Innovations

Effect of COVID-19 on Income of Households in Ethiopia: A case of West Arsi Zone

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ABSTRACT

Immediate to the confirmed case of COVID-19 in Ethiopia, the government at all levels has significantly strengthened its prevention and control measures which in turn results economic crises in the country. The aim of this study is to assess the potential impact of COVID-19 on households'income in West Arsi Zone of Ethiopia. By using multistage sampling techniques846 households are sampled from 7 Woredasof the Zone. Ordered Logit Model was employed for estimation. The result shows that COVID-19 outbreak has significant positive impact on households' income. The regression result proves that cut-off of one or more business type/production of households, decrease in product due to fear of COVID 19, displacement of family members from their job and product distribution and marketing challenges are significantly play vital role in decline of households' income that associated with the pandemic. Therefore, development interventions should give emphasis to support the vulnerable group especially daily laborers.

KEY WORDS: 1.COVID-19, 2.Ordered Logit, 3.Pandemic, 4.Outbreak, 5.Preventive Measures, 6.transmission

1. INTRODUCTION

The outbreak of pandemics happened in different time not only threatens people's lives and safety, but also has a significant impact on the economic development of the countries. For instance, the outbreak of Spanish Flu in 1920`s is the causes for the death of about 50-100 million peoples. Estimates suggest that 500 million individuals worldwide were infected by the virus, and that 50-100 million people died in the aftermath of an infection between 1918 and 1920 (Johnson and Mueller, 2002).

The first case of COVID 19 disease is confirmed on December 8, 2019, in China Wuha City. As the virus spread globally, the governments had taken actions to limit the spread through social isolation policies such as closing educational institution, social distancing and limiting the movement of people. These preventive actions taken to limit the outbreak in turn result significant implication on socio-economic development of nations.

Immediate to the confirmed case of COVID-19as that of other country, the government of Ethiopia at all levels has significantly strengthened its prevention and control measures. For instance, the immediate lock of schools and higher educations were the major action taken by the authority to limit the spread. Different service providing sectors especially transportation and hoteling and tourism were also under the measure. These measures are in turn results economic crisis in the country.

Statement of the Problem

The consequence of COVID 19 is multi-sectoral. The outbreak had immediate and significant effect on different business areas. For example, according to the paper conducted by the Office of the Chief Economist, East Asia and the Pacific Region and the Macroeconomics, Trade and Investment Global Practice, the effects of COVID-19 in the tourism, hospitality and recreation sectors have been unprecedented. In the accommodation and lodging sectors, quarterly revenues are down 75%. Travel agents saw a slowdown in bookings of 50% in March of 2020. Airlines worldwide are expected to lose $113 billion in revenues for 2020. In the peak of the outbreak, 70% of scheduled flights in China have been canceled. As of mid-March 2020, international travel has ground to a halt, with the World Travel and Tourism Council (WTTC) estimating that global travel would decline at least 25 percent in 2020**(Policy Research Working Paper 9211)**. Such economic destruction of COVID-19 results reduces the income of households in Ethiopia. This study is attempted to examine the effect of coronavirus outbreak on households` income in Ethiopia specifically in the study area and provides important information for policy making purpose.

Objective of the Study

The general objective of the study is to assess the effect of COVID 19 on income of households in West Arsi Zone of Ethiopia with the following specific objectives.

- To identify the factors affecting income that associates with COVID 19
- To measure level of change in income of households during the outbreak of COVID-19
- To estimate the effect of COVID 19 on household income

2. LITERATURE REVIEW

2.1. Theoretical Literature

2.1.1. Definition of Pandemics

The word "Pandemic" originates from two Greek words, pan meaning "all" and demos "the people". The word is commonly taken to refer to a widespread epidemic of contagious disease throughout the whole of a country or one or more continents at the same time (Honigsbaum, 2009). Nevertheless, in over the past 2 decades, the term has not been failed to be defined by many modern medical texts. Even authoritative texts about concerning pandemics do not list it in their indexes, including such resources as comprehensive histories of

medicine, classic epidemiology textbooks, the Institute of Medicine's influential 1992 report on emerging infections (Morens, Folkers, &Fauci, 2009).

