenue is dominated by travels that are related to religious holidays. In 2019/20, this subsector of domestic tourism accounted for 75% of the total travelers (domestic and international) to the region and 36% of the total tourism revenue of the region. When one considers most of the religious holidays that attract a large number of people take place in the first half of the Ethiopian fiscal year, it is not surprising that this subcomponent of domestic tourism increased as the COVID-19 pandemic has not crossed the Ethiopian borders until after March 2020. In short, the seasonality of tourism revenue was hugely in the region's favor.

Had vaccines for coronavirus been developed by now, the region could have managed to fortuitously escape the adverse effect COVID-19 on tourism. It seems however that a successful vaccine is several months, if not years, away from being developed. Thus, the religious holidays that take place in the first half of the Ethiopian year will likely feel the effect of the virus, and this will show up in the data for 2020/21.

As mentioned already, the total ANRS tourism revenue increased in spite of COVID-19 due to large increase in domestic tourism related to religious travels (See Figure 1). Besides most religious events taking place before COVID-19 crossing the Ethiopian borders, this is due to the fact that while luxury travels can be postponed, travels associated with religious holidays occur on fixed dates and cannot be postponed. Moreover, since followers of religions believe in the divine protection, they may still travel in the middle of a public health concern.

Figure 1: Revenue from the Different Subcomponents of Domestic Tourism



Source: ANRS Tourism Bureau

This has important implications for the region’s policies on regarding the tourism sector. First, domestic tourism has the potential to be a resilient source of revenue for the region. While most of the recent increase in domestic tourism came from travels related to religious holidays, there is a room for improvement in other subcomponents of domestic tourism. Given the focus from the federal government to renovate and develop tourist attraction sites in the ANRS (e.g. the Gorgora tourist attraction site), domestic tourism will continue to increase in the coming years. Policies that are implemented at the region level could also improve the performance of domestic tourism as well. This is a positive development as domestic tourism is less exposed to the vicissitudes of international tourist sentiments.

There is another more serious implication that needs to be heeded, however. Per capita wise, the revenue that comes from international tourism is significantly higher than domestic tourism

revenue. As can be seen from Table 3, in 2019/20, international tourists brought about 4,400 birr per tourist while domestic tourists brought only about 130 birr per tourist. This chasm in revenue per capita emphasizes the importance of international tourism as a revenue source. Efforts that increase international tourism will reap a much higher dividend.

Table 3: Revenue Per Tourist in ANRS

Revenue per Tourist (in Birr)										
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Domestic	70.9	116.9	74.5	116.2	135.9	150.7	121.6	110.6	133.1	131.4
International	1073.3	1490.4	2395.4	1549.5	2671.8	2389.6	4786.8	3425.8	4608.2	4416.0
Total	159.2	201.1	131.7	190.5	199.3	208.4	172.9	184.2	211.2	183.2

Source: ANRS Tourism Bureau.

Moreover, the flow of international tourists is not as seasonal as the flow of domestic tourists who primarily visit the region for religious reasons. A steadier tourism flow will create other opportunities in the region as well. Sectors that have strong linkages with tourism, such as hotels, benefit more from tourism when the flow is steady. A steady tourism flow will also create regular employment opportunities as opposed to seasonal short-term employment opportunities created around religious events. In addition to these, international tourism brings hard foreign currency and represents a transfer of resources from other countries to ANRS – at the country level, this is a positive net transfer of resources. Hence, international tourism merits special attention from the region’s government.

Other important components of domestic tourism that experienced positive growth in spite of the COVID-19 pandemic are conference tourism and health tourism.⁴ International conference tourism is unlikely to recover any time soon as the use of remote meeting platforms has changed the need to physically meet for conferences. While we do not have data on international tourism broken down into its subcomponents and we do not know the contribution of conference tourism to international tourism in ANRS, if it is non-negligible, it could keep the revenue from international tourism subdued unless other types of international tourism overcompensate for

⁴ The data on tourism obtained from ANRS tourism bureau does not identify tourist by their origins. As a result, it is difficult to set within-region travels apart from to-the-region travels. It is quite possible that to-the-region travels have declined. We just do not have the data to study tourism by origination.

the decline in international conference tourism. However, this does not mean that conference tourism will completely fizzle out as domestic conference travels and staff retreats will continue, as has been the case during the current COVID-19 pandemic. As can be seen from Figure 1 above, revenue from domestic conference tourism has been a stable source of revenue in ANRS.

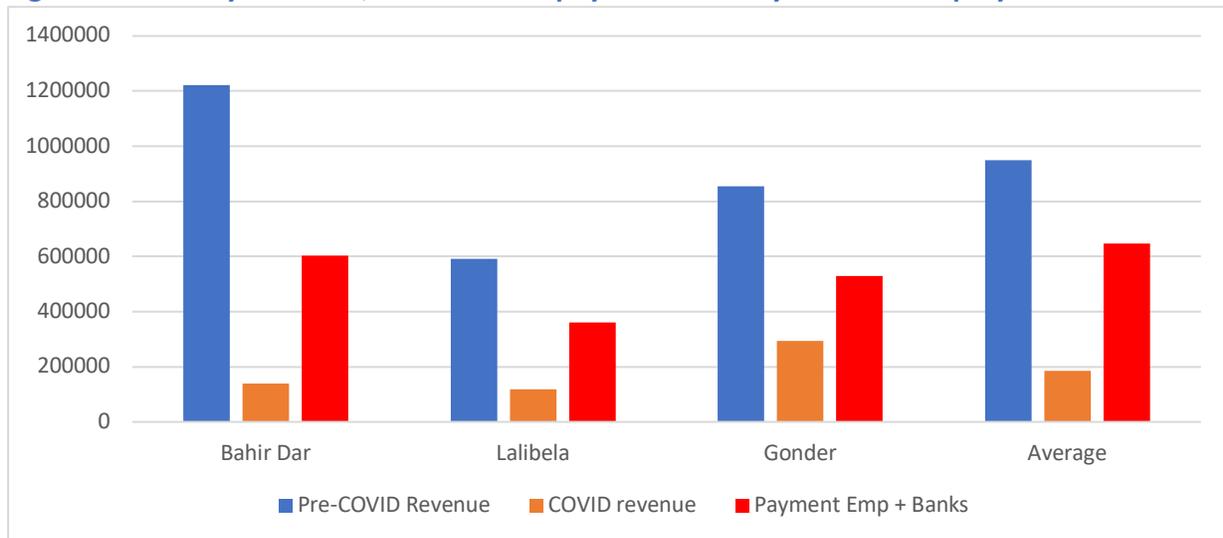
2.2. Impact of COVID-19 on Hotels in ANRS

While the effect of the fall in international tourism will ultimately be reflected on the balance of payments of the country as a whole, the effect of COVID-19 on some sectors that are directly linked to tourism will be immediately felt. One such sector with a strong linkage with tourism is the hotel sector. Nationally, hotel occupancy rates have dropped from about 60% before the pandemic to a mere 2% since the pandemic struck (Deloitte, 2020).

To get a sense of the immediate impact of COVID-19 on hotels in ANRS, we looked at hotels that already have a star rating or those that have acquired the investment license of star-rated hotels in three major cities in ANRS – Bahir Dar, Gondar City and Lalibela. These three locations account for the majority of hotels that are star-rated or operate with the license of a star-rated hotel in the region.

In Figure 2 below, we plot the monthly revenue before COVID-19 cases emerged in Ethiopia in March, the monthly revenues for March/April, and monthly payments to employees and banks. As can be seen from the Figure, COVID-19 had been devastating to hotels that are star-rated or operate with the license of a star-rated hotel. In March/April, such hotels in Bahir Dar received only about 11% of the average monthly revenue they used to receive before the pandemic. In Lalibela and Gondar City, the March/April revenue of similar hotels was only about 20% and 34.5% of their usual monthly revenue. The Figure also plots the average monthly payment to banks and employees. As evident from the figure, the average hotel that is located in either one of these three locations has received only a fraction of the resources it needs to repay its bank loans and employee salaries.

Figure 2: Monthly Revenue, Bank Loan Repayment and Payments to Employees



Source: ANRS Tourism Bureau

If these hotels received most of their revenues from international tourists, the situation might have gotten worse as the March revenue data includes international travelers who arrived in Ethiopia before the virus was first detected in Ethiopia. If, on the other hand, most of their customers are local people or other Ethiopians, the revenue will have partially recovered by now, although full recovery will not take place before international tourism recovers. With the spread of coronavirus expected to peter out over an extended period of time, the hotels that cater their services to international tourists will feel the COVID-19 pain the most as their services are generally priced with an international tourist in mind.

In conclusion, while the domestic tourism revenue has increased in spite of the coronavirus pandemic, revenue from international tourism has declined due to the pandemic. Our discussion in this section brings several insights. First, the increase in domestic tourism revenue is mainly due to an increase in revenue related to religious travels to the region, and most religious events had already taken place by the time the virus was detected in the region. Second, the fall in international tourism revenue is concerning as revenue per capita is much higher for international tourism than domestic tourism. Third, the pandemic has been devastating to the hotel sector. The monthly revenue obtained by star-rated hotels in March/April is not even sufficient to cover employee wages and bank loans. We will return to these issues in Section 8.2 with policy recommendations and coping mechanisms.

3. Welfare impact of COVID-19 through international remittances

It is estimated that more than 3 million Ethiopian diasporas live abroad in different parts of the globe such as North America, Europe, the Middle East, Australia and the rest of Africa (International Organization for Migration, 2018). Reports from the National Bank of Ethiopia indicate that on average USD 5 billion was remitted annually in the last three years. International remittances have been by far the biggest source of foreign exchange in the Ethiopian balance of payments in recent years. They constitute 26 percent of total inflows for the last three years. The country earns foreign exchange mainly through international remittances, exports of goods and services, foreign direct investment, transfers from non-government organizations, official transfers, and external loan disbursements⁵. In 2018/19, values of inflows of international remittances were USD 5.7 billion, higher than the value of earnings from exports of services, the second largest source of foreign exchange earnings during the year⁶. This is also more than double the value earned from exports of goods which was USD 2.7 billion (Table 4). Inflows of international remittance has also shown increasing trend in the past few years.

Table 4: Share (percent) of major sources of Foreign Exchange Flows in Ethiopia

Items	2016/17	2017/18	2018/19	2019/20		
				Q1	Q2	Q3
Private remittances	23.5	25.7	27.6	23.6	25.5	28.8
Private transfers (NGOs)	5.6	4.8	3.3	4.5	5.4	3.7
Exports of goods	15.4	14.2	12.9	15.9	11.4	16.5
Exports of services	17.7	21.2	24.0	28.8	23.9	23.7
Foreign Direct Investment	22.1	18.7	14.6	15.4	12.3	12.3
Official transfers	7.6	6.3	10.1	4.1	7.2	4.5
Loan disbursements	8.2	9.1	7.4	7.8	14.4	10.4

Source: National Bank of Ethiopia

Data on remittance by origin country is lacking. Furthermore, although the proper source for this data are commercial banks, the values of remittances through this channel is hugely understated

⁵ Only major sources of foreign exchange were considered. Sources with inflows that are small in size, such as short-term capital, net interest payments were omitted from this table to save space.

⁶ Values for international remittances include both the estimates of inflows through the informal sector, and inflows through the formal route.

mainly because it doesn't capture inflows through the black market as a significant amount of remittances are sent through the informal channel. According to the IOM, remittances from twelve sending countries to Ethiopia amounted USD 685.3 million⁷ in 2016 (Table 5). Remittance inflows sent from the United States was USD 241.1 million (35.2 percent). Saudi Arabia and Israel are the second and third most senders with USD 180.9 million (26.4 percent) and USD 81 million (11.8 percent). Close to 36 percent of these remittances were sent from Arab countries with Saudi Arabia (26.4 percent), Sudan (4.3 percent), South Africa (2.7 percent) and United Arab Emirates (2.5 percent).

Table 5: Remittances Received by Origin in 2016, Millions of USD

Country	Amount remitted	Share
United States	241.1	35.2
Saudi Arabia	180.9	26.4
Israel	81.0	11.8
Italy	31.5	4.6
Sudan	29.8	4.3
Canada	24.7	3.6
United Kingdom	20.4	3.0
South Africa	18.2	2.7
Sweden	17.7	2.6
United Arab Emirates	17.1	2.5
Germany	12.3	1.8
Netherlands	10.6	1.5
Total	685.3	100

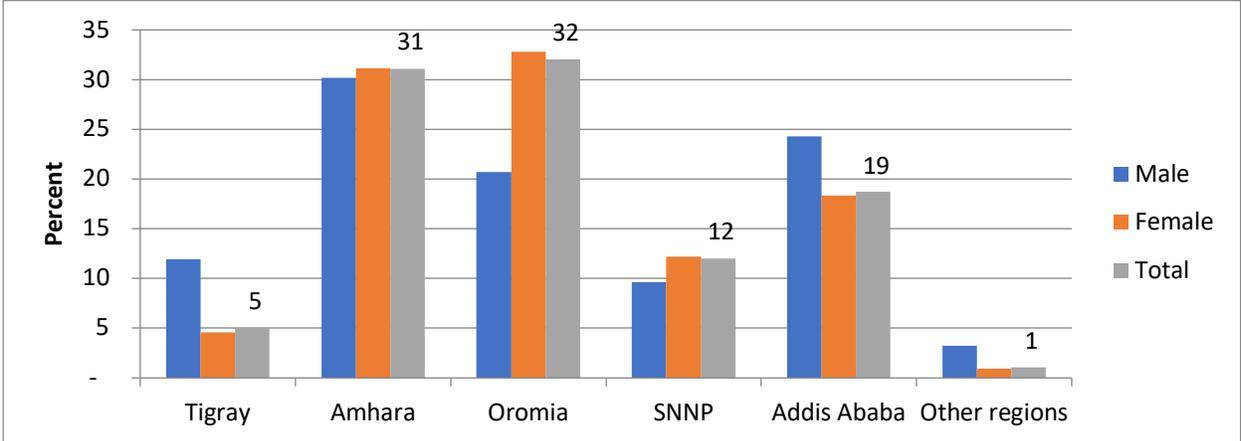
Source: IOM Development Fund, 2018

Approximately 305,800 Ethiopian immigrants live in the United States with 49.6 percent female and 50.4 percent male with an average median age at 30 years (International Organization for Migration, 2018). Furthermore, during a six-year interval only (i.e. 2008/9-2013/14), 453,935 Ethiopians left for Saudi Arabia, Kuwait and UAE for work mainly as housemaids, drivers and mobile plant operators with 94.5 percent female and 5.5 percent male. Disaggregating this by region, Figure 3 shows that the main migrant senders are Oromia (32 percent) followed by Amhara (31 percent), Addis Ababa (19 percent) and SNNP (12 percent). While the sex

⁷ As discussed in this paragraph, this amount is much lower than estimates of the National Bank of Ethiopia during the same period for two reasons: In addition to the value of remittances sent through the informal channel, it also excludes countries other than the twelve countries listed in the table.

composition of these migrants is different across all other regions, ANRS sends more or less equal proportion of male (30 percent) and female (31 percent) migrants.

Figure 3: Ethiopian Migrants in the Middle East, 2008/09-2013/14



Source: Ministry of Labor and Social Affairs

Among migrants who live in the Middle East, close to 99 percent of female and 31 percent of male migrants work as housemaids. More than 55 percent of male migrants work as drivers and mobile plant operators. In the United States, out of civilian employed population of over 16 years (149,998), 26.1 percent work in production, transportation and material moving sectors while 24.6 percent work in management, business, science and arts. Close to 24 percent of them work in service-related occupations and 22 percent in natural resources, construction and maintenance (Table 6).

Host countries have adopted measures to contain the spread of COVID-19. These measures have impacts on labor mobility of migrants, their incomes and remittances they send to their country of origin. This has mixed outcomes from country to country depending on the context of that country and the way those countries are responding to contain the spread of the virus and mitigate the impact of the pandemic. While some countries such as the USA provide unemployment benefits to households (employed migrants included), other countries (such as Djibouti, Somalia, Sudan, Kingdom of Saudi Arabia, Kenya, Kuwait and Lebanon) deport migrants to their countries of origin.

Table 6: Ethiopian Migrants in the Middle East and the USA by Profession, 2008/09-2013/14

Countries	Occupation	Female	Male	Total
Saudi Arabia, Kuwait, UAE, others*	Car, taxi and van drivers	0.0	5.6	0.4
	Cleaner, window	0.1	1.9	0.2
	Drivers and mobile plant operators	0.2	55.6	3.4
	Housemaid	98.8	30.5	94.8
	Labor relation officer	0.0	1.3	0.1
	Others**	0.9	5.1	1.2
	Total	100	100	100
USA*	Number of civilian employed population 16 years and over			149,998
	Management, business, science and arts			24.6
	Service occupations			23.8
	Sales and office occupations			21.8
	Natural resources, construction and maintenance			3.7
	Production, transportation, and material moving			26.1

*Source: Ministry of Labor and Social Security, International Organization for Migration, 2018. **Others: aBabysitter, hunters and trappers, vehicles cleaner, etc.

As of September 4, 2020, more than 28, 600 Ethiopian returnee migrants arrived since the first of April 2020 (Table 7). More than 88 percent of these returnees come from four countries. More than 12 percent returnee migrants have come from the Kingdom of Saudi Arabia. This number is in addition to the 390,000 returnees since a decree known as “A Nation without Violations” launched in 2017 between the governments of Ethiopian and Saudi Arabia. The decree granted all irregular migrants an amnesty period of 90 days- with several extensions - to leave without facing penalties. The other three countries that sent Ethiopian migrants due to COVID-19 include Djibouti (28 percent), Somalia (26 percent) and Sudan (22 percent).

