Economic Impact of COVID-19 on the Vulnerable Population of Bangladesh

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Research Article

Keywords: COVID-19, Bangladesh, Income, expenditure, Developing, Vulnerable population

Posted Date: July 6th, 2021

DOI: https://doi.org/10.21203/rs.3.rs-279226/v2

Economic Impact of COVID-19 on the Vulnerable Population of Bangladesh

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Abstract

This study aims to find out the Economic condition of the vulnerable population of Bangladesh in the COVID-19 situation. This study uses the primary data of 203 respondents who were collected from all around Bangladesh using convenience and purposive sampling. In this study, a comparison of expected income in the COVID-19 situation is made with the pre-COVID-19 situation using Welch two-sample t-test, and the possible impact on Expenditure and Savings was discovered using OLS estimation. Descriptive analysis is also included considering the key economic variable of the respondents. This study finds a significant drop in income due to COVID19 and infers that it will cause both drop-in expenditure and monthly savings, and gives an overall idea of the situation of vulnerable people in the COVID-19 situation. This study can help the stakeholders to understand the situation of the vulnerable population of Bangladesh due to COVID-19.

Keywords

COVID-19; Bangladesh; Income; expenditure; Developing; Vulnerable population

JEL Classification: I;E4;H5;H53;H75

1.0 Introduction

Coronavirus disease (COVID-19) first appeared in the Hubei Province of China in December 2019. From China, it has spread all over the world (Hassanin, 2020). The World Health Organization (WHO) described COVID-19 as a pandemic (Boseley, 2020b) and consecutively declared a global health emergency (Boseley, 2020a). According to WHO

(World Health Organization), this virus got 1,773,088 confirmed cases with 111,652 deaths out of all the confirmed cases by 13th April 2020, Bangladesh got 621 confirmed cases with 34 deaths by that date ("Coronavirus disease (COVID-19) Pandemic," 2020). The whole world is suffering from this crisis, and there is no chance of escape from this virus unless we invent the vaccine but it is supposed to slow down as in some countries this virus infection has reached the saturation point (Knowles, 2020). This virus is having global economic impacts like- demand and supply shocks, disruption in the value chain and supply chains, an increase in the unemployment rate ("Coronavirus: the economic impact," 2020).

In this crisis, the global economy could lose $3.7 billion worth of output. COVID-19 could push half a billion people into poverty, the informal sectors of the developing country will face a major hit (K. Ahmed, 2020). The president of the World Bank David Malpass said that the poorest country will hit the most in this economic crisis, especially those countries which have huge debts. In the developing countries of Asia, COVID-19 is causing a decline in domestic demand, tourism business as well it is disrupting trade and supply linkage (Abiad et al., 2020).

Bangladesh is the largest economy among the least developed countries and by 2024 expected to leave the LDCs ("Leaving the LDCs category: Booming Bangladesh prepares to graduate," 2018). This country has a vast population of 168.1 million with a per-capital income of 1,905.7 US$("Bangladesh,") as of 2019. According to the Bangladesh Bureau of Statistics (BBS) in 2018 the poverty rate in Bangladesh is 21.8% and people living below the extreme poverty line are 11.3% ("Poverty rate comes down at 21.8pc in 2018: BBS," 2019). According to the BBS report in the year 2017-18, the economically active population and the employed population were 62.1 million and 59.5 million respectively ("Bangladesh Statistics 2018," 2018). According to an article by ILO (International Labor Organization) about 87% of the total labor force was employed in the informal sector in 2010 and these informal professions are - wage laborers, self-employed persons, and unpaid family labors.

Due to the effect of the Corona Virus, almost 20 million workers in the informal sector lost their jobs in Bangladesh. A distinguished fellow at CPD (Centre for Policy Dialogue) Dr. Mustafizur Rahman said that both formal and informal sector out of 60.8 million people working, 14 million people get their monthly salary from employers, 10 million workers are day laborers and the remaining 27 million are self-employed with mainly small businesses; out of them in a current pandemic situation, the day laborers and self-employed are temporarily jobless with zero earning ("'Coronavirus: Nearly 20m people become jobless in Bangladesh'," 2020). Bangladesh is the second-largest exporter of garments, this sector is injured by the Corona Virus crisis due to the order cancellation, and worldwide decreasing demand of the consumers (Z. Ahmed, 2020; "Informal economy in Bangladesh,"). Corona Virus has also jeopardized the agriculture sector, due to the decline of demand in the market, the price of vegetables, fruits, eggs has got down ("Coronavirus: Prices fall in Dhaka kitchen markets," 2020), the milk producers are selling their milk at a

very low price which is causing them to incur great loss (Atik, 2020). Side by side of the effects on all other sectors it has affected the remittance also; in March 2020, the total amount of the remittance was found to be 15 months low ("Remittance hit a 15-month low in March due to coronavirus fallout," 2020).

According to the World Bank, the extreme poverty threshold is $1.9 per day, and for the lower middle-income country, the poverty threshold is $3.2 per day ("Poverty and Shared Prosperity 2018," 2018). In Bangladesh, according to the World Bank, only 15% of the population earns more than $5.90 a day and most of the employment is generates in the informal sector out of which a significant portion depends on daily wage to eat (Saleh, 2020). In the context of the economic turmoil due to COVID-19, this paper will consider the vulnerable people who have a personal monthly income below $177, and maximum income was considered $176.95(15,000 Taka); as most of them will lose job for the time being (Hossain, 2021). In this paper, an income comparison of the vulnerable people is made, and the relationship between expenditure and savings is expressed using the Least Squared Regression. Moreover, it will give the descriptive statistics analysis of key economic indicators of the respondents.

