

Ethiopian Economics Association



Ethiopian Economic Policy Research Institute
(EEPRI)

Economic and Welfare Effects of COVID-19 and Responses in Ethiopia: Initial insights¹

Policy Working Paper 02/2020

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April 2020

ISBN 978-99944-54-74-7

¹ This paper is released urgently to make it available for reference; hence it has not undergone a peer-review process.

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1. Introduction

The Novel Coronavirus, or COVID-19, pandemic is a global challenge that requires coordinated efforts from governments, individuals, businesses, and various stakeholders. The world economy is experiencing a historic and unprecedented shocks as the pandemic triggers a number of shocks simultaneously including health, supply, demand and financial shocks (Triggs & Kharas, 2020). Efforts by governments to control the COVID-19 pandemic through partial and full business closures unavoidably leads to general decline in economic activities domestically and globally. This contraction in economic activities leads to economic recession if the pandemic lasts for a prolonged period of time.

Studies indicated that societies with a lower economic status are more vulnerable to rising rates of chronic illness from the COVID-19 further complicated by economic and social welfare hardships (ILO, 2020). This, in turn, further depresses productivity and raises health care costs, leading to increased poverty, and hence again more disease. This is a “disease-driven poverty trap”. From an economic perspective, the key issue is not just the number of cases of the COVID-19, but the level of disruption to economic activities which in turn aggravate the level of health risks.

Most of the economic impact of the virus will be from the actions people and governments take to avoid the virus and this response comes from three sources (Baldwin, 2020; Baldwin and di Mauro, 2020). First, government imposes bans on certain types of business activities (such as restaurants, shops, etc.). Second, firms and institutions take precautionary measures such as business closures, resulting in lost wages for workers, especially in the informal economy where there is no paid leave. Finally, individuals reduce trips to the market, travel, going out, and other social activities, affecting the demand side.

As the virus sees a surge, countries are expected to incur huge costs in relation to the pandemic. Some of the direct and indirect economic costs of the COVID-19 include instituting surveillance

measures, establishing and operationalizing quarantines, putting money into social awareness programs, importing sanitation products, personal protective equipment, respirators, masks, gloves and other supplies, instruments and devices (such as testing kits and reagents), media air time and communication materials, cost of shifting personnel and equipment from standard health care services to the pandemic response, and costs of supporting the needy (particularly the elderly and the poor), among others. In this regard, developed economies have pumped in massive amounts of money into their national economies specially prioritizing sectors that have been affected by the pandemic. In contrast to the developed economies, Ethiopia's economy is unlikely to sustain infusion of cash or dramatically increase welfare-dependent population. Furthermore, the measures being taken in other countries to contain the pandemic may not apply in total in Ethiopia, given the difference in local contexts.

Generally, fears of economic slowdown are real and taking deep root. The effect of decline in economic growth would make massive disruption in various sectors. It is, therefore, necessary to estimate the economic and welfare impacts of the coronavirus in the context of Ethiopia in order to design effective strategies that would minimize shocks to health and economic activities. The objective of this study is to quantify economic and welfare effects of the pandemic and to suggest potential interventions to contain the pandemic.

2. Getting the Context Right: Vulnerability and Initial Interventions

2.1 The Context

Preventive measures against the COVID-19 are generally suggested to be handwashing, avoiding contact with others, social distancing, respiratory hygiene, reliable and up-to-date information about the pandemic, wearing of masks for health workers and infected groups, and isolation (self-monitor, self-isolate, and isolate) after infection or suspicion for infection. However, the relevance and feasibility of such

measures are, to a great extent, determined by the level of development and welfare of the societies and countries. Poverty, access to basic services and facilities, and social structure, and demography largely influence the extent to which people are vulnerable to the pandemic. The welfare situation of people in Ethiopia is summarized by place of residence for selected indicators below (Table 1).

Table 1: Some indicators related to preventive measures for COVID-19 pandemic

Welfare Indicator	Value			
	Rural	Semi-urban	Urban	National
Population (million, 2020)	79.0		21.8	100.8
Household Size (counts)	6.2	5.5	5.0	5.9
MPI poor (headcount, index)	0.784	0.912	0.948	0.813
MPI poor	0.427	0.584	0.655	0.466
Severe MPI poor	82.4	0.322	0.155	66.2
Absolute poverty (%)	24.1	15.5	12.7	22.1
Source of safe drinking water	50.7	88.6	87.5	61.5
Treatment of water for safety	13.7	12.8	25.6	16.1
Access to washing water (in dwelling or field)	3.1	51.4	16.7	6.0
Private toilet facility	85.1	72.1	44.5	72.5
Improved and private toilet facility	53.0	62.7	42.5	51.6
Incidence of food shortage	20.2	19.2	16.4	19.4

Source: CSA (2015/16), Ethiopian Socioeconomic Survey; CSA (2013). Population Projections for Ethiopia, 2007-2037 (medium variant projection).

For Ethiopia, a starting point to fully appreciate the severity of the impacts of the pandemic is the realization that the greatest majority of the population (81.3%) are multidimensionally poor in which access to basic

services is very low. About 22% of the entire population is extremely poor, unable to satisfy basic needs; only 6% have access to washing water; only 62% have access to safe drinking water; and about 19% face problem of food shortage. This would mean that even before the pandemic disruptions, the condition of life for majority of Ethiopians is already precarious.

One of the intervention areas for COVID-19 is isolation at home. Two of the determinant factors for isolation (self-monitor, self-isolate, and isolate) are household size and housing condition. The distribution of number of rooms and household size is important information for adoption of such intervention measures. All households in both rural and urban areas with two or more family members have no adequate number of rooms for isolation measures, the problem being more severe in rural areas (Table 2). On average, households in rural and urban Ethiopia (with 6.2 & 5 family members) have only 1.8 rooms for rural and 2.5 rooms for urban residents.

Table 2: Average number of rooms by household size and place of residence

Family size	Number of rooms by place of residence (mean)			
	Rural	Semi-urban	Urban	National
1	1.3	1.7	1.4	1.4
2	1.5	1.9	1.8	1.7
3	1.7	2.0	1.9	1.8
4	1.8	2.4	2.3	2.0
5	1.8	3.0	2.5	2.0
6	1.8	2.7	2.9	2.1
7	1.8	4.2	3.3	2.2
8	1.8	3.1	3.0	2.0
9	1.9	2.2	3.5	2.2
10	1.9	2.3	3.6	2.1
Total	1.8	2.7	2.5	2.0

Source: CSA (2015/16). Ethiopian Socioeconomic Survey.

Households with a single and two rooms accounted for 42% and 43%, respectively (Table 3). Similarly, the share of households with about 8.8 family size and 3 rooms was only 17% in 2015/16, and the remaining majority have fewer class rooms available for isolation. Less than 6% of households with four or more family members with four or more class rooms.

The evidence on household size and housing condition in Ethiopia suggests that isolation at home is not feasible in both rural and urban areas to control the pandemic. The most relevant and feasible option to control the pandemic in Ethiopia is to limit the spread of the pandemic, not isolation after spread.

Table 3: Proportion of households by family size and number of rooms in Ethiopia

Household size		Housing condition	
Family size (counts)	Value (%)	Number of rooms	Value (%)
1	1.78	1	42.02
2	4.56	2	30.65
3	8.79	3	17.90
4	13.56	4	6.06
5	15.85	5	1.69
6	17.33	6	0.88
7	14.25	7	0.43
8	10.76	8	0.13
9	6.50	9	0.02
10	3.50	10	0.07
Over 10	3.11	Over 10	0.15

Source: CSA (2016). Ethiopian Socioeconomic Survey.

The current public measure to limit mass transport, ban gatherings, business closure, flight bans, school closure, and work-at-home may be feasible measures for certain segments of the Ethiopian population under specific context. For the vast majority, movement

restriction will not be feasible. It is important, also, to explicitly clarify, in no uncertain terms, that ‘mass transport ban’ does not and should not include national and regional supply chain and logistics networks in order to avoid the disruptions to the national supply chain. This is a crucially important clarification as a matter of national security agenda.