Table 7: Ethiopian Returnee Migrants by Country

Country	Number of Ethiopian returnees due to COVID
Kingdom of Saudi Arabia	3,162
Kuwait	1,024
Lebanon	765
Djibouti	7,296
Somalia	6,732
Sudan	5,511
Kenya	1,201

Source: International Migration Organization, 2020

Table 7 might not represent the whole picture of the impact of COVID-19. First, we have data only for 7 countries. Second, the contribution of some of these countries (Such as Sudan) might not be as significant as others (such as Saudi Arabia). We saw in Table 5 that Saudi Arabia's share in remittances to Ethiopia in 2016 was 26 percent, while that of Sudan 4.3 percent only. Third, it is not only due to the returnees that inflows of remittances decline but also through a reduction in salaries and wages of migrants and from being unemployed. However, although the countries differ in the amount of remittances they send to Ethiopia, different sources indicate that there are still several thousands more Ethiopian migrants in the Middle East in different quarantine centers, with only a few hundred returning so far. The numbers in Table 7 therefore tell us the extent of the potential crisis that will have an adverse impact on the inflows of remittances.

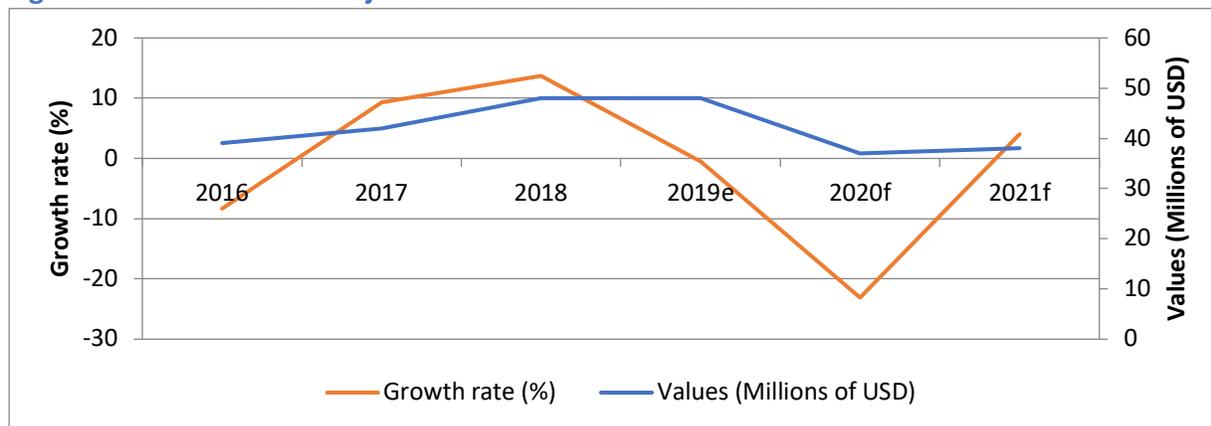
3.1. Impact of COVID-19 on Household Consumption in ANRS

A huge number of Ethiopian households rely on international remittances for their day-to-day expenses. Studies indicate that health expenditures and school enrollment increase as a result of increase in remittances, as well as raise education investment for girls relative to boys (Azisi 2018). Evidence from other countries also suggest that the welfare impacts of international remittances are higher than domestic remittances (Wadood and Hossain, 2017; Kamal and Rana, 2019).

A World Bank estimate indicates that inflows of international remittances to Sub-Saharan countries decline by 23 percent in 2020 to reach \$37 billion, while a recovery of 4.0 percent is expected in 2021. As many Sub-Saharan migrants are losing their jobs due to an almost complete shutdown of economic activities—especially in the construction, hospitality, and other service sectors—remittances are expected to decline (World Bank 2020). This has an impact on recipient countries in many ways such as on financial inflows which lead to a significant deterioration in fiscal and trade balances, increasing cost of finance and declining welfare of households (Asare et al 2020). This leaves households in Ethiopia and other Sub-Saharan countries highly vulnerable to shocks, as these households are already dependent on international remittances to finance food and non-food expenditures and use them as absorbers to external shocks. This will translate to declining household consumption expenditure. Households living in ANRS are not an exception

to this. More than a third of a million people in the region rely on international remittances for financing food and non-food expenditure.

Figure 4: Estimates and Projections of Remittance Flows to Sub-Saharan Africa



Source: World Bank Group (2020)

In the next few paragraphs, we look at how important international remittances are in financing household expenditure in ANRS and how these households use remittances. This helps us to understand the extent of household's reliance on remittances and the exposure to shocks that comes from declining remittances which results in a reduced household consumption. A more structured way of looking at the impact of declining remittances due to COVID-19 will be presented with a multiplier analysis in Section 6 of the document.

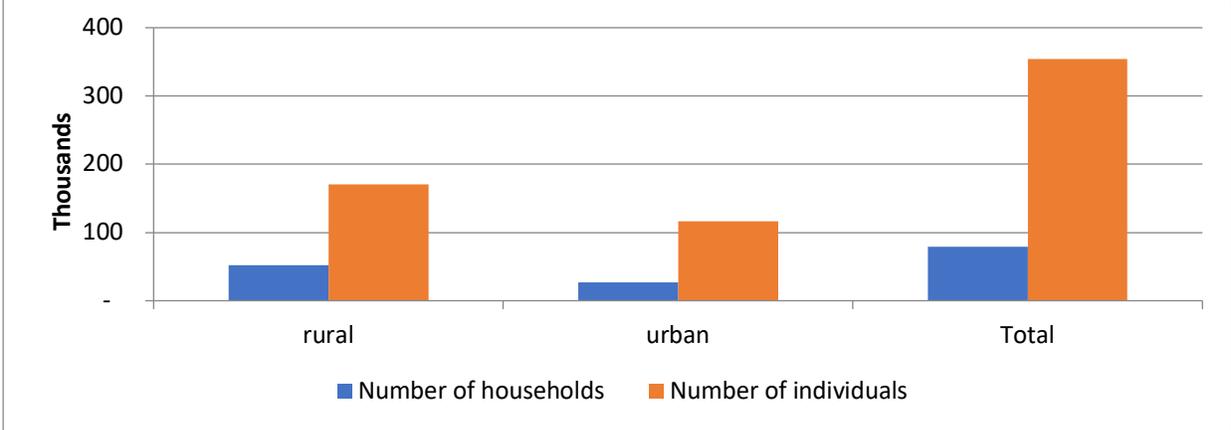
There are only few sources of data used to see the impact of COVID-19 on remittance inflows to ANRS. An aggregate level of data is reported on the quarterly and annual Balance of Payments reports from the National Bank of Ethiopia. While this might be a good estimate of inflows of remittances through the formal and informal channels, this barely says anything about how these remittances are used by households. Furthermore, this is not disaggregated by region. Another data source is remittance inflows that are registered through financial institutions. This source helps trace which households receive what amount; however, it only captures the inflows through the formal channel.

Household surveys, in addition to capturing remittances coming from both the formal and informal channels, help us understand how remittances are used by recipient households. We

use the most recent and representative data from Central Statistical Agency (CSA). CSA conducts household surveys every 5 years on consumption expenditure of households – Household Consumption Expenditure Surveys (Central Statistical Agency 2012a, 2012b, 2017) which has household data disaggregated by region. Because these datasets were collected years before the novel coronavirus infected human beings, they do not have information related to COVID-19. However, these surveys can be credible data sources to compute shares of expenditures financed by remittances. Since these shares are not expected to change drastically over the few years between the survey period and the onset of the COVID-19 pandemic, the surveys could help us estimate the exposure of households’ consumption to exogenous shocks like coronavirus that have adverse effect on remittances and, ultimately, on consumption and welfare.

There were close to 80, 000 households (i.e. close to 350, 000 people) in ANRS who rely on international remittances to finance one or more of their consumption expenditure items. Out of total households in the region, 66 percent of them live in rural areas. Furthermore, households who receive remittances in the region constitute 24 percent of all households who receive remittances nationwide, which makes the region the second largest receiver of international remittances following Addis Ababa whose share stood 27 percent (Figure 5).

Figure 5: Number of Households/Individuals that Rely on International Remittances in ANRS



Source: CSA, HICE Surveys

While most of the households who received international remittances in Amhara region live in rural areas, urban households are highly dependent on remittances. The share of consumption expenditure financed by international remittances is presented in Table 8. Urban households

finance more than 32 percent of their consumption expenditure through remittances-28 percent on food and 39 percent on non-food. On the other and, rural households finance 14 percent of their total consumption expenditure through remittances- 11 percent on food and 17 percent on non-food.

In rural areas, the share of remittances differs across income groups. Households in the lowest quintile are more dependent on remittances (31 percent) than their counterparts higher in the income hierarchy. These households finance 27 percent and 35 percent of their food and non-food expenditures respectively by remittances. Furthermore, remittances help finance 46 percent of health and 100 percent of education expenditures of these households. This indicates that remittances comprise a much larger share of the consumption expenditure of poorer households. This implies that shocks that affect remittances will have consequences for the consumption inequality in ANRS.

Table 8: Share (Percent) of Household Expenditure Financed by International Remittances in ANRS

Residence quintiles	Rural					Urban					Overall	
	I	II	III	IV	V	I	II	III	IV	V	Rural	Urban
Total	30.5	4.0	4.9	9.1	20.4	31.1	40.7	32.6	34.2	23.6	13.8	32.4
Food	26.5	1.2	0.0	9.1	18.3	26.5	35.6	27.7	25.4	22.7	11.0	27.6
Non-Food	35.4	7.7	9.2	9.1	22.7	40.5	49.1	37.4	41.7	24.4	16.8	38.6
Health	45.7	-		16.2	6.2	71.6	65.8	65.3	5.2	54.8	17.1	52.5
Education	100.0	-	-	-	12.7	71.1	31.9	16.0	58.5	31.9	22.5	41.9
Clothing	89.3	22.7	67.9	36.6	68.9	32.5	62.7	55.9	60.9	43.9	57.1	51.2

Source: CSA, HCE Surveys. *Quintile-grouped by quintiles based on total household consumption

Using World Bank's (World Bank 2020) estimates for Sub-Saharan African countries (see Figure 4) of 23 percent decline weighted by the fact that COVID-19 doesn't have the same impact on all Ethiopian migrants (i.e. 36 percent of remittances are coming from the countries where Ethiopian migrants are the most affected - Table 5), a rough estimate of the decline in household consumption expenditure can be computed. These estimates of a decline in per capita consumption are presented in Table Rem6. Overall, household consumption expenditure declines by close to 2 percent. This decline is severe in urban areas where consumption falls by

2.6 percent since the share of consumption expenditure financed by remittances is higher for urban households.

Table 9: Percentage Change in Per Capita Consumption Expenditure after the Decline in Remittances

Residence	I	II	III	IV	V	Overall
Region Total	-2.5	-1.8	-1.5	-1.7	-1.8	-1.9
Rural	-2.5	-0.3	-0.4	-0.7	-1.6	-1.1
Urban	-2.5	-3.3	-2.6	-2.8	-1.9	-2.6

Source: Estimations based on CSA and World Bank data

Households in the first quintile will suffer most, where consumption expenditure declines by 2.5 percent for the region as a whole, compared to other households in higher quintiles. While in rural areas, only lowest and highest income groups suffer most, there is an impact in all income groups of the urban areas. Although data didn't allow us to estimate declines in education and health expenditures, we can see from Table 8 that the share of health and education in poorer households is higher especially in rural areas. The shock that comes from reduced remittance receipts highly affects this group of households in sending their children to school. Fall in expenses in education and health has an impact on the future investments of human capital (Azizi 2018). This will also worsen the economic conditions in urban households who are likely already suffering due to the consequences of COVID-19.

To conclude this section, inflow of international remittances to Ethiopia are bigger than any other source of foreign exchange earnings and are used to support incomes, buy food, send children to school, and pay for medical expenses. A decline in the inflows of these remittances is therefore a serious income shock and results in the deterioration of the welfare of households and a reduction in human capital investments. The above analysis shows that the majority of recipients live in rural areas; however, in terms of the share of remittance in financing household consumption, urban recipients are highly dependent in international remittance compared to their rural counterparts. Although all the remittance recipient households are affected by the decline in remittances (a decline of consumption expenditure by 2 percent), the reduction in household consumption expenditure of urban recipients is higher (2.6 percent) than rural recipients (1.1 percent). The impact is also different across different income groups. The poorest

(first quintile) households are hit severely as this group of households is more dependent on remittances than higher income groups. Household investment in education and health of household members is also at risk as expenses of education and health expenses are mostly financed through remittances especially in the poorest households of both rural and urban areas. We will get back to these issues in section 8.2 with short-term and long-term policy recommendations.

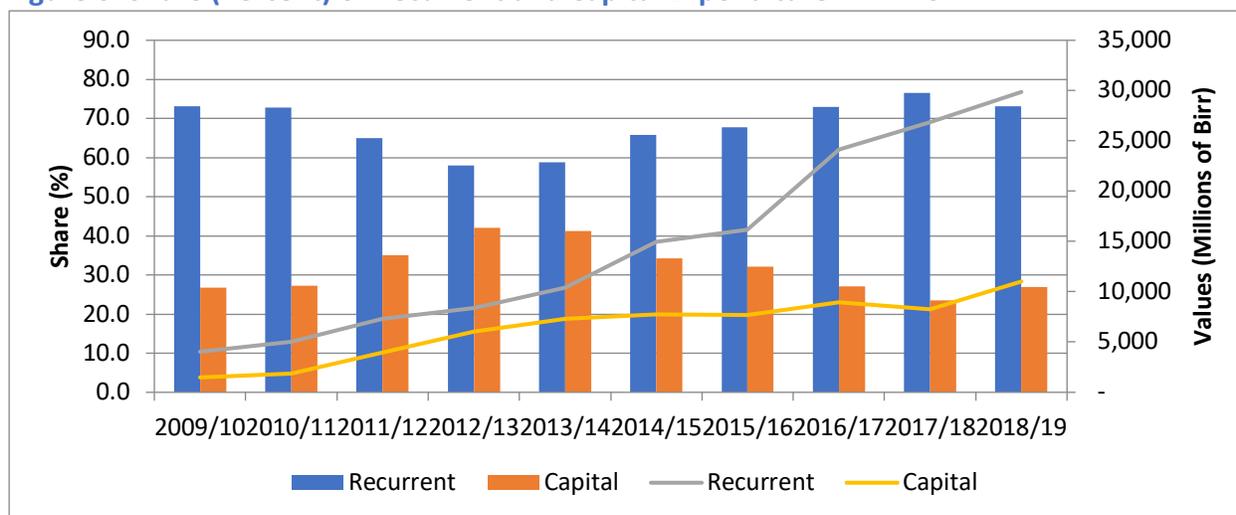
4. Government Finance

Containing the spread of COVID-19 and its impact the ANRS needs massive financing requirements and sustainable and dependable domestic resource mobilization and raising tax and non-tax revenues. The conventional sources of financing for regions include tax revenues, non-tax revenues (fees and commissions that are collected by the different government offices) and block grants that the federal government provides to regions. Apart from the block grants the region receives annually from the federal government, a significant part of these revenues comes from domestic regional revenue, of which tax revenue is the major source. This section will take a close look at the possible impacts of the pandemic on the region's tax revenue collection performance. Understanding and quantifying impacts caused by COVID-19 helps ANRS government to prioritize fiscal policy responses to the pandemic and manage its cash flow. Revenue estimates that account for the impact of COVID-19 can also help the scale of external resource required and unlock vital funding from development partners.

4.1. Expenditures in ANRS

Trends and patterns of recurrent and capital expenditure of ANRS are presented in Figure 6. Total expenditure of the region was Br 41 Billion in 2018/19. The average share of recurrent expenditure for the period 2009/10-2018/19 was 68%.

Figure 6: Share (Percent) of Recurrent and Capital Expenditure in ANRS



Source: Based on data from Ministry of Finance

Seventy-eight percent (78%) of this recurrent expenditure is paid to permanent staff in the form of salaries, pension and per-diem, and allowances. The rest 22 percent was spent for training, purchase and maintenance of machineries and equipment and so on. Only 2.4 percent was spent on medical supplies (Table 10).

Table 10: Breakdown of Recurrent Expenditure in ANRS in 2017/18

Items	Share (%)
Salaries to Permanent Staff	63.0
Government Contribution to Permanent Staff Pension	7.4
Per Diem	3.8
Grants, Contributions and Subsidies to Institutions and Enterprises	3.8
Medical Supplies	2.4
Allowance to Permanent Staff	2.2
Maintenance and Repair of Vehicles and Other Transport	1.9
Local Training	1.8
Miscellaneous Payments to Staff	1.6
Purchase of Plant, Machinery and Equipment	1.5
Fuel and Lubricants	1.3
Office Supplies	1.0
Others (Each item having less than 1%)	8.4
Total	100.0

Source: ANRS Finance Bureau

Capital expenditure was Br 10 billion in 2017/18. A bit higher than three-quarter of this was spent on the construction of infrastructure and non-residential buildings. A quarter of capital

expenditure was spent on compensation to individuals and institutions, construction supervision and other miscellaneous expenses.

The share of the constituents of recurrent and capital expenditure by sector averaged for the period 2009/10-2018/19 is presented in Table 11 below. The most important expenditure item has been the social service sector (constituting 55.3% of total expenditure) which includes recurrent expenses for education, health, culture & sports, and disaster prevention. However, only 12% of the total recurrent expenditure was allocated for health and health related expenditures of which only 6.6% is spent for primary health, clinic & health station (4.3%), hospitals (1.9%), and HIV/AIDS (0.2%). Capital expenditure displays a similar feature. For the period 2009/10-2018/19, an average of just 2% was allocated for the construction of new health infrastructure and maintenance of existing ones.