The internationally accepted definition of a pandemic as it appears in the Dictionary of Epidemiology is straightforward and well-known: "an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people" (Harris, 2000). The classical definition, however, includes nothing about population immunity, virology or disease severity. By On the basis of this dictionary definition, pandemics can be said to occur annually in each of the temperate southern and northern hemispheres, given that the definition of the term is so wide. Seasonal epidemics cross international boundaries and affect a large number of people. This said, seasonal epidemics are not considered pandemics. Modern definitions include "extensive epidemic", "epidemic […] over a very wide area and usually affecting a large proportion of the population", and "distributed or occurring widely throughout a region, country, continent or globally", among others (Morens et al., 2009). In the case of influenza, biologists also require that pandemic strains undergo key genomic mutations, known as antigenic shift. For WHO to pronounce a level six pandemic alert there has to be sustained transmission in at least two regions at the same time. WHO's standard definition of pandemic influenza refers to a situation in which a new and highly pathogenic viral subtype, one to which no one (or few) in the human population has immunological resistance and which is easily transmissible between humans, establishes a foothold in the human population, at which point it rapidly spreads worldwide (WHO, 2011a).

2.1.1.1. The new pandemic Covid-19 (Novel Corona virus) and its developing impacts

I. Corona virus and Covid-19

The coronavirus was first isolated in 1937, which caused bronchitis in birds (Beaudette, 1937). However, human coronaviruses (HCoV-229E and HCoV-OC43) were first characterized in the 1960s, which were associated with diseases in respiratory tracts such as bronchitis and pneumonia and illnesses in the enteric and central nervous system (Gaunt et.al, 2010). The virus is named as coronavirus for the crown-like spikes on their surface (Lin et.al, 2005). Recently, a novel Coronavirus appeared in Wuhan, China, at the end of 2019. While several facts of the development of this virus remain unidentified, an increasing number of cases seem to have caused from human -to-human transmission (Munster et.al,2020). According to WHO, Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus (WHO, 2020).

Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness. The best way to prevent and slow down transmission is be well informed about the COVID-19 virus, the disease it causes and how it spreads. The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes, so it's important that you also practice respiratory etiquette.

With the virus, people all over the world have become more aware of the best practices during a pandemic, from careful hand-washing to social distancing. Countries across the world declared mandatory stay-at-home measures, closing schools, businesses, and public places. Dozens of companies and many more independent researchers began working on tests, treatments, and vaccines. The push for the human race to survive the pandemic became the primary concern in the world.

This new virus spreads incredibly quickly between people, due to its newness – no one on earth has an immunity to Covid-19, because no one had Covid-19 until 2019. While it was initially seen to be a pandemic in

China, the virus spread worldwide within months. The WHO declared Covid-19 a pandemic in March, and by the end of that month, the world saw more than a half-million people infected and nearly 30,000 deaths.

II.   Global Economy in the Outbreak/pandemics

Infectious diseases outbreak may have a big effect on society as they can harmfully affect illness, and death. The undesirable effects of this deadly illness on the global economy are advancing day by day. The virus is predictable to play a conclusive role in shifting the global GDP as the outbreak continues and has caused limitations on supply chain, traveling, a decline in foreign travel as well as stoppage and decline in economic activity, especially in China (Ahani, &Nilashi, 2020). These days there are several reports, through social media platforms and internet, about how the Coronavirus outbreak is disturbing supply chains, manufacturing, and services around the globe. There is an increasing interest from scholars and industries from January 2020 onwards, which is also visualized in the Google trends for Coronavirus outbreak and related keywords. A sizable outbreak can overwhelm the health system, limiting the capacity to deal with routine health issues and compounding the problems. Beyond shocks to the health sector, epidemics force both the ill and their caretakers to miss work or be less effective at their jobs, driving down and disrupting productivity (Bloom et.al, 2018) Fear of infection can result in social distancing or closed schools, enterprises, commercial establishments, transportation, and public services—all of which disrupt economic and other socially valuable activity. Concern over the spread of even a relatively contained outbreak can lead to decreased trade.