Feasibility of quarantines is also dependent on the country’s health facilities and supplies, health professionals, population size, and nature of the pandemic. Ethiopia being the second most populous country in Africa and COVID-19 being the most severe widespread pandemic, the available health facilities and professionals are by far inadequate to consider quarantine as feasible measure in the Ethiopian context, and hence can only be used as a temporary measure. Quarantine at health centres can possibly be overwhelmed once community transmission of the pandemic is widespread both in rural and urban Ethiopia.

2.2 Vulnerability

The pandemic is threatening the world in multiple fronts, namely health, economy, and social challenges. The pandemic affects a wide range of sectors (health, manufacturing, services, agriculture, retails, social, national and international value chains) and population groups (rural, urban, casual laborers, self-employed, factory and government workers) with differentiated impacts.

Although the pandemic indiscriminately affects all segments of the society and sectors, population subgroups are expected to be differently vulnerable to the pandemic. The following social groups are particularly more vulnerable to the pandemic and require special focus and intervention measures: the poor, elderly (greater than 65), pregnant women, people with disability, unemployed, street vendors and small retailers, taxi drivers, public transport operators, construction workers, population residing in slums and congested residences, population with limited access to safe drinking and washing water, and population with less access to improved toilet facilities, health care workers, population with underlying medical problems, and those receiving emergency food

aid, As importantly, population outside of media outreach (radio, TV and other forms of communication) will likely miss out from national and local guidance of the pandemic.

The following activities are particularly more vulnerable to economic shocks arising from the pandemic:

- Agriculture and especially perishable (like vegetables, flowers, etc.) growers and dairy products through disruption of timely import and transportation and distribution of seeds, fertilizer, agro-chemicals, and other input supplies;
- Community markets (household to household exchange), rural trade centers (farmgate markets), small towns, woreda markets, regional and national markets;
- Intra and inter-regional trading and commodity exchange (domestic merchandized trade);
- Street vendors and on the head and on the shoulder traders (these are important sources of food supplies for low income and daily wage earners)
- Tourism and hospitality (transport providers, tour guides and operators, museums, parks, and other tourist attracting features, hotels and restaurants, etc.), especially affected will be large number of unemployed people eating from the left-over of hotels and catering services. Closure of hotels and catering services leads to a dramatic increase in the number of people seeking formal welfare assistance.
- Entertainment industry (cinema, sports, games, night clubs, etc.),
- Foreign trade sector,
- Merchandize business,
- Transport sector,
- Construction sector, and
- Manufacturing, specially the industrial parks.

2.3 Overview of Response Options

Preventive measures against the virus are generally suggested to be handwashing, avoiding contact with others, social distancing, respiratory hygiene, reliable and up-to-date information about the pandemic, wearing of masks for health workers and infected groups, and isolation (self-monitor, self-isolate, and isolate) after infection or suspicion for infection.

In addition to social and health-related measures, the Government of Ethiopia has introduced interventions to safeguard the economy, including the following.

- Tax exemption for the import of materials and equipment to be used in the prevention and containment of the COVID-19.
- National Bank of Ethiopia to avail Birr 15 billion for private banks to enable them to provide debt relief, loan rescheduling, and additional loans to their businesses.
- Banks to avail foreign currency for importers primarily importing goods and input materials for the prevention of COVID-19.
- Commercial Bank of Ethiopia to increase the amount of money individuals can transfer through mobile banking, to limit in-person cash handling.
- Removal of the minimum price set by the National Bank of Ethiopia on the horticulture sector for flower exports.
- The Ministry of Revenue to expedite VAT returns to support companies with cash flows. The Ministry of Trade and Industry to continue strengthening the measures it is undertaking to control price increments and supply shortages of consumer goods.

3. Quantifying the Economic Effects of COVID-19

Following the COVID-19 pandemic, the government is implementing various measures which will disrupt economic activities. People are advised to stay at home; public institutions are also granting forced leaves for their workers operating at minimum capacity, business firms are laying off their workers; downscale their operations; some firms are under complete closure; self-employed workers (including day laborers) are also reducing their effort with many forced layoff days; etc. Although the impact of the pandemic on economic activities may differ, almost all sectors and sub-sectors are expected to be negatively impacted by the COVID-19 layoff effects, on the one hand, and workers who lose their jobs spend less, on the other.

3.1 Conceptualizing the Transmission Mechanisms

One of the transmission channels of the COVID-19 epidemic impacts on the economic well-being is through direct and indirect effects of the sickness and death which will reduce people either temporarily or permanently from the labour force (ADB, 2020; KPMG, 2020). The second channel operates through behavioral responses resulting from the fear of contagion (e.g. fear of association with others) and this reduces labour force participation, disrupts transportation and motivates private decision makers to disrupt trade, travel, and commerce. If left unmitigated, the combined effects of these shocks will result in a massive social crisis. Thus, the pandemic will generate reinforcing crises: *health crisis* leads to *economic crisis*, which in turn evolves into *social crisis*.

As indicated earlier, the pandemic generates shocks to the economy through three entry points: supply, demand and financial shocks (Baldwin 2020).

Supply shock: Production shutdowns and supply chain disruptions, causing ripple effects across all economic sectors. Production closures and supply chain disruptions adversely affect production, generating

negative shocks to supply. Efforts to contain the spread of the disease through, for example, stay-at-home, social distancing, lockdowns and quarantines are expected to reduce both the supply of labour and capacity utilization of enterprises. In addition, firms that rely on supply chains may be unable to get the required inputs, whether domestically or internationally. It is also important to note that restrictions on the movements of people will interrupt several value chains, availability of food and agricultural products, with a potential impact on prices. These disruptions contribute to a rise in business costs and constitute a negative productivity shock, thereby reducing economic activity.

Beyond the short-term impact on food supply, there is also a risk that agricultural production will be impacted, generating deeper shortfalls on food availability, higher prices and overall severe hardships of food security at household and national levels. For instance, if the planting season is missed or delayed due to movement restrictions to contain the spread of the virus, current and subsequent year's production will likely suffer, causing persistent supply shortage and unmet food demand which will have to be met through food imports, if the global food commodity is assumed to be retained as normal.

There are multiple ways through which reduced supply affects the economy. First, less will be available to the domestic market which will lead to rising prices in the domestic market due to supply shortage. Second, there will be less export supply which will in turn affect the foreign exchange reserve of the country. Limited foreign exchange earning means that the country will be unable to purchase the required materials (such as inputs, investment goods, and other basic commodities) from the rest of the world, i.e. imports will decline. A decline imports will exacerbate supply shortages in the domestic market, leading to instability in the country.

Demand shock: The supply-side shock can quickly turn into a demand-side shock. Because of slow business operation, firms reduce their demand for inputs and may also experience difficulties meeting their obligations as cash flows dry up. Fear of contagion (e.g. stay-at-home)

and heightened uncertainty will make firms spend less which consequently reduce investments. Due to slowdown in economic activities, firms are forced to reduce workers, as firms will face difficulties in paying wages and salaries to workers. Although the pandemic will affect all sectors, some sectors such as tourism, airline, hospitality and other services will be hit hard due to travel ban and hence lower tourists. There is external demand shock as countries impose travel ban which will adversely affect the demand for these activities. The number of tourists will decline which will affect the local tourism sector, leading to a fall in revenues and profits of the tourism sector and other hospitality activities. Due to travel ban restrictions and limited international mobility, the Ethiopian airline will experience.