The capacity and readiness of the region's of health facilities was barely tested by the pandemic, as the spread of the virus did not explode as feared initially. Needless to say, however, that the region's health care facilities would have been overwhelmed if the virus had spread more. This provides the ANRS administration an opportunity to learn from the pandemic and allot a higher share to the health sector than it is currently allotting to stand prepared for similar shocks.

Table 11: Share (%) of major sectors in ANRS expenditure (2009/10-2018/19)

	Recurrent	Capital	
Administration & Gen. Serv.	25.6	Economic Development	56.9
Economic Service	16.3	Social Development	20.3
Social Service	55.3	Health	7.1
Health	12.7	o/w	
o/w		Primary Health, Clinic and Health Station	0.1
Primary Health, Clinic & Health Station	4.3	Hospitals	1.9
Hospitals	1.9	General Development	22.8
HIV/AIDS Office	0.2	TOTAL	100.0
Social Affaires	0.2		
Miscellaneous.	2.8		
Total	100.		
	0		

Source: Drawn based on data from Ministry of Finance

4.2. Tax Revenues in ANRS

Since 1991, the government of Ethiopia launched a series of tax reforms amending the majority of tax categories, including taxes on incomes and profits, goods and services, and international trade. Institutional reforms have also been implemented to enhance the government's capacity to raise tax revenues (Geda, 2005). These reforms aimed at reducing dependence on foreign financing through encouraging local and foreign investment and increasing domestic revenue resources. Despite these tax reforms, however, Ethiopia is among countries in Africa with the lowest tax-to-GDP ratios.

Despite these tax reforms, however, Ethiopia is among the countries in Africa with the lowest tax-to-GDP ratios. Estimates from the World Bank (World Bank, 2017) show that in 2010, the share of tax revenue to GDP (i.e. tax-to-GDP ratio) was only 8.2 percent in Ethiopia while this figure for Sub-Saharan Africa was 15.1 percent. Furthermore, tax revenues as a share of GDP have not increased over the last years in Ethiopia. In 2010, tax-to-GDP ratio was 8.2 percent which remained the same in 2016 and declined to 7.7 percent in 2017.

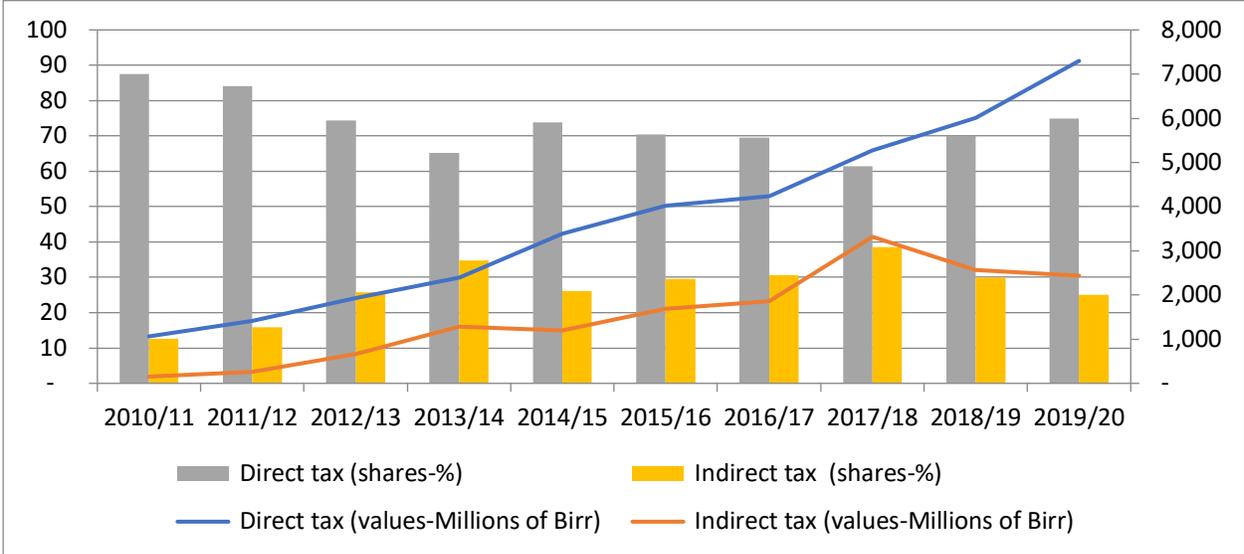
Using data from ANRS revenue office, total revenue from both direct and indirect tax sources was Br 1.2 Billion in 2010/11⁸. This has been increasing for the past 10 years to reach Br 9.7 Billion in 2019/20. Looking at the components of the region's tax revenue, the role of direct taxes is much higher than that of indirect tax revenue. The average share of direct taxes from total tax revenue was 73 percent, and only 27 percent is contributed by indirect taxes (Figure 7). The source of these direct income taxes includes wages and salaries, profits to individual business entities (i.e. not incorporated), and agriculture income tax.

Tax revenues from wages and salaries is the single most important source of direct tax revenue in the region contributing an average 45 percent from total tax collected, and 63 percent from

⁸ We use the traditional terminology, direct and indirect taxes, in this document. Direct taxes are taxes that are directly paid to the government by an individual or a company. Examples include taxes from wages and salaries, rental income, profits, capital gains, interest income, and agricultural income. Indirect taxes are taxes paid to the government but passed to the consumer as part of the purchase price of a good or service. Examples include value added taxes on goods and services, turn-over tax on goods and services and excise taxes.

direct taxes, in the last ten years. The second most important source is profits to individual businesses with 19 percent share.

Figure 7: Tax Revenue in ANRS

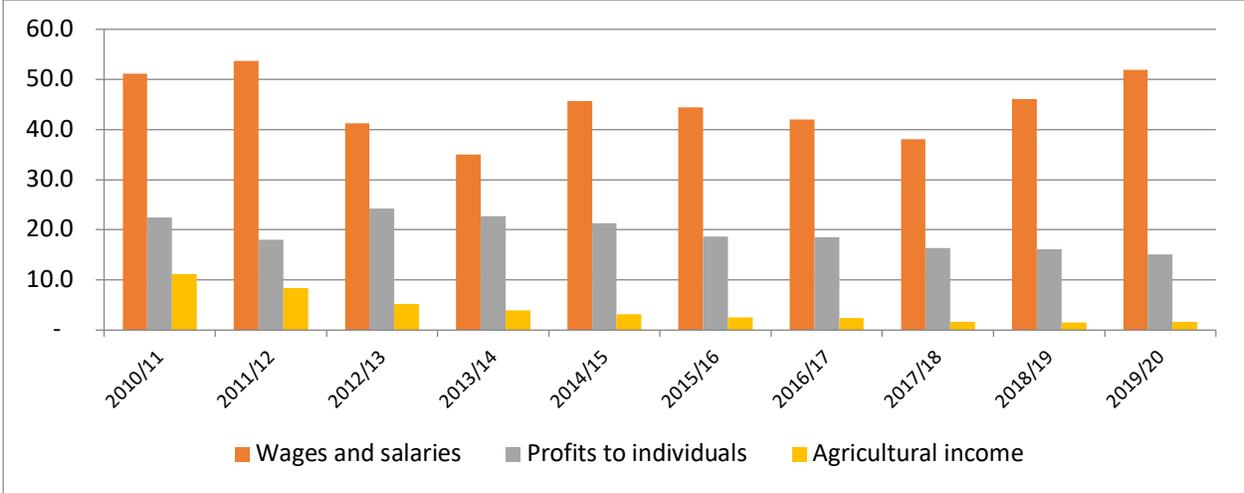


Source: ANRS Revenue Office and authors’ computations

Although overall, tax collection performance has been increasing in ANRS for the last decade, the region appears to be lagging behind in achieving the full tax potential of the region. To fully understand whether the region is behind potential and estimate the gap between actual and potential revenues, one needs to have information on the tax bases of each of the tax types being discussed. However, we can see this gap through a proximate indicator of whether the region is performing well in tax collection visa-a-vis its potential through the tax-to-GDP ratio (i.e. share of tax revenue from gross domestic product of the region).

The computation of tax-to-GDP ratio in this section only includes taxes collected by the region. In particular, value added taxes that are being remitted to and block grant transfers provided by the federal government are excluded from this computation. It is to be noted that the tax-to-GDP ratio computed here may not be comparable to similar measures for other regions in the country or for the federal government, i.e., different methodologies were adopted. Furthermore, the remittance 30% - now 50% - of value added tax from incorporated companies to the federal government complicates this comparison. Export tax at the national level is another factor that makes the ratio at the federal level much higher than the regions.

Figure 8: Share (percent) of Components of Direct Taxes in ANRS

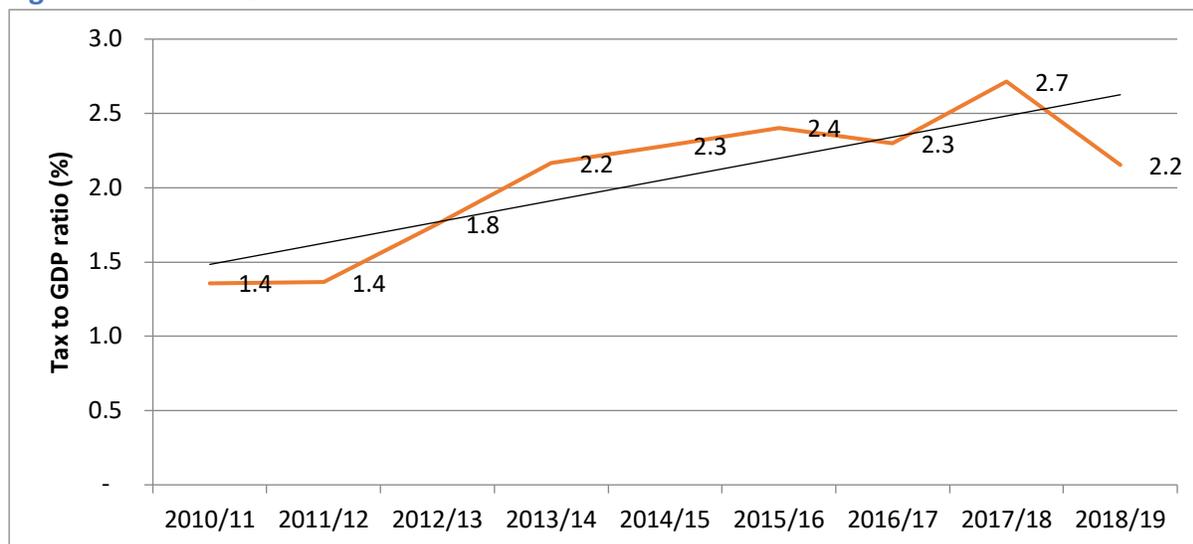


Source: Based on data from ANRS Revenue Office

With this limitation in mind, tax-to-GDP ratio in ANRS is still one of the lowest and has not improved significantly over the years despite a sequence of tax reforms. On average for the period 2010/11-2018/19, tax-to-GDP ratio was 2.1 percent improving from 1.4 in 2010/11 to 2.2 percent in 2018/19 with a modest fluctuation. The low tax-to-GDP ratio also shows similar trends in other regional states in Ethiopia, which have their regional GDP estimated. For example, the average tax-to-GDP ratio for Somali region is only 1.5 percent for the years 2012/13-2014/15, and that of Southern Nations Nationalities and Peoples was 2.3 percent during the period spanning 2009/10-2011/12. This figure for Ethiopia is 8.8 percent. The relatively higher tax-to-GDP ratio for the country as a whole is partly due to the bigger share of Addis Ababa in both economic activity and hence higher tax revenue as compared to other regions.

This analysis would have marginally changed the picture if we had included the Oromia regional state, for which we do not have reliable data, due in part to the budding manufacturing sector surrounding Addis Ababa. However, we do not expect the bigger picture to change drastically as the rest of Oromia region is not very different from other regions with respect to economic activity and tax revenue collection performance.

Figure 9: Tax-to-GDP Ratio in ANRS



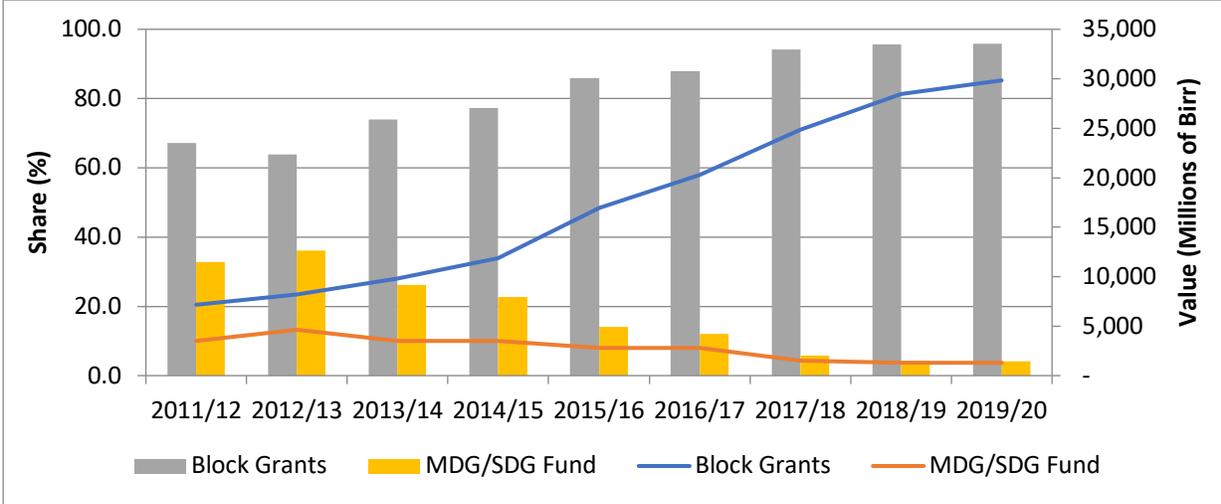
Source: Drawn based on data from ANRS Revenue Office

Potential explanation for low tax-to-GDP might be the narrow tax base and the capacity of the tax authorities to administer taxes. Narrow tax base is one of the major challenges that regional states in Ethiopia have confronted with. Moreover, there is the limitation on tax administration, which could be attributed to lack of qualified skilled work force and non-existence or limited automated system.

Another key aspect of the revenue of regional states in Ethiopia is their (over)-reliance on block grants from the federal government. The block grants the regions received consider the region's population size, the level of economic development and revenue collection capacity, among other things. Figure 10 provides the data on the value and share of block grants and MDG/SDG fund to the ANRS government.

The ANRS government has relied on these transfers over the years. Total transfers (including MDG/SDG fund transfers) have increased from Birr 10.6 billion in 2011/12 to Birr 31.1 Billion in 2019/20. The role of MDG/SDG fund transfers is lower (i.e., 18%) than block grant transfers and have been declining over time (See Figure 10). On the other hand, block grants have been steadily increasing over the period 2011/12-2019/20.

Figure 10: Trends in the value and share of block grant transfers to ANRS



Source: Ministry of Finance

The effect of COVID-19 on the federal government’s revenue remains to be seen. However, if the federal government’s revenue collection were to experience a severe negative effect, the same effect will ultimately be reflected on ANRS’s revenue through reduced block grants. The over-reliance on block grants from the federal government, thus, is an exposure to shocks that emanate at the federal level, and the ANRS government should improve its tax revenue collection to reduce this exposure.

4.3. COVID-19 and Tax Revenue Collection in ANRS

There are multitude of ways through which COVID-19 affects the amount of tax revenue collected by ANRS. Uncertainties and partial lockdown due to the pandemic result in a reduction in private consumption expenditure. The direct expected result of this is a declining sales turnover, closing of businesses and a fall in regional GDP. As a result, the tax base for sales taxes such as turnover and value added taxes falls implying a reduction in tax collection from these tax categories.

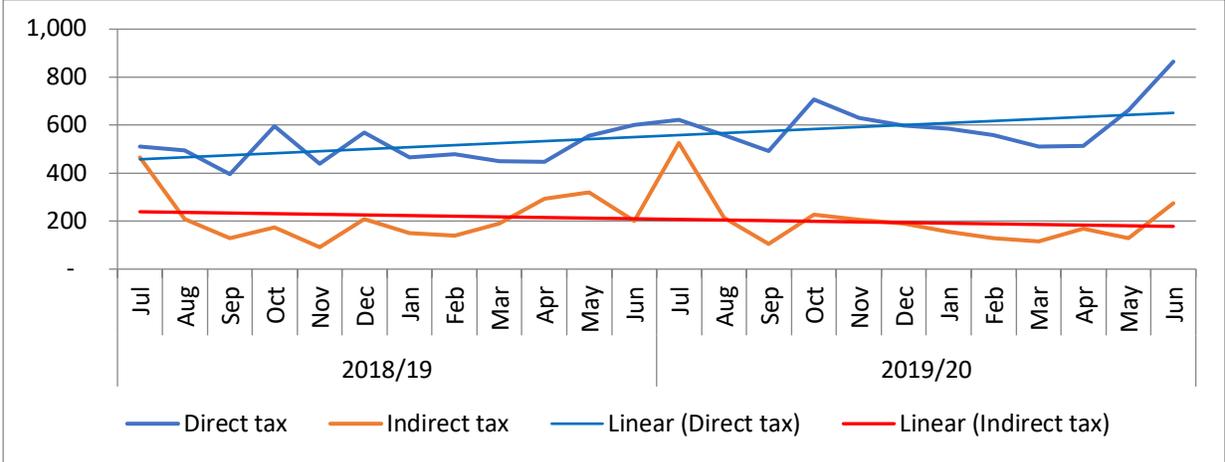
In the following few paragraphs of this section, we make an attempt, with the available data, to see if COVID-19 has an impact on tax revenues. Monthly data until June 2020 was accessed from the region’s revenue office. However, given we have only few months of data points after the first person was infected by the pandemic in the region, we were not able to make the point that all the changes observed can be ascribed to the pandemic-i.e. seasonality might be one of the

factors for the changes in revenue collection in the following four months after the onset of the pandemic in the region.