Travel and tourism to regions affected by outbreaks are also likely to decline. Some long-running epidemics, such as HIV and malaria, deter foreign direct investment as well. The economic risks of epidemics are not trivial. Recently estimated the expected yearly cost of pandemic influenza at roughly $500 billion (0.6 percent of global income), including both lost income and the intrinsic cost of elevated mortality. Even when the health impact of an outbreak is relatively limited, its economic consequences can quickly become magnified (Fan et.al, 2018)

 The consequences of outbreaks and epidemics are not distributed equally throughout the economy. Some sectors may even benefit financially, while others will suffer disproportionately (Bloom et.al, 2018). Pharmaceutical companies that produce vaccines, antibiotics, or other products needed for outbreak response are potential beneficiaries. Health and life insurance companies are likely to bear heavy costs, at least in the short term, as are livestock producers in the event of an outbreak linked to animals. Vulnerable populations, particularly the poor, are likely to suffer disproportionately, as they may have less access to health care and lower savings to protect against financial catastrophe. Economic policymakers are accustomed to managing various forms of risk, such as trade imbalances, exchange rate movements, and changes in market interest rates. There are also risks that are not strictly economic in origin. Armed conflict represents one such example; natural disasters are another. We can think about the economic disruption caused by outbreaks and epidemics along these same lines. As with other forms of risk, the economic risk of health shocks can be managed with policies that reduce their likelihood and that position countries to respond swiftly when they do occur. Although the economic consequences of epidemic outbreaks to affected areas are often well documented, little is known about how these might carry over into the economies of unaffected regions. In the absence of direct pathogen transmission, global trade is one mechanism through which geographically distant pandemics could reverberate to unaffected countries.

2.2.   Empirical works related to impacts of Covid-19

Since the outbreak of the coronavirus disease of 2019 (COVID-19), more than 1.4 million people have lost their lives due to the pandemic, and the global economy is expected to contract by a staggering 4.3 per cent in 2020. Millions of jobs have already been lost, millions of livelihoods are at risk, and an estimated additional

130 million people will be living in extreme poverty if the crisis persists. These are grim gures that re-act the immense challenges and human suffering caused by this pandemic. Nor is an end to COVID-19 yet in sight. In many countries, the number of new COVID-19 cases is rising at an alarming rate and, for many, a second wave is already an unwelcome reality. Much uncertainty remains about how and when the pandemic will run its course, but the unprecedented economic shock generated by the global health emergency has already sharply exposed the global economy's pre-existing weaknesses, severely setting back development progress around the world.

There is a plethora of ongoing research studies on estimating the economic impact of COVID-19, in both emerging and developed countries. Due to widespread business closures, especially in lower income populations, national economies are expected to contract, leading to a dramatic rise in unemployment and poverty rates. A report from the World Bank estimated that 11 million people could fall into poverty across East Asia and the Pacific (World Bank2020).

Analyzing the effect of the pandemic on poor communities across four continents, (Buheji et al.2020) estimates that 49 million individuals will be driven into extreme poverty in 2020 (living on less than $1.90 per day).

The U.S. economy, where gross domestic product (GDP) fell by 4.8% in the first quarter, is projected to fall into recession in 2020, with a contraction of 5.0% in a likely scenario (McKibbin and Fernando2020; Fernandes2020). The European Commission estimates that the euro area economy would decline by 7.25% in 2020, with all countries expected to fall into a recession (European Commission 2020). Developing countries in South-East Asia are also vulnerable to the global economic disruption of the pandemic due to decrease in trade, foreign investment and tourism. According to the International Monetary Fund (IMF), the ASEAN-5, which consists of Indonesia, Malaysia, Philippines, Thailand, and Vietnam is predicted to decline by 0.6% in 2020 (International Monetary Fund 2020). Reduction in remittances from high-income countries to low- and middle-income countries is likely to have a significant impact in many countries, such as Nepal or the Philippines, where remittances represent a large share of many households' income.

