

Food Insecurity Arising From Food Inflation & Natural Disasters in Pakistan

Syeda Wasia Zareen, Syeda Noor ul Sabah, Muzzammil Arif

Abstract: Food Insecurity is a global issue especially for developing countries like Pakistan that has been facing this major problem. Many reasons exist behind food insecurity in Pakistan such as, supply of bad quality food, smoky environment etc. Research objective is to find the factors which are responsible for the problem of food insecurity and undernourishment in Pakistan with main focus on food inflation. Furthermore, this study identifies the factors which are responsible for growing the food insecurity in the country under. Food insecurity is measured from depth of food deficit (kilocalories per day) that indicates how many calories would be needed to elevate the undernourished from their category. Secondary data is taken from WDI etc. Co2 Emissions, Law & order, Unemployment rate, Urban Population, food inflation, Prevalence of undernourished used as independent variables whereas, food deficit and food insecurity are used as dependent variables. Simple regression modal is applied for analysis. In result, Total Population, Co2 Emission, Food Inflation, Risk of Law & Order, Unemployment rate and Prevalence of Undernourished are positively related with dependent variable whereas, Urban Population negatively affected with dependent variable. Government should pay attention on implementation of effective policies, giving awareness about factors which are mainly cause the food insecurity.

Key Words: Co2 Emissions, Food Inflation, Food insecurity or deficit,

1 INTRODUCTION

The number of calories the body consumes in a day is different for every person but we assume the 2000 calories need for a person in a day. Body need less or more than 2000 calories. Caloric need depends on height, age, weight, activity level of person and gender. We measure the food insecurity from depth of food deficit (kilocalories per day) it indicate how many calories would be needed to elevate the undernourished from their status, everything else being constant.

Food Insecurity is a global issue. Many problems arises from food insecurity like poverty, deceases, economics turmoil etc. Pakistan is a food deficient country; with one-third of total population is food insecure. Food inflation directly affects the poor and helpless people. Food inflation leads to

poverty & inequality which adds to the problem of food insecurity.

Problem of food insecurity arises from many reasons like income inequality, supply of food, Input and output prices, disparity of provinces and peoples, ineffective or inconvenient government policies, political issues, disparity among rural and urban area etc. Pakistan is adversely affected by political issues because ruling party and opposition parties always try to fill their own pockets and they neglected their major obligation. Pakistan is consisted of four provinces, Sindh, Punjab, Baluchistan, and Khyber pakhtunkhwa (KPK). The environmentalism is quite different in each province. Income and asset disparity subsist among provinces. The KPK and Baluchistan are the food deficit provinces reason behind food supply etc.

Now this problem is more severe due to frequently coming natural disaster in Pakistan. Studies predicts the many new problems arise after some decade's climate change, change the temperature and rainfall patterns which are adversely affect on

cropping system. Food inflation is rapidly increased due to flood because crops & land damage by flood. Inflation measured by Consumer Price Index (CPI).

Pakistan is a developing country having more than 18million population with high poverty rate and food insecurity in people. The natural disasters are also a major factor of food insecurity because Pakistan has its a large part of cultivated land and many people are dependent on agriculture sector but due to disasters as floods which destroy all the crops and economy face food shortage and due to food shortage and access demand for food., prices of food become very high and people face food insecurity.

Pakistan is facing 19.90% under nourish people which is a very high rate & People are not having sufficient food to be healthy. This problem is more severe in areas where flood destroyed the crops and due to flood, food prices are increasing due to shortage of supply. Our objective is to find the factors which are responsible for the problem of food insecurity and undernourishment in Pakistan with main focus on food inflation and natural disasters as these are considered to be major factors behind the problem. Furthermore, this study identify the factors which growing the food insecurity in the country under some factors.

2 LITERATURE REVIEW

Ahmed (2009) investigated the situation of food

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security in Pakistan (from 1990 to 2008) using wheat production because it is a major staple food

in Pakistan. The objective of his study was to find out the factors which could help to enhance the wheat Production & availability for residents of Pakistan. Wheat production depends on cost of agriculture inputs. According to study & analysis wheat shortage affects the whole world, especially in developing countries like Pakistan where poverty is common. He recommended availability of agriculture inputs (fertilizer, water) on affordable prices & further suggested to enhance the wheat production thorough financial support to small farmers.