1.1 Research Objective

This research will try to understand the current economic condition of the vulnerable population of Bangladesh. It will try to compare the monthly Income in the COVID-19 scenario with the pre-COVID-19 situation and will try to establish a relation of respondents' monthly savings and expenditure with respondent monthly income.

1.2 Research Question

1) What is the condition of the vulnerable population of Bangladesh?
2) How COVID-19 will impact the income, expenditure, and savings?

This paper is composed of 6 sections, including section 1 as Introductions, & remaining are Literature Review, Methodology, Results & Discussion, Conclusion, and References.

2.0 Literature Review

The response during the COVID-19 outbreak in China indicates our experience from the 2003 SARS (Severe Acute Respiratory Syndrome) epidemic outbreak played a significant role (McCloskey & Heymann, 2020). SARS (Severe Acute Respiratory Syndrome), a type of Coronavirus also caused massive havoc to the economy in 2003 with a global loss of 59 billion USD. With the collapse of the US, the European, and Asian markets; also weakened the trade, and travel all around the world (Baric, 2008).

The COVID-19 has impeded the goal of the United Nations of eradicating poverty by 2030, in the most extreme study by Sumner, Hoy, and Ortiz-Juarez (2020) shows that there might be a 20% drop in consumption/income, increasing the number of people living below the poverty line by 420-580 million. Altig et al. (2020) found using economic uncertainty indicators that in *the USA* and UK COVID-19 is causing great economic uncertainties and economic fallouts. Ludvigson, Ma, and Ng (2020) used the VAR model in the case of the US to find the estimated loss due to
COVID-19 and found that for 12 months from the start of this epidemic in the US (February/March 2020) the multi-period shock would cause about 12%/month loss of industrial production and in service sector job loss of about 55%. Empirical evidence suggests that an epidemic outbreak results to reduce consumer expenditure but not across all categories, and using E-commerce as alternative manufacturers, and retailers can lessen the negative impact of an epidemic outbreak (Jung, Park, Hong, & Hyun, 2016). Ruiz Estrada and Koutronas (2020) suggested based on the 2019-nCOVGEI-Simulator that for the corresponding region both the likelihood and the magnitude of the epidemics are related to the economic dynamics. An African Perspective of COVID-19 impact on the Economy of Nigeria was conducted by Kanu (2020), this paper says that Economic disruption in Nigeria seems to be loss of jobs, disruption of financial markets and corporate sector, loss of income, and gradual recession.

In the unemployment crisis, a rise in government spending could potentially reduce unemployment and could increase output both in that crisis and in the future (Rendahl, 2016). In the time of recession, 2007-08 workers in small farms who have more external financial dependence are comparatively more vulnerable to job loss than the workers in big farms (Duygan-Bump, Levkov, & Montoriol-Garriga, 2015). Nigeria, a developing country used public money to stimulate the economy in this pandemic crisis to restrict business failure but some responses were inefficient (P. Ozili, 2020).

The socioeconomic impact of the COVID-19 should be reduced for which a proactive management approach should be followed, health policies should be taken by considering social detriments of health, education, and health literacy among the population needs to be increased, national, and international shifts in investments need to be encouraged, a strong private, and public partnership should be built; A unified world council should be established (Evans, 2020). This situation is instigating many countries to develop their public health sector, fixing the economy with the financial stimulus (P. K. Ozili & Arun, 2020). Sands, El Turabi, Saynisch, and Dzau (2016) also suggests that an infectious health disease as global health should not be neglected, we need to strengthen our public health capabilities to fight those threats. From the African perspective, Ataguba (2020) suggested the governments increase public health spending to tackle the virus. After reviewing all the relevant works a research gap was found that there is no study of the impact of COVID-19 on the vulnerable population of developing countries of Asia like- Bangladesh.

3.0 Methodology

The study uses primary data collected during the COVID-19 lockdown scenario of Bangladesh between 4th April 2020 to 6th June 2020. Both purposive and convenience sampling have been used in the collection of data, the non-random sampling was used as it was very much tough to collect data in the lockdown scenario. We collected a total of the data of 203 respondents from all around the country with monthly income below 15,000 Taka, who we generalized as the vulnerable population in Bangladesh. We used Ordinary Least Squares(OLS) linear regression, bar graph, descriptive statistics, Welch two-sample t-test in the analysis of our sample. In this analysis, we used SPSS version 25 & R-Studio version 1.3.95 for the statistical analysis.

3.1 Analysis

First of all, we find out the demographics of our total sample, we used bar graphs, pie charts for that purpose. We also made descriptive statistics analysis of respondent's economic variables- monthly income, monthly expenditure, monthly savings, people working in each family, total savings, days can be run with that savings, and days living on relief. This descriptive analysis also consisted of some categorical variables- alternative earnings, earnings in the COVID-19 situation, have savings, got relief, health insurance, and mobile banking account. We made a comparison of respondents' income in a pre-COVID-19 situation with income in the COVID-19 situation using Welch two-sample t-test. We used two OLS models to build the relationship between respondent's monthly income with monthly expenditures, & monthly savings respectively.