In the six-week span of March 15 to April 25, a record 30.2 Americans have filed for unemployment benefits as first-time claimants, according to the U.S. Department of Labor. The unemployment rate in the U.S. hit a staggering 14.7% officially in April from statistics released by the U.S. Bureau of Labor Statistics and some predictions estimate even higher unemployment rates, above 20%, (Bick and Blandin2020).

According to the Pew Research Center, the highest risks of layoffs are in the accommodations, retail trade, transportation services and arts entertainment and recreation services sector (Kochhar and Barroso2020). Additionally, among the sectors that lost the most jobs in March are the leisure and hospitality and health and educational services (Burns 2020).

Using a variable vector auto-regression model based on data from recent disasters, (Ludvig-son et al.2020) estimates a cumulative loss of 24 million jobs in the U.S. over the course of 10 months, largely due to a 17% loss in service sector employment. Only 37% of jobs in the U.S. can be performed at home, and many lower-income countries have a lower share of jobs that can be performed remotely (Dingell and Neiman2020). Consumer discretionary spending is in free fall as non-essential businesses are closed and individuals are saving more. Analyzing data from a personal finance website, (Baker et al.2020) found that consumer spending in the United States is highly dependent on the severity of the disease's outbreak in the state and the strength of the local government's response.

3. METHODOLOGY OF THE STUDY

This study was made depending on primary data. To achieve the stated objective the primary data on the target group from the community regarding the effect of COVID 19 on their incomewas collected in West Arsi Zone. In addition, to support the primary data the secondary documents were reviewed.

Sample size determination is based on the formula of Kothari (2004) and 846households were observed in this study. To take this sample, double stage sampling technique was employed.At the first,purposely six woredas were selectedin consultation with respective zone government officials. In the second stage, the target group was sampled proportionally fromeach woredas.

Both descriptive and econometric analysis was used to describe and evaluate the data collected. First, the variables were described using simple statistical measurements like mean and standard deviations and some statistical comparisons were made. Furthermore, econometric analysis was made and empirical estimation of the variables was presented neatly. In this section by using the econometric estimations, the potential economic impact of COVID-19 was estimated.

The analytical model used for this research is the Ordered Logit Model (OL model hereafter). The ordered logit model is a regression model for anordinal response variable. The model is based on the cumulative probabilities of the response variable: in particular, the logit of each cumulative probability is assumed to be a linear function of the covariates with regression coefficients constant across response categories.

In this research, respondents are asked select the rank of effect imposed by COVID-19 based on their income change after the outbreak of the pandemic. The research assumed that based on their income, respondents can state the level of effect to income change in line with comparing their income after the outbreak with before. Hence, the respondents was presented with fourlist of possible level of effect,definition and expected sign of explanatory variablesto income change and interviewed systematically to capture the effect level of COVID-19 on their income.

An ordinal response Yi with j categories can be represented asan underlying continuous response Yi* with a set of j−1 thresholds u_j such that Yi = y_j if and only if u_{j-1}< Yi*≤u_j. It follows that a cumulative model for an ordinal response, such as the ordered logit model, is equivalent to a system composed of a set of thresholds $u_j$and a linear regression model for an underlying continuous response:

$$y_i^* = \beta x_i^{'} + e_i$$
$$y_i = j \; if \; u_{j-1} < y_i^* \le u_j \quad wherei = 1,...,N$$

The probability that observation i will select alternative j is:

$$p_{ij} = p(y_i = j) = p(u_{j-1} < y_i^* \le u_j)$$
$$= F(u_j - \beta x_i^{'}) - F(u_{j-1} - \beta x_i^{'})$$