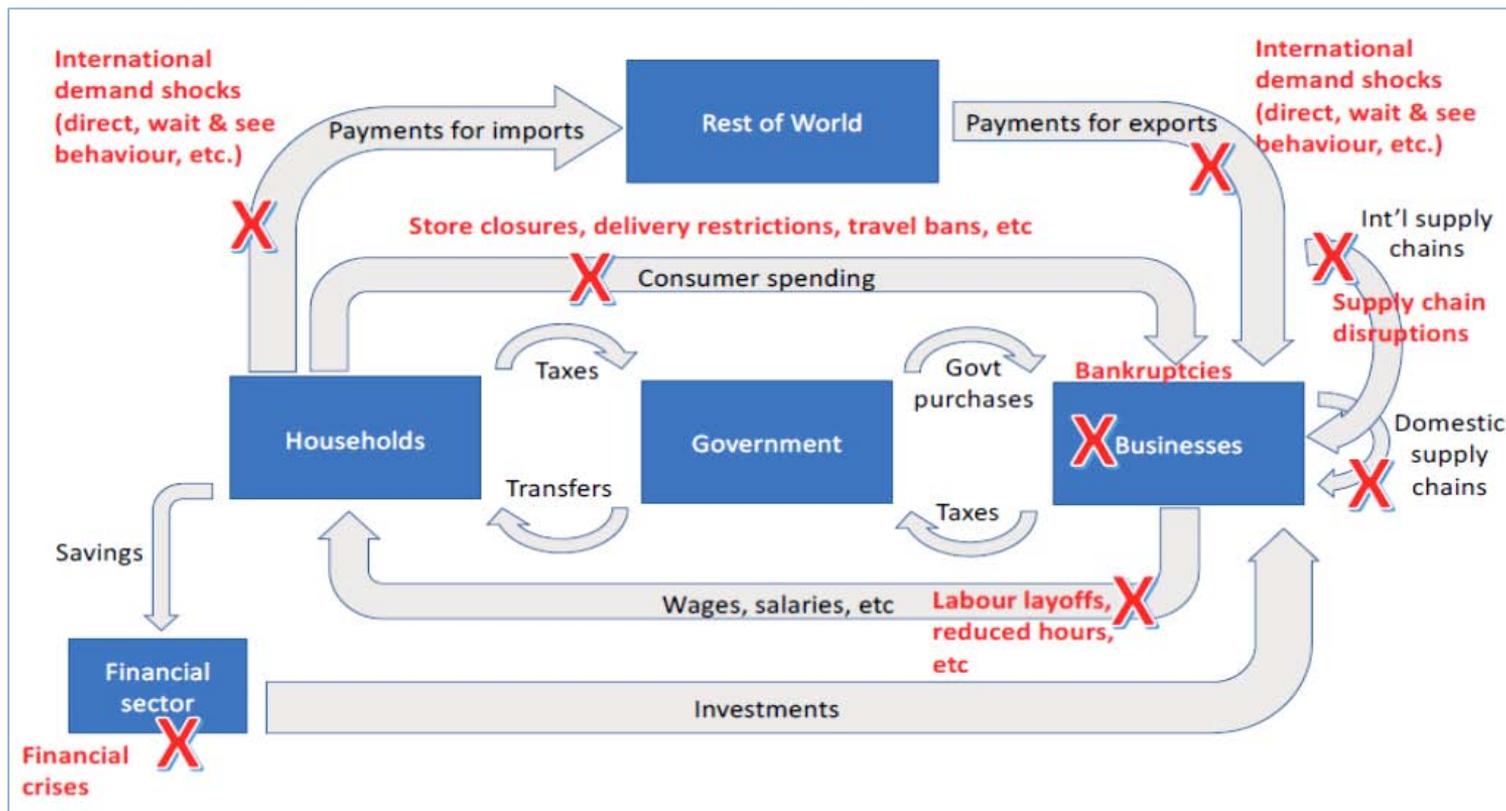
Loss of income, fear of contagion (e.g. stay-at-home), and heightened uncertainty will make people spend less which consequently reduce overall demand. In addition, consumers change their spending patterns, reducing expenditures on travel, entertainment, tourism and other discretionary items. On the other hand, consumers increase their expenditures on medical and pharmaceutical goods, health services, and necessities.

Financial shock: Because of slowdown in economic activity and business closure, enterprise will experience a liquidity crunch and unable to repay bank loans. In particular, small and medium enterprises will not be able to survive too long before defaulting or having to reschedule bank loans. If a large share of businesses is unable to pay their bank loans, then the financial sector will be under pressure. If not supported by appropriate scheme, the financial sector will collapse.

The three shocks reinforce each other and exacerbate business closures and job losses, resulting in wider social problems. Given that a significant part of the shock is coming from the supply side, country experience indicates that demand management policies, such as fiscal and monetary policies may play a small role in stabilizing the economy (Mickbbin, 2020).

The pandemic could lead to recession when there is a prolonged slowdown in economic activity, widespread drop in spending arising from the adverse demand shock. Contraction of business sales and revenues and negative growth of household income and expenditure arising from measures taken to control the pandemic are associated with multiple economic consequences, including massive job losses, and adverse welfare effects of populations and societies (Figure 1). If the pandemic generates multiple disruptions, then what is the effects of the pandemic on economic growth and welfare of the population?

Figure 1: Major disruptions in the circular flow of money diagram



Note: The red crosses show disruptions in the economy due to COVID-19.

Source: Baldwin and di Mauro (2020)

3.2 Scenarios and Assumptions

To capture the range of growth and welfare impacts of the pandemic, three scenarios are considered which can have different outcomes on economic growth and welfare of the population. How long will the COVID-19 pandemic last in Ethiopia? The exact duration of the pandemic is not known. To quantify the economic growth and welfare outcomes of the pandemic, this study considers three scenarios regarding the duration of the pandemic, which is dependent on efforts to contain the pandemic. It is anticipated that longer duration results in significant reduction in economic growth and welfare deterioration due to supply and demand shocks arising from decline of business activities.

Scenario 1: Base case scenario:

Early stage of COVID-19 confirmation. Business activities and welfare conditions are not affected by the pandemic. Economic growth and welfare conditions are assumed to be similar to the condition without COVID-19 both in rural and urban areas.

Scenario 2: Low/Mild

The second scenario, mild COVID-19 situation, assumes that an effective policy response is rapidly implemented, containing the widespread of the virus. This scenario assumes that the adverse effects of the virus will be mitigated through rapid response mechanisms (e.g. through fiscal, financial, and other mechanisms) with low infection rates and limited number of cases. For instance, enterprises or firms may proactively take measures to contain the spread of the virus in the work place through provision of personal protective devices, awareness creation, rescheduling work hours, etc. This will lead to a quickly resumption of economic activities across most sectors as workers will resume to their work place. In this scenario, the economy will experience mild productivity loss, limited unemployment, etc. Hence, the economic and social repercussions are kept in check.

Scenario 3: Severe

Relatively slow containment of the virus with widespread and more infections. The severe COVID-19 situation assumes an outbreak of the virus across the country with nearly similar rate both in rural and urban areas. Accordingly, the economic and social impacts are expected to be very high. In this scenario, the rapid spread of the virus will hamper movement of people and goods due to travel bans, business closures, stay-at-home, etc. In this scenario health, supply, demand and financial shocks are expected to be heightened to severely hit the economy, causing slow down economic activity, unemployment, supply shortage, low productivity, idle capacity, higher poverty, etc.

3.3 Description of Sectors

The services sector accounts for a large share (39.8%) of the national economy, followed by agriculture (33.3%), and industry (28.1%) in 2018/2019 (NBE, 2019) (Table 4). Given the nature of sectors, COVID-19 has a differentiated impact on different sectors of the economy. The pandemic is expected to hit hard the service sector. Among the components of the service sector, wholesale and retail trade contribute 35.9% to the service sector GDP in 2018/2019, with other service activities accounted for the balance: hotels and restaurants (6.5%), transport and communications (14%), real estate renting and business activities (10.7%), public administration and defense (11.2%), and others including financial intermediation, education, health and social work, private households with employed persons and other community, social and personal services (21.7%). The industry sector, especially labor-intensive manufacturing industries will be impacted by the pandemic.

Table 4: Contributions of different sectors to the Ethiopian economy (2018/2019)

Sector	Contribution to GDP (Billion ETB)	Share in GDP (%)
Agriculture	623.8	33.3
Industry	526.2	28.1
Service	745.7	39.8
Total	1874.7*	100

* The sum of sectoral GDP less financial intermediation services indirectly measured (FISIM, Birr 21 billion) gives the total GDP net of FISIM.

