Food Prices and its Impact on Poverty in Pakistan

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Abstract  
The study aims to investigate the long run and short run impact of raise in food prices on poverty level in Pakistan. For this sake, Study uses time series data ranging from the years 1973 to 2013. The time series properties of the data show the mixed order of integration. So, study used ARDL technique and error correction model for the estimation of the results and it is a preeminent methodology to use as compared to other methodologies. Result shows that rise in prices are responsible for enhancing the poverty level in Pakistan. Therefore, effective policy for eradication of poverty bothers much more about the rise in prices. Increase in the food prices enhance firm’s incentives but reduce the purchasing power of the consumer which stimulates poverty both in the short and long run, the results reveal.

Keywords: Food Prices; Poverty; ARDL; Pakistan

I. Introduction  
Food is the first and most important need of individuals. That is why it is closely related with the living standard of the individuals. The Price of food influences daily and domestic life of an individual. So a stable price mechanism is very essential for the prosperity of the individuals in the society and required government intervention to provide food at reasonable prices. Human beings can’t survive without this basic element of life. The entire struggle relates to this thing. People of Pakistan are not so rich whereas there are some families which are under the poverty line. It is impossible for them to survive with the rising food prices. The main profession of the people is agriculture and thus Pakistan is an agricultural country. Pakistan exports food items produced to the foreign countries. We import food items from other countries at high prices because high
taxes are imposed. Food has become a mystery for the poor people which are in majority in Pakistan.

Pakistan is suffering from food inflation now a day. The main food problem came into force in 2008. And from that year to the present year, Pakistan is facing the same problem and continuously this situation is becoming worst. This problem needs attention. Prices of food items are rising day by day. There are many causes which proved effective in the increase of food prices. Capitalism is a main cause of increasing food prices. The producers and other dealers store the food and because of that shortage of food occurs. The supply of food will become less than its demand. At this situation, the producer increases the prices of food items. It creates food inflation in the country. Food inflation is the main and worst problem which is faced by the developing countries. Increment in price of food items affects the economy of country badly. There are many crises in Pakistan and food crisis is one of them. In ‘Thar’ about 600 children died because of hunger during last few months. This is the worst example of food crisis in Pakistan. Most important effect of increment in food prices is that people can’t afford the good quality of food items and nutrition problems came into being and medical facilities of our country is not better and is not in range of every citizen like people of lower classes. It is often said: “Food insecurity anywhere, threatens peace everywhere”. Food insecurity may cause unrest or even political instability. Persistent food insecurity may cause conflicts, civil wars and can threaten the overall peace of community, society, nation or world depending on the extent and spectrum of hunger and poverty. Food insecurity is the major cause of militancy and violence.

Another effect is that people who are under the poverty line, they are deprived from basic needs. The increased level of poverty also affects the people purchasing power that adds to viscous circle of poverty. By using the up to date data with newly developed methodology, the study intends to investigate the impact of raise in the food prices on poverty.

After the detailed introduction in the first section, review of the literature is presented in the section 2 while, Data and methodology are given in the section 3. Section 4 consists on results and discussions and at the end section 5 gives conclusion.

i. The aim objective of the study finds out the short run and long run, impact of food prices on poverty in Pakistan.
ii. To provide an extensive review on the issue of poverty and food inflation.
iii. To recommend some policy suggestions on the impact of food inflation on poverty in Pakistan.

II. Literature Review

A number of studies have been made to explore the relationship between food inflation and socio-economic factors. Yet the studies on the issue of poverty and food inflation are not in surfeit. This section provides an extensive review of the prior studies to make the foundation of the theme clears. Thematically and chronologically studies are presented and discussed as under.

The theory of the cost of living index has been developed to give a precise meaning to price indices that are widely computed to make cost of living comparisons.
Many economists have contributed to the development of the theoretical foundation of consumer price indices, the most important contributions being those of Hicks [1946], Pollak [1983, 1998], Diewert (1976, 1990a, 1990b), Samuelson and Swamy [1979] and Konu’s [1924].