With this caution in mind, examination of data on revenue collection in the region until June 2020 indicates that, overall the region didn't lose revenue from direct taxes as a result of COVID-19 while there was a modest decline in indirect tax revenue. Revenues from direct taxes increased from Br 6 billion in 2018/19 to Br 7.3 billion in 2019/20 with a monthly collection performance increasing from Br 500 million to Br 600 million for the mentioned periods respectively.

Indirect taxes, on the other hand, showed a marginal fall from Br 2.6 billion in 2018/19 to Br 2.4 billion 2019/20. Average monthly collection performance also declined from Br 213 million in 2018/19 to Br 203 million in 2019/20.

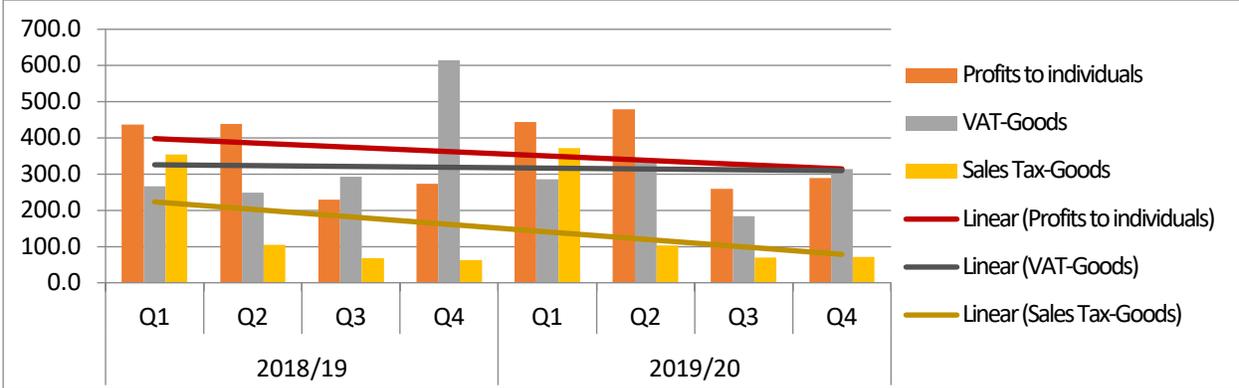
Figure 11: Monthly Tax Collection of Direct and Indirect Taxes (Millions of Birr)



Source: Drawn based on data from ANRS Revenue Office

Taxes from wages and salaries, which represent the main component of direct tax revenues, surged during the last two years reaching its maximum Br 5 billion in 2019/20. However, tax revenues collected on profits of individual businesses (which constitutes 15 percent of total tax revenue) showed a marginal decline in 2019/20. Furthermore, revenues from sales taxes including value added taxes (which include taxes on food, iron and steel, non-metallic mineral products, soft drinks, stationeries, cotton fabrics and clothing etc.), representing close to 20 percent of tax revenue collected by the region showed shrinkage in 2019/20 (Figure Rev6).

Figure 12: Monthly Tax Collection of Direct and Indirect Taxes (Millions of Birr)



Source: Drawn based on data from ANRS Revenue Office

Although we do not see any significant loss in tax revenue in ANRS, we can have few observations from this analysis. First, good performance in taxes collected from wages and salaries might be an indication that employment income was not affected during the period where the government took measures to contain spread of the pandemic. This might be because both the federal and regional governments have taken serious measures on employers terminating job contracts, effectively preventing wage employment from plummeting.

Second, the major declines in tax revenues are related to individual business activities. These include profit tax from individual businesses, value-added and sales taxes on goods, showing that business owners were the victims of public and government responses to COVID-19. Both voluntary partial lockdowns by the public and regional government’s announcement of stay-at-home measures have resulted in a major loss of sales turnover of many small and medium businesses in the service sector. As discussed in the second section on “Tourism and Hotels”, a reduced number of international tourists had a severe impact on tourism sector and businesses down the value chain such as hotels, gift shops, tour guides etc. As a result, the tax base for value added and sales taxes were weakened and the loss of market for these businesses brought about a decline in the revenues collected on profits from individual businesses.

Finally, the fact that there was no huge loss on tax revenue that came with the spread of COVID-19 doesn’t mean that the pandemic will not have an impact on the region’s tax revenues in the medium to long-run. If the pandemic continues to spread and no serious measures continue to

be implemented, it will have a detrimental effect, and has the potential to severely hit the fiscal sector of the region. Below, we undertake a simple elasticity analysis to see the effect of COVID-19 on the region's tax revenue.

Two concepts are necessary to measure the response of tax revenue to changes in the economy: buoyancy and elasticity. Elasticity is the automatic response of revenue to changes in income net of discretionary changes while buoyancy is the total response of tax revenue to changes in incomes and therefore includes any changes due to discretionary measures (Bilquees, 2004). In public finance, an important measure to assess the efficiency of any tax system in terms of its mobilization capacity becomes tax buoyancy-total response of tax revenue to changes in national income. A tax which is buoyant is one whose revenues increase by more than one percent for a one percent increase in national income or output. In measuring buoyancy, no attempt is made to control for discretionary changes in the tax system or administration. Consequently, buoyancy reflects both discretionary changes and automatic revenue growth (Biruk 2018).

Technically, tax buoyancy is defined as the percentage change in tax revenues divided by a one-percentage change in tax base.

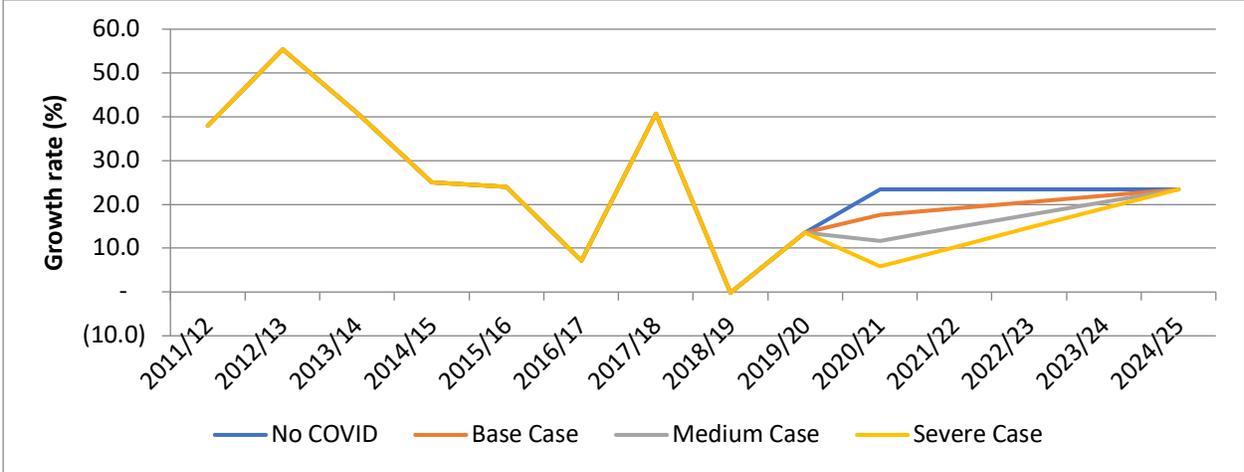
$$\textit{Tax buoyancy} = \frac{\% \textit{ change in tax revenue}}{\% \textit{ change in tax base}}$$

Available indicator for tax base is regional gross domestic product. Therefore, the above equation can be restated as:

$$\textit{Tax buoyancy} = \frac{\% \textit{ change in tax revenue}}{\% \textit{ change in regional GDP}}$$

Using data on tax revenue and regional GDP that was obtained from the region, estimation of buoyancy was found to be 1.3⁹. Based on the estimates of the impact of COVID-19 on the region’s economy (See Section 5 “Impact on Output”), we have come up with three scenarios.

Figure 13: Impact of COVID-19 on Tax Revenue in ANRS



Source: Drawn based on data from ANRS revenue office, planning office and researcher’s estimates

Figure 12 presents trends in total tax revenues from 2011/12-2019/20 and four possible trajectories from 2020/21-2024/25 after a shock occurs in 2020/21. In the “No COVID” scenario, revenues were projected to grow based on the average growth rate (23.5 percent) computed based on the last 10 years. This is the best-case scenario. The other scenarios take growth rates from the scenarios in Section 5 “Impact on regional GDP”. These growth rates were adjusted by the elasticity ratio estimated above. Once a shock was ensued and tax revenues drastically hit by COVID-19, following economic recovery as described in Section 6 “Impact on Output”, these tax revenues will regain their long run average trend in 2024/25.

Concluding this section, although the full impact of COVID-19 on tax revenue of the region is not yet to be noticed partly because the short period of time elapsed, we have seen some tax categories such as value added tax, profit tax from individual business owners declining. This might mean the pandemic can have a significant impact in the revenue collection performance

⁹ Actual estimation of buoyancy was made with a linear regression of the natural logarithm of tax revenue and nominal region GDP a dependent and independent variable respectively. With the available data (10 years), we take buoyancy to be the coefficient of regional GDP from this regression model

of the region if it continues to spread in the region. Based on different scenarios on the impact of COVID-19 on the economy, it was estimated that there would be a modest reduction to the growth rate of tax revenues in 2020/21 by 4 percentage points which will revert to its average growth of 23.5 percent by 2024/25.

5. Impact on Regional GDP

A pandemic such as the COVID-19 is understood as a negative Total Factor Productivity (TFP) shock. Hence, analyzing the impact of the pandemic on output requires a growth decomposition exercise. This section conducts one such exercise for the ANRS.

From the outset, we need to highlight the challenges one faces while conducting a growth accounting exercise for ANRS and the potential solutions to these challenges and the caveats of the solutions. First, there is no data on gross capital formation (investment) at the region level. There is an ongoing effort to compute gross capital formation for ANRS, but the data is available for only four years. To obtain an approximate measure of gross capital formation for the region that spans a longer time period, we assumed that the ratio of regional GDP to national GDP approximates the ratio of regional gross capital formation to national gross capital formation. Of course, this assumption can be criticized on several grounds. For instance, investments in Ethiopia are concentrated in and around Addis Ababa (See Annex 2 for an illustrative data). Thus, our estimate of ANRS gross capital formation is likely to overestimate the true gross capital formation in the region, and this caveat, among others, need to be heeded when interpreting the gross capital formation data we compute for the ANRS.

Second, while a time series of the region's population is available, there are only three data points on the size of the region's workforce. These three data points on the employment to population ratio come from the national labor force survey for 1999, 2005 and 2013. This ratio was about 70% in 1999, while it was about 80% in both 2005 and 2013. We use the value for 2013, i.e., 80.4%, as the most recent survey is more likely to reflect the existing situation in the region. We then scale the region's population by 0.804 to find the size of the region's workforce. This assumption too is not unassailable. If the employment to population ratio fluctuates, the size of

the workforce we estimate may not be a good measure of the region's actual workforce. However, we do not have a better measure of the region's workforce than the one we use.

Third, the functional form we adopt to back out the TFP estimate for the region is simple Cobb-Douglas production function. This is motivated by the fact that the Cobb-Douglas production function is a good approximation of the more general Constant Elasticity of Substitution (CES) production function. Of the three assumptions we make, this is the easiest to defend, and we can easily account for any criticism towards this assumption by adopting the CES production function. However, adopting the CES requires making further assumptions about the values of elasticities between factors of production for which we do not have good estimates.

Fourth, there is no estimate for the share of labor income in the GDP of Ethiopia, much less for ANRS. This parameter is available for many advanced countries. For instance, over the period from 1960 to 2005, the average value of this parameter has roughly been two-thirds for the United States. However, its estimation for developing countries has often been tricky mainly because there is significant informal self-employment in developing countries and there is no good measure of the size of the corporate sector (Reinbold and Restrepo-Echavarria. 2018). Hence, since capital income is likely to be smaller as the size of the corporate sector is smaller, the share of labor income in GDP will be higher in developing countries compared to advanced countries. In this exercise, we assume three value for the share of labor income in ANRS – 75%, 80% and 85% - to decompose GDP into TFP, capital and labor. But the scenario analysis we conduct with be assuming the share of income is 80%.

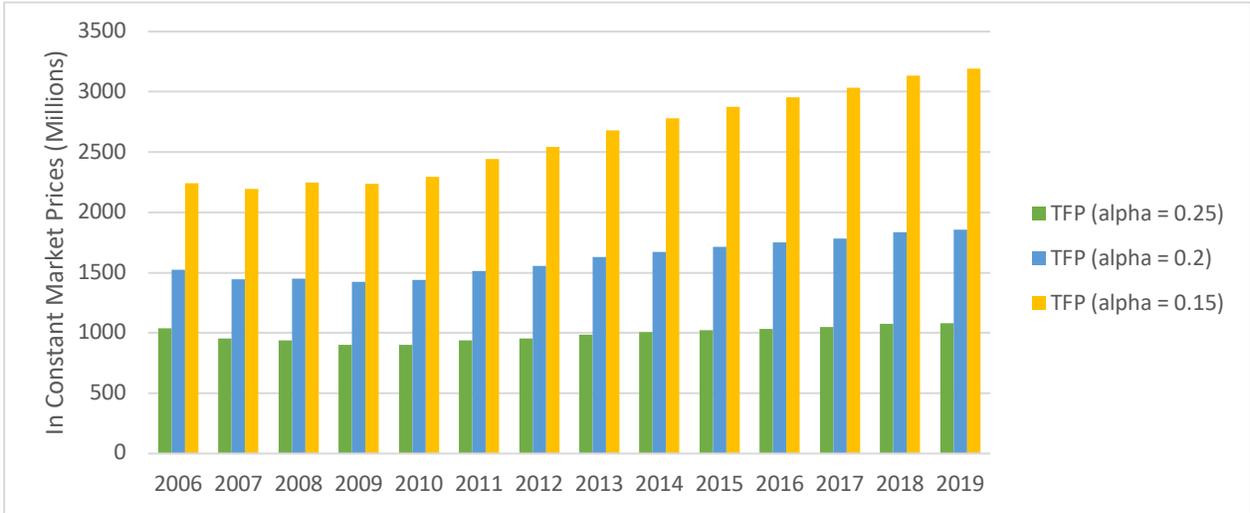
Data on regional GDP for ANRS is available from 2005/06 to 2018/19. Once we estimate the regional TFP for this period, we will then introduce the coronavirus shock as a TFP shock on the projected TFP growth for 2019/20-2023/24. We assume that every year, 25% of the shock disappears resulting in an average duration of 4 years for the shock. This shock duration assumes that in 2023/24, the economy will get back to the pre-pandemic trend. This assumption is also equivalent to assuming that the pandemic has negative effect only on the cyclical component of

growth, not on the trend and it will likely break down if, say, the pandemic leaves a long-lasting scarring effect on the labor market or other sectors of the economy.

Figure 13 below plots the estimated TFP for ANRS for three different shares of income in the regional GDP. AS can be seen from the figure, there has been a marked increase in the regional TFP mirroring the increase in regional GDP. As the labor share of GDP increases, the level of TFP increases since the absolute size of capital in constant monetary terms is bigger than the size of the population, and a decrease in alpha (i.e., an increase in labor share of income) assigns more weight to the workforce which is already lower in value. Hence, a larger fraction of output will be captured by TFP as the share of income in GDP increase.

Now that we have the ANRS regional GDP decomposed into TFP, capital accumulation and the size of the workforce, we have the ingredients to conduct our scenario analysis. As has been mentioned at the beginning of this section, the COVID-19 will hit the economy through its negative effect on TFP. In our base case scenario, TFP growth in 2019/20 falls by 25% from its value in 2018/19. In the medium and severe case scenarios, TFP growth falls by 50% and 75% from its value in 2018/9. Then, the effect of COVID-19 gets back to its pre-2019 average growth rate in 2023/24.

Figure 14: Estimated Total Factor Productivity for ANRS

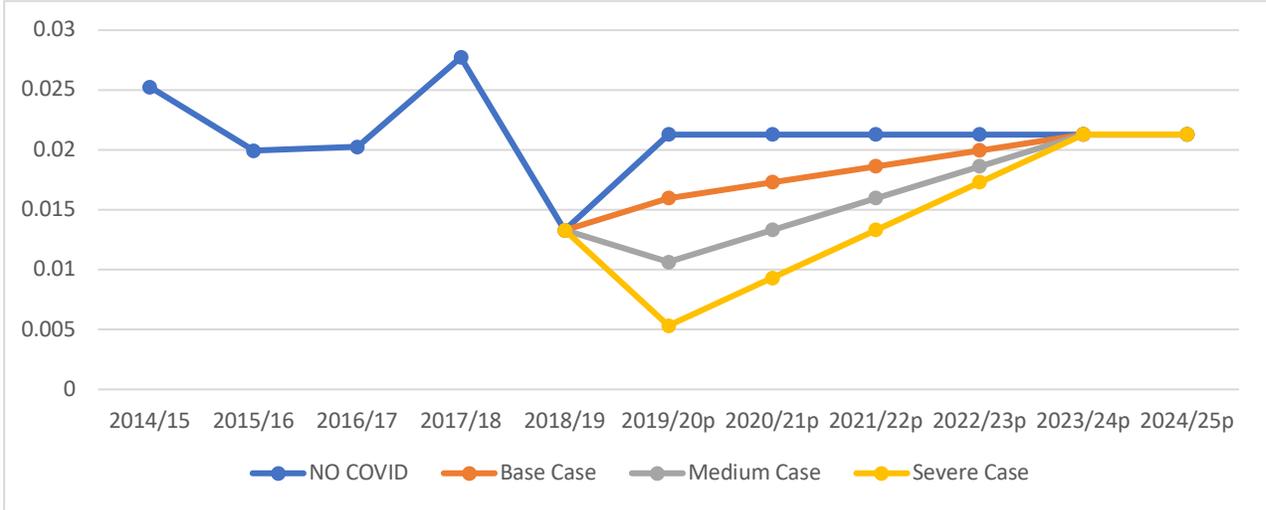


Sources: Planning commission, Ministry of Finance (MoF), Central Statistics Agency Labor Force Survey, ANRS RGDP, and authors’ computations. The production function is assumed to be Cobb-Douglas, with the share of capital income in GDP denoted by alpha.