Source: NBE, 2019

Although every sector will be affected by the pandemic due to border closures, quarantines, and market, supply chain and trade disruptions, relatively less effect by the COVID-19 is expected in the agricultural sector at least in the very short-run. A large share of agricultural activities is performed by smallholders who produce for self-consumption. In addition, the pandemic is happening in the slack season for the majority of farm households. But if the pandemic lasts for a longer period, it will negatively affect the sector, especially the next year agricultural production. Compared to other sectors of the economy, the agricultural sector will experience small disruptions from the demand and supply sides in the short-run provided the agricultural inputs supply chain is uninterrupted (see supply side effect).

In the demand side, the unprecedented shutdowns of schools and businesses, movement restrictions, and quarantines may render some agricultural products not to be on the list of items being purchased. If movement of people is restricted, demand will fall for products such as milk, butter, meat and other food items that are usually consumed at restaurants. The pandemic may also affect vegetable producers due to the perishable nature of products. In particular, movement restrictions could potentially affect vegetable producers. Due to a fall in global demand,

exportable farm products like flowers and other exportable commodities may also bear the burden of the pandemic.

On the supply side, shortage of farm inputs such as improved seeds, fertilizers, pesticides and other inputs, as well as movement restrictions may adversely affect the sector. Furthermore, though the numbers are limited, commercial farms may also reduce their employees because of COVID-19 pandemic implementing ‘social distancing’ on their part. Consequently, both demand and supply factors will adversely affect agricultural production levels sooner or later ultimately leading to layoffs to some extent in some agricultural activities.

As a supply side shock, layoffs of workers from the three sectors would affect GDP contributions of the sectors through reduction in sectoral value addition following COVID-19.⁶ To estimate reductions in value addition following labor withdrawal, it is necessary to know labor productivity in the different sectors.

Labor productivity (P_L), which is the ratio of output or value added (VA) to the number of workers (E), is often used as a useful indicator of monitoring income per capita. For sector i , labor productivity can be expressed as:⁷

$$P_{Li} = \frac{VA_i}{E_i} \quad i = 1, 2, \dots, n \quad (1)$$

where n is the number of sectors. Economy-wide labor productivity (P_L) is given by:

$$\sum_i^n P_{Li} = \sum_i^n \frac{VA_i}{E_i}; VA = \sum_i VA_i; E = \sum_i E_i; P_L = \sum_i P_{Li} \quad (2)$$

⁶ In this study, only labour input is used to assess the impact of the pandemic on economic growth of Ethiopia. It is useful to recognise other possible channels through which COVID-19 impacts the supply side of the economy, such as reduced capacity utilisation and declining capital productivity, as well as total factor productivity.

⁷ See https://www.ilo.org/ilostat-files/Documents/description_PRODY_EN.pdf

The change in aggregate value added can be decomposed into three effects: employment, productivity and interaction effects. This can be expressed as:

$$dVA = P_L dE + EdP_L + dEdP_L \tag{3}$$

Using the above relationship, the change in value added due to a change in employment can be obtained. The pandemic is expected to reduce labor either temporarily or permanently which will lead to a decline in total and sectoral value added.

In 2016, the amount of real value added per person per year (labour productivity) was estimated to be ETB 8,440 in agriculture, ETB 27,880 in industry, and ETB 33,130 in the service sector (Kidanemariam *et al.*, 2020). For the purpose of this study, the indicated labor productivities are extrapolated for the year 2019/2020 based on the growth rates of productivities between the years 2015/2016 and 2016/2017. It is assumed that the same annual growth rates will prevail in 2019/2020 (Table 15).

Table 5: Labor productivity across sectors

Sector	Labor productivity (2016)	Growth rates of productivity (between 2015 & 2016)	Labor productivity (2019/ 2020)*
Agriculture	8,440	0.67	8,680
Industry	27,880	11.84	44,770
Service	33,130	2.86	37,150
Total	15,630	4.67	18,840

* Estimated as the change in natural logarithm of the values between consecutive years (i.e. $\Delta \ln Y_t = \ln Y_t - \ln Y_{t-1}$). The values are based on 2011 real ETB.

Source: Kidanemariam *et al.*, 2020; and authors' estimate thereof for year 2020.

The effect of the pandemic is estimated based on labor layoffs among employed and active labor force. According to CSA’s estimate, the proportion of active labor force (aged between 15 and 64) in Ethiopia is about 50% of the total population. This means about 54.5 million people in Ethiopia are within the active labor category in 2019/20. Among the active labor force, about 79% (more than 43 million people) were employed in Ethiopia in 2019/2020 (World Bank, 2020). The sectoral share of employment indicates that agriculture accounts for 68% of total employment (Table 6).

Table 6: Sectoral employment, GDP shares and labor productivity

Sector	Employed labor force (2019/20)	Contribution to total employment (%)	Labor productivity in 2020 (ETB)	Total GDP contribution in 2019/20 without COVID-19 (Base scenario) (Million ETB)**
Agriculture	29,277,400	68	8,680	647,504.4
Industry*	4,305,500	10	44,770	592,501.2
Service	9,472,100	22	37,150	827,727.0
Total	43,055,000	100	18,840	2,067,733.

Note: * As about 98% of the industrial sector is composed of manufacturing and construction sub-sectors (NBE, 2020), ‘manufacturing and construction’ replaces ‘industry’ in the forthcoming discussions. ** Based on contributions of the three sectors to GDP in 2018/19 (also indicated in Table 5), sectoral GDP contributions for 2019/20 were estimated based on absolute growth rates (3.8% for agriculture, 12.6% for industry, and 11% for service sectors).

Source: Extracted and estimated based on NBE (2020), Kidanemariam *et al.* (2020) and World Bank (2020).

3.4 Layoff Assumptions

The supply side effect of the pandemic is through reducing the proportion of workers who would be laid off from the different sectors, or

loss of income for self-employed (formal and informal) and the period during which the pandemic is assumed to be controlled.

A recent preliminary study by the Job Creation Commission of Ethiopia indicates that the pandemic puts a significant number of jobs at risk, especially in the manufacturing and services sectors. The magnitude of job loss depends on the length of the pandemic. For instance, about 37 and 61% of jobs will be lost in the manufacturing and construction in the severe scenario. The services sector will be severely hit, as it would experience a decline in employment by 57 and 74%. For this study, two pandemic durations are assumed: three months and six months. Furthermore, two layoff scenarios- mild and severe-are assumed with different effects among the three major sectors (Table 7).

Table 7: Job loss scenarios under COVID-19

<i>Scenarios</i>	Layoff rates for different pandemic durations	
	3 months	6 months
<i>Manufacturing and construction</i>		
Scenario 1: Mild scenario	-20%	-33%
Scenario 2: Severe scenario	-37%	-61%
<i>Services</i>		
Scenario 1: Mild scenario	-36%	-56%
Scenario 2: Severe scenario	-57%	-74%
<i>Agriculture</i>		
Scenario 1: Mild scenario	-5%	-7%
Scenario 2: Severe scenario	-10%	-12

Source: Job Creation Commission (2020) for manufacturing and services, and authors' estimate for agriculture.

3.5 Impacts on Economic Growth

The base scenario provides the contributions of different sectors to total GDP without COVID-19 impact. The effect of the COVID-19 on the total and sectoral value added (or GDP) is presented in the mild and

severe scenarios (Table 8). The percentage reduction in GDP because of the pandemic is estimated for the two pandemic durations (i.e. three and six months) for two scenarios (mild and severe). To aid interpretation, the decline in total and sectoral GDP as a result of labor layoff is relative to the baseline GDP (i.e. in the absence of the pandemic). It should also be noted that the percentage decline in GDP in each pandemic duration refers to the contraction in GDP in those periods.⁸

Under the mild scenario and three months duration, the economy will experience a loss of around ETB 44.5 billion or 2.2% of GDP compared to the baseline, with the service sector experiencing a large contraction (3.8%). As expected, the agricultural sector is the least affected. However, under prolonged duration where the pandemic is mild, the economy will experience a significant loss, amounting ETB 139.2 billion or 6.7% loss in GDP relative to the base case. The services and manufacturing sectors will be hit very hard if the pandemic lasts for six months, indicating the magnitude of the economic burden gets worse with the duration of the pandemic.