For the Ordered logit, F is the logistic cdf

$$F(z) = {e^z}/{(1 + e^z)}$$

Let's assume y_i =(1, 2, 3,4 and 5) for (strongly affected, affected, Moderately affected, less affected, not affected), the choice rule is:

$$y_i = 1, if \; y_i^* \le u_1$$
$$y_i = 2, if \; u_1 < y_i^* \le u_2$$
$$y_i = 3, if \; u_2 < y_i^* \le u_3$$
$$y_i = 4, if \; u_3 < y_i^* \le u_4$$
$$y_i = 5, if \; y_i^* > u_4$$

Using the generic representation, the respective probabilities for the five categories are derived as:

- $Pr(y_i = 1) = F(u_1 - \beta x_i^{'})$
- $Pr(y_i = 2) = F(u_2 - \beta x_i^{'}) - F(u_1 - \beta x_i^{'})$
- $Pr(y_i = 3) = F(u_3 - \beta x_i^{'}) - F(u_2 - \beta x_i^{'})$
- $Pr(y_i = 4) = F(u_4 - \beta x_i^{'}) - F(u_3 - \beta x_i^{'})$
- $Pr(y_i = 5) = 1 - F(u_4 - \beta x_i^{'})$

Definition of Variables Expected to Explain COVID-19

The dependent variable for the OL model is the effects of COVID-19 on income for the four alternative effect levels. The identification of the model's explanatory variables is based on actions and measures taken to limit the spread of the virus andthese explanatory variables are expected to explain/determine the effect of COVID 19 since the measurements taken affects income through these explanatory variables. Thus, in this study, the following variables were treated as explanatory variables of income during the outbreak.

Level of Effect of Covid-19 on Income (**LEFFECOV-19**):- It is considered as dependent variable in this research that used to rank the effect of the corona virus on income of household. The level is classified in

quartile based on the percentage of changes in income as strongly affected (from 75-100%), Affected (from 50-75%), Moderately Affected (from 25-50%) and Less Affected (from 0-25%).

Cut off of Some Business (**CUTSOBUS**):- this refers to decline in income resulted fromthe cut-off of some business type/production due to the outbreak of COVID-19. In case of the households have more than two business types and produce different types of output/services, the cut-off of some business type/production expected to affect negatively the income of households.

Shortage in Supply of Input (**SHOSUINPUT**):- Different measurements taken to limit the transmission of COVID-19 are adversely affects the suppliers of various inputs. The decline in input, on the other hand, implies a decrease in production and income of the household.

Decrease in Product (**DECINPRO**):- When the households anticipated the decline in their demand, they decide to cut their product level. This cut in production level due to the fear of lack in customer while the outbreak of virus is expected to reduce the income of households.

Increase in Input Price (**INCPRINPUT**):- this represents the increase in price of inputs due to the shortage in its supply that resulted from different measurements taken to limit the spread of COVID-19. Increase in price of input induces the cost of product that adversely affects the income of households.

Displacement of Workers (**DISWORKERS**):- Workers may displace from their job due to different factors that associated with the outbreak. When the family member is displaced from the job, income of the household is expected to decline.

Marketing Challenges (**MARCHAL**):- This refers to the challenges associated with the distribution and marketing of the product. Measures taken to control the transmission of the virus especially rules and regulations regarding transportations terribly affect the marketing circumstances which in turn reduces the sales and then income.

4. RESULTS AND DISCUSSIONS

The study was intended to identify the factors contributing to decline in income of the households and microenterprises during COVID 19 by using both descriptive statistics and econometric analysis and to analysis the effect of the outbreak on their income.

4.1. Descriptive Analysis

This section presents the analysis of factors affects the income of households that expected to associate with COVID 19, the most vulnerable area among rural and urban and the most affected working areain descriptive analysis. Furthermore, the standard t- test is used to compare statistical significance of the mean difference of the change in income of households that of before and during COVID 19.