Ahmad & Farooq (2010) investigated impact of food security on future challenges and strategies .The main focus of this study to suggest the pathways to attain food and dietary protection for a growing population of Pakistan. Due to rising population of Pakistan food demand is also increasing day by day. Future food demands differ from today in some dimensions like age duration, consumption patterns etc, so it needs to focus on planning of food security & safety. Study suggests to developed new technology & techniques to identify the factors which are responsible for yield gaps. Furthermore, they suggest establishing the new center of food security & research and growing the existing one etc.

Idrees. M., Asma. M., Khalid. Z. , (2012) are examine the welfare effects of price changes on food items in Pakistan . They used 2 survey data of 2001-02 & 2005-06 taken from households (rural-urban segments, different income groups). The results show that all groups are not equally affected by increasing the price level, it also shows the susceptibility of poorest households are increase when price of staple food are increase. They use the LES direct utility function for equivalent income and equivalent variation. LES demand system shows the consumption behavior of household, income elasticity of each commodity. After these empirical analysis poorest or richer are equal affected by food inflation.

Hanif (2012) verify the linkage between global food inflation and food inflation in Pakistan. He also describes the affect of food inflation on different

income-groups. He checked the food spending share between different countries like low income, middle income and high income countries. He used series data from Pakistan Bureau of statistics (PBS) and international Monetary Fund (IMF).

The results shows that Food inflation has more affect on poor as compare to richer. Global food inflation caused food inflation in Pakistan. Moreover, Food spending share on different countries are different. Food spending on low and middle income country is double (40 %) as compare to high income countries (20 %). With the passage of time share are declined due to per capita income.

Kugelman and Hathaway(2009) investigated the situation of hunger in Pakistan (from 1970 to 2008) using poverty because it is major issue in Pakistan. The objective of his study was to find out the factors that affect the malnutrients in Pakistan. Due to unemployment and higher prices affect the life of peoples. Malnutrients depends on consumption of micro nutrients. According to analysis, poor nutrients contributes to about half of the child deaths in Pakistan.

Arif investigated the situation of agriculture in Pakistan as it is a major source of income in Pakistan. The objective of his study was to find out the factors that affect the agriculture sector for economy of Pakistan. Floods and rains affect the Agri-sector of Pakistan. Agri products depend on cost of agriculture inputs. According to study, shortage of crops affects the whole world, especially in developing countries like Pakistan and Asia where poverty is common. He recommended availability of better land; seeds and skilled farmers to enhance the production of agriculture goods to support the stability of price.

Ahsan, Iftikhar and Kemal (2012) find the affect of an increase in food prices on the poverty by considering Food prices as independent variable and poverty as dependent variable. They analyze that the increase in the food prices can lead to increase in the poverty. Because it directly affects the poor and below-average-income families, a

significant proportion of whose income is spent on food. They also find that a 20 percent increase in food prices could lead to an 8 percentage point increase in poverty. They use the Johansen approach to co integration. The objective of this study is to analyze the demand- and supply-side factors that affect food prices in Pakistan. They analyze their long-run relationship using an autoregressive distributed lag model for the period 1970-2010. They find that the most significant variable affecting food prices in both the long- and short run is money supply. Agricultural subsidies help reduce food prices in the long run but their impact is very small.

Chaudhry and Amjad (2008) measure The Effects of Rising Food and Fuel Costs on Poverty in Pakistan. Food and Fuel prices were taken as independent variable and poverty as dependent variable. Objective of the study was to analyze the impact of higher food and energy prices on the poverty head count and the poverty gap ratio in Pakistan. The data is taken from two different sources: The Pakistan Social and Living Standards Measurement Survey (PLSM), 2004-2005 and the Punjab Multiple Indicators Cluster Survey (MICS), 2003-2004. And found that the impact of food price increases on Pakistani poverty levels is substantially greater than the impact of energy price increases. Second, the impact of food price inflation on Pakistani poverty levels is significantly higher for rural populations as compared to urban population.