4.0 Results & Discussion

4.1 Demographics

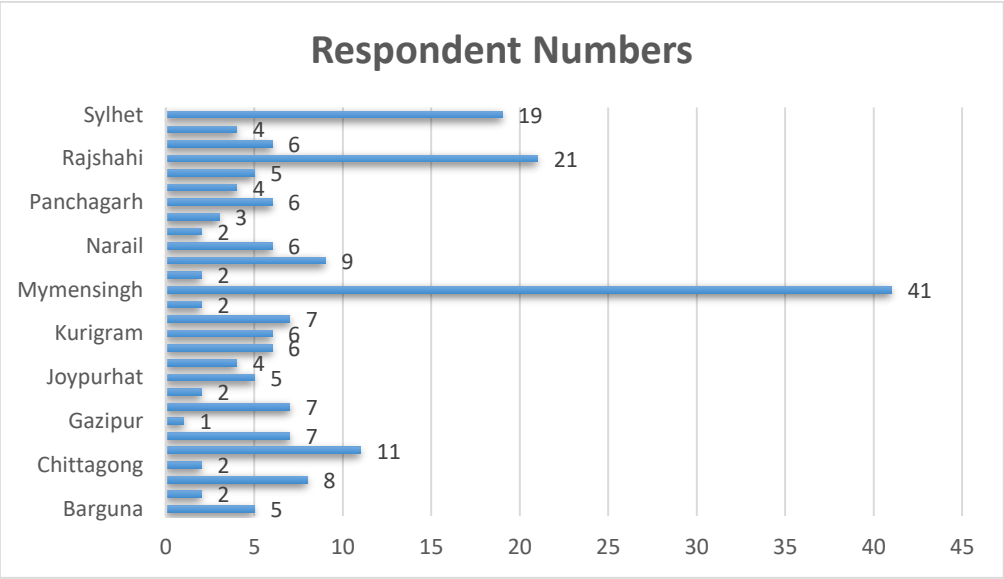

Figure 01 Bar Graph of the District of the Respondents

Table 01: Major professions of the respondents

Profession	Frequency	Percent
Driver	50	24.63
Day Labor	29	14.28
Seller	21	10.34
House Maid	16	7.88
NGO worker	7	3.44
Cook	6	2.95
Mechanic	6	2.95
Teacher	6	2.95
Hotel Stuff	5	2.46
Farmers	5	2.46

Table-2: Gender, and Marital status of the respondent

Gender			Marital Status	
Male	Female	Neuter	Married	Single
75%	23.19%	0.99%	74.38%	25.62%

Notably, 75% of our respondents are male, the remaining 23.19% and 0.99% are female and other genders respectively. The majority of the respondents are married which is about 74.38%, and the remaining 25.62% are single. We tried to collect data from all around Bangladesh, the maximum amount of data was collected from Mymensingh 41 (20.2%), followed by Rajshahi 21 (10.3%), and Sylhet 19 (9.4%) and other districts are also notable as shown in Figure 01. Our total sample is composed of respondents with low-paid and vulnerable professions in the context of Bangladesh as shown in Table 1.

4.2 Descriptive Statistics

Table: 03 Descriptive Statistics of the Continuous Economic Variables

Variables	N Statistic	Mean Statistic	Standard Deviation	Minimum Statistic	Maximum Statistic
Monthly Income of the respondent	203	5,748.2759	2,888.56305	700.00	15,000.00
Approximate monthly expenditure	203	6,976.8473	2,608.86	2,000.00	15,000.00
Approximate monthly savings	203	879.31	754.354	-500	4,000
COVID-19 Monthly Income	203	1,451.72	1,953.275	0	10,000
Total Savings	203	5131.43	11,409.775	0	100,000
Days Run with Savings	156	36.29	29.346	0	180
Days Living on Relief Food	145	13.78	15	145	90

Table 04 Descriptive Statistics of Categorical Economic Variables

Variables	N	Yes	No
Earnings in COVID-19 Situation	203	61.60%	38.40%
Have Savings	203	77.30%	22.70%
Got Relief	203	70.40%	29.60%
Health Insurance	192	6.77%	93.23%
Mobile Banking Account	203	62.60%	37.40%

As can be seen in Tables 03 & 04; out of the examined 203 respondents' we got the mean of respondent's monthly income, monthly expenditure, and monthly savings of 5,748.28 Taka, 6,976.85 Taka, and 879.31 Taka respectively. It has been found that about 61.60% out of 203 respondents has earnings in COVID-19 situation and about 77.3% of the respondent have some sort of savings. The COVID-19 monthly income amount & total savings amount was of average 1,451.72 Tk. and 5,131.43 Taka respectively. 156 respondents reported that on average they can live about 36 days with savings. Out of 203 respondents', 70.4% of the respondents said they got food relief, with which 145 respondents said they can run on average 14 days. Out of our 203, respondent's 62% said they got a mobile banking account, and of about 192 respondents it was found that about 93.23% said they don't have health insurance.

4.3 Variable Relationship Analysis

Table 05 Welch Two Sample t-test between Monthly Income in Normal Situation and Monthly Income in COVID-19 Situation

Mean of Pre-COVID-19 Monthly Income	**5,748.276**
Mean of COVID-19 Monthly Income	1,451.724
Confidence Interval	95%
t	17.556
N	203
p	0.00

We conducted unequal variance two samples independent welch t-test between Pre-COVID-19 earning & expected earnings in the COVID-19 situation, the result showed that there was a significant drop in income with a very low p-value at a 95% confidence interval (Table 05).