If the pandemic continues for three months under the assumption of severe scenario, about 3.6% of total GDP contribution from labor productivity will be lost. This means, more than 74 Billion Birr will be lost within three months. Under this scenario, the effect of the COVID-19 on the service sector in terms of reducing GDP is very high (reduction of about 6.1% of annual GDP within 3 months) followed by that of manufacturing and construction (reduction of about 3%), and agriculture (reduction of about 1%). However, if the pandemic lasts for 6 months, about 9.9% of total GDP will be lost under the severe scenario. That means, the country is going to lose more than 204 Billion Birr within six months. The effect of COVID-19 on the service sector in terms of reducing GDP is very high (reduction of 15.7% of annual GDP within 6 months) followed by that of manufacturing and construction (reduction of about 9.9%), and agriculture (reduction of about 2.4%). The details for other scenarios are also indicated in Table 8.

⁸ The loss in GDP due to labour withdrawal is computed for the three and six months.

Overall, the pandemic will significantly reduce the economic growth of the country. If the spread of the virus is kept under control with proactive measures, its impact on economic growth will be minimized. It is also useful to recognize other possible impacts of the COVID-19 such as on welfare of households. How does the decline in economic growth affect the welfare of the population? Given the slowdown in economic growth, it is important to estimate the likely welfare impacts of the pandemic. This issue is addressed in the next section.

Table 8: Impact of COVID-19 on Ethiopia's GDP through sectoral worker layoffs

Sector	3 months			6 months		
	Layoff rates (%)	Reduction in GDP contribution (Million, ETB)	Reduction (%) *	Layoff rates (%)	Reduction in GDP contribution (Million ETB)	Reduction (%)
<i>Mild scenario</i>						
Agriculture	5	3,176.6	0.49	7	8,894.5	1.37
Manufacturing & construction	20	9,637.9	1.63	33	31,805.0	5.37
Service	36	31,670.0	3.83	56	98,528.8	11.90
Total	-	44,484.4	2.15	-	139,228.2	6.73
<i>Severe scenario</i>						
Agriculture	10	6,353.2	0.98	12	15,247.7	2.35
Manufacturing & construction	37	17,830.0	3.01	61	58,791.0	9.92
Service	57	50,144.1	6.06	74	130,198.8	15.73
Total	-	74,327.4	3.59	-	204,237.4	9.88

Note: *Percent reductions under all scenarios are computed by considering reductions in GDP because of worker layoffs in comparison with annual GDP contributions of the different sectors under the Base Scenario indicated in Table 6 above (No COVID-19 impact).

Source: Authors' computation (2020).

4. Welfare Effects of COVID-19

As noted previously, the pandemic will also affect the welfare of the population through supply, demand and finance channels. To capture the welfare effects of the pandemic, real consumption expenditure per capita and poverty indicators are used as a proxy for economic welfare outcome, differentiated by areas of residence (rural and urban) and access to basic services.

A slowdown in economic growth will adversely affect the welfare of the population. A report by the Planning and Development Commission indicates that the poverty elasticity of growth was -2 percent, i.e. a 1 per cent increase in growth rate leads to a 2 per cent reduction in poverty between 1996 and 2016 (Planning and Development Commission (PDC), 2018). The figures for rural and urban areas were -2.1 and -1.5 percent, respectively. Preliminary evidence indicates that the pandemic will reduce Ethiopia's economic growth by 3% in 2020 (World Bank, 2020). Under different scenarios for labour reductions and pandemic duration, our results indicate that the pandemic will reduce Ethiopia's economic growth in the range of 2.2% to 9.9% in 2020.

4.1 A Note on Welfare Scenarios

Building on previous scenarios, the welfare effects of the pandemic depends on severity of economic slowdown. The pandemic will have differentiated impact on rural and urban areas. To capture this, a range of scenarios have been introduced regarding the growth in real consumption per capita (Table 9). A low or mild scenario is expected between three to six months. If the pandemic lasts for three months, this will not have significant effect on rural areas as the pandemic limited to urban areas. However, if the pandemic lasts for six months, it is likely that rural areas will be affected, but as not severe as urban areas. The spread of the pandemic and production nature in rural areas is different from the case in urban areas. Real consumption expenditure is not that much affected within three months in rural areas of Ethiopia mainly due

to seasonality of agricultural production in which source of income/expenditure are not evenly distributed within a year. But, income and expenditure effects of the pandemic on urban areas significantly depend on the duration of the pandemic.

The second (mild) and third (severe) scenarios consist of sub-scenarios to capture differentiated impacts on rural and urban areas.

Table 9: Welfare scenarios of COVID-19 in Ethiopia

Scenarios	Pandemic Duration (Months)	Scenarios for real consumption per capita growth (%)	Description of welfare scenarios
Scenario 1: Base case	0	0	Business activities & welfare conditions without COVID-19
Scenario 2: Mild/Low	3-6		a. Rapid containment of the pandemic and limited spread; b. Low/mild decline of business & welfare conditions
<i>Scenario 2A:</i>	3	0% to -3%	a. No/insignificant (0%) decline of business activities & welfare conditions in rural areas b. Very low (-3%) decline of business activities & welfare conditions in urban areas
<i>Scenario 2B</i>	6	-3% to -9%	a. Very low (-3%) decline in business activities & welfare conditions in rural areas; b. Low (-9%) decline of business activities & welfare conditions in urban areas.
<i>Scenario 2C</i>	6	-9% to -15%	a. Low (-9%) decline of business activities & welfare conditions in rural areas; b. High (-15%) decline of business activities & welfare conditions in urban areas.
Scenario 3: Severe	9-12	-15 to -25%	High decline of business activities & welfare conditions in both rural & urban areas.
Scenario 3A	9	-15%	High (-15%) decline of business activities & welfare conditions in both rural and urban areas
Scenario 3B	12	-25%	Very high (-25%) decline of business activities & welfare conditions in both rural and urban areas

Source: Authors' construction.

4.2 Analytical Framework

There are various measures of welfare or poverty situation in a society. The Foster-Greer-Thorbecke (FGT) poverty measures are additively decomposable. It is also possible to separate changes in the FGT measures into a component resulting from rising average incomes/expenditures, and a component resulting from changes in the distribution of income/expenditure. Real consumption expenditure is considered as an indicator of economic wellbeing in this study. The FGT index of poverty was used to analyse the incidence, depth and severity of consumption poverty arising from consumption shocks due to COVID-19.

As one of the measures proposed by Foster et al. (1984), it may generally be written as

$$P_a = \frac{1}{N} \sum_{i=1}^N \left(\frac{G_i}{z} \right)^a, \quad a \geq 0 \quad (4)$$

where α is a measure of the sensitivity of the index to poverty and the poverty line. When parameter $\alpha = 0$, P_0 is simply the headcount index. When $\alpha = 1$, the index is the poverty gap index P_1 , and when α is set equal to 2, P_2 is the poverty severity index. For all $\alpha > 0$, the measure is strictly decreasing in the living standard of the poor.

The FGT poverty index (P) can be decomposed by population subgroups as follows (Araar and Duclos, 2013):

$$\hat{P}(z, \alpha) = \sum_{g=1}^G \hat{\phi}(g) \hat{P}(z; \alpha, g) \quad (5)$$

where G is the number of population subgroups, $\hat{P}(z, \alpha, g)$ is the estimated FGT index of subgroup g , $\hat{\phi}(g)$ is the estimated population share of subgroup g , $\sum_{g=1}^G \hat{\phi}(g) \hat{P}(z; \alpha, g)$ is the estimated absolute

contribution of subgroup g to total poverty, and $\sum_{g=1}^G \hat{\phi}(g) \hat{P}(z; a, g)$ is the estimated relative contribution of subgroup g to total poverty.

The total alleviation of FGT poverty into a sum of the contributions generated by separate income/expenditure components can be decomposed. Total alleviation is maximal when all individuals have an income/expenditure greater than or equal to the poverty line. A negative sign on a decomposition term indicates that an income component reduces poverty.

Assume that there exist K income/expenditure sources and that s_k denotes source k . The FGT index is defined as (Araar and Duclos, 2013):

$$\hat{P}\left(z; a, y = \sum_{k=1}^K s_k\right) = \frac{\sum_{i=1}^n \left(1 - \frac{y_i}{z}\right)_+^a}{\sum_{i=1}^n w_i} \quad (6)$$

where w_i is the weight assigned to individual i and n is sample size.