Abdullah and Kalim (2012) investigated Empirical Analysis of Food Price Inflation in Pakistan from 1972 to 2008; Food price inflation was taken as dependent variable and independent variables as its main determinants like inflation expectations, money supply, per capita GDP, support prices, food imports and food exports. Johansen's co-integration technique is utilized to find the empirical analysis. . Objective of the study was to find out the long run relationships among food price inflation and its determinants. And found that all the determinants affect food price inflation positively and significantly except money supply which is insignificant with correct positive sign.

Hasan and Zaidi (2012) analyze the impacts of the disastrous floods on economic and political situation of economy from 2010 to 2011. They found that flood has adversely effected the different sectors of the economy as Agriculture (as main sector of the Pakistan economy) which further related to industries. Government faces different challenges which effect on whole economy.

Hussain & Akram analyze the impact of persistent food insecurity from policy failure in Pakistan. They also indicate the three types of food insecurity like Transitory Food Insecurity which is Short term food insecurity that occur to periodic crises, Chronic Food Insecurity become as a result of long-term changed and Cyclic Food Insecurity come from seasonal variation. Pakistan has made lot of progress in the field of agriculture sector thorough Green, Yellow and Blue revolution. Many reasons exist which create the problem of food insecurity as weather conditions which are highly influenced on agriculture sector, inconvenient government Policies, income inequality, input & output prices, food supply and so on.

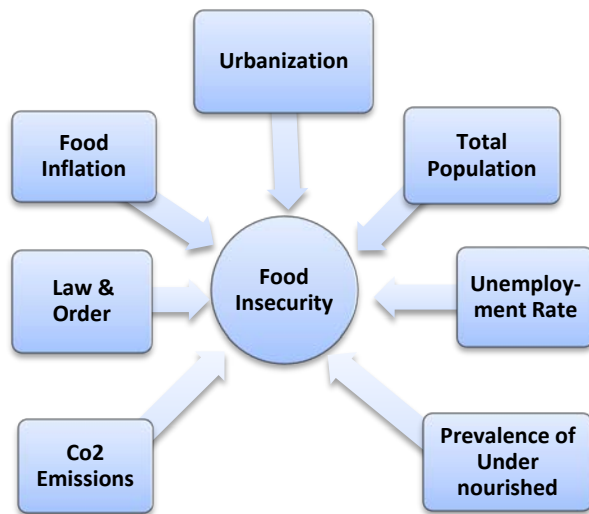
Sheikh, Kronstadt, Vaughn (2010) write a report on flooding in Pakistan economy. They also explore the different issues arise from flood. They loyal major focused on flood of 2010 which is the major factor of humanitarian crises. The flooding in Pakistan, which started in late July, 2010 reportedly affected over 20 million people. Over 1.9 million household were spoiled. Roughly 2000 people died and 3000 were injured. The flood are estimated to have long-term adversely affect on the development scenario for Pakistan. Due to this prediction spoiled the different sector of Pakistan economy, also damaged the infrastructure and agriculture sector. They also blamed to weakened government of Pakistan. The United Nations, World Bank and Asian Development Bank is conducting a needs assessment for Pakistan. Initial reports tell about expenditure spending for need recovery and reconstruction. Many countries as china pay relief to Pakistan for reconstruct the situation of Pakistan.

3 METHODOLOGY

Secondary data is used for answering a research question by selecting the annually time series data from 1961-2013. Independent variables such as (Co2 Emissions, Law & order, Unemployment rate, Urban Population, food inflation, Prevalence of undernourished) used for measuring the Food Deficit or Food Insecurity. By making the simple regression model & then applying the regression on dependent and independent variables, results are made.

4 THEORETICAL LINKAGES

Theory supports the hypothesis that food inflation and natural disasters affect food security. However in Pakistan the situation is more complex and problem is very severe especially in some remote areas. Food inflation targets are set by the governments to ensure price stability of the food available to the population of the country. Our study examines the affect of recent increase in food prices and the effect of natural disasters on food security. In the last summer flood once again destroyed crops in Pakistan which will lead to food shortage and increase in prices.



4.1 Urbanization

Urbanization is the migration of people from rural to urban sector. If urbanization increases, People doing job for fulfilling their needs ultimately food insecurity will decrease. And we measure the urbanization by total urban population.