Arrow (1958) noted that people with lower incomes are likely to have consumption patterns that differ from those with higher incomes. For instance, people with lower incomes spend more of their budget, on average, on necessities than they do on luxuries. This means that if the prices of necessities increase faster than those of luxuries, the poor will be relatively more adversely affected than the non-poor.

Prais (1959) refers to this index as a plutocratic price index. This index has an implicit social welfare function in that it assumes that the society is inequality-neutral in its attitude. This means that the index is completely insensitive to changes in income inequality caused by price changes.

The main objective of this paper is to define a measure that will systematically capture the impact of prices on poverty. Poverty can be measured by several indices; the most common among them are the class of Foster, Greer and Thorbecke (FGT) (1984) poverty measures.

Pollak (1980, 1981) proposed a social cost of living index, which is defined as the ratio of the total expenditure required to enable each individual to attain his or her reference indifference curve at comparison prices, to the expenditure required at reference prices. He calls this index a Scitovsky–Laspeyres group cost of living index.

Dessus et al. (2008) analyzed a recent World Bank working paper lists Pakistan as one of the twenty countries that the authors consider “at risk” due to the estimated impact of food prices on urban poverty.

Chaudhry and Chaudhry (2008) found that it is very important condition for the developing country like Pakistan because the price of foods and fuel increases daily. With the passage of time the cost of foods and fuel increase and the ratio of poverty are also increasing. In Pakistan as whole if twenty percent increase in food prices then it would lead to on 8 percent increase in the poverty. By the rising of food prices rapidly the policymakers, international agencies have concern about the effects of these on their populations and the poor.

Chaudhry and Nosheen (2009) analyzed the determinants of women empowerment in Southern Punjab of Pakistan. The results demonstrated that women empowerment is considerably influenced by education, access to media, socio-cultural norms of the community, job of women and household participation rate.

Baloch (2009) argued that another major reason for increasing prices is increased prices of industrial goods. During the same time, in which food prices were increasing, fuel prices have risen by around 25 to 30%. The fertilizers and insect killer costs have increased by 50%. This automatically puts pressure on the prices of food. The major reason for these costs going up is international prices and reduction of local currency. Generally it is assumed that reduction of currency will have a helpful impact on the
country’s exports, therefore reducing the trade shortage. However, one fact is often forgotten that all major products rely heavily on the import of machinery or other inputs required for production, and when the cost of inputs will rise, then the prices will naturally rise as well reversing the impact of deflation.

Chowdhury et al (2009) concluded in his study that poor people do not received the minimum amount to start any income generating activity from financial sector sources. The poverty of borrowing household decrease with the increase in micro credit program duration any micro credit loan size therefore, participation in micro credit program can reduce the poverty of borrowing house. As compare the past now a current circumstances the poverty of borrowing family circle reduced and raised in microcredit interval. Provide to poor people maximum amount then they able to start the business or work and spend better live condition.

Chaudhry et al. (2009) showed household size, dependency on household, participation, landholdings, and numbers of livestock have a significant impact on poverty incidence.

Ali and Chaudhry (2015) found livestock output as negatively associated with poverty levels in Pakistan in the long run using Johansen’s Cointegration method and vector error correction technique.

According to the World Bank report (2015), food prices have risen by eighty three percent from February 2015 to February 2008. By this time the price of wheat exported is raised from $ 375 to $ 440 per ton. Government makes policies to maintain the prices of goods to see all the situations. Pakistan has seen a 20 percent increase in wheat prices from November 2007 to February 2008. The prices of natural gas are rapidly rising and Pakistani government has difficulty to maintain given high financial shortages. The prices of goods increases due to increase in population and in this situation people cannot fulfill their basic needs. The world’s goods program reports that 20 million poor children are at a risk. The prices of goods are high for their people. Good prices hurt poor consumers.