This estimates the share in total consumption expenditure of each source k and the absolute and relative contributions of each source k to the value of $\left(\hat{P}_{-1}\right)$.

Growth elasticity of poverty (GEP) is the percentage reduction in **poverty** rates associated with a percentage change in mean income or expenditure. The information on the responsiveness or sensitivity of poverty measures to changes in income or expenditure is relevant to evaluate the likely impacts of poverty reduction measures. The overall GEP, when growth comes exclusively from growth within a group k (within that group, inequality neutral), is estimated by (Araar & Duclos, 2007; Araar, 2012):

$$GEP = \begin{cases} -\frac{zf(k, z)}{F(z)} & \text{if } \alpha = 0 \\ \alpha \frac{\bar{P}(k, z; \alpha) - \bar{P}(k, z; \alpha - 1)}{\bar{P}(z, \alpha)} & \text{if } \alpha \geq 1 \end{cases} \quad (7)$$

where z is the poverty line, k is the population subgroup in which growth takes place, $f(k, z)$ is the density function at level of income or expenditure z of group k , and $F(z)$ is the headcount.

4.3 Data Source

This study has utilized the third wave of Living Standards Measurement Study (LSMS 2015/16) for Ethiopia. The LSMS is the country representative, multi-topic dataset collected at different levels (individual, households, farm plots, etc.) collected by Central Statistical Agency (CSA) of Ethiopia in collaboration with the World Bank. The third wave covers nine regional states and two administrative towns with 4954 households and more than 23,000 individuals across the country. This study has utilized 22,296 samples (of which 29% are urban residents) (Table 10).

Table 10: Distribution of sample households across regions and place of residence

Region	Rural	Small towns	Urban	Total
Tigray	1,554	155	708	2,417
Afar	569	53	37	659
Amhara	2,927	405	643	3,975
Oromia	3,273	476	922	4,671
Somalie	1,156	123	163	1,442
Benishangul Gumuz	538	58	0	596
SNNP*	4,083	475	696	5,254
Gambella	505	42	35	582
Harari	661	0	154	815
Addis Ababa	0	0	1,019	1,019
Dire Dawa	578	0	288	866
National	15,844	1,787	4,665	22,296

Note: * SNNP denotes Southern Nations, Nationalities and Peoples region.

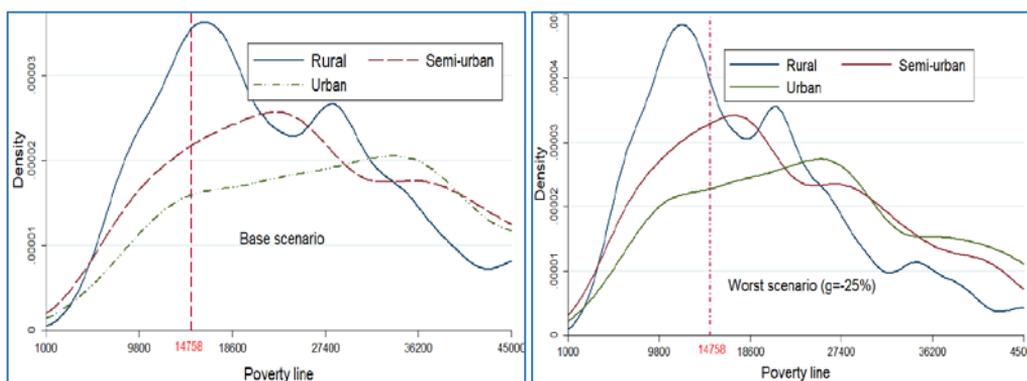
Source: LSMS-3, CSA (2015/16).

4.4 Impacts on Poverty

4.4.1 Patterns of poverty

The density curves of real consumption expenditure computed from the base and worst scenario (25% decline) by areas of residence are plotted and compared (Figure 2). The poverty patterns suggest that households are highly impacted and tend to rapidly fall into poverty if the pandemic lasts over nine months, adversely affecting the economy at a rate of 25% or higher. The incidence of poverty for the base scenario shows that greater proportion of the population (right side of the poverty line at 14,758 birr) were nonpoor in all areas of residence in the country in 2015/16. However, after a widespread of the virus and slowdown of business activities, greater proportion of the population in rural areas will experience very high welfare decline and descend to poverty (left side of the second panel of the figure) and poverty will significantly increase in urban and semi-urban areas.

Figure 2: Density curves of real consumption expenditure at base and worst scenarios



Source: Authors' computation from LSMS-3 data (2020).

4.4.2 Levels and distribution of poverty

At national level, the incidence of poverty is expected to grow from 22.1 in the base scenario to 38.4% in the worst scenario, suggesting

that nearly half of the population will fall under extreme poverty if the pandemic lasts for a year (Table 11). The incidence of poverty will increase by about twofold with significant variation across rural and urban residents. Similarly, the depth of absolute poverty will increase from 6% in the base scenario to 12% (double) in the extreme scenario.

Table 11: Poverty impacts of coronavirus on poverty situation in Ethiopia

Place of residence	Base (0%)	Low/Mild scenario			Severe scenario	
		Scenario 2A (0% & -3%)	Scenario 2B (-3% & -9%)	Scenario 2C (-9% & -15%)	High (-15%)	Very high (-25%)
<i>Incidence of poverty⁹</i>						
Rural	0.241	0.241	0.255	0.293	0.329	0.421
Semi-urban	0.155	0.169	0.203	0.244	0.244	0.291
Urban	0.127	0.131	0.151	0.170	0.170	0.200
National	0.221	0.222	0.238	0.274	0.304	0.384
<i>Poverty gap index</i>						
Rural	0.064	0.064	0.070	0.082	0.097	0.130
Semi-urban	0.052	0.055	0.064	0.074	0.074	0.097
Urban	0.034	0.037	0.043	0.051	0.051	0.067
National	0.060	0.060	0.066	0.078	0.090	0.120

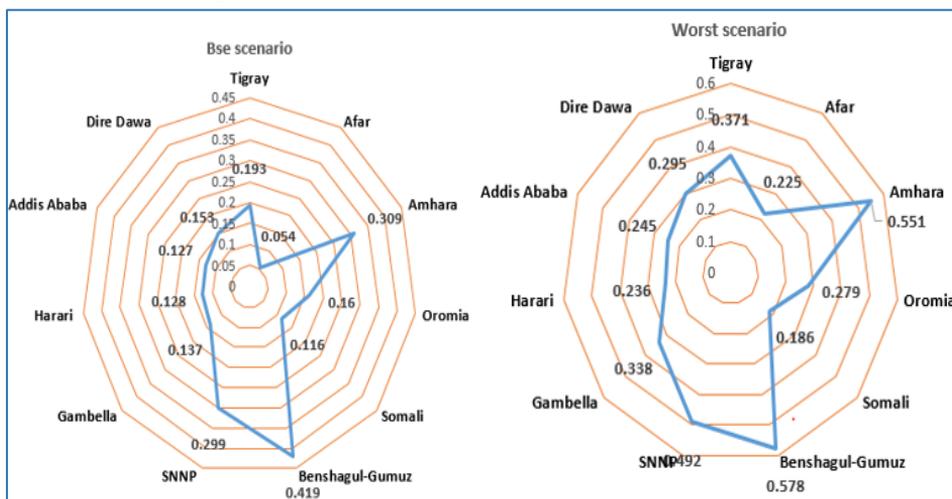
Source: Authors’ computation from LSMS-3 data (2020).

COVID-19 has also differentiated welfare impacts across the nine regions and the two administrative cities. The pandemic worsens the poverty situation of regions as the prevalence of poverty increases across regions (nearly twofold as indicated by the area of the radar graphs)

⁹ The official national poverty lines in 2015/16 determined by the government of Ethiopia were ETB 7184 for overall poverty and ETB 3772 for food. This poverty threshold was highly underestimated mainly due to very low threshold used for 2015 (US\$ 1.25 per day). The international absolute poverty line in 2015 revised by the World Bank is USD 1.90 (ETB 40.43 per day). This leads to an overall absolute poverty line of ETB 14758 per year (with an exchange rate of ETB 21.28 in December 2015).