4.2 CO2 Emissions

CO2 emissions are the carbon dioxide emissions from use of liquid and solid natural gas which causes the climate change. When CO2 emissions increase, And Temperature changed, and temperature changes affect the Rainfall pattern to change. Rainfall pattern is the major factor behind the condition of crops which are responsible to food supply in the economy. When crops are affected adversely by CO2 emissions, ultimately, the food production and supply becomes low. Prices go high and people are not able to get enough food in result of increase in food insecurity.

4.3 Risk of Law and Order in economy

The law and order situation is an important factor responsible for food insecurity in the economy and has two way relationships. Firstly, when the

situation of law and order is poor in the economy, the producer will charge high prices and consumer will adversely effected and black marketing will also affect the market equilibrium in the economy and commodity markets will not be stable and people couldn't get enough quantity of food and food insecurity will be exist.

Secondly, when there will be food insecurity in the economy and people are properly fulfilling their basic need for food, crimes will be more and the law and order situation of the economy will be obstinately affected.

We choose the indicator (Risk of Law & Order) for measuring the situation of law and order. If Risk of law and order increases then its mean situation of law and order is improper then food insecurity increases.

4.4 Food Inflation

Food inflation is measured by Consumer Price Index. CPI imitates changes in the cost to the average consumer of acquiring a basket of goods & services that may be fixed or changed at specified intervals such as year. If food inflation exists its mean prices of food increase poor people cannot afford those prices. Then its means when depth of food deficit increases ultimately food insecurity also be increased.

4.5 Total Population

Growing population will lead to food deficit. When population increases then its mean food shortage exist when supply of food decreases, people have not enough food for dietary consumption then ultimately food deficit increases.

4.6 Unemployment Rate

Unemployment has the positive relationship with food deficit. When unemployment increase, production decreases, prices increases and the purchasing power of consumer decreases, and people has less ability to consume the efficient amount of food, as, the food deficit increases in the country.

4.7 Prevalence of undernourishment

Prevalence of undernourishment means that the percentage of the total population which is not having enough food consumption. When people don't have sufficient food consumption which is necessary for body then they are mightily faced food insecurity. Food insecurity can increase the food deficit in the country. Because when the

prevalence of undernourishment increases, the food deficit also increases that shows a positive relationship between both.

5 DESCRIPTIVE ANALYSIS

	FD	L_O	POP_M	POU	UNEMP_R	URBN_M	CPI	EMSN_THSN D
Mean	162.4016	0.552009	106.0986	28.21880	4.847679	33.36251	28.96453	25.38260
Median	165.9900	0.560000	102.2900	28.21880	4.850000	30.21000	13.94000	16.79800
Maxi.	185.0000	0.670000	188.0000	38.10644	19.50000	68.96000	132.1950	67.04400
Mini.	131.0000	0.500000	42.98000	17.20000	-2.950000	10.50000	2.080000	1.380000
Std. Dev.	12.44445	0.036311	42.45947	5.953091	4.992314	17.79035	33.09765	21.80632

R2 = 0.913

6 EMPIRICAL ANALYSIS

From 7 independent variables (Co2 Emissions, Law & order, Unemployment rate, Urban Population, food inflation, Prevalence of undernourished), 3 independent variables are significant with dependent variable whereas 4 independent variables are insignificant with dependent variable.

Variable	t-Statistic	Prob.
L_O	-2.439419	0.0187
POP_M	4.180942	0.0001
PU	3.811795	0.0004
UNEMP_R	-3.544605	0.0009
URBN_M	-4.303813	0.0001
CPI	-4.391792	0.0001
EMSN_THSND	8.583276	0.0000
C	1.881353	0.0664

Significance of all variables is checked by applying the Unit Root Test.

- Dependent variable (depth of food insecurity) is significant on first difference of unit root test.
- CPI is significant on second difference of unit root test.
- CO2 Emission is significant on first difference of unit root test.
- Law & order is significant on level of URT.
- Total Population is significant on first difference of URT.
- Unemployment rate is significant on first difference of URT.
- Urban Population is significant on second difference of URT.
- Prevalence of undernourished is significant on first difference of URT.

by applying the Vector Error Correction Estimation, the relationship between dependent & independent variable is checked.