Model 01

Table 06: Ordinary least squares (OLS) regression considering Approximately Monthly Income in Pre-COVID-19 situation as independent Variable and Monthly Expenditure in Pre-COVID-19 Situation as Dependent Variable.

Dependent Variable: Approximately Monthly Expenditure

Method: Least Squares

Included Observations: 203

R^2= 0.497

Adjusted R^2= 0.494

Variable	Co-efficient	Standard Error	t-Statistic	P-Value
Constant	3318.547	290.650	11.418	.000
Pre-COVID-19 Monthly Income	.636	.045	14.079	.000

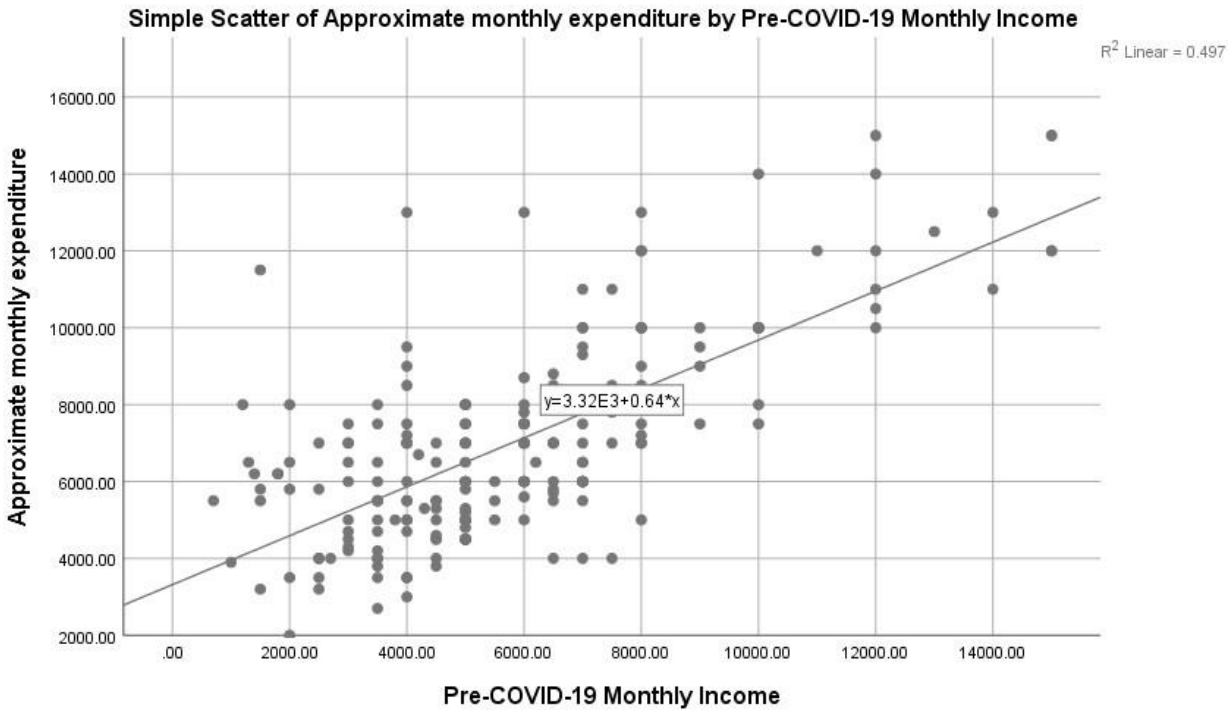

Fig 02 Linear Regression line (OLS) between Monthly Expenditure & Monthly Income in Normal Situation

This linear model between monthly income & monthly expenditure in the pre-COVID-19 case showed a significant linear relationship with a very low p-value and the R^2 value of this model is also satisfactory, which is about 0.497 which means this model can predict about 49% of the cases.

The co-efficient of the variable pre-COVID-19 monthly income is 0.636, which means there is a positive relation between monthly income and monthly expenditure in normal cases. This coefficient can be interpreted as, for every 1taka increase in monthly income about 0.636 takas in monthly expenditure will be increased, similar impact in case of decreasing income, expenditure will also decrease.

Model 02

Table 07: Ordinary least squares (OLS) regression considering Approximate Monthly Income in Pre-COVID-19 situation as independent Variable & Approximate Monthly Savings in Pre-COVID-19 Situation as Dependent Variable.

Dependent Variable: Monthly Savings

Method: Least Squares

Included Observations: 203

R^2= 0.033

Adjusted R^2= 0.029

Variable	Co-efficient	Standard Error	t-Statistic	P-Value
Constant	605.299	116.453	5.198	.000
Pre-COVID-19 Monthly Income	0.048	0.018	2.632	.009