The results on the effect of COVID-19 on ANRS TFP growth and ANRS GDP growth are plotted on Figure 14 and Figure 15 below. As can be seen from Figure XYZ, the growth rate of TFP was unusually low in 2018/19. While the average growth rate of TFP since 2014/15-2018/19 is above 2%, the growth rate for 2018/19 was only 1.3%. This is because of a disproportionate fall in the growth rate of the agricultural sector in 2018/19. In a counterfactual with no COVID-19 and other structural issues that will keep the growth rate at 1.3%, TFP growth is anticipated to recover to the pre-pandemic average growth rate of 2.1%. However, the growth rate of TFP will be below average due to COVID-19. In the most severe case where the negative effect of COVID-19 equals 75% of the average TFP growth for the pre-pandemic period, TFP will decline further before it shows any recovery.

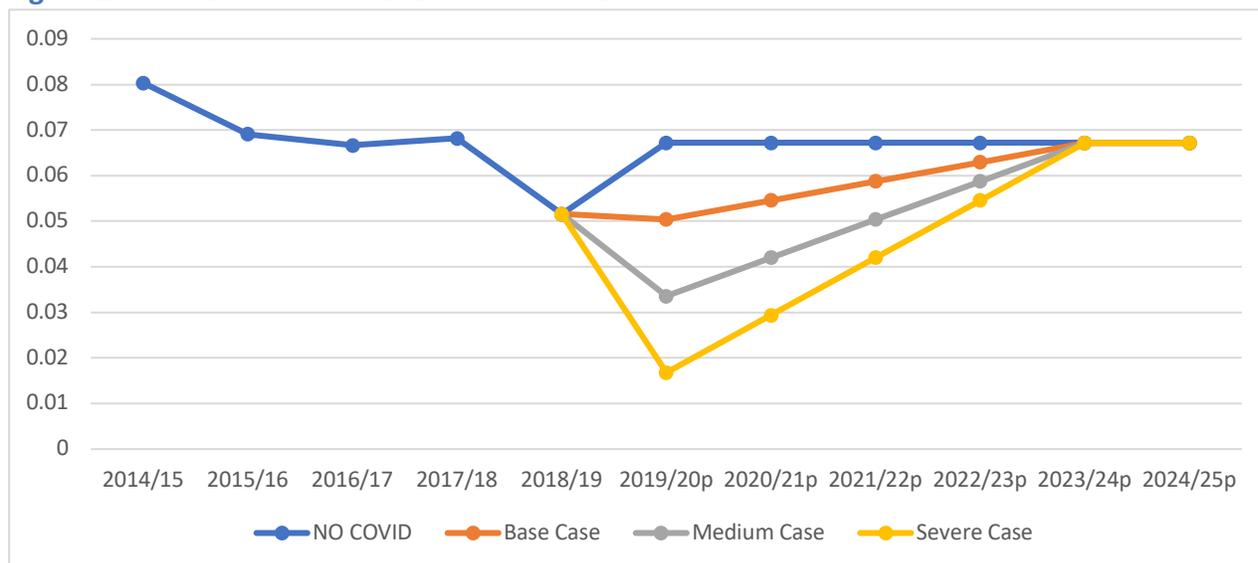
The real GDP growth of ANRS has experienced a persistent decline since 2010/11. After rebounding from the low growth rates of 2008/09 associated with the global economic crisis, the 5.2% growth rate recorded in 2018/19 is the lowest GDP growth rate since the regional data became available. Hence, the negative effect of COVID-19 will hit an economy that was already experiencing a decade-long decline in its growth rate.

Figure 15: The Effect of COVID-19 on TFP Growth



Data Sources: Planning commission, Ministry of Finance (MoF), Central Statistics Agency Labor Force Survey, ANRS RGDP, and authors’ computations. The production function is assumed to be Cobb-Douglas, with the share of capital income in GDP denoted by alpha.

Figure 16: The Effect of COVID-19 on ANRS GDP Growth



Sources: Planning commission, Ministry of Finance (MoF), Central Statistics Agency Labor Force Survey, ANRS RGDP, and authors' computations. The production function is assumed to be Cobb-Douglas, with the share of capital income in GDP denoted by alpha.

We will also analyze the impact of shocks from remittances, exports, tourism and travel on ANRS's regional GDP using SAM-based multiplier analysis in Section 6 below.

5.1. Employment

Another economic variable that suffered heavily from the pandemic is employment. Employment falls due to other underlying reasons such as a fall in export demand, a fall in domestic consumption, or government-imposed virus mitigation measures. Consequently, the size of effect of the pandemic on employment crucially depends on what sector gets the hit (Tadele et al, 2020).

Nationally, the share of employment in agriculture has fallen from 78% in 2005 to about 66% in 2019, see Table XYZ below. Over the same period, the share of industrial employment has increased from 7% to only 10.5%. The fall in employment in the agriculture sector went mostly to the services sector. Over the same period, employment in the services increased from 14.5% to almost a quarter of the total work force.

Table 12: Employment Shares (Percent) by Sector, 2005-2019

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Industry	7.4	7.5	7.6	7.7	7.8	9	8.2	8.3	8.4	8.7	9.1	9.5	9.8	10	10.2
Agri.	78.1	77.4	76.6	75.8	75	74	73	72.1	71	70.1	69.1	68.2	67.3	66.7	66.1
Services	14.5	15.1	15.8	16.5	17.2	18.0	18.9	19.6	20.6	21.2	21.8	22.3	22.8	23.3	23.7

Source: World Development Indicators and authors' computations

Employment in agriculture, nationally as well as in the ANRS, is mainly family-based employment. Hence, the sector is likely to sail through the pandemic with little to no impact in terms of employment. Moreover, both the national and regional governments have not imposed full lockdown, meaning the industrial sector will not face a significant fall in terms of employment. The sector that suffers the most in terms of employment will be the services sector. This is due to the fact that sectors that are hit hard by the pandemic, such as tourism and hotels, will cut employment.

Unlike advanced countries where formal welfare systems lessen the damage of the employment fall on welfare, both the federal and regional governments lack such facilities. Thus, the effect of the pandemic on employment will directly translate to a fall in welfare.

Moreover, informal sector employment is high. According to ILO, about 88% of the total employment in low-income countries is in the informal economy (ILO Monitor). Ethiopia being one of the poorest countries in the world and the ANRS being predominantly rural, the proportion of workers employed in the informal sector is likely to be about the same as the average for low-income countries. Moreover, according to CSA's labor force survey, about 31% of the total urban population of ANRS is in the informal sector. Thus, the choice facing a typical informal sector employee are stark – if the informal sector employee sticks to government-prescribed preventive measures for a long time, it could lose livelihood, or he/she could neglect safety measures and be exposed to the virus.

Another important parameter to consider is the effect of the pandemic on income inequality. Research from other countries shows that historically underprivileged and low-income households suffer more than high income households (Bernstein and Jones, 2020). That is, up and down swings are more amplified for low-income households. This fact, together with the fact

that lower income households are disproportionately employed in informal sectors could mean that the pandemic could widen income inequality. We have also seen from the section on remittances that households in the lowest quintile are affected the most by a fall in remittances as a result of the pandemic. This calls for a policy measure that emphasizes on the poor.

There will also be serious sectoral variation in terms of the effect of the virus on employment. As a recent study by the Jobs Creation Commission of Ethiopia indicated and further corroborated by Tadele et al (2020), manufacturing and service sector jobs are the most at risk. In particular, service sectors such as tourism and hotels will likely suffer more than other sectors, and the effect is likely to remain for some time before recovery takes place (see the observations we made in Section 2 above). This is because it takes time for people to regain their confidence to travel locally and internationally. On the other hand, as experience from advanced countries show, other service sectors such as banking and insurance may have already recovered from the effect of the pandemic.

As the virus lingers on with no therapeutics and vaccine, the duration of unemployment in some sectors will increase. An example, again, is the travel and tour sector which will mostly remain below its potential until travelers regain confidence to travel. Employees in such sectors will most likely switch to other sectors or become unemployed. This effect will need to be considered by policy if long-term damages on welfare are to be minimized. We provide more specific policy recommendations in Section 8.2 below.

5.2. Manufacturing

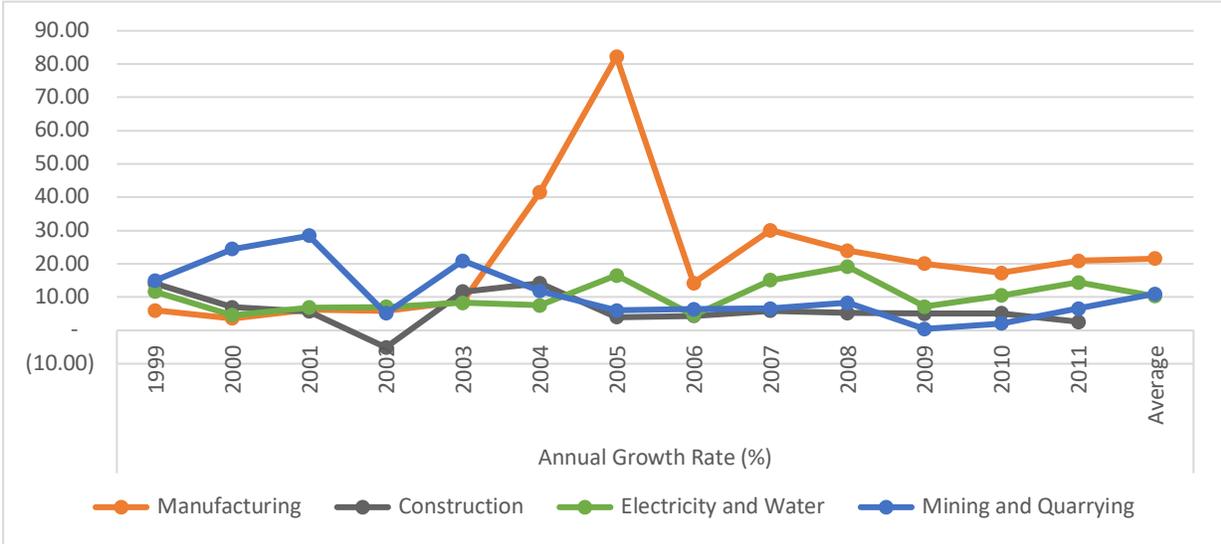
Manufacturing is yet another sector which is highly susceptible for COVID-19 pandemic. In the ANRS GDP, it accounted for 38% of industrial production, ranking second next to the construction sector which accounts close to 60% of the total industrial production.

This sector is likely to suffer both from shortfalls in demand for the output it produces as well as disruptions in supply chains and labor supply. Given the lockdowns in most of the advanced

world, the sector will have suffered a substantial shortfall in demand for its output as well as the supply of labor and other intermediate inputs.

Before the COVID-19 pandemic hit the region, the average growth rate of output in this sector has been remarkably high. From 2007-2019, ANRS manufacturing output increased by an average of 22% annual growth rate ranking the sector first in growth rates among sectors within industry sector (See Figure 16)

Figure 17: Growth in Annual Industrial Production in ANRS



Source: ANRS regional GDP and authors’ computations

The COVID-19 pandemic will potentially reverse some of the progress made over the past decade, and manufacturing output may not get back to the pre-crisis trend soon. While the average contribution of total industrial output to the regional GDP just about 14% and this decline may not be as impactful as a shock, say, to the agriculture, the fact that the shock impedes a much-needed transformation towards industry-dominated regional economy makes it a severe shock.

To sum up this section, the ANRS GDP has been already experienced a steady decline in terms of its growth rate before the pandemic struck. COVID-19, which introduces a negative TFP shock, is likely to accelerate this trend. In the worst-case scenario, the growth rate of TFP and GDP will decline to 0.5% and 1.6%. Moreover, while we do not expect employment in agriculture to experience a significant decline, employment in services and informal sectors could sharply fall.

The pandemic could also hamper the remarkable growth in manufacturing the region has been experiencing.

6. SAM-Based Multiplier Analysis

Globally, COVID-19 epidemic is creating considerable social, health and economic havoc. Countries are implementing different measures to reduce further spread of the virus including restrictions on movement of people and activities. While these restrictions are expected to reduce the spread of the virus, they are also anticipated to have unintended significant direct and indirect impacts on the economy. Understanding these economic impacts of the pandemic is a topical issue for many countries. This is also the same for Ethiopia and the regional states within the country.

This study has mainly focused on a partial equilibrium study of the hotel and tourism sectors, remittances and government finances. It then studied the effect of COVID-19 on ANRS GDP through the lens of its effect on the region's total factor productivity. We now resort to a SAM based multiplier analysis method to study the general equilibrium effects of COVID-19 on the economy of the ANRS. To do so, we identify three carefully selected channels through which the corona virus shock could be transmitted to ANRS's economy. We focus on the exports, remittances, tourism (hotel and travel), and wholesale and retail trade via which the pandemic is anticipated to have the quickest and probably the biggest impact.

6.1. Data and Methodology

6.1.1. Data

For this analysis, we employ the latest Ethiopian Social Accounting Matrix (SAM)¹⁰ which is built by EU/PSI (henceforth PSI-EU-SAM) in 2019. As in any good SAM, the PSI-EU-SAM depicts detailed

¹⁰ Construction of a SAM is very data intensive and also requires significant human efforts and times. In Ethiopia, a number of attempts have been made to construct (or update) the Social Accounting Matrix (SAM). So far, Ethiopia has constructed three national SAMs: the first SAM was built in 2007. It was based on various datasets from the 1999/00 surveys and national accounts. The SAM construction involved experts from the Ethiopian Development Research Institute (EDRI) now called Policy Study Institute (PSI) and researchers from Addis Ababa University. The second SAM was constructed in 2009 and it relied up on different surveys conducted in 2004/05. It was constructed by EDRI in collaboration with the Institute of Development Studies at the University of Sussex (IDS) and IFPRI. The

resource flows (all transfers and real transactions) between activities (such as agricultural, industrial, and service), factors of production (e.g., labor, capital, and land), and institutions (households, government, and the rest of the world), often over a financial year (Breisinger, 2009). This PSI-EU-SAM utilized a number of important datasets from the period 2015/16. It is very much disaggregated. The PSI-EU-SAM is at agro-ecological level and consists of 227 accounts including 61 activities, 71 commodities, 6 factors of production (with labor and capital also further disaggregated by region), 3 types of taxes (direct, indirect and import), 28 regionalized households and one account each for margins, saving-investment, enterprises, government and rest of the world. This makes the SAM a powerful tool to study the structure of an economy and interdependence between different sectors.

6.1.2. Methodology

For this analysis, we make use of a SAM multiplier model. SAM multiplier technique is a powerful instrument to analyze the effects of macroeconomic policies (or shocks) on a number of outcome variables including on GDP. Given a reliable Social Accounting Matrix (SAM), SAM Multiplier analysis is a wonderful method to analyze different complex scenarios. It is ideally suitable to estimate a short-run impact of a given shock (such as the impact of COVID-19) on a given economy (e.g., GDP). By tracing the backward and forward linkages between different accounts, the model captures the overall (both the direct and indirect) effects of a given shock -e.g., lower remittances by reducing purchasing power of receiving households may lower domestic demand for, say agricultural, commodities that ultimately may end up affecting different actors across the value chain including farmers producing those commodities.

In the simplest form, SAM multiplier model can be described as follows. Following Arndt et.al, 2013, let X be an $n \times 1$ vector of sectoral gross outputs and let there be n sectors (firms) in the economy producing n homogenous items. Let F be an $n \times 1$ vector of sectoral final demands and

third and the latest is the PSI-EU-SAM. In addition, there were three other SAMs that were updates (rather than a ground up new construction) version of SAMs. The first is the so called '2009 IFPRI SAM' which is an update of the 2005 SAM where the updating was in line with the national accounts and other relevant datasets of 2009. The second is the '2015 IFPRI SAM' which is an update of the 2009 SAM that is based on the 2011/12 national datasets. The third is the '2017 IFPRI SAM' which is an update of the 2015 SAM based on respective dataset from 2017 period.

B be an $n \times n$ matrix of coefficients representing intermediate inputs per unit of gross output. Given the $I-O$ (B) coefficients and structure of a given SAM (see Annex 1), we can represent the gross output as:

$$B \cdot X + F = X \quad (1)$$

Rearranging and taking out common factor we can arrive on the model with the famous Leontief Matrix as:

$$(I-B)^{-1} \cdot F = X \quad (2)$$

Where $(I-B)^{-1}$ is Leontief's inverse matrix and I is identify matrix. The Leontief inverse shows the direct and indirect impact of a one unit exogenous change in a given (column) account on the accounts in the row.

Given assumption of linearity, one can assume equation (2) can also applies to changes as follows:

$$(I-B)^{-1} \cdot \Delta F = \Delta X \quad (3)$$

We then assume shares are fixed and set up equations after which we use matrix algebra to solve the systems-as in equations (1)-(3).