Table 1: Comparison of Level of effect of COVID 19 on income of household

Variables	Level of effect									
	Strongly affected		Affected		Moderately		Less Affected		Not affected	
	0	1	0	1	0	1	0	1	0	1
Cut off of some business type/production	5	19	55	77	94	103	179	99	215	0
Shortage in input supplier	21	3	101	31	136	61	212	66	215	0
Decrease in product due to fear of COVID	7	17	61	71	69	128	131	147	215	0
Increase in price of inputs	18	6	98	34	137	60	227	51	215	0
Displacement of worker from their job	13	11	77	55	103	94	183	95	215	0
Product distribution and marketing challenges	2	22	55	77	57	140	125	153	215	0

Source: Own survey data

The above table shows that the effect of expected variable on income of household in each level of effect. It reveals that large numbers of respondents are affected at strong level as compared to no and less affected level for more variables. For instance, of total of 24 respondents who are strongly affected, cut off of some business type/production contribute in decline of their income for 19 respondents (76.17%) while it contribute only for 99 respondents (35.61% of respondents) for those less affected households.

As shown in the following table, the mean of income of households before COVID-19, from both farm & off-farm activities, is 28,152.93 whereas that of after COVID-19 is 24,375.25from both farm &off-farm. It shows that about 16.51% (3,777.683) income is declined after COVID 19 outbreak.

Table 2: Comparison of mean of household income

	Mean
Income before COVID-19 (From both Farm & Off-farm)	28,152.93
Income after COVID-19 (From both Farm & Off-farm)	24,375.25
Income change	3,777.683
Percentage of change in income	16.508

Source: Own survey data

On the other hand, table 3 shows the effect of COVID 19 in relation to different categories of householdjobs. Accordingly, more traders are strongly affected whereas large numbers of daily laborer households are laid down in affected category. Contrarily, it reveals that large numbers of permanent employees are not affected by the outbreak of coronavirus.

Table 3: Level of Effect of COVID 19 with relation to types of household leader job

Level of Effect of COVID 19	Household Leader Job					
	Permanent employee	Daily laborer	Pension	Farmer	Trader	No Job
Strongly affected	0	7	0	4	12	1
Affected	22	49	2	22	37	0
Moderately affected	25	51	0	83	36	2
Less affected	66	18	0	160	30	4
Not affected	129	2	1	77	4	2

Source: Own survey data

4.2. Econometric Analysis

This part presents the ordered logit econometric model estimates of the effect of COVID 19 on the income of households. The factors that conceptually hypothesized and associated with the pandemic to affect the income of the households are Cut off of some business type/production, Shortage in input supplier, Decrease in product due to fear of COVID 19, Increase in price of inputs, Displacement of worker from their job and Product distribution and marketing challenges. In this study, these variables were analyzed using econometric model with their degree of significance in affecting the income of households.For estimation purpose STATA 14 software package was employed.

Estimating the Effect of COVID 19 on Income of Households
Table 4 gives model information and the ordered logit estimation of coefficients of the model. It shows that of the expected variables included in the model Cut-off of Some Business, Decrease in Product, Displacement of Workers from their work and Marketing Challenges arestatistically significant in positive relationship while Shortage in Supply of Input and increased in price of inputsstatistically insignificant.