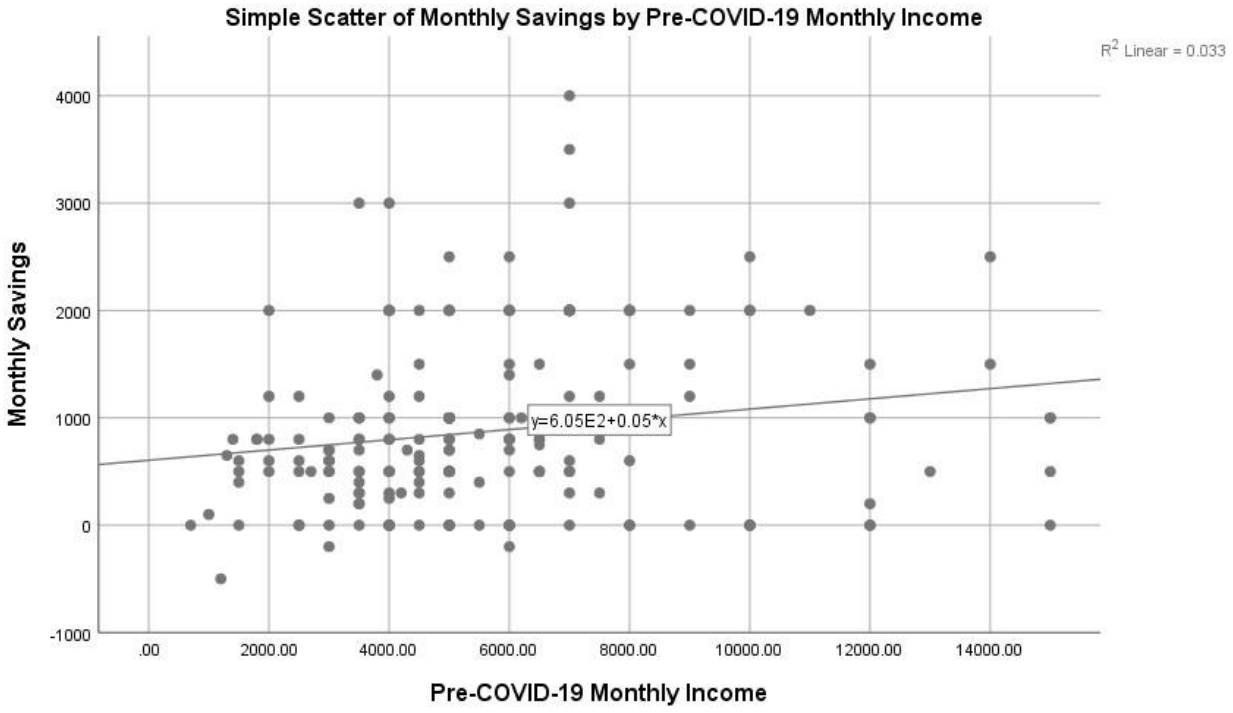

Fig 03 Linear Regression line (OLS) between Monthly Income & Monthly Savings (Pre-COVID-19 Situation)

This linear model between monthly income and monthly savings in pre-COVID-19 condition showed a significant linear relationship with a very low p-value and though the R^2 value of this model is not very satisfactory, which is about 0.033.

The co-efficient of the variable pre-COVID-19 monthly income is 0.048, and this relationship with the dependent variable monthly savings is found significant with a p-value of 0.009 at a 95% interval, which means there is a positive relation between monthly income and monthly savings in a normal case. This co-efficient can be interpreted as, for every 1taka increase in monthly income about 0.048 takas in monthly savings will be increased. Similar impact in case of decreasing income, savings will also decrease.

As seen in the Welch two-sample t-test the income in COVID-19 has dropped significantly, and the positive and significant relationship of OLS Model 01 and 02 shows that both expenditure and savings will be a drop in the COVID-19 situation, due to fall in the income.

5.0 Conclusion

COVID-19 is disrupting the whole global economy, so it is in Bangladesh. As an LDC country the COVID-19 has a much severe impact on the overall economy of Bangladesh. Our research has analyzed different continuous and categorical economic variables of our sampled vulnerable population which can help to overall understand the situation & more new studies can compare the situation in an updated manner. It has found a significant drop in income due to COVID-19 and signifies that both monthly expenditure and savings will drop, as a significant relation was found between monthly income with both monthly expenditure & monthly savings separately. Due to the lockdown scenario, a 203 sample was collected using non-random sampling which can't give the proper picture of the vulnerable population. But it can be used to roughly understand the situation.

Conflict of Interest: The authors declared no conflict of interest.

Acknowledgment: The authors would like to thank Professor Dr. Mohammad Abdul Hannan Pradhan, and postgraduate student of the Department of Economics, Shahjalal University of Science & Technology, Susmita Dutta Prita for their significant guidance & instructions throughout the journey.

REFERENCES

Abiad, A., Arao, M., Dagli, S., Ferrarini, B., Noy, I., Osewe, P., . . . Platitas, R. (2020). The economic impact of the COVID-19 outbreak on developing Asia.

Ahmed, K. (2020). Coronavirus could turn back the clock 30 years on global poverty, *The Guardian*. Retrieved from https://www.theguardian.com/global-development/2020/apr/09/coronaviruscould-turn-back-the-clock-30-years-on-global-poverty

Ahmed, Z. (2020, 25.03.2020). Coronavirus: Bangladesh's garment industry risks collapse, *DW*. Retrieved from https://www.dw.com/en/coronavirus-bangladeshs-garment-industry-risks-collapse/a52917410

Altig, D., Baker, S., Barrero, J. M., Bloom, N., Bunn, P., Chen, S., . . . Mihaylov, E. (2020). Economic uncertainty before and during the covid-19 pandemic. *Journal of Public Economics*, 104274.

Ataguba, J. E. (2020). COVID-19 pandemic, a war to be won: understanding its economic implications for Africa: Springer.