(Figure 3). Other scenarios indicate similar trends in terms of welfare loss as illustrated by the two radar plots of the two scenarios (base and worst). Relatively poorer regions tend to descend far to poverty compared to other regions with better economic standing.

Figure 3: Regional distribution of poverty impacts of coronavirus in Ethiopia



Note: The radar charts compare the aggregate values of the 11 regions with 11-sided polygon (also called hendecagon). The radar charts show changes in values relative to the center point (valued as 0). The distance of gridline from the center (or zero) to the filled line is the values of the regions. All coordinate points of the radar with the gridlines at the 11-sided polygon have the same value. The numbers written vertically starting from 0 to the last gridline are the levels to be compared with the value for each region. The values of each region in the series is indicated on the gridline at the angle. For the example, the total poverty rate in Oromia region is 16% in the base scenario and 27.9% in the worst scenario.

Source: Authors’ computation from LSMS-3 data (2020).

The welfare impacts of the virus for different population subgroups with different living conditions is also a good indicator of social distribution of the welfare impacts of the pandemic (Degye, 2019). The impacts of the pandemic are significantly different across gender of

the household head, access to drinking and washing water, access to off-farm activity, and ownership of trading business (Table 12). Female-headed households, and households without safe drinking and washing water in dwellings, off-farm activities, and trading business experience significant welfare loss due to slowdown in economic activities.

Table 12: Poverty impacts of coronavirus by population subgroups

Population subgroups	Base (0%)	Low/Mild scenario			Severe scenario	
		Scenario 2A	Scenario 2B	Scenario 2C	High (-15%)	Very high (-25%)
		(0% & -3%)	(-3% & -9%)	(-9% & -15%)		
<i>Gender</i>						
Male	0.236	0.237	0.253	0.290	0.321	0.410
Female	0.357	0.362	0.391	0.438	0.467	0.525
<i>Access to drinking water</i>						
With	0.175	0.177	0.193	0.233	0.255	0.339
Without	0.283	0.283	0.300	0.329	0.369	0.446
<i>Access to washing water</i>						
With	0.150	0.151	0.160	0.188	0.222	0.290
Without	0.233	0.235	0.252	0.289	0.318	0.401
<i>Access to off-farm activity</i>						
With	0.122	0.124	0.140	0.150	0.169	0.214
Without	0.233	0.234	0.250	0.289	0.320	0.405
<i>Ownership of trading business</i>						
With	0.194	0.198	0.215	0.221	0.239	0.286
Without	0.222	0.223	0.239	0.276	0.307	0.389
National	0.221	0.222	0.238	0.274	0.304	0.384

Source: Computed from LSMS-3 data, CSA (2015/16).

4.4.3 Poverty decomposition

To identify the major sources of poverty and their absolute and relative contributions to total incidence of poverty arising from the economic shocks, the overall poverty impact estimated under each scenario is decomposed by areas of residence (Table 13). The absolute

(0.196 to 0.342) and relative contribution of poverty impacts (88.5% to 89%) in Ethiopia under all the six scenarios is primarily attributable to rural areas. The rural areas covering about 81.3% of the population is the major source of poverty and the primary sector largely impacted by the shock. Urban and semi-urban areas are attributable to about 11% of the poverty impacts.

The absolute effect of rural areas on the incidence of poverty will be by far higher in all scenarios than the rate in urban areas. Absolute contribution to total poverty in all areas of residence shows a consistency increase as the pandemic gets severe and lasts longer. However, relative contribution does not significantly consistently change in all the scenarios of the pandemic.

Table 13: Decomposition of poverty impacts of coronavirus by place of residence

Poverty rate	Base (0%)	Low/Mild scenario			Severe scenario	
		Scenario 2A (0% & -3%)	Scenario 2B (-3% & -9%)	Scenario 2C (-9% & -15%)	High (-15%)	Very high (-25%)
Poverty index	0.221	0.222	0.238	0.274	0.304	0.384
Rural	0.241	0.241	0.255	0.293	0.329	0.421
Semi-urban	0.155	0.169	0.203	0.244	0.244	0.291
Urban	0.127	0.131	0.151	0.170	0.170	0.200
Absolute contribution						
Rural	0.196	0.196	0.207	0.238	0.268	0.342
Semi-urban	0.008	0.009	0.011	0.013	0.013	0.016
Urban	0.017	0.017	0.020	0.023	0.023	0.027
Relative contribution						
Rural	0.885	0.880	0.869	0.869	0.882	0.890
Semi-urban	0.038	0.041	0.046	0.049	0.044	0.041
Urban	0.076	0.078	0.084	0.083	0.074	0.069

Source: Computed from LSMS-3 data, CSA (2015/16).

4.4.4 Elasticity of poverty

Growth elasticity of poverty (GEP) indicates the percentage reduction in poverty rates associated with a percentage change in mean real expenditure. Growth elasticity of poverty in Ethiopia is generally higher in rural areas and decreases with level of urbanization (Table 14). In the baseline, a unit percentage growth in real consumption expenditure reduces poverty incidence by 2.4% and 1.1% in rural and urban areas, respectively. In the presence of the pandemic under the different scenarios, growth elasticity of poverty generally decreases in both rural and urban areas as it becomes severe, widespread, and lasts for prolonged period by pushing the population to the poverty trap. This is due to the pandemic slashes economic performance thereby weakens the poverty reducing impact of economic growth.

Table 14: Growth elasticity of poverty with respect to average expenditure

Place of residence	Base (0%)	Low/Mild scenario			Severe scenario	
		Scenario 2A (0% & -3%)	Scenario 2B (-3% & -9%)	Scenario 2C (-9% & -15%)	High (-15%)	Very high (-25%)
<i>Elasticity of poverty incidence (%)</i>						
Rural	-2.39	-2.38	-2.31	-2.16	-2.04	-1.51
Semi-urban	-1.48	-1.57	-1.63	-1.54	-1.39	-1.23
Urban	-1.13	-1.16	-1.14	-1.04	-0.94	-0.86
National	-2.17	-2.16	-2.11	-1.96	-1.84	-1.41
<i>Elasticity of poverty gap (%)</i>						
Rural	-2.95	-2.92	-2.80	-2.70	-2.58	-2.42
Semi-urban	-1.73	-1.88	-2.11	-2.18	-1.88	-1.62
Urban	-1.56	-1.56	-1.63	-1.53	-1.32	-1.11
National	-2.70	-2.68	-2.61	-2.51	-2.37	-2.20

Source: Computed from LSMS-3 data, CSA (2015/16).

Growth elasticity of poverty gap follows the same decreasing trend from rural to urban areas as the case in poverty rate, but it is

relatively more elastic. A 1% growth in real consumption expenditure reduces depth of poverty by about 3% and 1.6%, respectively, in rural and urban populations. As the pandemic becomes serve/widespread, and lasts longer, poverty will be deeper, dragging the poor far below the poverty threshold and trapping the nonpoor to poverty. However, this elasticity of poverty gap similarity decreases in both areas as the pandemic becomes worse, creating additional burden on the effort to design and implement poverty reduction measures for attainment of the sustainable development goals and other national aspirations.

Poverty can be reduced not only by growth in income or expenditure, but also by reduced inequality among citizens. Elasticity of total poverty with respect to expenditure inequality for the different scenarios of impacts of coronavirus is reported in Table 15. The results show that elasticity of poverty with respect to inequality decreases as economic activities and income and expenditure declines due to widespread and severity of the virus. Poverty with respect to inequality will be more inelastic because of the decline in relative poverty arising from the pandemic.

Table 15: Elasticity of total poverty with respect to inequality

Scenario	Elasticity with respect to inequality (%)			
	Rural	Semi-urban	Urban	National
Base scenario	2.31	1.76	1.52	2.18
Low/Mild scenario				
Scenario 2A: 0% rural & -3% urban	2.26	1.75	1.51	2.15
Scenario 2B: -3% rural & -9% urban	2.03	1.61	1.38	1.94
Scenario 2C: -9% rural & -15% urban	1.64	1.34	1.17	1.56
Severe scenario				
High (-15%)	1.33	1.18	1.04	1.30
Very high (-25%)	0.68	0.82	0.77	0.71

Source: Computed from LSMS-3 data, CSA (2015/16).