Using the SAM multiplier model as in equation (3), we analyze the short-run impact of COVID-19 on the Ethiopian economy¹¹. While the pandemic can have an effect on the economy through a number of channels, for this study, we focus on those sectors (i.e., export, remittances, tourism, and trade) that are expected to be directly affected by the pandemic. These four sectors are identified as the most common routes through which the pandemic could have a direct impact. For example, lower exports volume, lower remittances, reduced tourism due to international

¹¹ As powerful as the multiplier models are, they are, however, often suited to undertake rapid assessment of a given shock (up to a year) and may not be appropriate for a medium to long run analysis. For economy-wide analysis of more than a year, more dynamic models (such as CGE) should be used.

travel restrictions, and possibly low wholesale and retail trade as firms and individuals reduce activities are expected to have a quicker and more direct impact on the economy of the region.

6.1.3. Assumptions and Simulations

SAM Multiplier and multiplier-based analysis relies on a few assumptions: First, the multiplier model is suited for a short period of time and hence we assume that prices would remain fixed (or adjust very slowly). Second, as the PSI-EU-SAM is annual, to estimate the impact of a given shock in the short run (less than a year), we assume linearly proportional value of economic activity across months of a year. Third, the model is based on pre-identified parameters and hence assumes the parameters remain fixed over the study period. Fourth, implicit to the mechanics of the model is that SAM entries with very small shares are relatively less relevant-the model is primarily based on an I-O model that relies on the input output ratio. This means that some inputs that are key for a given activity but constitute only a small share of the activity's overall output are undermined in the multiplier model. For example, in banking industry, an electricity bill per a given period may constitute a very small share of the overall bank expenditures, however, without it, the banks' day to day activity might disproportionately be disrupted. The role of such key inputs and the sectors dependability on the input is not necessarily well captured by the model. This would mean given the multiplier, the smaller the share of the input the smaller the likely impact.

Furthermore, our assessment is based on a few crucial assumptions. First, as the PSI-EU-SAM is a national SAM, we approximate the Amhara region's accounts based on the region's share of different sectors in the national accounts and activity shares for the corresponding SAM base year (i.e., 2016). For example, consistent to the ANRS's accounts, the region constitutes about 25% of national accounts for agriculture, hunting and forestry sector, 9.6% of national level for industry sector, and about 12.6% of national level for service sector (for more detailed item by item description of the shares, please see Table 1A and Table 1B). Implicit to this approach is the assumption that the regional and national SAMs have similar structure. Two, given that the PSI-EU-SAM is of a year's value of the accounts, to have a reasonable level of shock, we assume a

shock level proportional to the timespan we consider. For example, for 6-month scenario, we divide the shocks by 6/12 (i.e., 50% of the annual value), and for 9 months, by 9/12 (i.e., 75% of the annual value). Three, for export related shocks, given the timespan scenario, the magnitude of the different shocks is equated to the largest negative percentage change between subsequent months between March and June 2020 (please see Annex 4). For example, for coffee export (in value), while the percentage change between April to March, May to April, and June to May are 7.3%, -8.4%, and -0.8% respectively, we took the largest negative change (i.e., -8.4%) as the magnitude of the shock for coffee exports. Similarly, for oil seeds export, the percentage change between April to March, May to April, and June to May are 1.6%, -31.3%, and -23.5% respectively and the shock magnitude we considered is -31.3%. As such, our shocks can be considered as the upper threshold of the impact through the shock channels under discussion.

Table 13: ANRS's Share in National Income Accounts, 2015-2019

Industry\ Year	2008	2009	2010	2011
	2015/ 16	2016/ 17	2017/ 18	2018/ 19
Agriculture, Hunting and Forestry	0.2443	0.2503	0.2770	0.3492
Crop	0.2468	0.2355	0.2704	0.3701
Animal Farming and Hunting	0.2494	0.2869	0.2975	0.3020
Fishing	0.1450	0.2118	0.1719	0.1816
Forestry	0.2079	0.2426	0.2617	0.3307
Industry	0.1004	0.0959	0.1089	0.1194
Mining and Quarrying	0.0477	0.0762	0.1075	0.1526
Manufacturing	0.1124	0.0000	0.1344	0.1714
Large and Medium Scale	0.0615	0.0649	0.0732	0.0910
Small Scale and Cottage Industries	0.2263	0.2071	0.2589	0.3465
Electricity and Water	0.0956	0.0895	0.0922	0.1174
Construction	0.0975	0.0898	0.1005	0.1017
Service	0.1200	0.1285	0.1475	0.1589
Whole Sale and Retail Trade	0.0995	0.1257	0.1340	0.1431
Transport and Communications	0.1624	0.1352	0.1623	0.1770
Financial Intermediation	0.0408	0.0385	0.0334	0.0347
Real Estate, Renting and Business	0.1695	0.1761	0.2368	0.2495
Public Administration and	0.0911	0.1117	0.1273	0.1378
Education	0.1809	0.2754	0.3038	0.3235
Health and Social Work	0.1449	0.1614	0.2139	0.2356
Other Community , Social &	0.2212	0.2380	0.2750	0.3167
Private Households with	0.0444	0.0579	0.0844	0.1231
Total	0.1614	0.1637	0.1816	0.2102
Less : FISIM	0.1757	0.1686	0.1816	0.2179
GVA at Constant Basic Prices	0.1612	0.1636	0.1816	0.2102
Taxes on Products	0.0287	0.0313	0.0337	0.0396
GDP at Constant Market Prices	0.1512	0.1543	0.1724	0.2005

Source: Amhara Region Bureau of Finance and NBE, 2015-2019

Table 14: Contribution (Percent) of ANRS to National Crop Production

	Area (share)	Production (share)
Grain Crops	35.31	32.67
Cereals	33.85	31.73
Pulses	44.65	42.30
Oilseeds	35.32	29.01
Vegetables	38.68	21.35
Root crops	15.61	10.38
Fruit crops	5.14	3.65
Chat	3.28	2.46
Coffee	1.38	0.75

Source: CSA 2016-2020

Hence, to examine the possible impact of COVID 19 on the economy of the Amhara regional state, we simulate the multiplier (the direct and indirect) effects of the pandemic through the channels listed below:

1. **EXPORT: -Exports:** This simulation looks at the impact of COVID induced reduced commodity exports on the economy during the designated periods.
2. **REMITTANCES:** Here we look at the impact of reduced remittance inflow in the region. Consistent with a recent report by the World Bank report (World Bank, 2020), we assumed a 23% reduction in remittance during the covid-19 hit period. Nonetheless, amid lack of proper regional level remittance data, to estimate the regional level, we assumed population based proportional share. This means that the Amhara region is assumed to receive 24.7% of the national level remittance inflow upon which the impact of covid-19 shock is imposed.
3. **TRADE & TOURISM:** Under this simulation, we show the possible impact of a reduced inter regional trade (wholesale, retail, & transport) and lower tourism (including hotels) to Ethiopia due to COVID during the study period. Given that wholesale and retail trade

is associated with transport, we also introduced appropriate shocks in the transport sector under this simulation.

4. COMBINED: EXPORTS + REMITTANCES+ TRADE & TOURSIM: This simulation presents the possible overall impact of COVID driven negative changes throughout the combinations of the channels used above-i.e., exports, tourism and trade.

For each of these simulations, the simulations are introduced as a demand-based shocks to pass through these channels. Under each simulation (channels), we experiment with three different timespan scenarios for which the pandemic is assumed to last: 6 months, 9 months, and 12 months.¹² While we have the results for all the simulations for all time spans, in this document, we focus on the simulation for the 12-month scenario.

Please note that this study covers the impact of COVID-19 on the ANRS's economy only through the three channels listed (Exports, Remittances, and Trade & Tourism). The study does not cover the impact of the pandemic through other important channels including reduction in domestic activities (such as bars & restaurants, schools & universities, sports & entertainment, and other trading activities), decline in imports and foreign direct investment into the region, and changes in government revenue and expenditures. Accordingly, our analysis should be interpreted with caution.

6.2. Model Results

In this section, we present results and discussions. While we have results for 6 months, 9 months, and 12 months, as briefly described above, we focus on the results for the 12 months scenario. We begin our analysis from the GDP effects of covid-19. We also want to reiterate that our results pertain only to the impacts through the three channels described (export, remittance, and trade & tourism) and does not cover all other channels through which the pandemic could potentially affect the regional economy. Our results, hence, show only partial impact of the pandemic on the

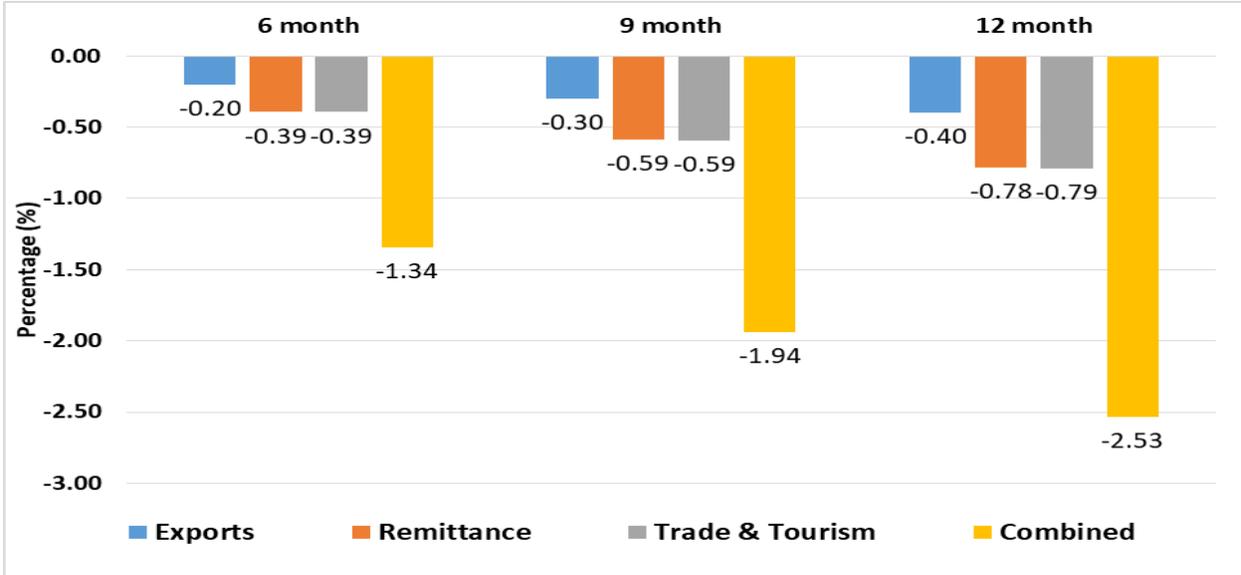
¹² Given that it has already been about six months since the first known case in Ethiopia and it might be less likely unlikely that pandemic to end within 12 months, we included the two intemperance periods (i.e., 6 and 12 months) as threshold levels within which the realistic impact would be examined.

regional economy. As such the estimates are underestimates of the overall impact of the pandemic.

6.2.1. Impact of COVID-19 on GDP

Figure 17 shows how the GDP and overall household consumption of the Amhara region would be impacted by a COVID-19 induced shock on exports, remittance, trade & tourism, and the combined effect over three different timespans: 6 months, 9 months and 12 months. Looking at the COMBINED simulation, COVID-19 induced changes could reduce GDP by up to 2.5%. While the shock levels across the simulations differ, the actual shock levels in Trade & Tourism and Remittances seem to result in bigger reduction in the GDP as compared to the shock in Export.

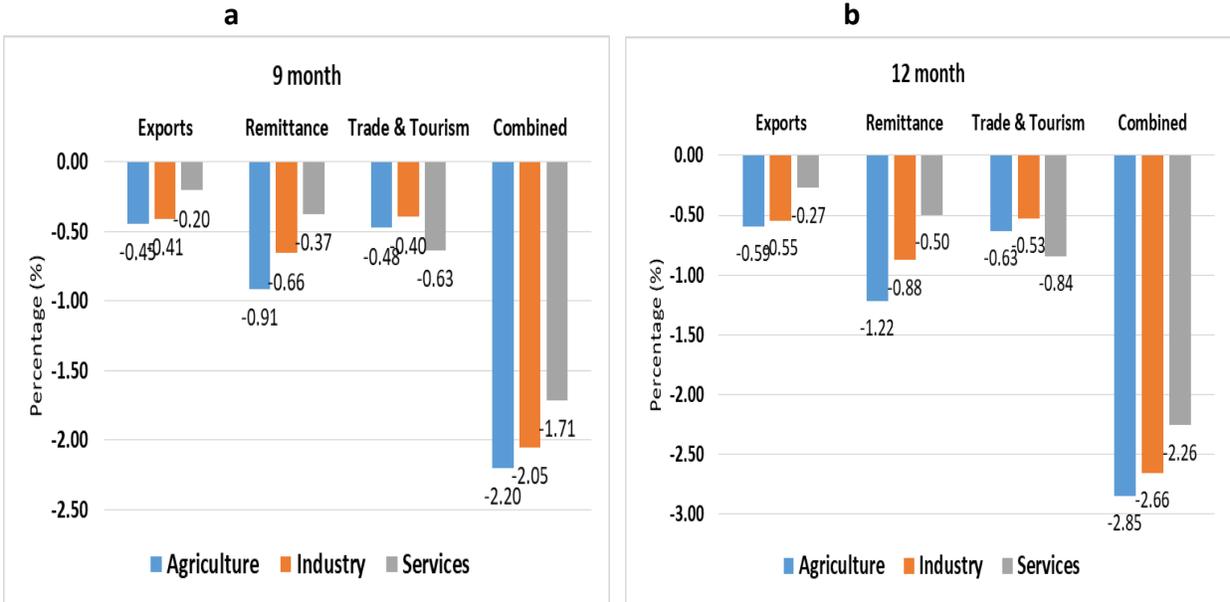
Figure 18: Impact of a Negative Shock on Export, Remittance, and Trade and Tourism on Regional GDP, Percentage Difference from BAU Scenario



Source: Based on PSI-EU SAM

As can be seen from figure 18 below, COVID-19 has the largest impact on the agriculture sector. The industry sector is also affected substantially while the service sector is hit the lowest. The exception is under the TRADE & TOURISM scenario where the service sector is hit the hardest. Under the 12-month simulation and for the COMBINED scenario, agriculture, industry and service sectors are hit by about 2.9%, 2.7%, and 2.3% respectively.

Figure 19: Effect of a Negative Shock on Agriculture, Industry and Services, Percentage Difference from BAU Scenario



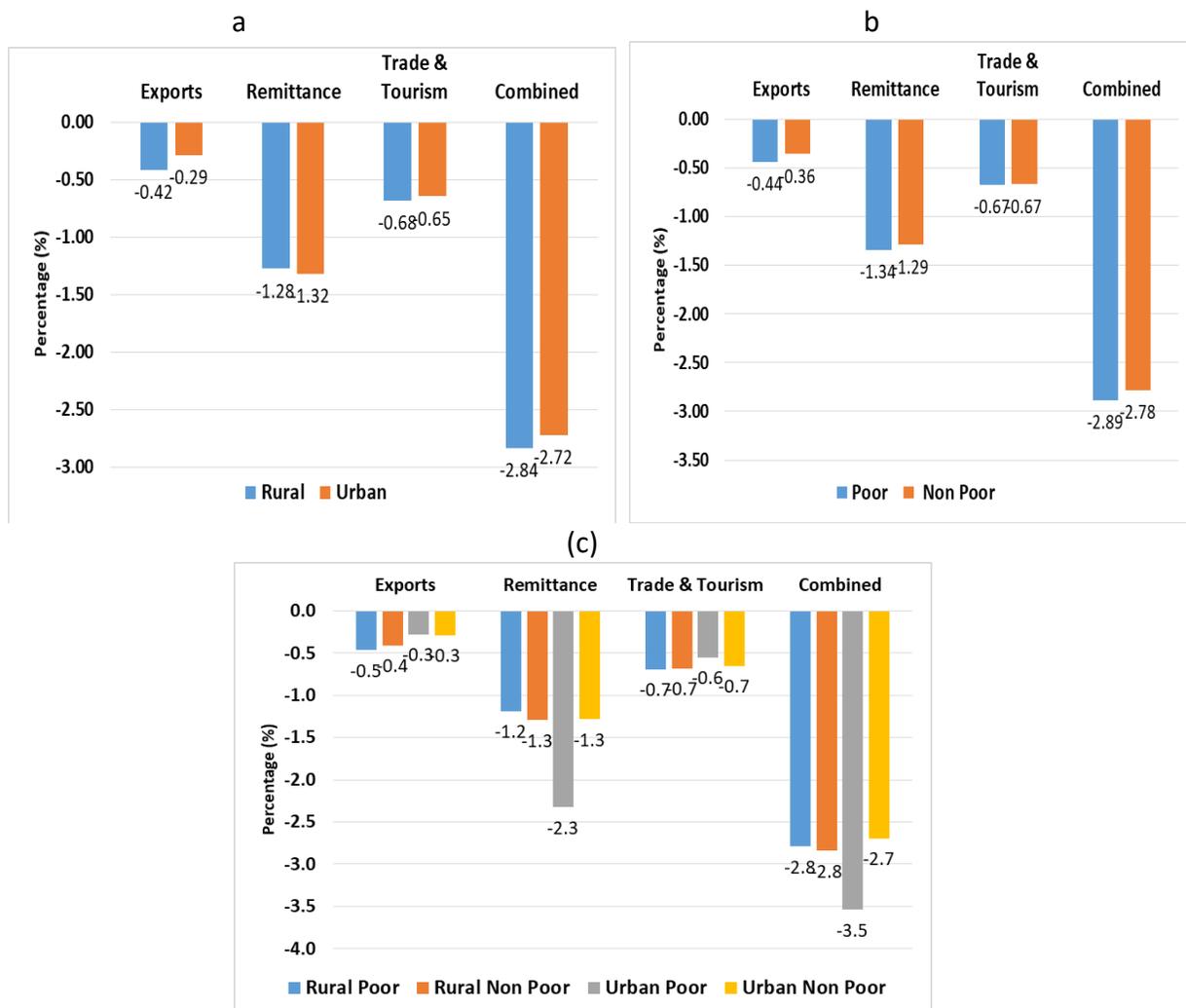
Source: Based on PSI-EU SAM

6.2.2. Impact of COVID-19 on Household Income

Figure 19 below displays the combined direct and indirect effect of reduced exports, tourism, and trade on household income for different household groups. The effect of COVID-19 on household income varies across the simulations. The figure in the upper left (figure 19 (a)) shows the change in household income for the rural and urban category. Overall, the income of rural households seems to be slightly more negatively affected than that of their urban counterparts. While under EXPORT and TRADE & TOURISM scenarios, the fall in income for rural households is larger as compared to their urban counterparts, under REMITTANCE scenario, the reduction in income for rural households is relatively lesser. Under the COMBINED scenario, rural households experience a reduction of about 2.8% whereas the urban households face a reduction of about 2.7%. The figure in the right (figure 19 (b)) displays household income change for the poor and non-poor category. The figure shows that across the simulations, the income of the poor seems to be hit severely as compared to the non-poor albeit marginally. For example, under the COMBINED scenario, covid-19 induced shocks result in 2.9% and 2.8% reduction in income of the poor and non-poor households respectively. Figure 19 (c) further categorizes the households into four groups: the rural poor, urban poor, rural non-poor, and urban non-poor. The estimates

under 12 months scenario show that the reduction in income for the rural households (the poor and non-poor) group is marginally worsened as compared to the urban households under the EXPORT and TRADE & TOURISM scenarios. Under the REMITTANCE scenario, however, it is rather the urban households, especially the urban poor, who are hit the hardest. Given the disproportionately larger weight of the Remittance shock in the overall (COMBINED) scenario, the trend of the COMBINED scenario is skewed towards the estimates from the Remittance scenario. Under the COMBINED scenario and for the 12-month simulation, the reduction in income for rural poor, urban poor, rural non-poor, and urban non-poor amounts to be about 2.8%, 3.5%, 2.8%, and 2.7% respectively.