These narrations show that there is strong relationship between the food prices and the living status of the people. Different studied shows different mechanism through which the rise in prices affects the individuals’ living standard.

III. Data and Methodology

After the detailed review of literature, this section consists of data and methodology. The study used Autoregressive distributed lags model for the estimation of the results to gauge the impact of food inflation on poverty in Pakistan by employing the data ranges from 1972-2013. The data on the selected variable is gathered from different sources as discussed in details in the following.

A. Data

Five variables are used in this study that include; poverty (POV) which is proceeded by head count ratio (measured in percentage); Income inequality (IINEQ) which is again proceeded by Gini Coefficient (measured in percentage); Per capita income (PCI) measured in Pak rupees; Population (POP) is measured in Million people while the Food prices (FP) are measured with the index. The data has been taken from
Economic survey of Pakistan (various issues), Ministry of finance, Jamal (2006) and Labor force survey (various issues). The source of data from which the data is collected is secondary.

B. Properties of data
We have check stationarity of data and came to know mixed order of integration i.e. some variables are at 1st order of integration values while the remaining are at level for that reason we have use ARDL for estimating long run and short run impact of food price on poverty in Pakistan.

C. Econometric Methodology
We have used time series data and examine its proprieties which proved mixed results i.e. some variables are of 1st difference while the remaining are at level this proved just fiction to use ARDL for the estimation. ARDL has advantage over other co-integration technique it is useful for small data sample, Narayan (2004). As the methodology of Engle and granger and Johensan technique are not reliable for co-integration but ARDL gives reliable results. The ARDL methodology is consists of two stages. First, the long run relationship between variables is tested using F-statistics to determine the significance of the lagged levels variables. Second, the coefficient of the long run and short run relationship will be examined.

D. Model Specification
This study constructs the following model to estimate the impact of food prices on poverty by using the above discussed methodology. The model takes the Poverty (POV) as a dependent variable while population (POP), Income Inequality (IIEQ), Food Prices (FP), and Per capita Income (PCI) are taken as explanatory variables.

\[ \text{POV} = f(\text{POP}, \text{IIEQ}, \text{FP}, \text{PCI}) \]

Further the variables are transfer from in their log form, to find the parentage response i.e. elastic ties. So the above equation turned into the form described as;

\[ \text{POV} = f(\text{POP, IIEQ, FP, PCI}) \]

All the variables are expressed in percentage after taking the log of POP, FP and PCI where the POV and INQU are already taken into percentage form.

IV. Results and Discussions
After the formulation of the model, this section consists on results and discussions. The long as well as short run impact of food process on poverty is estimated with the help of ARDL technique to co-integration. While the error correction term provide the time requites for attaining the equilibrium in the long run.

A. Descriptive statistics
Firstly, we presented the descriptive analysis which includes mean, standard deviation, number of observation and probability value for the purpose of showing the measure of central tendencies of the variables of the study. On the average, poverty, per capita income, food prices and Income Inequality are respectively 26.54, 60000.26, 9.57 and 23.59 in Pakistan. The probability values show that null hypothesis of Jarque Bera
test may not be rejected e.g. series is normally distributed. Furthermore we estimate the long run and short run results through ARDL co integration.

**Table 1: Descriptive Statistics**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>St. Dev.</th>
<th>Observations</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>POV</td>
<td>26.54</td>
<td>7.61</td>
<td>41</td>
<td>0.10</td>
</tr>
<tr>
<td>PCI</td>
<td>60000.26</td>
<td>314.49</td>
<td>41</td>
<td>0.21</td>
</tr>
<tr>
<td>FP</td>
<td>9.57</td>
<td>5.35</td>
<td>41</td>
<td>0.05</td>
</tr>
<tr>
<td>IIEQ</td>
<td>23.59</td>
<td>2.90</td>
<td>41</td>
<td>0.74</td>
</tr>
</tbody>
</table>

Source: Authors Calculation (Eviews 7.0)