Total Population, Co2 Emission, Food Inflation, Risk of Law & Order, Unemployment rate and Prevalence of Undernourished are positive relate with dependent variable & Urban Population, are negative relate with dependent variable.

$$FD = 716.396 + 5.895 T_POP + 15.87 POU + 18.08Unemp_R + 19.11 R_L\&O - 4.25 UP + 1.24 FI + 0.80 C02 Emsn + \mu t$$

7 DISCUSSION

Equation shows that if Total Population (T_POP), Prevalence of Undernourished (POU), Risk of law & order (R_L&O), unemployment rate (Umemp_R), Food inflation (FI) & Co2 Emissions (CO2 Emsn) increases then its mean food deficit increase but when urban population (UP) increases then its mean food deficit decreases.

- Urbanization is the migration of people from rural to urban sector. If urbanization increases, People doing job for fulfilling their needs ultimately food insecurity will decrease. And we measure the urbanization by total urban population.
- CO2 emissions are the carbon dioxide emissions from use of liquid and solid natural gas which causes the climate change. Erosion of CO2 emissions causes temperature and rain fall pattern to change. In result, these factors disturb the crop system in country. When crops are adversely affected by CO2 emissions, ultimately food deficit increase.
- The indicator (Risk of Law & Order) is chosen for measuring the situation of law and order. If Risk of law and order increases then its mean situation of law and order is improper then food insecurity increases.
- Food inflation measure by Consumer Price Index. CPI imitates changes in the cost to the average consumer of acquiring a basket of goods & services that may be fixed or changed at specified intervals such as year. If food inflation exists its mean prices of food increase poor people cannot afford those prices. Then food deficit will increase.
- If production of food is limited because main sources of producing food is limited like land. When population increase, food shortage exists and food deficit will increase.
- Unemployment has the positive relationship with food deficit. When unemployment increase, production

decreases, prices increases and the purchasing power of consumer decreases, and people has less ability to consume the efficient amount of food, as, the food deficit increases in the country.

- Population below minimum level of dietary energy consumption (also referred to as prevalence of undernourishment) shows the percentage of the population whose food intake is insufficient to meet dietary energy requirements continuously. Food insecurity can increase the food deficit in the country when the prevalence of undernourishment increases, the food deficit increases and as, they both has positive relationship.

8 RECOMMENDATIONS

According to the findings of research, here are some suggestions to overcome the problem of food insecurity.

Firstly, Government should play the role for giving awareness to people about controlling the Population using different means of communication. Secondly, it should make the effective policies & pay attention for implementation of that policies. Thirdly, it should try to maintain or stable the food prices which could affordable for poorest. By doing so, food deficit will decrease.

Moreover, government should offer the Job opportunities to reduce the unemployment rate. In result, food deficit will also decrease. Furthermore, government should pay the attention on equally distribution of food when prevalence of undernourished will decrease then eventually food deficit will also be decreased.

In addition to that, government should take the step to make environment clean because continuously increase in Co2 emissions will not only make atmosphere ineffective for the health of people but will also affect the temperature that further will affect the Rainfall pattern to change. Rainfall pattern is the major factor behind the condition of crops which are responsible to food

supply in the economy. When crops are affected adversely by CO₂ emissions, ultimately, the food production and supply becomes low.

9 CONCLUSION

In present era, Food Insecurity has become global issue. Many problems arise from food insecurity like poverty, deceases, economics turmoil etc. Food insecurity is analyzed from depth of food deficit (kilocalories per day) that indicates how many calories would be needed to elevate the undernourished from their status. Then examined the literature about studies of food insecurity, different studies gave different concept about food deficit but our objective is to find the factors which are responsible for the problem of food insecurity and undernourishment in Pakistan with main focus on food inflation. Independent variables (Co₂ Emissions, Law & order, Unemployment rate, Urban Population, food inflation, Prevalence of undernourished) and dependent variables (food deficit, food insecurity) are used to make the simple regression model. After applying the regression on variables findings are made. Moreover, recommendations are given which can help to overcome the problem of food deficit.

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