Atik, R. B. a. F. (2020, 13 Apr 2020). Dairy farmers hit hard by coronavirus lockdown in Bangladesh, *bdnews24.com*. Retrieved from https://bdnews24.com/bangladesh/2020/04/13/dairy-farmershit-hard-by-coronavirus-lockdown-in-bangladesh

Bangladesh. from https://www.bd.undp.org/content/bangladesh/en/home/countryinfo.html

Bangladesh Statistics 2018. (2018): Bangladesh Bureau of Statistics (BBS), Statistics and Informatics Division (SID) & Ministry of Planning.

Baric, R. S. (2008). SARS-CoV: lessons for global health. *Virus research, 133*(1), 1.

Boseley, S. (2020a, 30 Jan 2020). WHO declares coronavirus a global health emergency, *The Guardian*. Retrieved from https://www.theguardian.com/world/2020/jan/30/who-declares-coronavirus-aglobal-health-emergency

Boseley, S. (2020b, 11 Mar 2020). WHO declares coronavirus pandemic, *The Guardian*. Retrieved from https://www.theguardian.com/world/2020/mar/11/who-declares-coronavirus-pandemic

Coronavirus disease (COVID-19) Pandemic. (2020). from https://www.who.int/emergencies/diseases/novel-coronavirus-2019

'Coronavirus: Nearly 20m people become jobless in Bangladesh'. (2020, 1 April 2020). *Prothom Alo English*. Retrieved from https://en.prothomalo.com/business/local/coronavirus-nearly-2mpeople-become-jobless-in-bangladesh

Coronavirus: Prices fall in Dhaka kitchen markets. (2020, 30 March, 2020). *The Independent*. Retrieved from http://www.theindependentbd.com/post/242976 . Coronavirus: the economic impact. (2020).

Duygan-Bump, B., Levkov, A., & Montoriol-Garriga, J. (2015). Financing constraints and unemployment: Evidence from the Great Recession. *Journal of Monetary Economics, 75*, 89-105.

Evans, O. (2020). Socio-economic impacts of novel Corona Virus: The policy solutions. *BizEcons Quarterly, 7*.

Hassanin, A. (2020, 20 Mar 2020). Coronavirus origins: genome analysis suggests two viruses may have combined. *World Economic Forum*.

Hossain, M. I. (2021). COVID-19 Impacts on Employment and Livelihood of Marginal People in Bangladesh: Lessons Learned and Way Forward. South Asian Survey, 28(1), 57–71. https://doi.org/10.1177/0971523121995072

. Informal economy in Bangladesh. International Labour Organization.

Jung, H., Park, M., Hong, K., & Hyun, E. (2016). The impact of an epidemic outbreak on consumer expenditures: An empirical assessment for MERS Korea. *Sustainability, 8*(5), 454.

Kanu, I. A. (2020). COVID-19 and the economy: an African perspective. *Journal of African Studies and Sustainable Development, 3*(2).

Knowles, D. (2020, 06 Apr 2020). How and when will this pandemic end? We asked a virologist. *The World Economic Forum*.

Leaving the LDCs category: Booming Bangladesh prepares to graduate. (2018, 13 March 2018). Retrieved from https://www.un.org/development/desa/en/news/policy/leaving-the-ldcs-categorybooming-bangladesh-prepares-to-graduate.html

Ludvigson, S. C., Ma, S., & Ng, S. (2020). Covid19 and the macroeconomic effects of costly disasters: National Bureau of Economic Research.

McCloskey, B., & Heymann, D. L. (2020). SARS to novel coronavirus–old lessons and new lessons. *Epidemiology & Infection, 148*.

Ozili, P. (2020). COVID-19 Pandemic & Economic Crisis: The Nigerian Experience & Structural Causes.

Ozili, P. K., & Arun, T. (2020). Spillover of COVID-19: impact on the Global Economy. *Available at SSRN 3562570*.

. Poverty and Shared Prosperity 2018. (2018): The World Bank.

Poverty rate comes down at 21.8pc in 2018: BBS. (2019, May 13, 2019). *The Daily Star*. Retrieved from https://www.thedailystar.net/country/news/poverty-rate-comes-down-218pc-2018-bbs1742953

Remittance hit a 15-month low in March due to coronavirus fallout. (2020, April 03, 2020). *The Daily Star*. Retrieved from https://www.thedailystar.net/business/news/remittance-hit-15-monthlow-march-due-coronavirus-fallout-1889209

Rendahl, P. (2016). Fiscal policy in an unemployment crisis. *The Review of Economic Studies, 83*(3), 11891224.

Ruiz Estrada, M. A., & Koutronas, E. (2020). The Application of the 2019-nCoV Global Economic Impact Simulator (the 2019-nCoV-GEI-Simulator) in China. *Available at SSRN 3542817*.

Saleh, A. (2020). In Bangladesh, COVID-19 threatens to cause a humanitarian crisis. World Economic Forum.

Sands, P., El Turabi, A., Saynisch, P. A., & Dzau, V. J. (2016). Assessment of economic vulnerability to infectious disease crises. *The Lancet, 388*(10058), 2443-2448.

Sumner, A., Hoy, C., & Ortiz-Juarez, E. (2020). Estimates of the Impact of COVID-19 on Global Poverty. *UNU-WIDER, April*, 800-809.