**B. Long run short run Estimate of food prices and poverty**

The long run results of the estimated model are reported in following table 2. The dependent variable is poverty proxied by POV while POP, CPI, IINQ and FP are taken as independent variable. Food price in Pakistan is turned out to be positive with poverty having significant coefficient value. The long run result of food prices (FP) on poverty (POV) indicates that one percent increase in prices cause to increase poverty by 60 percent. It means that increase in food prices is hurting the leaving cost of poor part of society. Especially prices of wheat, rice, sugarcane, milk and eggs etc increase the living cost of poverty which also cause to reduce the purchasing power of the individuals. Whereas short run results indicate that increase in food prices reduce poverty at 10% level significant. The reason may be that food prices mostly induced staple food prices where as mostly of the staple food are supplied by the agriculture sector in which poor people are engaged in producing food items especially staple food so increase in food prices may benefit the poor farmers in the short run.

**Table 2 Long run estimates of food prices on poverty**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>t-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>INQ</td>
<td>1.19</td>
<td>4.55*</td>
</tr>
<tr>
<td>POP</td>
<td>3.8</td>
<td>2.40**</td>
</tr>
<tr>
<td>PCI</td>
<td>0.48</td>
<td>-1.382</td>
</tr>
<tr>
<td>FP</td>
<td>0.59</td>
<td>-6.115**</td>
</tr>
<tr>
<td>C</td>
<td>-0.121</td>
<td>1.134</td>
</tr>
<tr>
<td>ECMc1</td>
<td>-0.58 [0.022]</td>
<td></td>
</tr>
</tbody>
</table>

**Diagnostic test (p-values)**

- $X^2_{sc}$: 0.367, NA
- $X^2_{ll}$: 0.490, NA
- $X^2_{nor}$: 0.234, NA
- $X^2_{het}$: 0.982, NA

Note: ARDL(1,0,0,0,0) selected based on Schwarz Bayesian Criterion, Dependent variable: Poverty. Source: Authors Calculation

Long run result of inequality (IINQ) and population (pop) indicate that poverty is positively and significantly linked with inequality and population. It may be interpreted as one percent increase in the income inequality will cause to increase the poverty by 1.19 percent and it is significant at one percent level of significance. Similarly, one percent increase in the population will increase the poverty by 3.8 percent.
While per capital income is found to be a cause of reducing poverty having coefficient value 0.48. Statistically, it is insignificant so its importance may be ignored in this study. The short run result also indicates same result for poverty.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>t-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>∆INIQ</td>
<td>0.534</td>
<td>8.72*</td>
</tr>
<tr>
<td>∆POP</td>
<td>51.876</td>
<td>3.98**</td>
</tr>
<tr>
<td>∆PCI</td>
<td>-1.234</td>
<td>1.982</td>
</tr>
<tr>
<td>∆FP</td>
<td>-0.1387</td>
<td>-9.151*</td>
</tr>
<tr>
<td>∆C</td>
<td>-0.447</td>
<td>21.87*</td>
</tr>
</tbody>
</table>

Note: ARDL(1,0,0,0,0) selected based on Schwarz Bayesian Criterion, Dependent variable: Poverty
Source: Authors Calculation

The error creation term came with the value of (-0.58) with negative sign which is evident for existence of long run relationship. The value of ECM interprets and it will take about six month to adjust short run variable to attain long run equilibrium.

V. Conclusions
In this study we have estimated the impact of food prices on poverty in Pakistan by applying time series data ranging from 1973 to 2013 study uses ARDL and error correction model for the estimation. The result of the study goes over the main point that food prices along with per capital income are deterring poverty in short run but in the long run food prices causing to increase poverty while inequality and population are main factors effecting level of poverty positively in Pakistan. This proved clear message that the poor worker working in the Agriculture sector needs attention regarding sources of income which is mostly earned from this sale of staple food. This will also cause the removal of income inequality and boost-up their live standard by increasing per capital income which is the Major source of poverty reduction.

References