Table 4: Ordered Logit Regression Result of Household data

```
Ordered logistic regression                    Number of obs    =        846
                                               Wald chi2(6)     =     334.29
                                               Prob > chi2      =     0.0000
Log pseudolikelihood = -1008.9843              Pseudo R2        =     0.1741


                           Robust
  leffecov19     Coef.    Std. Err.      z    P>|z|    [95% Conf. Interval]

    cutsobus   1.478915   .1525984    9.69   0.000    1.179828    1.778003
   shosuinput   .2701388    .17751    1.52   0.128   -.0777744     .618052
     decinpro   .7231057   .1597438   4.53   0.000    .4100137    1.036198
   incprinput   .1726848   .2037247   0.85   0.397   -.2266083    .5719778
    disworkers   .7729215   .1614776   4.79   0.000    .4564312    1.089412
      marchal   1.393836   .1683458   8.28   0.000    1.063884    1.723788

       /cut1   .2657807   .1016959                    .0664603    .4651011
       /cut2   2.472911   .1468864                    2.185019    2.760803
       /cut3   3.911765   .1841064                    3.550923    4.272607
       /cut4   6.113982   .2514034                    5.621241    6.606724
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The marginal effect for statistically significant variables that associated with the research is conducted to measure the effect of these variables on income. The marginal effect of three categorical level of effect, i.e., strongly affected, affected and moderately affected is taken for those significant variables to estimate the contribution of these variables to the decline in income of households. The following table is present the marginal effect.

Table 5: Average Marginal Effect

LEFFECOV-19	Marginal Effect (dy/dx)		
	Strongly Affected	Affected	Moderately Affected
CUTSOBUS	.04573	.1194807	.0676908
DECINPRO	.0223594	.0584193	.033097
DISWORKERS	.0238997	.0624439	.0353771
MARCHAL	.0430992	.1126072	.0637967

The above table reveals that Cut off of Some Business of household due to the outbreak of COVID-19 is contribute about 5%, 12% and 7% at 1% significant level to the decline in income of household for strongly affected, affected and moderately affected level of effect respectively. Similarly, the table shows the effect of displacement of family members from their work due to coronavirus. Strongly affected income due to

coronavirus via displacement of workers from their job takes about 2% shares whereas its share for affected and moderately affected level is about 6% and 4% at 1% significant level, respectively.

The table also shows that Decrease in Product due to the anticipation of low demand resulted from the pandemic is contributing to level of strongly affected income by about 2.4% at 1% significant level. It also contributing to level of affected and moderately affected income due to COVID-19 outbreak by about 6% and 4% at 1% significant level, respectively.

Another significant variable that included in the model is product marketing and distribution channels problem occurred due to the outbreak. Table 5 reveals that about 4% strongly affected income of the household is belongs to the marketing challenges. The table also shows that marketing challenges takes the share of 11% and 6% at 1% significant level for the rank of affected and moderately affected income, respectively.

5. CONCLUSIONS AND RECOMMENDATION

5.1. Conclusions

This study was conducted in West Arsi Zone, which is located in Oromia Regional State of Ethiopia. The main objective of the study was to estimate the potential impact of COVID 19 on the economy. The study was conducted specifically to describe the factors contributing to the decline in income of households during the outbreak of COVID-19 and to estimate the effect of COVID-19 outbreak on households' income.

The expected variables that mostly play a role to change in income of the households are Cut off of some business type/production, Shortage in input supplier, Decrease in customer, Decrease in product due to fear of COVID 19, Increase in price of inputs, Displacement of worker from their job and Product distribution and marketing challenges.

In this study, ordered logit model was employed to evaluate the effect of COVID-19 outbreak on income of households. Most variables which are assumed to relate with the pandemic are statistically significantly contributes to the decline in income of households during the outbreak of COVID-19. Variables such as Cut off of some business type/production, Decrease in customer, Decrease in product due to fear of COVID 19, Displacement of worker from their job and Product distribution and marketing challenges are statistically significant at 1% level of significance in affecting the income of household while Shortage in input supplier and Increase in price of inputs are insignificant.

5.2. Recommendation

The study implies that COVID 19 affecting income of households through its effect on different variables. Form the result, for instant, though its effect on the assumed variables, COVID 19 significantly affects the income of households. Identifiably, Cut off of some business type/production, Decrease in product due to fear of COVID-19,Displacement of worker from their job and marketing challenges are play a vital role in decline of income of households. Thus, the following recommendations are drawn.

➢ Governmental, non-governmental institutions and any concerned have to pave the way for the support of those business areas that are closed down and for the survival of those business areas that are going to closed from the result of COVID 19 outbreak.

➢ The study reveals that the problems in product marketing and distribution channels contributing vital role in changes in income. This may when there is preventive actions are taken, especially on transportation, to control the widespread of coronavirus. Thus, it must be done on better distribution channel.

➢ Displacement of workers is another way in which income of the households is declined significantly. It sights that there are working areas more vulnerable to COVID-19 outbreak specially those whose income is depends on daily labor activities. Therefore, it is advisable to develop selective policies to support the vulnerable group.

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