Figures

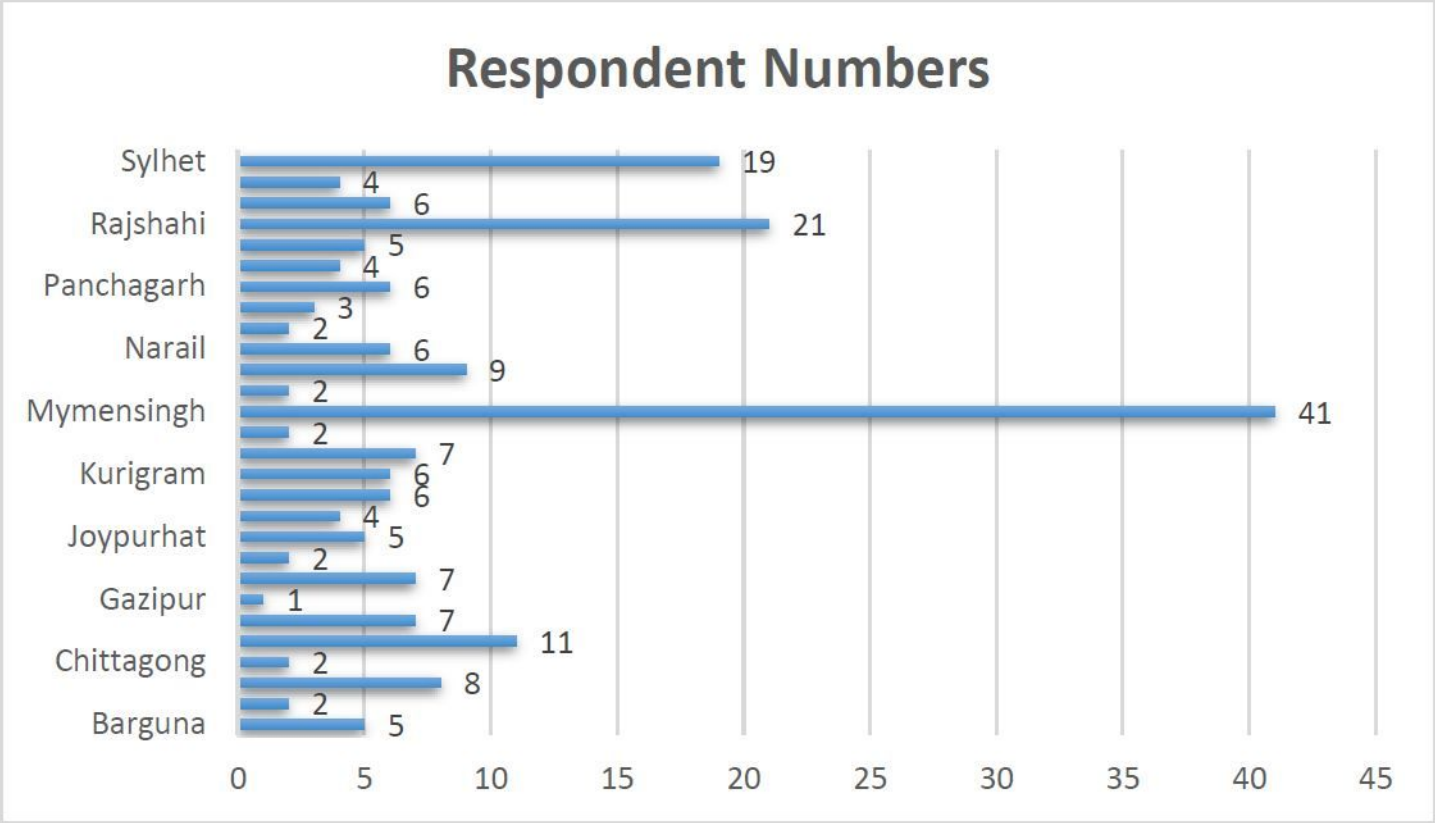

Figure 1

Bar Graph of the District of the Respondents

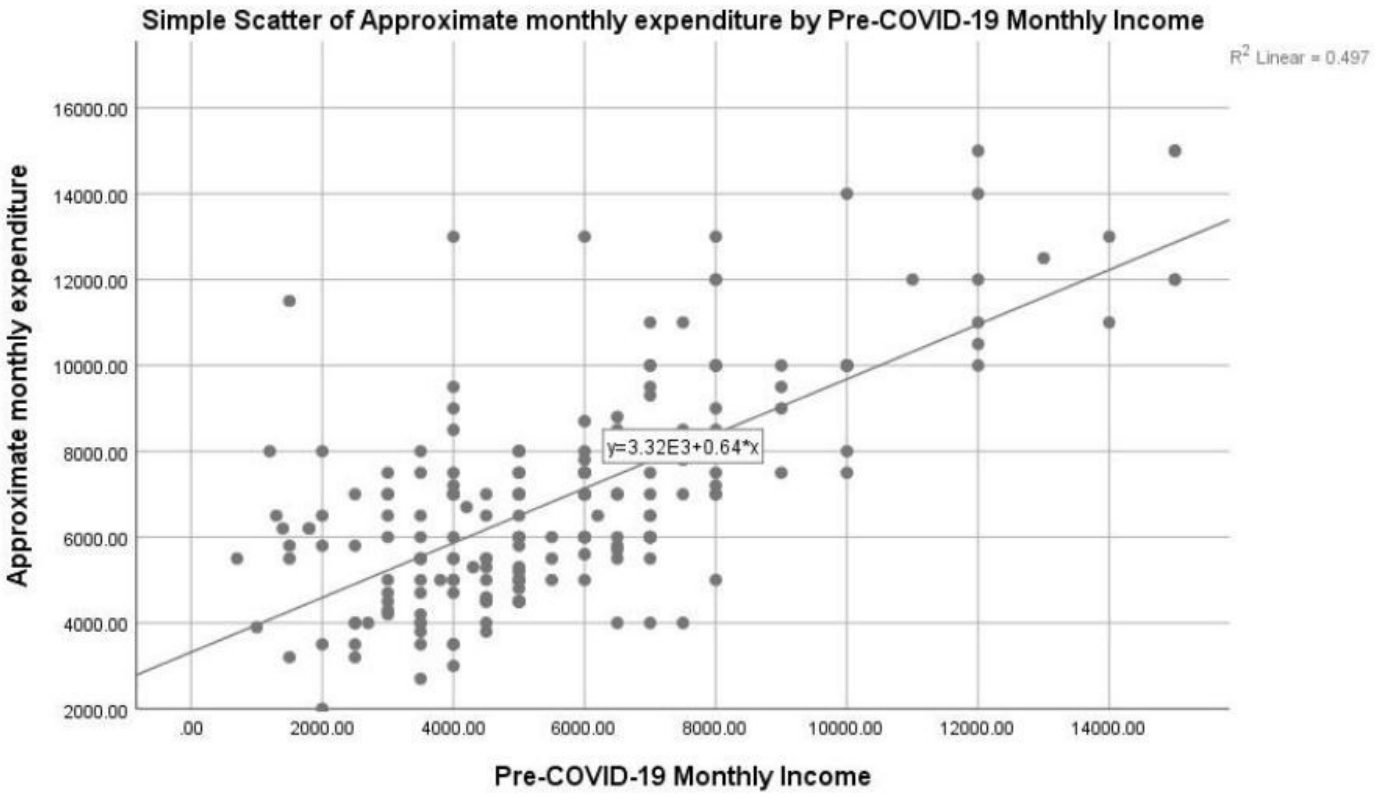

Figure 2

Linear Regression line (OLS) between