Figure 20: Impact of Negative Shocks by Location and Income Status, 12-Motnh Scenario, Percentage Difference from BAU Scenario

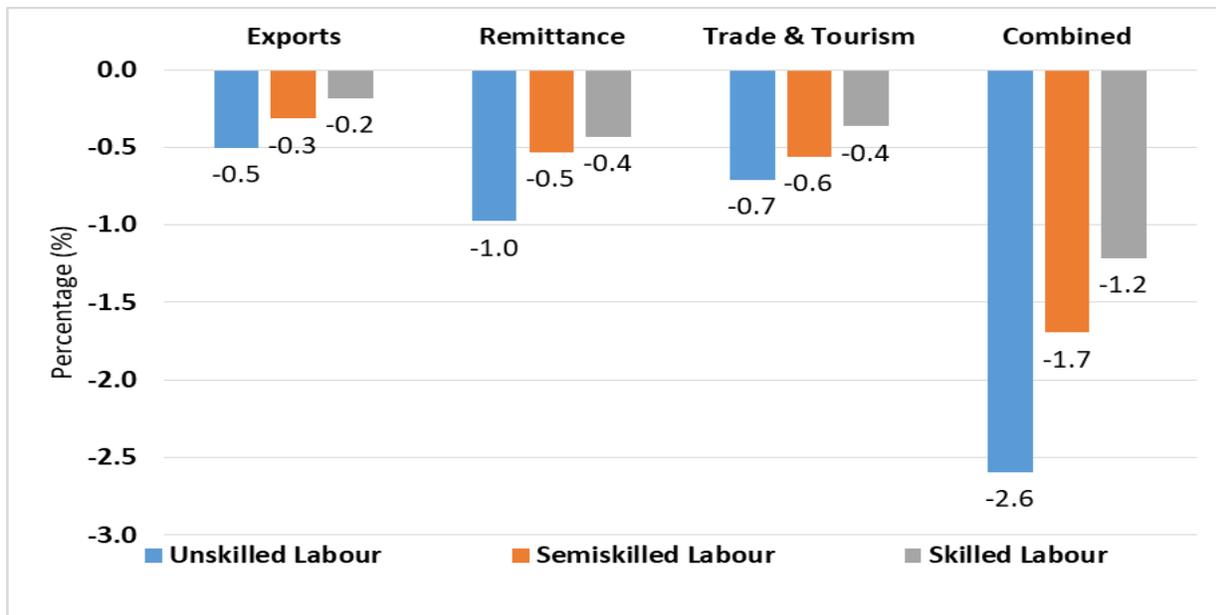


Source: Based on PSI-EU SAM

6.2.3. Impact of COVID-19 on Employment

Focusing on labor, Figure 4 presents the changes in factors of production due to COVID-19 induced shocks. As can be seen from the figure, the impact on employment varies for the different labor skill types. Across all the scenarios, unskilled labor faces the largest unemployment level followed by the semi-skilled whereas skilled labor is relatively less hit. Under the COMBINED scenario, for example, the unemployment level for the unskilled and semi-skilled labor increases by 2.6% and 1.7% respectively, while the unemployment level for the skilled labor rises by about 1.2%. The changes in employment for the different skill levels are probably driven by the changes in the major sectors where agriculture seems to be hit the hardest (Figure 19 above).

Figure 21: Impact of a Negative Shock by Work Skills, 12-Month Average, Percentage Difference from BAU Scenario



Source: Based on PSI-EU SAM

In conclusion, relying on the latest SAM developed for Ethiopia and using a multiplier analysis technique, we analyze the possible economic impact of COVID-19 on the Amhara Regional State's economy. We look at the impact through three carefully chosen channels: export, remittances, and trade & tourism. Results generally indicate that shocks on remittances have the biggest effect on the economy followed by the shocks on trade & tourism. The shocks on the export sectors

seem to result in the least effect on the economy. Our results of the combined effects of the three channels show that, in the absence of any policy responses and as compared to a no-COVID-19 situation, the ANRS's economy experiences a GDP loss of up to 2.5 if the pandemic stays for a year. Splitting the GDP cost of the pandemic by sectors, the agriculture sector seems to be affected the most experiencing a loss of about 2.9%. The performance of the industry and service sectors is also reduced by 2.7% and 2.3% respectively. In line with this, the employment level of the unskilled labor comes down by up to 2.6% whereas the employment level of the semi-skilled and the skilled labor reduced by 1.7% and 1.2% respectively. This translates into relatively less income for the rural households that face an income loss of about 2.9%. The urban households experience a loss of about 2.7%. Nonetheless, further categorization of the households into poor and non-poor reveals significant welfare implication with the urban poor facing the largest reduction in income. While the urban poor faces up to 3.5% loss in their income, the rural poor, the rural non-poor, and the urban non-poor, on the other hand, experience losses of 2.8%, 2.8%, and 2.7% in their respective income.

While the results should be interpreted with caution, they have a number of policy implications. First, amid the generally lower COVID-19 incidence in Ethiopia and the incidences largely concentrated in Addis Ababa, the post-COVID-19 trading activities (wholesale and retail) in Ethiopia in general and in regional states in particular, have seemingly resumed to normal. Nonetheless, this is not the case for tourism and tourism related activities that have declined substantially since the first known case of COVID-19 in Ethiopia. According to a document from the ANRS Tourism Bureau, tourism (as proxied by revenue changes for medium to big hotels) has declined by up to 40-75% during the COVID-19 period. Tourism by its nature involves a number of activities across the value chain including conferences, religious & non-religious carnivals, tour agents, drivers, hotels & restaurants. It is estimated that at the aggregate level, domestic tourists (e.g., participants of conferences and religious carnivals) contribute to a larger share of overall revenue from tourism. However, foreign tourists spend substantially larger tourism related expenditure per capita as compared to domestic tourists. It is expected that tourists, particularly foreigners, worry about the prevalence of the pandemic and safety measures among other things. Policy makers hence need to first create proper awareness among local stakeholders along

tourism value chain on the standard practices and safety measures of maintaining the lowest possible covid-19 incidents. This is expected to boost confidence among foreign tourists as a safe destination.

Two, while the impact through the export channel is found to be relatively small, caution should be taken in interpreting the result. This is because seasonality might have played an important role. For example, pulses and oil seeds that are harvested before December-i.e., before the first known covid-19 case in Ethiopia, are the most important export items from the region. While COVID-19 might have impacted the mid and down-stream activities across the export value chain, the impact could have been significantly larger had it also included the possible impact in the upper stream. As the most important different activities in the upstream (including ploughing, sowing, weeding, chemical spraying, and harvesting) have already taken place before COVID-19, the possible impact of the virus through export channel is probably understated. As such, the impact can be considered as a lower bound. Hence, proper caution should be undertaken in the upstream between now and the next harvest.

7. Legal and Policy Responses to COVID-19

Since the first confirmed case of COVID-19 was reported on March 14, 2020, the Ethiopian government has taken a multitude of legal and policy measures to contain the spread of the pandemic and its consequential impacts on health and the economy. These measures have been implemented by all regions irrespective of the prevalence of the pandemic. Furthermore, the government of ANRS also took similar responses at regional level. Although there are some revisions to the measures (the ones on transporters) and some expired (e.g. State of Emergency), most of them are still being implemented.

Among the major responses include postponement of the national election, which was scheduled for August 29, for as long as 12 months. The most stringent measure was, however, the declaration of state of emergency (Negarit Gazete 2020), which had severe consequences on slowing down of both private and public businesses, government finance and balance of payments. The proclamation prohibited conducting of meetings for religious, government, social

or political purposes in places of worship, public institutions, hotels etc. including educational institution to conduct classes face to face in schools or campuses. It also prohibited transporters to carry passengers greater than 50 % of the seating capacity; closed recreational services and night clubs, cinemas, theatres etc.; reduced the capacity of hotels, restaurants and cafes which are expected to provide services to not more than three patrons at a single table. It closed borders and prohibited to enter into or exit from the country or import and export anything other than legal dry or liquid cargo through inland entry ports. International passengers are subject to mandatory 14-day (later on revised to only 7-days) quarantine at designated hotels at the traveler's expense.

7.1.1. Fiscal policies

Despite the above proclamation of the state of emergency, the number of COVID-19 cases has been surging from 5 in 16 March to 66,224 in 16 September, 2020¹³. Economic impacts of the responses were also felt in some sectors. As a result, the government made bold fiscal measures. Initially the government announced a Br 300 million package to bolster healthcare spending in early March. On March 23, this package would be increased to Br 5 billion which was 0.15 percent of GDP) but details on the precise modalities of the assistance were not made available. Furthermore, a COVID-19 Multi-Sectoral Preparedness and Response Plan was announced on 3rd April, with prospective costing of interventions of US\$1.64 billion (about 1.6 percent of GDP). The funds were expected to be allocated as follows (IMF, 2020):

- \$635 million (0.6 percent of GDP) for emergency food distribution to 15 million individuals vulnerable to food insecurity and not currently covered by the rural and urban PSNPs;
- \$430 million (0.4 percent of GDP) for health sector response under a worst-case scenario of community spread with over 100,000 COVID-19 cases of infection in the country, primarily in urban areas;
- \$282 million (0.3 percent of GDP) for provision of emergency shelter and non-food items;

¹³ <https://www.covid19.et/covid-19/>

- The remainder (\$293 million, 0.3 percent of GDP) would be allocated to agricultural sector support, nutrition, the protection of vulnerable groups, additional education outlays, logistics, refugees support and site management support.

The Council of Ministers approved another set of economic measures to support firms and employment. These include forgiveness of all tax debt prior to 2014/2015, a tax amnesty on interest and penalties for tax debt pertaining to 2015/2016-2018/2019, and exemption from personal income tax withholding for 4 months for firms who keep paying employee salaries despite not being able to operate due to Covid-19.

Other measures that were intended to support FDI in the country through the crisis and recovery were taken, including: (i) operational facilitation of logistics in export and import process (such as free railway transport of manufacturing goods between Ethiopia and Djibouti); (ii) removal of taxes from the import of raw materials for the production of Covid-19 essential goods, and lifting of the minimum price set by the NBE for horticulture exports.

Regarding external assistance, IMF Executive Board Approves US\$411 Million in Emergency Assistance to Ethiopia to Address the COVID-19 Pandemic. The Board of Directors of the African Development Fund (ADF) on 3 July approved a grant of \$165.08 million to support Ethiopia's response to the health and economic impacts of the COVID-19 pandemic, including helping to ease fiscal pressures on the economy. The grant, awarded from the country's ADF-15 Performance-Based Allocation, will help bolster Ethiopia's COVID-19 National Emergency Response Plan (NERP). The NERP outlines a reliable, multi-sector approach to tackling the pandemic. It aims to expand social protection coverage for the most vulnerable, enhance capacity to contain the virus outbreak, and address macro-fiscal imbalances as well as cushioning the effects of the crisis on the private sector (UNWTO, 2020).

7.1.2. Monetary and macroeconomic measures

The central bank has provided 15 billion birr (0.45 percent of GDP) of additional liquidity to private banks to facilitate debt restructuring and prevent bankruptcies. It has also provided 33 billion birr of additional liquidity to the Commercial Bank of Ethiopia.

7.1.3. Responses by the ANRS regional government

The response measures described in above is applied to individuals and institutions in all regions. Regional governments have had their own responses depending on the local contexts of the regions. The government of ANRS established a command post, team of experts, revenue generation and expenditure team, special technical committee at each office of the regional government. These teams work at each hierarchy of the region from regional offices to kebele level. One quarantine center was established for each of the zones in the region. Establishment of a call center (6981) so that people can report suspected cases of the pandemic. Inspection centers were organized at all the four airports in the region.

The region allocated Br 150 million. Out of this two-third was directly allocated for health bureau.

8. Conclusions, Policy Recommendations and Coping Mechanisms

8.1. Conclusions

The novel coronavirus has posed a series of challenges to individuals and governments all over the globe. These challenges created health, economic, social and political crisis at the same time. In Ethiopia, while the spread of the virus has not exploded as feared when the first case was detected on March 13, 2020, the number of people who contracted the virus is approaching 100,000, with 1500 lives lost.

Since the first coronavirus case in the ANRS was detected on March 27,2020, it has been feared that the virus would leave scarring damage to the region's economy. It is, therefore, necessary to examine the potential damages the virus would cause to the region's economy, with a particular emphasis given to sectors that are highly exposed to external exogenous shocks. To

this end, this study examines the impact of COVID-19 pandemic on a few carefully selected sectors – tourism and hotel, remittances and government finance. It then conducts macro-level growth accounting and SAM-based general equilibrium multiplier analysis to study the economywide effects of the virus. Having examined the effects of the virus on the region’s economy, it then prescribes some policy recommendations in section 8.2 below.

The main results of the study are the following. First, domestic tourism increased more than the decline in international tourism to result an increase in aggregate tourism in 2020. The increase in domestic tourism is likely because most religious events had already taken place by the time the first coronavirus was detected in ANRS. In addition, the fall in international tourism is alarming since international tourism brings in a significantly higher revenue per capita wise. Second, the hotel sector experienced a painful negative shock, with most hotels not even able to cover their employee wages and bank loan payments. Third, remittances are expected to decline, and this decline is going to affect the consumption expenditure of all households in the region, with the effect being more pronounced for urban households. Fourth, while direct tax revenues did not show any decrease during the pandemic, perhaps due to government regulations that prevent laying off employees, indirect taxes showed a modest decline. Fifth, growth decomposition exercise shows that in the worst-case scenario, GDP growth in ANRS could come to a near standstill. Sixth, the SAM-based multiplier analysis indicated that shocks to remittances have the biggest effect on ANRS economy, and that poor households that live in urban areas face the sharpest decline in their income.

8.2. Policy Recommendations and Coping Mechanisms

8.2.1. Availability of Accurate, Recent and Disaggregated Data

Accurate and recent data are the basis for any sound public policy and for any effective implementation of risk and disaster prevention policies. In addition to being accurate and timely, the datasets should also be at the lowest possible level of disaggregation. Both survey and administrative data are crucial. The research team has observed that there is a significant gap in the availability of data ready for analysis. The data that are available do not come in a standardized format as well.

It is to be noted that we are aware of the data collected by the Central Statistics Agency at regional level which we have utilized to produce some of the results of this study. We also believe that these datasets are important sources of data for region's policy analysis. However, taking into account the frequency of CSA's data collection, the time lag in making the data accessible for users after it is collected, and the context the data is collected, CSA's data might not be suitable for the region's needs of risk assessment and disaster management.

We specifically suggest that periodic and frequent data should be collected on vulnerable areas to respond quickly to any economic and non-economic (artificial, natural) shocks taking into account the region's context. It is in with this insight in mind that we recommend regional government's offices to closely work with federal government agencies to create rich and readily accessible databases. We recommend two specific ways this can be done.

- Existing regional government structures like the ANRS branch of the Planning Commission Office could take up further duties and responsibilities to create rich and standardized secondary data source. The office has a good track record of collecting and organizing datasets for the purpose of estimating the region's gross domestic product. Thus, the already existing work could be made more thorough, say by increasing data frequency, and comprehensive to collect and store data beyond those that are currently used for regional GDP estimation. For example, a department in the ANRS Tourism Bureau keeps a periodic record of tourism inflows and revenues. Another department in the Tourism Bureau keep a record of monthly data that pertain to hotels and restaurants. These offices could send the data to the ANRS Planning Commission within an agreed frequency, which will keep a standardized data on the region's economic activities.
- A second way the region can alleviate the problems surrounding data collection is to have the region's Planning Commission Office to work in tandem with the Central Statistics Agency. This helps the region's Planning Commission Office to have quicker access to CSA's surveys which otherwise would take several years to become available.