5. Conclusions and Response Options

5.1 Conclusions

The objective of this study was to provide preliminary insights on the potential effects of the pandemic on economic growth and welfare in Ethiopia. Very few tools exist in modern economic and social assessments that will sufficiently approximate the impacts of the pandemic and depict realities on the ground. The methods and models used in this study will continue to be refined along with the progression of the pandemic. Given that the impact of the COVID-19 is multidimensional affecting economic activities, households, and the financial sector, it requires a holistic and integrated approach to assess the economy-wide impacts of the pandemic.

As this policy paper is being finalized, the first week of April 2020, the number of confirmed cases of the COVID-19 patients is low in Ethiopia, following the first confirmed cases on 10th of March 2020. The early cases of the COVID-19 patients were imported, but at the present, some of the confirmed cases are local, what is typically referred to as a community level transmission. If examples were to be gleaned from the pandemic trajectories in China, Europe and America, the rate of community transmission is likely to be rapid, multiplying at an exponential rate, doubling every few days. Ethiopia must now brace for such an exponential transmission.

COVID-19 delivers a number of shocks in a single package, namely health, supply, demand and financial shocks. The supply side impact of the pandemic on the economy is through loss of labor inputs due to social distancing, movement restriction, stay-at-home, sickness and disruption to production. The supply side impacts are also reflected in delays in business inputs being imported because of disrupted transport networks and border closures. There are also demand side impacts such as falling global trade including services, reduced tourism, and loss of income and these impacts can be rapid and very damaging.

This preliminary empirical evidence assesses the potential impact of the pandemic on economic growth and welfare under different scenarios (mild and severe scenarios) and pandemic duration. The key conclusion is that the pandemic will slow down economic growth and exacerbate poverty. The results show that, depending on containment efforts and duration, the pandemic could reduce gross domestic product by 2.2-9.9%. In a very conservative scenario (mild scenario) with three months pandemic duration, economic growth will be reduced by over two percentage points from the base due to labor reduction either temporarily or permanently. Even under the mild scenario, delays in the containment of the virus will lead to a large reduction in economic growth which could multiply the economic cost of the disease.

The poverty impact of the pandemic is considerable due to slowdown in economic activity. Incidence of poverty is expected to worsen, especially in the severe scenario, as nearly half of the population would fall into extreme poverty under acute and protracted economic downturn and prolonged pandemic duration (e.g. 12 months). Poverty will increase significantly in both rural and urban areas.

For now, what is unmistakable is that Ethiopia starts with poor economic, health and social baseline of the society and the government. Although it may be useful to look into other countries' actions, Ethiopia's responses must be realistic, reflecting its own capacities. It is not just the health of the population that is at stake, in equal measure, it is also the economic, social and physical securities of the population that must be addressed from the get go. There is very little savings, for the vast majority of Ethiopians, financial and other resources that can be deployed during the pandemic. The government's capacity is also the reflection of the population; one must mitigate unrealistic welfare expectations.

Key priority for the Federal and Regional governments, the population, business communities and other civic organizations is to adequately balance health responses with a realistic and on the ground economic and social conditions of the population. Ethiopians cannot, and should not, be forced to choose between the suffering or even deaths

from the virus and hunger. As the Spanish saying goes, *civility and anarchy are seven meals apart*.

Community lockdown may only apply in a very limited circumstance. Any such decision must take into consideration residential areas (rural versus urban), housing conditions (slums, congested buildings, number of rooms per family, etc.), and income status of the population. Already, millions of wage workers are living hand-to-mouth; layoffs as a result of the pandemic presents a grim existential challenge for the millions in this and other sub-section of the population.

5.2 Response Options

Given that the economic and welfare costs of the pandemic are significant, a large enough response is required to reduce the effects of the pandemic once it emerges. Quick-win interventions together with recovery plan need to be designed and implemented before a temporary health shock turns into an economic and social crisis.

Health and safety responses:

- Priority needs to be given to delaying the spread of the virus, flatten the bell-curve and minimize the economic and social cost of the pandemic. Early and proactive measures need to be implemented to contain the spread of the virus, including testing, targeted lockdown, tracing, etc.
- Social distancing and appropriate personal protection equipment (PPE) strategy must be sought in all types of markets throughout the country including farmgate exchanges; local sellers (the ‘*gullit*’ markets), neighborhood shops, street vendors. These distribution mechanisms are both the flash point of the contagion and the lifelines for the entire population throughout Ethiopia.
- Effective awareness campaign is underway since early March and this must be continued. Special attention must be given to rural and remote areas where information penetration is limited or none at all.

Scaling up the existing rural and urban safety programs:

- Ethiopia has a well-functioning rural and urban safety net organizational arrangement, programs, delivery methods such as cash and voucher. These must now be tested and made to work using existing stocks as well activating strategic grain reserves.
- Under severe scenario, the safety net programs will be overwhelmed in a short span of time, especially in urban areas. For this reason, alternative arrangements must be considered including preparing and equipping cooperatives, local/ kebele distribution channels, and local/neighborhood shops as a place of voucher-based distribution. A system for cash and voucher must be worked on right now spearheaded by the National Disaster Risk Management Commission (NDRMC) in partnerships with multilateral and bilateral institutions.
- Mobilize social self-help institutions such as *Iddir* and link them with the formal structure to provide a coordinated support to the most vulnerable population during the pandemic.

Maintaining an uninterrupted supply chain for critical commodities:

- Continuous movement of cereals and other essential commodities (e.g. vegetable oil, hygiene supplies, condiments) must be made to flow as normal as possible throughout the country. Closure of regional borders must ensure commodity movements; these are not only essential for survival of the population, but also critical for national security arrangements.
- Ensure an uninterrupted agricultural commodity exchanges– farmers to farmers exchange, and primary (farmgate), secondary and tertiary agricultural commodity aggregation and distribution system.
- Imported food commodities fill a significant gap in the national food balance sheet. International commodities might be disrupted as a result of the pandemic, the effects of which will be felt delayed. To the extent possible, advance contract may be arranged within an international commodity trade regime.

Support domestic economic activities:

- Put in place alternative mechanism to fill a potential import deficit. These may include planting short-season and early-maturing crop varieties, and prioritizing irrigation schemes for selected foods crops (e.g. potato, maize, etc.).
- With immediate effect, put in place measures that will ensure uninterrupted supplies of chemical fertilizers, improved seeds, pesticides and herbicides as well as livestock medicine. These will minimize the adverse effects of the pandemic in the agricultural sector.
- Initiate discussions with commercial banks on rescheduling bank loan repayments and write off interest payments for severely affected sectors until the shock is abated.
- The National Bank of Ethiopia needs to consider reserve rate relaxation to enhance banking liquidity.
- The National Bank of Ethiopia shall initiate discussions to reduce interest rates to stimulate the economy.
- Initiate discussions with financial institutions to support exporters by increasing foreign trade credits, deferring loan payments and extend debt rollovers.

Provision of basic services and facilities:

- Maintain consistent and sustainable water supply schedule at household level, especially in urban areas, for ensuring water supply for drinking and sanitation.
- Establish reliable system for disseminating information related to the pandemic nationally, regionally, and locally using selected and reliable media suitable to different social groups (including rural-urban, disabled, illiterate) will also help to avoid misinformation.
- Strengthen security services for protection of property and people arising from expected social disruptions.

Resource mobilization:

- Continue to expand on the special **Pandemic Fund** serving for prevention, detection, care and support related to the pandemic. The Fund is expected to unite citizens of the nation and to accelerate the country's response to the pandemic.
- Reallocate budget and other resources to sectors working on the COVID-19 operations. Following the full closure of universities and schools, for instance, the available budget and facilities can be used to support the effort in the fight against the pandemic.
- The pandemic sends a message that there is a need to establish a national **Sovereign Fund** that will be activated and deployed in times of crisis and acute emergency situations.

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