Monthly Expenditure & Monthly Income in Normal Situation

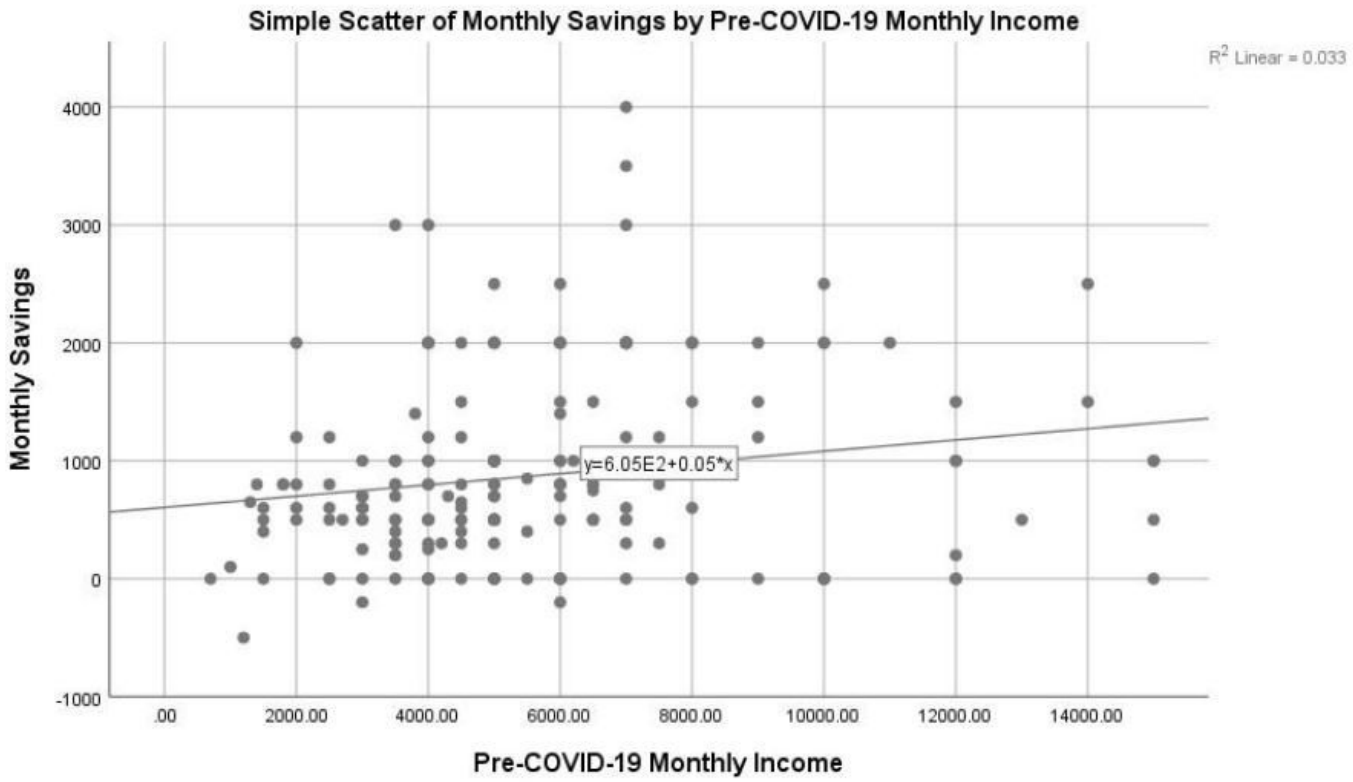

Figure 3

Linear Regression line (OLS) between Monthly Income & Monthly Savings (Pre-COVID-19 Situation)