8.2.2. Hotel and Tourism

Whether the tourism sector recovers and regains its attractiveness to international tourists will ultimately depend on how quickly and efficiently the government is able to fight the novel coronavirus and to instill confidence on potential tourists to travel. This will depend on what other countries are doing as much as it depends on what the Ethiopian government is doing. Hence, the speed with which things will get back to life as usual is, at least in part, outside the control of the Ethiopian government. However, in addition to what is already being done, the federal and regional governments could take some measure to mitigate the impact of the virus on the tourism sector, to boost the chances of speedy recovery and to make sure that critical lessons are drawn from the current crisis, lessons that would mean the sector stands prepared in the event of future exogenous shocks. In this light, we believe the ANRS government should implement the following strategies.

First and foremost, policies that prioritize domestic tourism need to be passed and implemented. This could be achieved with efforts to advertise, promote and encourage tourism to the ANRS in coordination with the Ministry of Tourism. ANRS is already home to major tourist attraction sites for international tourists. However, the region's tourism office should ramp up its efforts to promote the region's attractions to Ethiopians. One way of doing this is for the region's tourism office to transmit short, paid advertisements on national TVs during primetime. TV commercials advertising tourist attraction sites is ubiquitous in other countries, and the ANRS government should emulate this experience. Paid promotions that are one-minute or thirty-second-long will introduce and remind major tourist attractions, and thereby encourage the viewers to come and visit the region.

Second, the efficacy of actions taken to mitigate the effect of the pandemic is maximized when they are implemented in a coordinated fashion. In a pandemic, or even any other exogenous shock for that matter, multiple government agencies will be involved to lessen adverse effects. When this happens, there will be weak coordination and some efforts will be unnecessarily duplicated. To avoid this issue, the region should use the Disaster Prevention and Food Security

Program Coordination Office to facilitate the actions of federal and regional government agencies. The region's tourism bureau should work closely with the DPPC to identify the tourism sector's bottlenecks.

8.2.3. Remittances

The ANRS government should address the consequences of COVID-19 that has come through international remittances in two stages. Priority should be given to the following short term responses:

- Although there is a limit to what the ANRS government can do to help migrants in host countries to regain their pre-COVID19 work status, the regional government can work with the relevant office in the federal government to normalize the crisis with the Ethiopian diplomatic missions in the countries where the problem is severe. More importantly migrants in Saudi Arabia and Kuwait, which are sources of huge amount of remittances, are being forcefully returned to Ethiopia. As of 4th Sep 2020, more than 3 thousand and more than a thousand returnees have already come from Saudi Arabia and Kuwait respectively registered through the International Organization for Migration.
- The regional government should identify households who are hit by the drop in remittances and help them through emergency cash/non-cash transfers. This should focus on urban and rural poor who are heavily dependent on international remittances.

Furthermore, as a long-run strategy of coping mechanism,

- The regional government can help recipient households to invest in small and medium scale enterprises and promote entrepreneurship by creating supportive business environment through relaxing regulations (e.g., tax breaks, compliance).
- Expand channels of remittance transfer in rural areas by trying to link international transfer agents with micro financial institutions in the rural areas. This can be through Amhara Saving and Credit Institution (ASCI). This helps not only reduce transfer fees but also provides better access to households receiving remittances.

8.2.4. Government Finance

As a medium-to-long term coping mechanism to shocks from COVID-19 and similar possible shocks, the region should depend on a sustainable and domestic resource mobilization strategy. The region should look for potential resources for generating tax revenues. The first step for this is to identify and estimate the tax potential of the region. Tax potential is the maximum amount of tax revenue the region could reasonably raise at a given point in time conditional on its prevailing characteristics (Langford, 2015). Assessing the tax system of the region and estimating tax revenues potential that could be collected if the existing tax laws and policies are implemented efficiently have far-reaching policy significance. Particularly, providing accurate information on the maximum amount of tax revenue potential in the region is central to policy decisions about public expenditure financed by own revenues. Two examples may be given:

- Agriculture income tax. This tax is collected from small holder farmers based on the area of land cultivated. As discussed in Section 4 on “Government Finance,” agricultural income tax is very low (155 million in 2019/20) and its role has been declining over time (from 11 percent in 2010/11 to 1.6 percent in 2019/20). There seems to be huge tax revenue potential in agriculture given the region has the largest cultivated land of 4.5 million hectares (Central Statistics Agency, 2019)-of the total area of land cultivated for grain crops in Ethiopia 35 percent is in ANRS, the second most largest following Oromia regional state having 45 percent of total cultivated land in the country.
- Urban property tax: This tax is levied on properties (such as buildings) in urban areas and is collected by the municipality of the town/city. Currently, urban property tax is only 0.3% of the total tax revenue in the ANRS. Given the rapid rate of urbanization in the region, property tax can become a huge source of tax revenue for the region.

The second step to achieving actual collection to potential is easing tax administration problems. Given the administrative constraints that the region currently has in collecting tax revenues, and that tax effort is low (i.e. the extent to which actual tax revenue reaches estimated capacity), the region might not quickly achieve to collect all the potential tax revenue. Realizing potential tax revenue assumes an ideal and smooth tax administration infrastructure. Achieving collection

performance of the amount estimated is therefore highly dependent on whether the region is committed to reduce the existing tax administrative problems in the region.

8.2.5. Employment

While it is essential to minimize the effect of the pandemic on current employment, it is equally important to make sure that workers get back to pre-pandemic employment very quickly.

- The most vulnerable jobs need to get priority from the ANRS government. These are jobs in services and informal sector in urban areas.
- Micro, small and medium scale businesses employ the bulk of the workforce, and they need special consideration from fiscal policy.
- One way of avoiding mass employee lay off is for the federal and the region's administration to pay a portion of the salaries of workers. This could also be indirectly done by requiring employers keep their workers to be legible for government support. The salary share that come from the government could be determined based on pre-specified metric, such as the vulnerability of the businesses to coronavirus-like shocks. This will keep employees at work and ensures the pandemic doesn't not leave a scarring effect on the labor market.
- Implement public infrastructures that will employ workers released from the informal sector. Alternatively, the region's administration could provide education and training to workers while the pandemic unfolds.

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Annexes

Annex 1: Estimates and Projections of Remittance Flows to Low-and Middle-Income Regions

	Region	2009	2016	2017	2018	2019e	2020f	2021f
Value of Inflows in \$ Billion	Low and Middle Income	307	446	487	531	554	445	470
	East Asia and Pacific	80	128	134	143	147	128	138
	Europe and Central Asia	36	46	55	61	65	47	49
	Latin America and the Caribbean	55	73	81	89	96	77	82
	Middle East and North Africa	33	51	57	58	59	47	48
	South Asia	75	111	118	132	140	109	115
	Sub-Saharan Africa	29	39	42	48	48	37	38
	World	437	597	643	694	714	572	602
Growth rate in percent	Low and Middle Income	-5.0	-1.5	9.1	9.0	4.4	-19.7	5.6
	East Asia and Pacific	-4.8	-0.5	5.1	6.8	2.6	-13.0	7.5
	Europe and Central Asia	-14.7	-0.3	20	10.9	6.6	-27.5	5.0
	Latin America and the Caribbean	-11.3	7.4	11	9.9	7.4	-19.3	5.9
	Middle-East and North Africa	-6.2	-1.2	12.1	1.4	2.6	-19.6	1.6
	South Asia	4.5	-5.9	6.2	12.1	6.1	-22.1	5.8
	Sub-Saharan Africa	-0.2	-8.3	9.3	13.7	-0.5	-23.1	4.0
	World	-5.1	-0.9	7.7	8.0	2.8	-19.9	5.2

Source: World Bank Group (2020). COVID-19 Crisis Through a Migration Lens Migration and Development Brief 3. April 2020. Note: e = estimate; f = forecast.

Annex 2: FDI by Location in Ethiopia

Summary of Licensed Foreign Direct Investment (FDI) Projects by region and investment status since August 22, 1992 to February 06, 2020.

Region of Investment	Total	Pre-Implementation	Implementation	Operation			
	No of projs.	No of projs.	No of projs.	No of projs.	Capital in '000' Birr	Perm. Empl.	Temp. Empl.
Addis Ababa	51	48	41	56	35	23	31
Afar	0	1	1	0	0	0	1
Amhara	6	9	8	3	10	7	6
B.Gumze	0	1	1	0	0	0	1
Dire Dawa	1	1	2	1	2	24	7
Gambella	0	0	0	0	1	0	1
Harari	0	0	0	0	0	0	0
Multiregional	4	2	4	5	3	3	5
Oromia	31	32	36	29	42	35	28
SNNPR	3	4	3	3	5	2	17
Somali	0	1	1	0	0	1	1
Tigray	2	2	2	1	2	4	4
Grand Total	100	100	100	100	100	100	100

Source:

Annex 3: SAM-Based Multiplier Analysis

For illustration purpose, consider Ethiopian MACRO SAM in Table 1A that comprises activities (A) commodities (C), factors of production F, enterprises (ENT), shousehold (H), Government (GOV), different taxes (TAX), saving and investment (S-I), rest of the world (ROW) accounts, and a total (TOTAL) account.

Table 1A below presents the EU-SAM based Ethiopian MACRO SAM with an activity (A) account (probably comprising of a host of activities including agricultural activities) producing a number of commodities which is represented here as an aggregate commodity account (C). The MACRO SAM also includes an aggregated factor of production F (possibly an aggregate of labor, capital, land and livestock), grouped enterprises (ENT), an aggregated household (H), Government (GOV), different taxes (TAX), saving and investment (S-I), rest of the world (ROW) accounts, and a total (TOTAL) account. The MACRO SAM that represents Ethiopian economy in 2016 (in billion Birr) can be represented in a matrix format as follows:

Table 1A: Endogenous and Exogenous accounts of Ethiopian MACRO-SAM

	A	C	F	ENT	H	GOV	TAX	S-I	ROW	TOTAL
A		2,103.2			213.6					2,316.8
C	907.3				883.8	148.8		588.7	122.4	2,651.0
F	1,409.5								3.8	1,413.2
ENT			542.4			8.0			0.5	550.8
H			868.2	388.5		11.0			132.3	1,400.1
GOV				19.9	7.6		192.7		27.2	247.3
TAX		121.4		42.0	29.2					192.7
S-I				99.2	259.1	75.5			154.8	588.7
ROW		426.4	2.7	1.2	6.8	3.9				441.0
TOTAL	2,316.8	2,651.0	1,413.2	550.8	1,400.1	247.3	192.7	588.7	441.0	

Source: Based on EU-SAM

To construct a workable SAM Multiplier model, one needs to first develop an Input-Output (I-O) multiplier model as in Arndt et.al. (2013). For this, as is standard to do, we partition the SAM into Endogenous and Exogenous sub-matrices. Categorization of the SAM accounts as endogenous and exogenous depends on the specific simulation scenarios analyzed and researcher's

preferences. The norm is that firms (Ai), commodities (Ci), factors of production (Fi), and Households¹⁴ (Hi) are set to be endogenous while as a final demand account, government (G), taxes, saving-investment (S-I) and rest of the world (ROW) are categorized as exogenous (see Table 2A below).

Table 2A: Endogenous and Exogenous accounts of Ethiopian MACRO-SAM

	A	C	F	ENT	H	GOV	TAX	S-I	ROW	TOTAL
A		2,103.2			213.6					2,316.8
C	907.3				883.8	148.8		588.7	122.4	2,651.0
F	1,409.5								3.8	1,413.2
ENT			542.4			8.0			0.5	550.8
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ROW		426.4	2.7	1.2	6.8	3.9				441.0
TOTAL	2,316.8	2,651.0	1,413.2	550.8	1,400.1	247.3	192.7	588.7	441.0	

Source: Based on EU-SAM

While accounts within the orange bordered area are endogenous, accounts within the blue bordered area are set to be exogenous. Representing the different numbers in Table 2A in variable form, one can rewrite the entries in Table 2A as in Table 3A below.

Table 3A: Endogenous and Exogenous accounts of a stylized Ethiopian SAM (as variables)

	AAG	ANAG	CAG	CNAG	F	H	EXOG	TOTAL
AAG			S11				0	X1
ANAG				S22			0	X2
CAG	Z11	Z12				C1	FD1	S1
CNAG	Z21	Z22				C2	GD2	S2
F	V1	V2						F
H					D		0	Y=E
TOTAL	X1	X2	S1	S2	F	E		

¹⁴ While household consumption demand and factor supply are typically treated as endogenous, they could as well be set as exogenous.

Then, assuming fixed share of coefficients, one can calculate the I-O coefficients (i.e., convert endogenous entries into shares of account totals) and explicitly introduces coefficients.

To get the coefficients, we divide each cell entry by the respective account totals –for example, $a_{11}=Z_{11}/X_1=50/607$, $a_{12}=Z_{12}/X_2=30/163$, $s_{11}=S_{11}/S_1=607/700$, $c_1=C_1/E=380/565$ etc. These shares in different columns have different economic interpretations: a) the activity columns can be interpreted as unit costs of production, b) commodity columns as shares in commodity supply, c) factors columns as shares of factor income distributed to each institutions while d) institution columns represent shares in use of income.

Table 4A: Endogenous and Exogenous accounts of a stylized Ethiopian SAM (with coefficients)

	AAG	ANAG	CAG	CNAG	F	H	EXOG	TOTAL
AAG			$s_{11}S_1$				0	X_1
ANAG				$s_{22}S_2$			0	X_2
CAG	$a_{11}X_1$	$a_{12}X_2$				c_1E	FD1	S_1
CNAG	$a_{21}X_1$	$a_{22}X_2$				c_2E	FD2	S_2
F	v_1X_1	v_2X_2						F
H					hF		0	Y
TOTAL	X_1	X_2	S_1	S_2	F	E		

Assuming fixed shares of coefficients, we can show this relationship in algebraic form and we can write the coefficients under table 3A into algebraic equations (by adding up along the rows) as follows:

$$\begin{array}{rcl}
 & s_{11}S_1 & =X_1 \\
 & s_{22}S_2 & =X_2 \\
 a_{11}X_1 + a_{12}X_2 & +c_1E + & FD_1 & =S_1 & (4) \\
 a_{21}X_1 + a_{22}X_2 & +c_2E+ & FD_2 & =S_2 \\
 v_1X_1 + v_2X_2 & & & =F \\
 & hF & & =Y
 \end{array}$$

Then, we convert these algebraic equations into matrix format as in Table 4A and equation (2) in the main below

Table 5A: Coefficient matrix of a stylized Ethiopian SAM

0	0	s_{11}	0	0	0		X_1		0	X_1
0	0	0	s_{22}	0	0		X_2		0	X_2
a_{11}	a_{12}	0	0	0	c_1	*	S_1	+	FD1	= S_1
a_{21}	a_{22}	0	0	0	c_2		S_2		FD2	S_2
v_1	v_2	0	0	0	0		F		0	F
0	0	0	0	h	0		Y		0	Y

Changes in Value of Major Exports Commodities: March-June, 2020

Export Commodities (2020)	(Value in Mn USD, Volme in Mn K.g and Unit price in USD/k.g)				Percentage change		
	March	April	May	June	April to March	May to April	June to May
	A	B	C	D	E=B/A	F=C/B	G=D/C
Coffee	97.0	104.1	95.3	94.5	7.3	-8.4	-0.8
Oil Seeds	50.8	51.6	35.4	27.1	1.6	-31.3	-23.5
Leather and Leather Products	4.8	2.0	7.7	10.3	-59.3	292.8	33.5
Pulses	23.9	25.6	22.1	19.9	6.8	-13.7	-9.6
Meat & Meat Products	4.8	5.4	8.4	5.5	14.1	55.1	-35.1
Fruits & Vegetables	5.1	4.8	5.6	5.8	-5.8	16.1	4.4
Textile & Textile Products	12.8	8.9	12.9	15.9	-31.0	45.8	22.7
Flower	24.8	29.1	18.6	48.7	17.3	-36.1	161.9
Gold	9.4	63.3	1.2	2.8	569.5	-98.2	140.2
Live Animals	1.6	3.6	3.0	6.0	121.1	-17.8	98.9
Chat	25.4	18.2	22.8	23.8	-28.2	25.1	4.7
Spices	1.2	0.8	1.1	1.6	-33.4	40.2	39.4
Cereals and Flour	0.2	0.4	0.3	0.2	49.1	-24.2	-11.2
Natural Gum	0.1	0.5	0.6	0.5	215.7	25.5	-7.1
Electronics	6.9	3.3	0.7	4.1	-52.8	-79.3	508.6
Chemicals & Construction Inputs	0.9	0.3	1.2	1.0	-60.7	258.5	-15.1
Electricity	6.4	3.1	2.1	2.9	-51.8	-31.2	36.2
Bees Wax	0.1	0.2	0.2	0.3	24.6	5.2	82.7
Others	4.2	4.3	4.4	3.9	2.1	4.0	-11.0
Beverages	0.4	0.3	0.4	0.4	-31.1	55.7	-0.7
Sugar & Molasses	0.0	0.0	0.2	0.6	-78.2	-	202.6
Cotton	0.0	0.1	0.0	0.0			
Tantalem	0.5	0.8	0.5	0.2	51.6	-42.2	-60.3
Natural Honey	0.1	0.0	0.0	0.0	-100.0	0.0	-100.0
Others	3.2	3.1	3.4	2.8	-3.1	8.6	-18.3
Total	280.7	329.3	243.6	275.0	17.3	-26.0	12.9
Total Excluding Chat	255.4	311.1	220.8	251.2	21.8	-29.0	13.7
Total Excluding Gold	271.3	266.0	242.5	272.2	-1.9	-8.9	12.3
Total Excluding Chat and Gold	245.9	247.8	219.7	248.4	0.8	-11.4	13.1

Source: National Bank of Ethiopia Data

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